ONLY CONNECT: A PHENOMENOGRAPHIC STUDY EXPLORING STAKEHOLDERS' CONCEPTIONS OF INFORMATION LITERACY ACROSS AN INTERNATIONAL MIDDLE SCHOOL COMMUNITY

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Abstract

The dynamic information context is challenging school communities to calibrate their ways of understanding information literacy. However empirical research reports a lack of shared understanding and vision around information literacy that is negatively impacting its development. The solution it is argued is to increase the level of multi stakeholder dialogue about the information literacy phenomenon.

The purpose of this study was to create a platform for dialogue within an international school community by identifying and comparing conceptions of information literacy across multiple stakeholder groups to proactively inform information literacy practice.

Working within the qualitative paradigm and invoking a phenomenographic methodological approach the research drew from a trans-disciplinary theoretical background in the information, management and education sciences. Using recorded focus group discussions stakeholders including students, parents, teachers, library staff, IT personnel, administration and leadership shared their perceptions of the information context as a stepping stone to sharing their conceptions of information literacy.

The findings show that stakeholder groups perceived the information context to be characterised by environmental, social human and affective dimensions; that stakeholders did not hold one singular conception of information literacy but rather they shared a series of conceptions of information literacy to varying degrees, and that the variation in the ways information literacy was conceptualised prevailed across three continuums namely the individual-collective, affective-cognitive and competency–personal mastery continuums. Furthermore, the comparative analysis of the series of conceptions of information literacy created the opportunity to develop a model of the common ground of conceptual understanding of information literacy thereby making an original contribution to knowledge.

The study provides compelling insights for information literacy practitioners recommending that a shared conceptual understanding of information literacy requires accommodating its complex socio-contextual nature and anchoring that understanding in the philosophical, pedagogical and strategic thinking of the learning community.

Key Words: Information literacy, information context, conceptions, phenomenography, multi-stakeholder, dialogue, international private education, middle school, agility.

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ACRONYMS AND ABBREVIATIONS

AASL - American Association of School Librarians

ACRL - Association of College and Research Libraries

ADM - Administration Stakeholder Group

ALA - American Library Association

ANZIL - Australia and New Zealand Institute for Information Literacy

CAUL - Council of Australian University Librarians

CEFR - Council of Europe Common European Framework

CILIP - Chartered Institute of Library and Information Professionals

CIS - Council of International Schools

CGC - Common Ground Collaborative (Curriculum)

ECIS - European Council of International Schools

EE - Extended Essay

FGD - Focus Group Discussion

HE - Higher Education

IC - Information Context

IL - Information Literacy

ILE - Information Literacy Education

IBO - International Baccalaureate Organisation

IBDP - International Baccalaureate Diploma Programme

IB PYP - International Baccalaureate Primary Years Programme

IB MYP - International Baccalaureate Organisation Middle Years Programme

IFLA - International Federation of Library Associations

IFAP - Information for all Programme (UNESCO)

IIEP - International Institute for Education Planning

IPC - International Primary Curriculum

ISTE - International Society for Technology Education

IT - Information Technology Stakeholder Group

LE - Leadership Stakeholder Group

LB - Library Stakeholder Group

LIS - Library Information Service

MSA - Middle States Association for Colleges and Schools

NCLIS - National Commission on Library and Information Science

NFIL - National Forum on Information Literacy

ODL - Online Distance Learning

P - Parent Stakeholder Group

PS - Project School

SCONUL - Society of College, National and University Libraries

S - Student Stakeholder Group

T - Teacher Stakeholder Group

UNESCO - United Nations Educational, Scientific and Cultural Organisation's

WWW - World Wide Web

CHAPTER 1 Setting the Scene

Introduction

It was in the context of examining the relationships between the National Program for Library and Information Services to information literacy and the information industry in the late 1970's that the term information literacy (IL) was first articulated by the then President of the Information Industry Association in the United States, Paul Zurkowski (National Forum on Information Literacy (NFIL) 2016). In his Report to the National Commission on Library and Information Science (NCLIS) Zurkowski stated "people trained in the application of information resources to their work can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in moulding information solutions to their problems" (Zurkowski 1974 p. 6).

Today, nearly two decades into the 21st Century, the concept of IL has evolved and transitioned against a backdrop of major change in the information context (IC) driven by innovative technological advancements chief amongst them being the World Wide Web a powerful force for greater connectivity in the manifold areas of daily life. More recently the American Association of College and Research Libraries (ACRL) have published their new Framework for IL containing a new definition of IL as follows:

'Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning' (Association of College and Research Libraries 2016 p. 3).

Whilst techniques, skills, tools and a problem solving orientation are at the heart of Zurkowski's (1974) definition developed from a work place perspective, ACRL places an emphasis on reflection, understanding of the ways information is produced, on creation of new knowledge and ethical participation in communities of learning, with their definition emerging from the professional academic setting (Association of College and Research Libraries 2016). Whatever the differences and similarities that prevail between these two ways of conceptualising IL emerging from two successive centuries IL today is recognised as being at the heart of lifelong learning. Indeed, IL has been endorsed by the United Nations Educational, Scientific and Cultural Organisation's (UNESCO) Information for All Program (IFAP) as 'a basic human right' (Catts and Lau 2008 p. 9).

Moreover, in her review of the state of Global Information Policy Weiner (2015 p. 5) observes that "there is general agreement that IL contributes to workforce readiness, educational success, and everyday life decision-making".

The move toward the development of a conceptual framework for the identification of indicators for IL by the UNESCO's Information for All Programme (IFAP) (Catts and Lau 2008 p. 7) alongside the introduction of IL standards developed by professional Associations such as United Kingdom's Society of College, National and University Libraries (SCONUL), United States Association of College and Research Libraries (ACRL), the Australian and New Zealand Institute for Information Literacy (ANZIL) and Council of Australian University Librarians (CAUL) have framed the expectations around the core skills to be developed in order to become information literate (Folk 2016 p. 11).

Against the backdrop of state and international standards for IL learning it is clear that IL has a status and importance at the highest political and professional levels in terms of the relevance and centrality of IL learning in the 21st century. At the IL research level the past forty years has provided extensive understanding of both the process and content of IL education ranging from bibliographic instruction and information skills to questioning the IL phenomenon and the way its processes and practices manifest and operate in different contexts (Ariew 2014; Lundh, Limberg and Lloyd 2013; Pinto, Cordon and Gomez Diaz 2010; Markless and Streatfield 2007; Williams and Wavell 2006; Williams 2005; Virkus 2003; Rader 2002; Limberg 1999; Bruce 1997; Kulthau 1993).

However, as the demands of the technologically driven information learning and working environment evolve in their complexity educators have been challenged to continuously calibrate their IL outlook to emphasise creative and innovative approaches to the advancement of IL learning. Responding to this challenge has necessitated a shifting of pedagogical and philosophical preferences. A key problem however has been identified in terms of the absence of 'joined up thinking' in various education contexts over the past number of years (Andretta, Pope and Walton 2008; Williams and Wavell 2006a).

More recently Bønløkke, Kobow and Kristensen's (2015 p. 11) research in the Danish Higher Education (HE) context, report in their study that "studies describe that lack of joint conceptual understanding of IL makes communication and cooperation difficult and the educators' lack of knowledge on IL is a barrier when supervising students". The findings from their study confirm that "that Joint conceptual understanding of IL is important for the teamwork and in order to have common and clear aims for the IL of the students" (2015 p. 12).

This deficit or gap in terms of a shared articulated conception of IL among key stakeholders is clearly a dilemma in terms of IL learning for all age groups and its resolution is the subject of attention in IL literature (Andretta, Pope and Walton 2008; Williams and Wavell 2006b). A number of studies have emphasised that the development of successful IL strategy is reliant upon the adoption of a multi-stakeholder collaborative approach. When translated into practice the solution involves increasing the level of inter professional exchange and dialogue to facilitate sharing of ideas and perceptions of IL and embracing collaborative processes that lead to the development of a multi- stakeholder IL strategy that is founded on a shared vision of IL (Bønløkke, Kobow and Kristensen 2015; Cope and Sanabria 2014; Andretta, Pope and Walton 2008; Williams and Wavell 2006b; Levy and Roberts 2005; Henri and Asselin 2005; Henri, Oberg and Hay 2002). Dialogue in this sense is generative in that it offers stakeholders the opportunity to connect and share their ways of thinking and feeling about their information experience and how they conceptualise IL based on their personal and shared experiences of the changing IC (Senge et al. 2000).

Moreover, a study examining IL in United Kingdom primary and secondary schools covering the past thirty years by Shaper et al. (2011 p. 6) reports that:

> "School librarians in the UK have been involved in what they have successively described as information skills and information literacy for more than thirty years, but this work has never been consolidated at a level that made it a consistent feature of teaching and learning. Rather, there have been various stages along the way where attention was focused on IL so that it rose to the forefront of school library work, even it has not been fully embraced by schools".

The findings from this study indicate "that IL in UK schools cannot be said to be in a good state". The survey results suggest that there is a wide and growing gap between best practice and the rest, with many libraries relatively under resourced and senior management support ranging from visionary and enthusiastic through to neglect" (2011 p. 20). It is clearly apparent then that there is no country wide comprehensive, consistent shared vision and practice held across key stakeholder groups including senior management, teachers and library staff upon which to design, resource and implement a holistic shared IL learning strategy that can prepare primary and secondary students to become information literate as they transition through key foundational educational experiences in their lives.

A further gap within IL research centres on the need for researchers to take cognisance of the nature of the information context (IC) in which IL is being studied. Lloyd (2010 p. 1) is one such proponent of this need within the IL research arena arguing that:

> "As our research into IL proceeds…to understand IL requires more than an understanding of the student research process or the development and application of information skills, it

> requires a deep understanding of the complex social processes and arrangements that shape information and how it is used within any given context".

In an international school context which is the context for this study there are diverse standards that schools need to meet in order to be accredited by major accreditation bodies such as the Council of International Schools (CIS) (2015) and the Middle States Association for Colleges and Schools (MSA) (2011). In some cases, international school libraries may also have adopted the American Association of School Librarians (AASL) (2007) Standards for the 21st Learner. In terms of information technology literacy, the curriculum may be informed by the International Society for Technology Education (ISTE) (2008) Standards which includes a research and information fluency as a key component. Furthermore, some international schools offer one, two or all elements of the International Baccalaureate Organisation (IBO) Diploma Program (IBDP) in tandem with for example a national curriculum such as the US K 12 curriculum, a UK national curriculum or one of the many national curricula from around the world (International Baccalaureate Organisation 2014a). Additionally, in more recent years there has been an increase in schools introducing the International Primary Curriculum (IPC), which similar to the IBO programme also adopts an inquiry based pedagogical approach (Bunnell 2010).

When one considers the potential mix of standards and expectations at play alongside the fact that the school community comprises of families who may have experienced multiple education settings as well as a faculty who oftentimes have completed their teacher training in a national curriculum context and taught in multiple national and international settings it is clear that there will be significant potential for extensive variation in how IL is conceptualised. Combining these various elements with the fact that international schools very often deliver their instruction through English and that many of the community are "plurilingual" the potential for sharing understanding of concepts is challenging (Council of Europe Common European Framework 2013 p. 168).

School communities worldwide are tasked to prepare their learners for life and in an international middle school context the students are on the cusp of major physiological and emotional changes as they approach and enter their teenage years. Moreover, these young learners may well be 'third culture kids' "a term used to describe a student who moves from one culture to another culture and is educated in third culture" (Tilke 2011 p. 14). Their information and IL learning experiences against this backdrop of change may differ greatly and as such this variation can offer fresh understanding of IL to inform IL strategy. The adults in their lives including their parents, guardians, teachers, library and IT personnel, school administrators and leaders collectively impact and shape children's formation as citizens of a global society.

Never has it been more important for everyone who has a stake in shaping the minds of the future needed to connect and share their understanding of what IL means so that through this collective sensitivity to IL 'a basic human right' can be more fully understood from all stakeholder perspectives.

The purpose of the study is thus captured in the short title "Only Connect" (a quotation borrowed from Edward Forster's classic novel Howard's End (Forster 1985 p. 188), which places the focus on the value of people connecting through dialogue and conversation. Senge also promotes dialogue as the vehicle to gather a rich and comprehensive insight into the nature of challenges and issues faced in the education context (Senge et al. 2000). By engaging stakeholder groups across a school community to connect through focus group discussions (FGD) it will open up the possibility to contribute to bridging the 'disconnect' in conceptual understanding of IL currently impacting student learning. More importantly the insight gained will in turn act as a baseline for future multi stakeholder dialogue around the design and delivery of IL learning strategies shaping the ways educators prepare today's students and their learning coaches for the challenges and opportunities of tomorrow's unknown world (Flood 1999). In this sense the identification of conceptions held in an international school community context can also be valuable in terms of stimulating dialogue for understanding IL across national and international stakeholders as the internationalisation of education and private international education evolve in the coming decades (De Wit et al. 2015; Bunnell 2010; Hayden and Thompson 2008).

1.1 Research problem

As a library and information professional working in international private education the researcher found herself facing the problems associated with the lack of a shared articulated conception of IL. At the most basic level it was difficult to identify conceptions of IL explicitly articulated in the school narrative around expectations, standards, practices or research processes for IL at all key stakeholder group levels to include students, parents, teachers, library personnel, IT personnel, leadership and administration. In reality the ways stakeholder groups understood IL was very much associated with terms such as research or going to the library "to do" research with little shared understanding or clear articulation of learning outcomes even when IL standards were made explicit in library policy documentation.

In this scenario the gravity and immediacy of the need to discover the ways stakeholders across a school community understood IL formed the core research problem on which this study is based. Furthermore, based on the clearly identifiable need for IL research to take cognisance of the IC the researcher sought to discover how stakeholders perceive their IC by considering their experience of that context thereby grounding the findings regarding conceptions of IL within the perceptual

mindscape of the project school (PS) community. Therefore, this study, whist exploratory in nature, is simultaneously designed to utilise the understanding gained to proactively inform and shape professional IL practice to impact adult and student IL learning.

1.2 Research aims and objectives

Against the backdrop of the challenges posed by a lack of shared thinking about how IL is conceptualised the aim of this research is to identify, compare and contrast conceptions of IL from multiple stakeholder perspectives in a private international middle school community.

The objectives underpinning the research were to:

1. Conduct a critical review of key literature relevant to the research problem;
2. Explore the ways stakeholder groups perceived their IC as a stepping stone to discovering the ways IL was conceptualised across stakeholder groups;
3. Undertake a phenomenographic study of variation in how IL is conceptualised across seven key stakeholder groups in the project school (PS) context creating an outcome space for each stakeholder group;
4. Conduct a comparative analysis of the conceptions arising from each of the stakeholder groups to reveal commonalities and differences in the conceptions of IL;
5. Proactively explore implications of the research findings in terms of contribution to IL knowledge and identifying potential routes to impact on IL professional practice.

1.3 Research question

Initial investigations as to how IL is conceptualised indicated that there were some studies examining how IL is conceptualised by one key stakeholder group such as Williams and Wavell's (2007) study of UK secondary school teachers' conceptions of IL and Limberg's (1999) study of high school senior students' conceptions of the information seeking and use experience. Turning to the higher education context Boon, Webber and Johnston (2007) carried out a study of English UK academics' conceptions of IL. In terms of studies examining how IL was conceptualised from multiple perspectives one study conducted by Andretta, Pope and Walton (2008 p. 36) in the UK higher education context offered "an insight into the perceptions of information literacy by exploring four distinct perspectives: those of the institution, the faculty, the library staff, and the students". From a workplace context Bruce's (1997) study examined the experience of IL amongst various types of professionals leading to the seven faces of IL classification of conceptions of IL. However, there were no published studies found in the international private middle school arena on conceptions of IL from single or multiple stakeholder perspectives or indeed in international private schools at any divisional level. Furthermore, the preliminary search for studies about IL pointed to a need for IL researchers to

have a greater critical awareness of the IC in their research practice. This study by attending to the issue of context and by conducting a comparative analysis of the variation in conceptions of IL that surface from multiple stakeholder groups in an international school community addresses this call for greater sensitivity by IL researchers to the IC. It offers an understanding of IL from the vantage point of multiple stakeholder perspectives in a school community context where information needs and practices are experienced across work, school and home place environs (Lloyd 2010; Lloyd and Williamson 2008; Toledano O'Farrill 2008; Lloyd 2005).

The absence of multiple stakeholder understanding of IL together with the challenge to lead and develop a relevant context sensitive IL learning strategy led to the initial research question:

"What conception(s) does an international school community hold about information literacy?"

From the experience of the researcher as an IL practitioner in an international school setting it was clear that the term information literacy was not a commonly used term by colleagues, parents and generally within that working context. Thus when communicating with various stakeholders the decision was taken that, for the purposes of the research process, that question should be adapted as follows:

"What conception(s) does an international school community hold about the effective use of information for learning (IL)?"

Furthermore, the terms effective use of information for learning whilst primarily focusing on student IL also remained open to stakeholders' experiences of the project school (PS) context as a workplace setting and as a context that spilled over into home place IL experience of students, parents and their wider information and communication network.

The intent from the outset was to create a dialogue process whereby conceptions of IL would surface from stakeholder groups drawing from their information experiences and perceptions of their IC and thereby enable the spontaneous sharing and ultimate discovery of the ways IL is conceptualised from multiple stakeholder group's perspectives in the school community. In this regard this study is informed by an assumption that the IC shapes and is shaped by people's engagement within it rather than assuming the context is perceived in a given way(s). As Lloyd (2010 p. 157) points out the importance of context matters as "we are of our contexts and at the same time are producers, shapers and interpreters of it".

This study therefore seeks to discover how stakeholder groups perceive their IC as a stepping stone to surface variation in conceptions of IL. In so doing the study will explore potential connections in terms of the ways perceptions of the IC potentially might shadow conceptions of IL.

1.4 Theoretical influences from the management sciences

The professional development plan linked to the professional doctorate programme required the student to undertake studies in subject areas of relevance to their professional role and specifically, to critically inform their research process. To that end the researcher successfully completed post graduate modules in leadership, communication and change management, organisational learning and information dissemination. The impact of studying these modules is immediately evident in the ways the research process has been designed, honing the researcher's sensitivity to the research context in ways that retaining a library professional perspective only could not achieve. In practice in terms of key concepts and theories underlying the study the concept of dialogue and shared vision are defined from a learning organisation perspective that is grounded in systems theory (Senge et al 2000; Flood 1999; Smith 2009).

In terms of impact on professional practice the subject knowledge development in the areas of leadership, communication and change management has heightened the researcher's sensitivity to leadership and administration perspectives on IL and the need to critically explore routes to impact on professional IL practice. The critical understanding gained from undertaking the organisational learning module (Wenger 2010; Wenger 1998; Lloyd 2005) about work place information being both tacit and explicit heightened the researchers' sensitivity to these theories and concepts during the dialogue process and laterally when interpreting the feedback (Mezey 2009; Argyris and Schon 1978).

Furthermore, the knowledge and understanding gained from the information dissemination module has been hugely beneficial enabling the researcher to have a critical awareness of the structural and social human dimensions of information contexts across diverse environs (Kelly 2008). Collectively combining the subject knowledge development of these three related areas of management science with a library and information science background and expertise has brought a more multidisciplinary as opposed to library information only perspective to the study and the application of its findings. In this sense this study uniquely brings a cross disciplinary approach to the research process that involves multiple stakeholders who themselves have backgrounds in a diverse set of professions and disciplines.

1.5 Research approach

The research is carried out primarily within the qualitative paradigm undertaking a phenomenographic study of conceptions of IL to determine variation in the conceptions of IL held by various stakeholders in a single international middle school community. Seven key stakeholder groups were identified to include students, parents, teachers, library personnel, IT personnel,

administration and leadership. Recorded focus group discussions were the preferred data collection method to surface variation in the ways IL was conceptualised.

The study is limited in that the focus is on one international school community. However, although that could be perceived as a limitation, it can also be interpreted very much as a major strength of the study. This is so because the study captures a breath of perspectives and a depth of understanding about IL across a school community and through the comparative analysis of variation in the conceptualisation of IL will deliver a more holistic 'big picture' understanding of IL within an international middle school community to inform professional practice.

1.6 Layout of thesis

This thesis consists of seven Chapters: The Introduction Chapter includes the background, rationale, aims and objective of the research. Chapter 2 reviews the literature pertinent to the research problem identifying the gaps in the IL knowledge base that this study seeks to address providing a standpoint against which to place the findings from this study. Chapter 3 describes the methodology for the research, presents a critical overview of phenomenography as the preferred data collection method to surface variation in the conceptualisation of IL. It also profiles in detail the design of the focus group discussion (FGD) process providing insights for future similar type research processes. Findings are presented in Chapters 4 and 5. Chapter 4 presents the findings regarding conceptions of IL prevalent at each stakeholder group level commencing with a focus on the perceptions of the IC. Chapter 5 reveals the findings from the comparative analysis of variation in the conceptions of IL held across the seven stakeholder groups. The comparative analysis in Chapter 5 culminates in the development of a model of the common ground conceptualisation of IL marking an original contribution to IL knowledge. Chapter 6 discusses the findings in three sections. The first section examines the significance of the variation in IL revealed in the findings, critically reviewing the extent to which it confirms and extends conceptions of IL found in the literature. Section 2 explores the potential contribution the findings from this study have to offer to inform and enhance professional practice on three levels to include the immediate impact at the PS level, the impact on the researchers' professional practice and learning points from this experience for other professionals and thirdly, the early indications for potential impact on professional practice in diverse national and international education and work place contexts. The third section considers how the comparative analysis of variation undertaken in the study through the adaptation of the phenomenographic approach may potentially influence future multiple stakeholder studies of IL in diverse contexts. The concluding Chapter 7 presents a case for the immediate and longer term contribution of the research to IL knowledge and professional practice on both the national and international education contexts

and details the nature of further research required to enhance, extend and consolidate conceptions of IL to inform a holistic approach to IL learning strategies in diverse contexts.

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CHAPTER 2 Review of Literature

Introduction

This study is exploratory in nature seeking to discover what conceptions of IL prevail across an international school community. Given the gap in the literature as noted in the chapter 1 regarding the ways IL is conceptualised from multiple stakeholder group perspectives and a lack of focus on IL in the international private education context the literature review necessarily sought to focus on studies of conceptions of IL conducted in other educational and workplace contexts. Consequently, the literature review process set out to identify and critique the literature regarding:

1. The centrality of context when conducting IL research;
2. The origin and development of international private education as the context for this study;
3. The evolution of the conceptualisation of IL since the 1990's to include a focus on IL in primary, secondary and tertiary levels of education, work place contexts and on IL frameworks, models and standards.

By focusing on these areas the literature review profiles the current status of knowledge about and gaps in the literature concerning IL, offering a backdrop that substantiates the need for this study, and finally serves as a bench mark for comparing the results of this study with findings from previous studies (Cresswell 2009).

2.1 Literature search process

The literature search strategy as presented in Figure 2.1 incorporated a series of elements to include the:

1. Identification of source selection criteria;
2. Identification of relevant sources such as data bases, journals, list serves, professional online networks, books, reports and articles;
3. Key word search lists for basic and advanced searching;
4. Development of a literature review map to capture sources relevant to the main research question and
5. Development of a source management, organisation and note-making routine (Cresswell 2009).

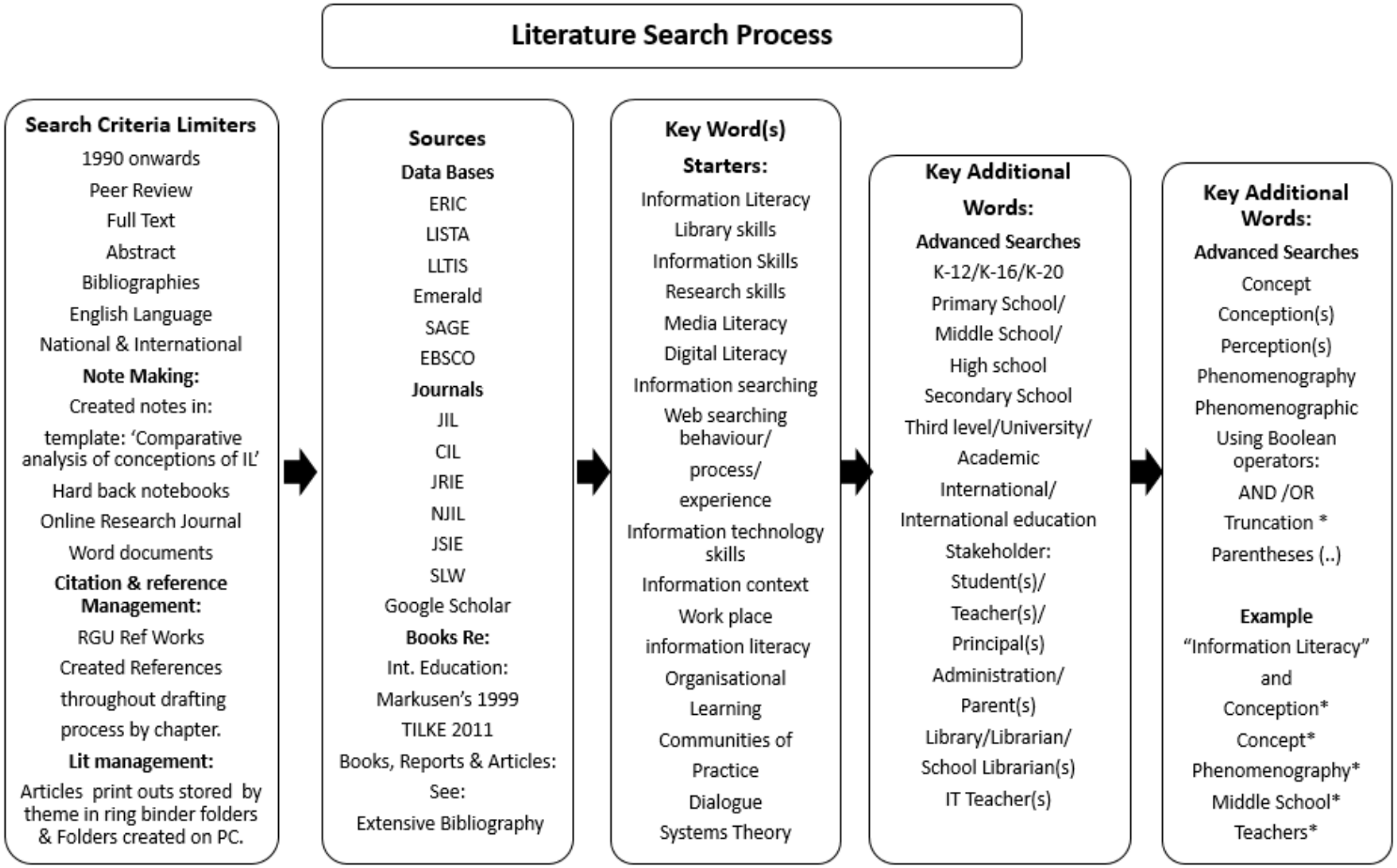

Figure 2.1 Literature review process

The principal source selection criteria included:

1. Publications primarily from 1990's onwards;
2. Written in the English language;
3. Coverage of national and internationally focused literature;
4. Priority to peer reviewed research but including PhD. Theses available on RGU Open Air database when no other peer reviewed source was available;
5. Relevance to research problem;
6. Authority of source;
7. Books written on the subject of IL by single or multiple contributors and
8. Conference papers, professional and or academic organisations reports, models, frameworks and standards on the subject of IL.

The initial search process concentrated on searching for studies that offered a historic overview of IL (Pinto et al. 2010; Markeless and Streatfield 2007; Virkus 2003; Bruce, Candy and Klaus 2000; Todd 1999). The bibliographies associated with these publications proved a valuable starting point to advance the search process. As the research progressed and new studies providing a historical overview of the development of the conceptualisation of IL were sourced enabling a calibration of the review to integrate these new insights (Whitworth 2014; Virkus 2013; Streatfield et al. 2011). For workplace IL studies the annotated bibliography developed by Williams, Cooper and Wavell (2014) provided a comprehensive map of studies in this area. To develop an initial understanding of key IL studies the researcher also focused on scanning the abstracts of studies of relevance primarily in the Library Information Science and Technology Abstract (LISTA) and Library Literature and Information Science (LLIS) data bases.

The search process was challenging not least because the study sought to understand how IL was conceptualised from seven different stakeholder groups including students, parents, teachers, librarians, IT teachers, administrators and leaders in educational and work place contexts. This search yielded a series of studies related to the research problem and based on a protracted reading, reflection, analysis and note-making process the researcher identified four thematic areas upon which to build the literature review as depicted in Figure 2.2. The four themes included research context to include international private education context and the importance of sensitising the research to understand stakeholders' perceptions of their IC, conceptions of IL found to prevail in K-20 settings to include primary secondary tertiary levels of education and workplace contexts; examining IL models, frameworks and standards and finally examining the contribution of authors to explaining variation in conceptualisation of IL (Bruce, Edwards and Lupton 2006; Whitworth 2014).

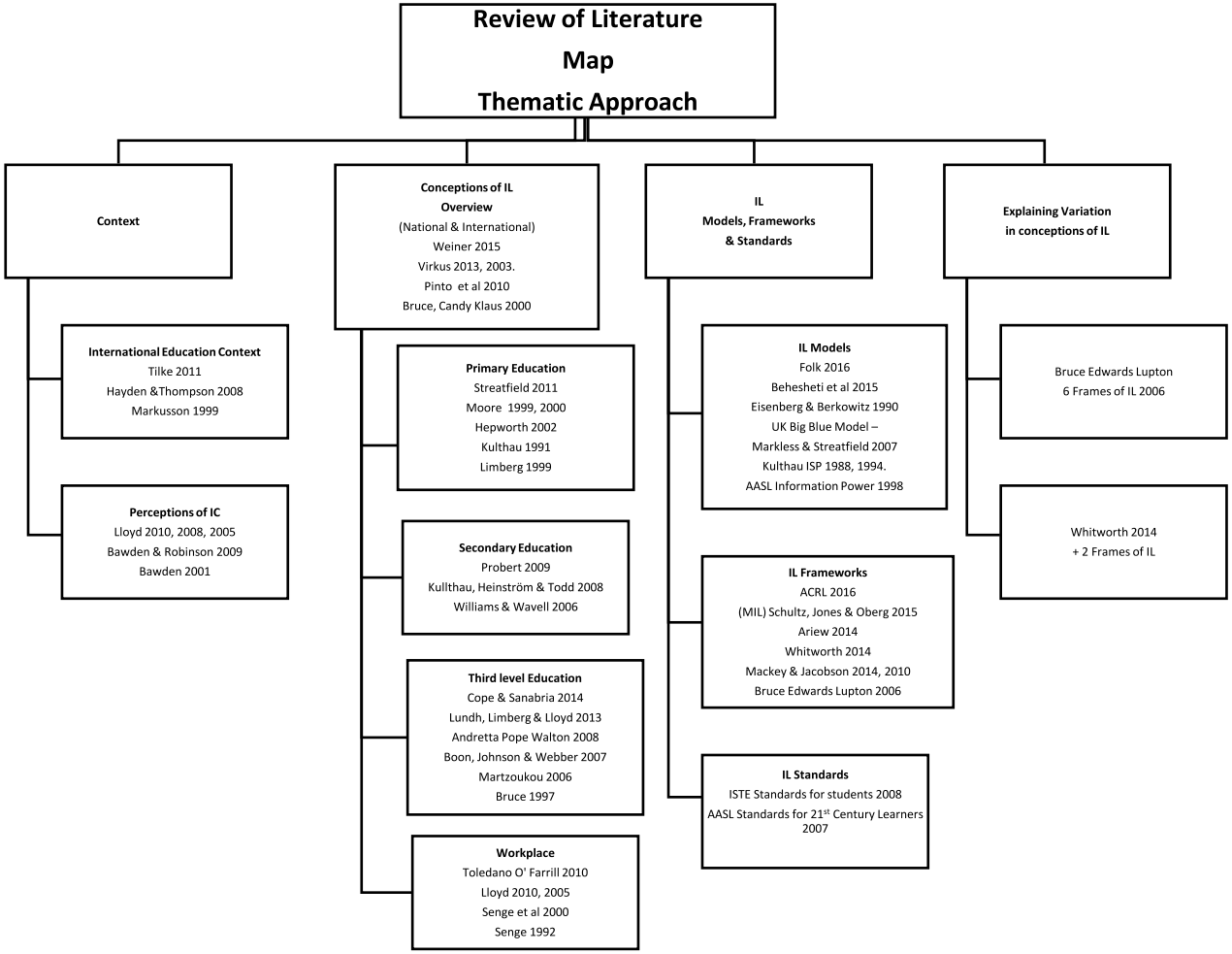

Figure 2.2 Review of literature map

Each of these four themes will now be explored in turn drawing on relevant literature as indicated in the literature review map however as the review process continued over the life time of the study different subtopics and search terms were introduced to further refine or encompass different dimensions of the research problem for example the initial focus was on conceptions or perceptions of IL which was later broadened to include a focus on children's web searching and the information search process and experience. This was particularly important to locate studies of children's information use experiences as there were no studies found on middle school children's conceptions of IL. Equally as there were no published studies regarding conceptions of IL in international school setting it was necessary to broaden the search to understand what IL frameworks developed from an international perspective were in existence such as the International Federation of Library Associations (IFLA) and United Nations Educational, Scientific and Cultural Organisation (UNESCO) documentation on IL (Grizzle et al. 2014; Horton 2014; United Nations Educational, Scientific and Cultural Organisation 2013, 2008; Catts and Lau 2008; Hayden and Thompson 2008; Horton 2008; Moore 2002; Schultz-Jones and Oberg 2015; International Federation of Library Associations 2005). Moreover, such terms as library skills information skills, media, IT and digital literacy were also used to search for sources as was research skills and work place IL.

To ensure both relevant and current coverage of the literature the researcher relied on regular notifications from Chartered Institute of Library and Information Professionals (CILIP) and Facet publications, the European Council of International Schools (ECIS) Library and information list serve discussion forum, notifications regarding new issues of Journal of Information Literacy (JIL) and frequent searches using date delimiters. The gathering of relevant sources was also facilitated through networking and presenting at conferences such as Librarians Information Literacy Annual Conference (LILAC) (2009), iDocQ 2011 RGU Aberdeen (iDocQ Information Science Doctoral Colloquium 2011), iDocQ 2012 Edinburgh University (iDocQ Information Science Doctoral Colloquium 2012), the International Federation of Library Associations (IFLA) European Media and IL Conference; (EMMILE) Milan 2012, ECIS 7th Triennial Librarians Conference; (St John's International School, Brussels 2014) and the Common Ground Collaborative (CGC) Curriculum Conference in Brussels 2014 (Common Ground Collaborative Curriculum 2014). Finally in order to obtain relevant insight into the methodological approach and about key research on the conceptions of IL the researcher emailed key experts in these areas to include F. Marton, Professor emeritus in the Department of Pedagogical, Curricular and Professional Studies at the University of Gothenburg Sweden, who is a founding father of the phenomenographic method and Christine Bruce Professor in the Department of Science and Engineering (Information Systems and Information Ecology) at Queensland University of Technology Brisbane, Australia who is a recognised expert on the subject of conceptualisation of IL

(University of Gothenburg 2012, Queensland University of Technology). These communications yielded important guidance and connections to other key authors and researchers on the subject of IL.

As the literature search process started to gather momentum it was important to develop note making strategies that captured a critical understanding of the sources. Tables were created with headers concerning aspects of the literature for example the author, date and context of each study of IL conceptions in one column and then the corresponding conceptions of IL arising in the findings from the study. A further template was developed to capture comparative analysis of findings from the literature with preliminary and final findings from this study, with columns for the reference details and key findings of the published work, key findings from this study and a third column entitled Remarks (Extends? Raises Questions?). Finally, notes were also made in word documents and saved with the article or print out from chapters in books, in the research journal facility of the NVivo software programme and in the more traditional format handwritten notes were made in hard back journals over the years of the research process.

In conducting the review of literature attention was given to sourcing studies using quantitative or qualitative or mixed methods approaches to assess the most appropriate methodology to meet the aim and objectives of the research and the rationale for the final selection of phenomenography based on the literature is presented in Chapter 3.

Citation and reference management was ongoing facilitated through the expert training conducted by the RGU librarian for the Business School which enabled the researcher to systematically track bibliographic references throughout the literature review process and to create in-text citations and reference lists from the outset of the drafting of the thesis chapters. The chapter now moves to discuss the literature on IL commencing with a focus on the origins and development of International private education which is the context of this study.

2.2 Context

From the outset a key objective of this study has been to explore conceptions of IL in tandem with discovering perceptions of the ways the IC was perceived by stakeholders in the PS community. The reasoning behind such an approach arose from the reported lack of context sensitivity in previous research on IL (Lloyd and Williamson 2008; Toledano O'Farrill 2008) but more importantly because although the PS context is an academic setting it is also a workplace and community context that straddles home life involving students, parents and their wider network of family and friends. As Lloyd (2010 p. 157) argues:

> "…the first task for researchers and practitioners becomes the mapping of the context or setting. This is not just as a backdrop that situates the research, and, something that can be forgotten as the researcher focuses on the research object. Context is a central feature that influences and determines the information experience and the range of process and activities that affect the manifestation of IL practice".

Reflecting on Schatzki's work Lloyd (2010 p. 157) points out that "according to Schatzki context predetermines practices, which in turn prefigures the types of activities that will occur. It is characterised by three aspects, it:

- Embraces and entangles the phenomena,
- Shapes the phenomena and entities within it, and
- Has composition and character that will vary 'with the entities or phenomena that exist in context".

The centrality of context, in terms of the role of people and their interactions within the information experience as creators, collaborators and contributors, is leading to a questioning of the value of linear skill set type models against a reality of cyclical people-centred information experiences. Consequently, this study is designed to be attentive to stakeholder groups' perceptions of their IC and thereby responds to the call for researchers to be sensitive to the context within which IL is been studied. Furthermore, the literature review process has identified an absence of studies of conceptions of IL from across multiple stakeholder groups alongside a lack of studies within the international private school context which this study will serve to redress in some small measure.

The review of literature to follow reveals that IL is a global phenomenon and although the review has focused on publications available in the English language and therefore quite Anglo centric there is evidence to show that IL is a subject of attention worldwide. Horton's (2014) Report for UNESCO, contains IL resources in over forty languages which have been developed and implemented in various contexts in recent years. This is an ongoing UNESCO project and Horton (2014) notes that in 2012 at the time the project was underway that:

> "Already in hand and included herein, or in preparation and expected soon, are Chinese, Japanese, Russian, Turkish, French, German, Dutch, Spanish, Brazilian, Korean, Arabic, English, Portuguese, Italian, Swedish, Finnish, Norwegian, Icelandic, Polish, Hungarian, Czech, Slovakian, Bulgarian, Romanian, Hindi, Bengali, Nepali, Lithuanian, Slovenian, Croatian, Albanian, Ukrainian, Bosnian, Armenian, Thai, Vietnamese, Laotian, Cambodian, Malaysian, Indonesian, Filipino, Hindi, Bengali, Turkmen, Uzbek, Azerbaijani, Greek, Amharic, Afrikaans, Swahili, Zulu, Shona, and other languages"(Horton 2014, p. 27).

Also with a Eurocentric IL focus Virkus (2013) has updated her previous study (Virkus 2003) of IL profiling IL initiatives in the European context. IL then is a global phenomenon and when one turns to

consider IL in a private International school context one is encountering a very particular context. Based on the researchers' own experience of working in international schools an international school community may be described as a communities of communities within which students, parents, teachers, administrators, librarians, IT teachers and personnel and leadership from across the globe find themselves together in pursuit of the educational project. In their introduction to the UNESCO Report concerning the growth in international education Hayden and Thompson (2008 pp. 27-28) note that:

> "International schools are diverse and growing rapidly in response to pragmatic demands (of globally mobile expatriate families and upwardly mobile host national families) and ideological motivators concerned with offering education focused on encouraging young people to become 'global citizens' with a concern for world peace, environmental responsibility and sustainable development…Growing numbers of globally mobile children are being educated in international schools which fall outside of national of national systems of education and in some countries rapidly growing numbers of socio economic advantaged families are choosing an international school education for their children as a means of establishing social and human capital and providing a competitive edge in university and employment contexts".

Two key accrediting bodies for international schools are the Council of International Schools (CIS) and the American Middle States Association of Colleges and Schools (MSA) (Council of International Schools 2015; Middle States Association of Colleges and School 2011). In the context of the PS it offers the American K 12 curriculum, is accredited by CIS and MSA and offers the IBO Diploma (IBDP) in the final two years of high school (International Baccalaureate Organisation 2015).

The PS context and the criteria for its selection receives detailed coverage in Chapter 3 (Section 3.1).

At the time of writing this thesis the CIS community included 697 schools and 508 colleges and universities representing 112 countries (Council of International Schools 2015). The most recent figures available for the number of schools offering the IB DP programme are 2,795 schools in 143 different countries worldwide (International Baccalaureate Organisation 2015). MSA CESS has also extensive presence in international education as noted on their official website:

> 'MSA-CESS traditional region includes Delaware, Maryland, New Jersey, New York, Pennsylvania, and the District of Columbia, as well as 85 countries in Europe, Africa, the Middle East, the Subcontinent of Asia, and other regions around the world. In recent years, through its cooperative partners, CESS has expanded its scope to include schools and institutions seeking accreditation throughout the United States and around the world' (Middle States Association of Colleges and Schools 2011).

The MSA vision is to aspire to improve the quality of education in the United States and around the world by assisting schools to achieve excellence through accreditation and by confirming to the

public a member school's trustworthiness and commitment to continuous improvement" (Middle States Association of Colleges and Schools 2011).

The IBO mission is to:

> "…develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through inter cultural understanding and respect. To this end the organisation works with schools, governments and international organisations to develop challenging programmes of international education and rigorous assessment. These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences can also be right" (International Baccalaureate Organisation 2016a).

This sense of inter cultural awareness is echoed in the CIS vision statement as follows:

> The CIS vision is to inspire the development of global citizens through high quality international education: connecting ideas, cultures and educators from every corner of the world (Council of International Schools 2015)

The growth in the international education curriculum is also prevalent in the increasing numbers of schools adopting the International Primary Curriculum (Fieldwork Education 2016) which is described as:

> "A comprehensive curriculum with a clear process of learning and with specific learning goals for every subject, for personal learning and for international mindedness. The IPC is now the curriculum of choice of international and national schools in over 1,800 schools on over 90 countries around the world".

In his exploration of the rise in the numbers of UK primary schools adopting the IPC curriculum Bunnell (2010 p. 471) observed:

> "This curriculum had been developed in 2000 for the Shell Company Group of Schools. It first emerged in England in 2003; two years later it had become the major form of international curricula in England. This development is mainly a by-product both of government policy-making encouraging a 'global dimension' in primary schools aimed at the '2020 Generation', and also of documentation recommending a more innovative and creative primary curriculum".

More recently a new approach to international and national education and curriculum development called the Common Ground Collaborative (CGC) (Bartlett and Eldridge 2016a) has emerged from the international education context. The CGC which is very much in its early phase of development is described by its developers as follows:

> **"**The Common Ground Collaborative (CGC) is a global network of innovators, educators and partners who share common principles. Collectively, we are tackling the stubborn problems of disconnected curriculum, disconnected schools and disconnected conversations. We are creating smart, sustainable solutions that systematize learning and schools through connected conversations" (Bartlett and Eldridge 2016a).

Key concepts underlying this new approach include conceptualising learning as an ecosystem and the intent is to "design, deliver and demonstrate learning in the context of understanding, competency learning and character development" (Bartlett and Eldridge 2016a). Bartlett and Eldridge began the development of this new approach whilst working together at the International School of Brussels. The conceptualisation of learning from an eco- system viewpoint and the focus on learning in terms of students understanding, competency and character development provides a further variation of curriculum perspectives within the milieu of international education curricula.

Whilst these curricula can be categorised as within the domain of K-12 education contexts there is also a parallel growth in the Internationalisation of Higher Education (IoHE) which De Wit and Hunter (2015 p. 3) define as:

> "the intentional process of integrating an international, intercultural or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff, and to make a meaningful contribution to society."

Whilst recognising there are many challenges ahead in progressing the internationalisation of HE De Wit and Hunter (2015 p. 3) point out that:

> "…if the barriers are removed and the enablers activated, a European higher education will emerge whose graduates will be able to contribute meaningfully as global citizens and global professionals in a Europe that is better placed not only to compete but also to cooperate".

Looking across the narratives concerning the underlying ideologies of these different curricula approaches there is a common theme of the purpose of education being to cultivate internationally minded culturally aware global citizens. There is also the emphasis on designing an educational experience that prepares learners to meet the needs of a globalised economy. Furthermore, there is an intent inherent in each curriculum to develop citizens who will contribute to the creation of a better world. In this pedagogical context and given the fact that IL has been recognised as contributing to "…workforce readiness, educational success, and everyday life decision-making" (Weiner 2015 p. 5) it would appear that there is a definite alignment in the aspirational goals of international education curricula and the ideological underpinnings of a global IL policy. Moreover, both the Prague Declaration (United Nations Educational Scientific and Cultural Organisation 2003) and Alexandria Proclamation (International Federation of Library Associations 2005) concerning IL articulate a similar discourse for IL as playing a:

> "...leading role in reducing the inequities within and among countries and people, and in promoting tolerance and understanding through information use in multicultural and multilingual contexts" (United Nations Educational Scientific and Cultural Organisation 2003 p. 1).

The question arises however what conceptions of IL prevail in a private international school community context? The initial stages of the literature review process indicated a lack of research in this area. Indeed, the absence of research may be a symptom of the limited research undertaken to date in international private education context which is noted by Caillods in the preface to the UNESCO Report by the International Institute for Education Planning (IIEP) "International schools are a well- kept secret…many people do not know about them and little research has been conducted in their regard" (Caillods 2008 p. 9). In more recent years' studies are emerging about student learning in various international curricular contexts and Tilke (2011 p. 111) in his study of the IBO Diploma programme and the School Library provides a list of studies "from the general education scene relating to "students and how they learn and are supported in their IB Diploma candidacy". There is also a burgeoning of research in the past decade on the impact of the various elements of the IB Middle years and Primary Years programmes (International Baccalaureate Organisation 2016b) on learning however the gap still remains in regard to studies of conceptions of IL and conceptions within international private education. The focus will necessarily turn now to considering the ways IL is conceptualised in education and work place contexts.

2.3 The language of IL

Before reviewing the literature regarding conceptions of IL it is first necessary to address the thorny issue of a lack of shared language around the way IL is spoken about. Pinto, Cordon and Gomez Diaz (2010) in their review of conceptions of IL found that two key terms that of information skills and IL have dominated IL literature over the period 1977 to 2007. More recently Streatfield et al. (2011 p. 12) found in their study of IL in UK primary and secondary schools that "IL has taken over from information skills in the past few years as the preferred term used in schools to describe the skills and abilities that students need to develop to locate, obtain, evaluate and exploit information in all its forms" in regard to the way professionally qualified librarians talk about information work with students. That said they also found that "such terms as 'library skills', 'research skills' and 'study skills' are more familiar to teachers but are less comprehensive in their scope". Moreover, the study revealed that "several librarians reported that they chose their language to suit the circumstances, knowing that using teachers' preferred vocabulary could help communication, "some understand IL, others research skills or information skills" (Streatfield 2011 p. 13).

In the context of a USA higher education setting Cope and Sanabria (2014 p. 3) compared the ways faculty from different disciplines perceived and spoke about IL finding that:

> "…although they (Faculty) talked about IL in ways that resonate with the conversations with LIS, it was impossible to disentangle their discussions of IL from their perspectives on pedagogy and higher education more generally".

Looking to the Australian context Todd (1999 p. 27) in his review of the status and challenges facing IL in Australian education also highlights the 'conundrum' in regard to defining IL observing:

> "A fundamental issue is what is this thing called IL? Despite the volume of literature about IL and widespread acceptance of the term, what IL is remains a vexed question".

Turning to the European context Virkus (2013) in her recently updated review of IL in Europe since her previous study (2003) noted that:

> "…our understanding of IL has shifted from 'skills-based approaches towards a broader and more social understanding of information 'practice'" (2013 p. 251).

That said however Virkus goes on to emphasise that:

> "…there is still a lot of confusion around the term…A lack of clarity with regard to the term of IL and what it means can often be an obstacle for formulating an institutional or national policy as well as collaborating internationally. It is also believed that it can lead to IL not being fully embraced by practitioners and can contribute to a lack of recognizing IL's importance amongst policy-makers, the public, and indeed, library users and patrons" (2013 p. 252).

Virkus also reports in this paper results from her exploratory study undertaken to focus on the problem as to why:

> "...progress in developing independent research competencies (IRC) in higher education has been so modest and the belief that a better understanding of what academics, senior management, librarians and students are thinking and doing would help better to engage them in effective development of IRC" (2013 p. 254).

This main conclusion from their study which involved students, faculty, senior managers and librarians from six Online Distance Learning (ODL) Institutions in Europe was that:

> "…the lack of a holistic approach to IRC in European Higher Education Institutions may be an obstacle for the effective development of these competencies. Differing perceptions and expectations of different actors' roles and responsibilities in academia might create unexpected behaviours and so have an adverse impact on the implementation of programmes that facilitate the development of IRC" (2013 p. 254).

The aforementioned studies have focused on IL in educational contexts. However, given that this study seeks to discover conceptions of IL held across stakeholder groups in an international school context which is both a work and a learning space that crosses over into home-place information experiences, it is important to also sensitise the literature review process to considerations around work place IL. The literature review revealed a similar challenge around the terminology and language of IL when one considers the history of work place IL. Bruce (1999 p. 34) argued:

> "Some of the limiting factors in developing interest in IL include the term itself, which does not clearly communicate its meaning; the 'insufficiency' of the definitions commonly

> attributed to the term; the fact that the discussion is largely confined to library studies, and to a more limited extent, to the education disciplines; confusion of IL with computer and information technology literacy, and the lack of theoretical cogency underlying much of the literature".

Bruce's (1999 p. 33) subsequent phenomenographic study of IL in a workplace context led to the identification of:

> "seven different ways of experiencing IL…These experiences are closely related to important workplace processes such as environmental scanning, information management, corporate memory, and research and development; confirming that IL should be considered a significant part of the character of learning organisations as well as being a key characteristic of the organisation's employees".

More recently Lloyd (2013 pp. 223-224) in her study of work place IL observes the shift of emphasis in workplace IL from information skills terminology towards IL being termed a social practice stating that:

> "A people in-practice approach represents a shift in attention towards the enactment of IL as a social practice, and away from the information skills approach that has dominated IL research and education. The approach highlights the role of co-participation of the community in shaping the production, reproduction and circulation of knowledge, including knowledge about the appropriateness of information skills in relation to the context".

Bruce (1999) and Lloyd's (2010) work on IL will receive further attention in the discussion of conceptions of IL in education and workplace settings commencing within third level education context.

Each of the aforementioned studies evidence the diversity of terms used when speaking about IL by different stakeholders in different contexts which can potentially contribute to confusion and misunderstanding across stakeholder groups who seek to develop IL (Virkus 2013; Bønløkke; Kobow and Kristensen 2015b) thus confirming the need for a study to gather an understanding of the ways different stakeholder groups in a given context conceptualise IL. The diversity of terms used to talk about IL may reflect the variation in the ways IL is conceptualised within and across stakeholder groups in differing contexts. Having acknowledged the language challenge faced when considering IL, the focus now turns to examining the ways IL is conceptualised in education contexts commencing with tertiary education.

2.4 Conceptions of IL: Tertiary, secondary and primary education

In order to facilitate a systematic review of conceptions of IL within the education sector it is useful to begin at the latter end of the education spectrum. On entering tertiary education there are a set of expectations (implicit or explicit) as to the level of preparedness of students to meet the IL requirements to pursue third level studies. The goal of stakeholders concerned with IL learning

development for learners of all ages is to ensure this preparedness of learners to move through the major transition points in their education and work journey.

2.4.1 Conceptions of IL: Tertiary education

By beginning the analysis at Higher Education level which is also the sector from which most of the research on conceptions of IL has emerged it is possible to begin mapping the territory of IL learning in a more encompassing manner. It also provides a valuable comparative bench mark from which to consider the ways IL is conceptualised across the different levels of education to isolate what might be the similarities and difference in such conceptualisations given their powerful impact in shaping the expectations surrounding the design implementation of information literacy education (ILE) strategy.

Bruce's (1997) work entitled the 'Seven faces of IL' represents one of the foundational phenomenographic studies of conceptions of IL in higher education in Australia. Bruce identified seven categories of description or ways of experiencing IL to include:

1. Information technology
2. Information sources
3. Information process
4. Information Control
5. Knowledge Construction
6. Knowledge Extension
7. Wisdom

Following on from her research Bruce worked together with Edwards and Lupton (2006) to produce the Six Frames of IL Education. They proposed that this model would act as "a tool for analysing, interpreting and understanding" the challenges faced by IL educators in an "environment in which colleagues and students bring very different perspectives to curriculum design, teaching and learning and by the need to apply theories of learning to IL education in coherent ways" (Bruce, Edwards and Lupton 2006 p. 1).

Bruce (2008 p. 5) also drew on her research from the Seven Faces of IL to publish her book entitled Informed Learning which she states:

> "…draws from what we know about variation in the experience of learning and teaching…when we see IL as a complex set of different ways of using information to learn we open the door to informed learning".

IL and information skills represent two of the basic concepts amongst others associated with Informed Learning. IL is defined by Bruce (2008 p. 6) as "being able to draw upon different ways of

experiencing the use of information" and Information skills "are the building blocks that make IL possible, for example database search and creation skills, referencing skills, computer skills and library skills". One of the guiding principles of the Seven Faces of Informed Learning identified by Bruce (2008 p. 54) is that "Information literacy which includes information technology use is a social phenomenon more than an individual one". In developing her ethos for IL education Bruce (2004 p. 6) draws on the thinking of:

> "...Delors' (1996) four pillars, the proposed foundations for education in the twenty-first century. The use of real world learning resources supports learning to live together, effectively bringing the world into the classroom, or perhaps taking the classroom out into the world; and the use of ICTs...Using information to learn is also essential to learning to know, as learners seek out knowledge from the exploding range of resources available to them and develop a critical appreciation of the relative value of those resources. Bringing the information practices of the real world into the curriculum supports learning to do, as learning experiences are designed to introduce learners to the kinds of information practices that will support professional and civic and personal life. And, finally, the emphasis on critical and creative thinking, communication, team-work and wisdom that are integral to an information literacy education support the fourth pillar: learning to be".

According to Bruce (2004 p. 13) the realisation of such an ILE hinges on a partnership approach:

> "Students information specialists, IT specialists, curriculum designers, teachers amongst others, all need an awareness of the value of IL, and all need to collaborate to make possible learning experiences that facilitate IL. We should also note that no single group, in a broad context, nor individuals in a local context, neither governments, nor schools, nor universities, nor teachers, can responsibility for IL amongst students. This responsibility must be shared with strategic partnerships, operating at various levels, including curriculum design, policy development, staff development, research and classroom teaching; and be supported by educational leaders such as principals and deans".

A decade on from Bruce's (2004) call for partnerships in ILE in a Danish Higher Education Context Bønløkke, Kobow and Kristensen (2015 p. 12) echo Bruce's call for partnerships and conclude from their action research concerning library and faculty cooperation around IL that:

> "…A joint conceptual understanding of IL is important for making this teamwork work. This study has showed that educators possess a different experience of IL from librarians and that this can be a problem when challenging students on IL for their assignments. As shown by this and other studies, IL is everyone's business and local dissemination throughout a faculty of an agreed curriculum intervention is important. Leadership and resources are also significant factors for integration of IL".

Around the same time frame as Bruce's (2004) work in Australia Boon, Johnson and Webber (2007 p. 205) undertook a phenomenographic study of English Faculty's conceptions of IL in a UK Higher Education setting. The rationale for undertaking this study centred on the fact that whilst university academics are "front line educators…dealing with the day to day "real world" pressures of teaching and learning, and are potentially vital agents for IL" little is known about how they conceptualise IL with most of the research in the area focused with the Library Information Service (LIS) field.

The conceptions of IL that arose from their phenomenographic research include:

1. Assessing and retrieving information;
2. Using IT to assess and retrieve information;
3. Possessing basic research skills and knowing how and when to use them;
4. Becoming autonomous learners and critical thinkers. (Boon, Johnston and Webber 2007 p. 215).

Boon, Johnson and Webber (2007 p. 225) conclude that:

> "…a growing awareness of the importance of IL provides an excellent opportunity for dynamic and constructive collaboration between faculty and librarians in furthering the role literacy in pedagogy and research". They go on to highlight that "Librarians working with English faculty on IL need to be aware of differences in conception between themselves and academics to work effectively" (Boon Webber and Johnson 2007 p. 204).

Continuing the focus on higher education context and perceptions and practices around IL Da Costa (2010) conducted a quantitative survey involving faculty at two higher education institutions in England and the United States to ascertain faculty's perceptions and activities relating to IL:

> "The results reflect an IL skills gap between what faculty (and librarians) want for their students and the practical reality. Librarians and faculty should work collaboratively together to bridge this gap". (DaCosta 2010 p. 203).

DaCosta's (2010) findings appear to confirm Boon, Webber and Johnson's (2007) findings which again point to a need for further research and work around establishing the nature of the understandings of IL that prevail in diverse settings and the need for clarity regarding the ways that stakeholder groups in any given context understand IL as a baseline for effective formulation of shared vision and practice for IL.

Andretta, Pope and Walton (2008 p. 36) brought the study of conceptions of IL in HE a stage further by conducting research to explore "the perceptions of IL from four distinct perspectives: those of the institution, the faculty, the library staff and the students". Over the course of two different workshops at Staffordshire University in May and November 2006 Andretta Pope and Walton (2008 p. 37) prepared posters in the form of lists of statements that described IL from the four perspectives and "invited participants to choose two options from each poster and to rank them". These lists were developed "partly by using the Six Frames of IL (Bruce, Edwards and Lupton 2006) aimed to elicit the participant's view of ILE from an institutional perspective" (Andretta, Pope and Walton 2008 p. 38) and the statements used in the library, faculty and student posters were developed by Andretta drawing from her own IL practice.

The findings indicated that from "an institutional perspective, IL is dominated by the need to measure information skills within the context of information as a discipline in its own right" (Andretta, Pope and Walton p. 38). The most frequently selected statement regarding the Institutional Perspective was: "IL is a set of competencies or skills (Competency Frame) and the second most popular was that "IL is knowledge about the world of information (Content Frame) which the authors felt also "demonstrated the influence of the Society of College, National and University Libraries (SCONUL)'s Seven Pillars model" (Andretta, Pope and Walton 2008 p. 38) of IL.

The authors go on to reflect that the focus on the content and competency frames of IL is not aligned with the original thinking of Bruce, Edwards and Lupton (2006) of the need to deliver ILE on the basis of "a combination if not all, of the six IL frames". (Andretta, Pope and Walton 2008 p. 39). The other four frames in the Six Frames matrix include the Learning to Learn Frame, Personal Relevance Frame, Social Impact Frame and Relational Frame (Bruce, Edwards and Lupton 2006). The authors also found that:

> "…there is a great deal of misinformation regarding IL, and as a result, a clear marketing strategy must be adopted by information professionals to address the misconceptions held by faculty, staff and students alike" (Andretta, Pope and Walton 2008 p. 36).

Using the insights gained from their study Andretta Pope and Walton (2008) went on to propose and implement a strategy that ensures the integration of ILE learning and teaching practice at the University of Staffordshire which places a focus on the importance of collaboration between library and faculty, a relationship which itself demands attention in regard to acknowledging the role of librarians as not only educators but also advocators at a strategic level so as "to actively promote institutional long term objectives" around ILE (Andretta, Pope and Walton 2008 p. 49).

Staying with the HE context Gross and Latham (2011) undertook a phenomenographic study of first year college students with the aim of examining student's experiences with and perceptions of IL having first determined their proficiency IL skill level of the seventy-four participants. Interestingly Gross and Latham (2011) also set out to examine both imposed and self-generated information experiences which offers a unique dimension relative to studies already discussed in this review. In developing their outcome space Gross and Latham (2011) identified four categories of description of the conceptions of IL held by students to include:

1. Information Finding conception
2. Information technology conception
3. Information people conception
4. Information quality conception

When compared to previous studies of IL these conceptions are both similar and different in particular the emphasis on people which has not really come to the fore in previous studies to the same degree but which as will be shown appears more prominent in subsequent studies particularly those undertaken in a workplace context. A particularly significant finding from this study was that:

> "The students who participated in these interviews do not embrace the idea that there is an objective set of skills that are needed in order to find, evaluate, and use information. They believe that finding information is something that anyone can do and that the preferred methods are technological and personal, as the main sources of information are Internet searches and asking people" (Gross and Latham 2011 p. 180).

The role of people as integral to the information experience was found to manifest itself in various modalities as Gross and Latham (2011 p. 180) describe:

> "People are sought for what they know (informants), their ability to find out (agents), or their ability to teach a needed skill (trainers). Proficient students show more immersion in information and a greater desire than below-proficient students to serve as an informant and/or an agent for others. People are also the preferred source for learning IL skills. With few exceptions, participants voiced a dislike for online tutorials and online learning as a way to gain new skills".

It will be of interest to compare the conceptions of IL from Gross and Latham's (2011) study to this study of conceptions from across stakeholder groups specifically the ways young middle school children conceptualise IL. The discovery of conceptions of IL at this younger age group will add value to the overall understanding of IL in a way that is not feasible at present in the absence of research about middle school children's conceptions of IL in an International school context.

More recently a phenomenological study by Cope and Sanabria (2014 p. 475) of faculty from a range of disciplines to discover the ways faculty perceived IL "to examine two key factors: how disciplinary background influences conceptions of IL among faculty members in academic departments and how the instructors' perception of IL differs from that of professionals in library and information science". The authors found that "participants viewed IL as a combination of the basic skills and concepts that have become a large part of academic discourse along with the acquisition of basic library skills". (Cope and Sanabria 2014 p. 487). Their analysis also yielded three specific themes in terms of the ways faculty perceived IL which were the contextual, textual and empirical which offers another way of approaching the ways IL is understood across the disciplines in a third level education setting. Cope and Sanabria (2014 p. 498) conclude that in essence for many of the faculty IL is about "learning how to learn". They go on to report from their findings that the ways faculty think and speak about IL is very much rooted within their own disciplines and therefore they do not see IL as something distinct from literacies of their discipline.

It would seem that, although there is a seven- year gap between the Cope and Sanabria study and the study undertaken by Boon, Webber and Johnson (2007) in the UK HE context, the challenge for stakeholders responsible for ILE education still remains in terms of each stakeholder group becoming aware of one another's conceptions, language and terminology so as to form authentic ILE experiences. Cope and Sanabria (2014) conclude by recommending that the conversation about IL between librarians and faculty needs to change to embrace a more "general framework" which "may allow for observations that address IL as a more universal concept" suggesting:

> "...that library based IL practitioners be cognizant of the reality that most faculty see themselves as deeply invested in educational work related to IL, they just identify this work as being embedded in their courses and disciplines and not as a distinct academic discourse. Armed with this knowledge, library-based IL practitioners can identify the most productive possibilities for collaboration, thereby deepening and expanding IL throughout higher education" (2014 p. 499).

The discussion thus far has focused on conceptions of IL identified in the HE context and will now move to consider the K-12 (Primary and Secondary level of education) following the same process of detailing the key findings from phenomenographic studies where available in tandem with non phenomenographic research and related literature.

2.4.2 Conceptions of IL: Secondary school Level

As already stated there is a scarcity of studies of conceptions of IL in the Secondary or K -12 context and specifically in the private international education arena. A key phenomenographic study of relevance which was published shortly before the researcher commenced her research was the study undertaken by Williams and Wavell (2006b) of UK Secondary School teachers' conceptions of student IL which yielded six conceptions of IL presented in Table 2.1.

The authors identified the impetus for their study as originating in the fact that "Previous definitions and models of IL have attempted to describe effective information use within a learning context from the perspective of the information profession. However, we know little about the teacher's perspective" (Williams and Wavell 2006b p.v). The research process to discover teachers' conceptions of IL involved teachers in various rounds of focus group discussion or individual interviews and this dialogue experience in its own right was fruitful in delivering up more critical understanding of teachers' conceptions of IL based on both their personal and shared experience of IL including the challenges they face in terms of supporting IL learning.

Based on their research Williams and Wavell (2006b p. 61) identified key strategies that could:

> "…help teachers tackle some of the challenges which they recognised as directly affecting the quality of student work…At the macro level members of the school community can

engage in dialogue and work towards shared knowledge of IL and shared understanding of common and complementary goals by all those involved in supporting IL".

Table 2.1 Williams and Wavell (2006b) Secondary School Teachers' conceptions of student IL

Conception	Description
Finding Information	Emphasis on technology and library, navigation of sources e.g. Internet and/or books to find and gather facts
Linguistic Understanding	Basic Listening and reading for comprehension, e.g. understanding instructions and/or task
Making Connections	Cognitive processes for example summarising, synthesising, interpreting, decision making, which make sense of, or derive meaning from, information in different sources and formats within the context of the specific subject under consideration
Skills	Focus on using a range of skills, techniques and strategies when handling information
Critical Awareness	Critical awareness of sources and need for evaluation
Independent Learning	Working independently with information, e.g. in research projects, less reliant on teacher input

In concluding their findings Williams and Wavell (2006b p. 62) were emphatic in their recommendation that:

> "…teachers need to debate the meaning of IL for their own particular community of practice. Evidence from this study would indicate that, in engaging in that debate, however challenging, teachers recognise the importance of IL and begin for themselves to explore the potential for developing students' abilities to learn independently".

This recognition of the value and need for further debate to develop a common ground understanding of IL with its emphasis on the school as a community involving students, librarians and teachers provides a strong evidential basis of the need for this study which is designed to discover what conceptions of IL prevail across multiple stakeholder groups in a school community and laterally to compare these conceptions to establish the extent of common ground thinking. Moreover, this study which takes place in an international middle school context will build on the understandings gained by Williams and Wavell's (2006b) study which was at the secondary school level so it will be possible to laterally compare the findings from this study to those of Williams and Wavell (2006b) and consider the extent of alignment in conceptions of IL at these key transition points in K -12 education.

Probert (2009) conducted a study of secondary school teachers' understanding of IL and their IL teaching practices involving two hundred teachers working in public middle and high Schools in New Zealand. This study which used a mixed methods approach of survey questionnaire and interviews of 148 teachers finding that:

> "…a number of teachers did have some understanding of the concept of IL. Some though, connected it with literacy or with reading or information and communications technology (ICT) whereas it actually embraces both literacy and ICT. Unfortunately, it is not so easy to find a better term" (Probert 2009 p. 31).

The findings regarding the extent to which teachers taught information skills showed that it was not extensive:

> "It was also evident that a number of teachers in a variety of departments from all three schools, regardless of age or years in teaching, were not explicitly teaching IL skills or providing inquiry learning opportunities, using an information process, for students…The majority of teachers from all three schools agreed that it would be helpful to have a common method or model to use when doing research. They also thought it would be helpful to have more strategies for teaching the skills" (Probert 2009, p. 31).

A key final recommendation by Probert (2009 p. 31) was that:

> "It would also be informative, in the light of findings reported earlier relating to teachers' understanding of IL as reported in questionnaires and discussed during interviews, to investigate students' understanding of various IL skills".

Both Williams and Wavell's (2006a and b) and Probert's (2009) studies, although conducted in the UK and New Zealand and utilising different methodological approaches, would appear to share some similarities in terms of teachers' experience of IL and the inherent challenges faced by teachers in teaching IL in practice. Whilst Williams and Wavell's (2006a and b) study looked at teachers' conceptions of students' IL and Probert's (2009) study reveals the ways teachers understand and practice teaching IL, both studies are limited in that the focus is at the teacher level. There is therefore a gap as Probert (2009) notes in the research to discover students' own conceptions of IL which this study seeks to bridge.

Given the lack of studies of conceptions of IL for middle school level and in the private international context the literature review sought to discover literature on the ways information use and searching more broadly were conceptualised in K-12 contexts and thus represent some of the ways IL is manifested in the learning experience of students in K-12 contexts. This includes Kuhlthau's (1991) study on the information search process and Limberg's phenomenographic study (1999) of information experience of information seeking and learning.

Although conducted some years ago Kuhlthau's (1991) Information Search Process (ISP) model continues to be the subject of attention in ILE with two further studies focused on accessing and confirming its relevance being published in recent years (Beheshti et al. 2015; Kuhlthau, Heinström and Todd 2008).

Kuhlthau's (1991) research was concerned to examine the information search process from the user's perspective going beyond cognitive aspects of information seeking giving particular attention to the affective and social human dimension of that experience. Kuhlthau (1991) identified five stages in the Information Search Process as presented in Table 2.2.

Table 2.2 Kuhlthau (1991) Five Stages in the Information Search Process

Stages in ISP	Task as Reported by Study Participants
Initiation	Gather
Selection	Gather
Exploration	Gather/Complete
Formulation	Gather/Complete
Collection	Complete
Presentation	Write or present

Limberg describes "information seeking as a process of sense making in which a person is forming a point of view" (Kuhlthau 1991 p. 361). The initial study in 1983 involved "academically capable" high school students with several more extensive studies being completed to further consolidate the work. Unlike all the studies discussed thus far in this literature review Kuhlthau's offers significant insight into the affective dimension of the information search process highlighting how uncertainty potentially permeates the search process. Kulthau (1991 p. 370) emphasises:

> "…the whole experience of users affects their information use, their feelings as well as their intellect, particularly in the exploration stage. By neglecting to address affective aspects, information specialists are overlooking one of the main elements driving information use".

Following in Kuhlthau's footsteps Limberg (2000; 1999) who identified that the lack of IL studies about information seeking and use for learning decided to undertake a phenomenographic study looking at the experience of information seeking and learning in a high school context in Sweden. Limberg (1999) discovered that "students experienced information seeking and use in three or more ways" to include:

1. Relevance criteria
2. Information overload
3. Criteria for judging when they had enough information
4. Cognitive authority
5. Bias

Limberg (2000 p. 195) concluded that "information seeking is not independent of the content of information, as experienced by these users" arguing that "this contradicts the established view of information seeking as general process regardless of content". In this scenario of focusing on high school students' information use experience it is interesting to observe that Limberg's (2000 p. 203) finding "… that students do not think of information seeking separate from the content of an assignment" would seem to echo the ideas emanating from the third level studies of conceptions of IL held across faculty who were found not to see IL as a separate discipline but as integral to their discipline (Cope and Sanabria 2014). This particular information experience then is not something isolated from content or context but integral to the experience which will be returned to when exploring the literature on concerning the IL frameworks, models and standards.

Staying with a focus on the affective dimension Beheshti et al. (2015 p.943) have published findings from the first part of a two-part study of middle school students' information search experience to:

> "…observe the evolution of the feelings, thoughts, and actions of grade 8 students (13–14 years old) researching their history project over a 3-month period. We collected data each week for a total of 12 data-collection points".

Beheshti (2015) and his colleagues tracked the information use experience of two grade 8 classes undertaking a history project and used Kuhlthau's 6 stage ISP model as their conceptual model identifying five factors that "constitute information behaviour characteristics over time for the grade 8 students participating in the study as follows:

1. Goals (thoughts)
2. Knowledge and information management (thoughts and actions)
3. Consultation (actions)
4. Positive emotions (feelings)
5. Negative emotions (feelings)

The authors identify what they describe as a "potentially important finding" from this study concerning:

> "…the role of consultation in the knowledge construction and the project construction for the grade 8 students. The sounding-board aspect of the human or informal channels of information seeking undertaken by the participants in our study was important for knowledge construction. These results will inform our long-term project in investigating the impact of an intervention agent on the students' information seeking behaviour during an inquiry-based learning project" (Beheshti et al. 2015 p. 957).

Interestingly the social human and affective dimensions reported by Beheshti et al. (2015) at the middle school level are echoed at the HE level by Martzoukou (2008 p. 182) who undertook a mixed

methods study to explore the information seeking behaviour of post graduate students and examined user satisfaction with the search process "through the perceptions of students about themselves as information seekers". Martzoukou (2008 p. 182) found:

> "…that the students were experienced Web searchers but they shared less appreciation for the value of more complex strategies in the Web environment", concluding "that there is a need to place less emphasis on developing optimal search skills through information literacy instruction and to place more emphasis on increasing motivation and appreciation of more complex search strategies".

It would therefore appear that these social human elements remain as students go through their educational journey. The social human dimension of the information experience in terms of its mediated nature signals another point of reference in not only the development of ILE but also that its impact is reliant on the formation of collaborative partnerships between all the stakeholders involved in mediating the experience not just in the school but the wider home and friends network. In this context research undertaken by Madden, Ford and Miller et al. (2006) to determine what factors influenced children's use of the internet for information seeking found:

> "...the factors that determined a child's ability to search successfully appeared to be: the amount of experience the child had of using the internet; the amount of guidance, both from adults and from peers; and the child's ability to explore the virtual environment, and to use the tools available for so doing" (Madden, Ford and Miller et al. 2006 p. 744).

The idea of the importance and significance of consultation in the information process begs the question as to how the various players in that moment or cycle of consultation themselves perceive the IC in addition to the ways they conceptualise IL. This research by discovering what the nature of such conceptions are across student, parent, teacher, library, IT, administration and leadership groups will potentially contribute to a fuller understanding of IL in all its manifestations specifically at the conceptual level.

The Behesheti et al (2015) study whilst not a study of conceptions of IL represents the only published study that actually took place in a private national middle school context and although was not available at the time of commencing this study the findings are particularly relevant in terms of the later discussion of findings in Chapter 6.

2.4.3 Conceptions of IL: Primary school Level

Moving on to consider the literature on conceptions of IL prevailing at primary school level this is where there appears to be somewhat of a hiatus in respect of published empirical studies of the ways stakeholder groups in primary school education conceptualise IL as Jorosi and Isaac (2008 p. 123) when setting the scene for their study of IL in community junior secondary schools point out "Much of the (IL) research has focused on Higher Education students". Furthermore, it is important

to reiterate that the domain of private international education would also appear to have received limited attention in term of research on IL.

Moore's studies (1999) in the context of elementary schools in New Zealand provide insight into the ways primary school teachers perceive student IL development for teachers of seven to eleven year olds. These mixed methods studies which took place in different elementary school contexts incorporated professional development workshops to support teachers to develop their understanding and practice of IL and to reflect on their practice and on their observations of student information problem solving experience. These workshops were preceded by a survey to uncover teacher's perceptions of IL development. The study also involved a survey of school documentation for evidence that information skills were explicitly addressed at policy level, included interviews with principals, and teachers with library responsibility and school administrators. This study discovered a rhetoric reality gap in terms of the articulated vision of the school Principal which manifested in a lack of integration of library use in teaching and half of the teachers encountering challenges around the development of step stage processes for teaching information skills (Moore 1999).

Reporting on the study's finding in another separate article Moore (2000) notes differences in the ways staff perceived information skills with many seeing information skills as being the same as research skills whilst in another school some teachers felt information skills were the same as library skills and in the fourth school staff did not identify information skills with either library or research skills.

It would thus appear that the ongoing challenge around the language used to describe IL is equally a challenge at the primary school levels as it is in secondary and tertiary level contexts. What is also interesting in terms of Moore's (2000 p. 138) findings is that teachers perceived that:

> "…every aspect of resource based learning sometimes presented difficulties for children. Despite this they generally expected children to have a clear idea of what they were seeking and to complete activities at home where the consistency of support and access to resources was highly variable".

As this study involved professional development workshops around IL for the teachers this experience was found to positively impact teacher's thinking and practice around IL to varying degrees in the different schools studied. Drawing on her insights from this study in terms of how best to consolidate on the learning which had taken place Moore (2000 p. 143) recommended:

> "To make the most of the intellectual capital invested…future IL initiatives need to be centred on tasks that cannot be completed without input from everyone".

Moore's (1999) study is particularly revealing in regard to teachers' expectations of children around IL. However, it does not incorporate insight from the parent perspective and this is an important gap in the current understanding of conceptions of IL.

Streatfield et al. (2011) conducted research in UK primary and secondary schools which included results from a small study of library based IL work in primary schools in England using structured focus groups of teachers and library assistants and telephone interviews with head teachers. The authors note how IL work in primary schools

> "…is not necessarily library focused…In several schools children use the IT suite rather than the library for information seeking" highlighting how "the debate in one focus group pointed to a lack of preparedness of secondary school children to use libraries and do effective e searching identifying a role for primary schools to address this issue" (Streatfield et al. 2011 p. 11).

Noting the diversity of approaches to IL learning across their study sample Streatfield et al (2011 p. 10) also make reference to the International Primary Curriculum (IPC) which some participants saw as placing a stronger emphasis on research skills. One IPC school teacher in the study "…differentiated between areas of IL that are taught observing study skills are integrated into IPC and also problem solving skills but not library skills" which was felt needed redressing going forward.

Streatfield (2011 p. 10) further reported "an emphasis on computer-oriented ("Teachers spend more time teaching Google") skills…but five schools said that children are encouraged to use the Internet (and get support in searching) in the IT suite rather than using the library". The main thrust of the study's findings however point to three broad categories of IL behaviour of librarians in relation to IL teaching and development in schools which Streatfield et al (2011) identify as sporadic opportunism, systematic development and strategic orchestration. The three approaches according to the authors (Streatfield et al. p. 11) "offer a potential way forward for schools seeking to develop their IL work". However implicit in their discussion is that IL development hinges on the commitment of all stakeholder parties to include head teachers, teachers and library personnel in addition to investment in professional staffing of school libraries and library resources to meet curriculum needs. The study whilst emphasising the responsibility which the school librarian must embrace in leading and managing the development of IL across the grade levels and curriculum does however also point to the teacher's role alongside the librarian.

This understanding of the centrality of commitment by school leadership alongside the librarian/staff with responsibility for the library and teachers was a central tenet of the Norwegian government's four-year School Library Programme as reported by Ingvaldsen (2014 p. 1):

> "The Norwegian School Library Program was a four-year, national project (2009-13) designed to strengthen the school library as an educational tool. The objective of the program was that school libraries be actively used in reading education and the promotion of information literacy".

In order to receive funding to integrate the school library into students' learning experience school Principals or Directors had to become the project manager of the initiative and both teachers and librarians had to attend compulsory training in IL and reading development. The four-year programme ended in 2014 and in her article reviewing the achievements of the programme had been, Ingvaldsen (2014) identified that the success of the programme could be summarised in three key terms: planning, cooperation and anchoring in respect of anchoring the library in learning.

Staying with a focus on the role of the library and librarian in terms of IL learning in K-12 contexts but addressing the international school context Gordon (1999 p. 46) offers her perspective on both information skills and IL arguing for the need for meaningful connections between information skills and academic work. Gordon (1999 p. 46) identifies five categories of information skills from an integrated library/information technology programme for middle schoolers that operates "in a mature library programme" to include:

1. Personal management;
2. Information retrieval;
3. Study skills and learning to learn;
4. Research skills and thinking skills';
5. Computer skills.

Gordon (1999 p. 47) describes how these:

> "…categories as well as the skills that are selected to appear in an IL curriculum document, structure the library instruction programme and present opportunities for interaction between the classroom and the library".

In the book edited by Markuson (1999) containing Gordon's Chapter there is an Appendix entitled IL models which outlines 84 standards focusing on what students will need to know and need to do that relate to these five categories encompassing elementary, middle and high school levels. Implicit in this narrative of IL are conceptions of IL that encompass the content and competency frames of Bruce Edwards and Lupton's (2006) framework for understanding IL and the IT face and finding information conceptions of Bruce's (1997) Seven faces of IL. Gordon's emphasises the need for the library instruction programme to be connected to the curriculum noting that:

> "…while information skills drive the library instruction programme they are not its starting point. They serve instead as touchstones for IL, connecting what is happening in the classroom and what can happen in the library/computer lab" (Gordon 1999 p. 44).

Furthermore, Gordon promotes the constructivist view of learning "whereby the learner constructs meaning rather than passively absorbing facts" highlighting the role of project based and inquiry learning as the basis to integrate the library instruction programme (Gordon 1999 p. 44).

Ten years on Gordon (2010) published a paper on the theme of a culture of inquiry for school libraries in which she advocates for the need for evidence based practice to inform the culture of inquiry in school libraries suggesting action based research as a way forward. The narrative in this article reflects the conceptualisation of IL around the need for a culture of inquiry in school libraries to guide IL learning. This research will contribute to bridging the gap in research about the conceptualisation of IL in international education.

Miller (2005 p. 21), a teacher librarian in a Canadian school context, has undertaken a study to discover what perceptions novice teachers have regarding the role of the teacher librarian and what was their level of awareness of the concept of IL. Based on literature review Miller (2005) observed that "most teachers and administrators do not understand the concept of IL". Miller (2005) used a qualitative approach to gathering her understanding from five novice teachers so it was a small scale sample. Nonetheless Miller (2005 p. 24) found that none of the five participants had heard about the concept of IL during their teacher training and that upon offering them a definition and discussing the concept with them they all agreed they understood the concept "but were unfamiliar with the terminology". In regard to discovering novice teachers' perceptions of the potential for collaboration across the curriculum Miller (2005 p. 26) concluded that it was her belief "that new teachers are generally unaware of the collaborative role the teacher-librarian can play in implementing IL skills across the curriculum".

One route to redress this gap in novice teacher and other K-12 stakeholder group's lack of understanding of IL is to adopt a K-20 approach to establishing partnerships between higher education and schools. Nichols, Spang and Padron (2005) from Wayne University report their experience in building such K-20 partnerships to promote IL with local K-12 schools in their area. In their review of their partnership experiences and in the context of future possibilities the authors refer to the Learning for the 21st Century (Partnership for 21st Skills) report:

> "…which identifies K-12 and higher education partnering as a MILE, or a Milestone for Improving learning and Education…both IL and the need for K-20 partnerships are clearly identified as critical to meet the educational needs of today's students" (Nichols, Spang and Padron 2005 p. 12).

In this context the present study of conceptions of IL across multiple stakeholder groups in a K-12 context will provide important insight as to the nature of conceptions that prevail providing a solid basis for potential dialogue processes between stakeholders seeking to build K-20 IL partnerships thereby contributing to the gap in current understanding of conceptions of IL in the K-12 context specifically in terms of the middle school years and also from an international education perspective.

Moreover, Hayden's (2010) study which focuses on K-16 collaborative partnerships, i.e. kindergarten to undergraduate level, echoes these sentiments around the need for partnerships. Hayden's study supports the positive potential of K-16 collaborative initiatives. The importance of "one voice" he notes can be very powerful in offering direction to the team. Hayden (2010 p. 4) reported how:

> "Respondents noted that it is essential that academic and school librarians have one voice, "sing the same song", develop a common vision, and send a consistent message. It was noted that the outcome for both academic and school libraries is knowledge development, and with a collective vision and program alignment, we would be able to be better able to bridge student abilities between the two levels of education".

Furthermore, Hayden (2010) reports how his respondents which included both library and administration staff from university and school library contexts were emphatic about the need to have a progressive development of IL from kindergarten through to undergraduate and beyond. This type of work could leverage the detailed understanding that teachers across the various levels of education possess and through sharing this knowledge it is possible to build authentic and relevant IL programmes that "more holistically look at learners from school to the academy". There is a continuity of learning, knowledge, and skill development that can be realized through combined efforts" (Hayden 2010 p. 4). Indeed, one teacher librarian from the school context identified the "need a learner-centric rather than library-centric vision, i.e., it is about the learner, not the library".

In order to facilitate such partnerships, it would be important to begin with a baseline of understanding the conceptions of IL held by stakeholder groups in a middle school context a piece of the picture which is currently absent in the literature and which this study aims to redress.

2.4.4 Comparative analysis of conceptions of IL in the workplace, HE and K-12 contexts

Having focused on reviewing conceptions of IL in the educational context the focus now turns to considering conceptions of IL in the workplace. This is relevant given that this study seeks to discover what conceptions of IL prevail across multiple stakeholder groups in a school context approaching that research from the perspective that the school, whilst primarily a learning space, is also a place of work for many of its stakeholder groups such as the administration, leadership and faculty. Weiner (2011 p. 7) in her review of literature on IL and the workforce reports that compared to IL in the educational context there is "much less literature on implications for the workplace and job related

lifelong learning" which is also noted by Lundh, Limberg and Lloyd (2013) in their study examining research approaches across workplace and educational contexts.

In reviewing the literature on workplace IL Weiner (2011 p. 9) identifies a series of IL competencies that reflect the thinking of many business and educational organisations in terms of "readiness for the workforce and success in the workplace". Table 2.3 presents a selection of conceptions of IL directly arising from the literature across the education and workplace contexts and in regard to K-12 conceptions in terms of students Limberg's conceptions of information seeking and use for learning have been included (Limberg 1999).

Table 2.3 Conceptions of IL k-16 and workplace: a comparison

K-12 Limberg (Limberg 1999) * ***Information Seeking and Learning Conceptions**	**Secondary School** Teachers conceptions of Student IL (Williams and Wavell 2006b)	**HE Education** (Bruce 1997)	**Work Place (Scottish National Health Service)** (Toledano O'Farrill 2010)
Relevance criteria; Information overload; Criteria for judging when they had enough information; Cognitive authority; Bias.	Finding information (includes use of WWW/IT); Linguistic Understanding; Making Connections; Skills; Critical Awareness; Independent Learning.	Information technology; Information sources; Information process; Information Control; Knowledge Construction; Knowledge Extension; Wisdom.	Awareness of information related to events that affect the service and changes to procedures; Awareness of health-related information and knowledge sources; Sourcing appropriate information for decision making; Giving appropriate advice and information to callers; Controlling information; Sharing information and knowledge; Using information to learn; Using information systems.

It is evident that there is a significant degree of common ground in the ways IL is conceptualised across these contexts. Specifically, the emphasis on information technology competency, information skills of finding evaluating, synthesis and communication skills. There is also a shared emphasis on the procedural dimension of IL manifested in the concept of the research process.

Moreover, the emphasis on the need for critical thinking and problem solving is also a common concept. A difference in workplace IL conceptions arises in the sharing information and decision making which has not necessarily been as explicit in the conceptualisation of IL in the education context where there has traditionally been an emphasis on project work and individual assignments. Information control is a commonly shared concept particularly at the HE and workplace levels with information overload being a concept emerging in the K12 context in regard to Limberg's (1999) findings on high school students' information searching and use for learning experiences.

Whilst there may be a significant degree of common ground across the ways IL is conceptualised in workplace and education contexts the actual practice of IL in both these contexts is different according to Weiner (2011) and so there is a need to sensitise and calibrate the ways in which one might seek to apply concepts across different contexts. For example, Weiner (2011) notes how in practice IL in the education context can be experienced as being driven in a more prescriptive manner. That is the teacher designs the information task, problem or project often delineating the potential resources to be utilised and the question is also usually established in advance by the teacher. In contrast IL in the workplace may not be as straightforward or scaffolded.

Furthermore, performance measurement in the school context is very much in the form of a rubric and a grade and or a descriptive comment through formative and or summative stand alone or continuous assessment or a combination of these. In contrast in a workplace IL experience the worker may have to formulate their own questions, identify relevant information sources including colleagues as information may well be tacit as opposed to explicit. To quote Weiner (2011 p. 9):

> "…in the workplace tasks and problems tend to be complex, messy and open ended. They can be difficult to analyse. They may employ different approaches to information seeking and use that go beyond the mastery of information seeking skills to 'knowing ways of thinking and seeing and of crafting the narrative'".

Drawing on the work of Lloyd (2010) and Toledano O'Farrill (2010) amongst others Weiner (2011 p. 10) goes on to describe workforce IL "as a socio cultural practice that informs learning in the workplace and is informed by it ". In this context Toledano O'Farrill's (2010 p. 706) study of workplace IL also found that the pre-existing institutional IL frameworks:

> "…do not properly reflect some important ways in which information is used by participants in the study particularly the use of people as information sources and the social sense making and interpretation of the value of information and its application in the workplace environment".

The social human dimension of IL is therefore a key conception of IL that has not been part of the narrative of IL in educational contexts until recent times and it will be of interest when conducting

this multiple stakeholder group study to determine the extent to which this conception may arise from the feedback.

Toledano O'Farrill (2010) set out to study the relationship between IL and knowledge management specifically to discover the conceptions of information use in a Scottish National Health Service environment. Through his phenomenographic study O' Farrill (2010) developed two outcome spaces. The first related to conceptions of effectiveness in the job and the second conceptions of effective information use. In regard to conceptions of effective information use Toledano O'Farrill (2010 p. 716) found eight conceptions to include:

1. Awareness of information related to events that affect the service and changes to procedures
2. Awareness of health-related information and knowledge sources
3. Sourcing appropriate information for decision making
4. Giving appropriate advice and information to callers
5. Controlling information
6. Sharing information and knowledge
7. Using information to learn
8. Using information systems

In his discussion of findings Toledano O'Farrill (2010 p. 179) highlights how support and collaboration are:

> "…important aspects of decision making and developing the knowledge base, through the sharing of information and knowledge (which is further discussed below as a conception of effective information use). There are important elements of information behaviour involved in these exchanges:
>
> - Using people as information sources;
> - Awareness of who has relevant information
> - The role of social capital in gaining access to people; and
> - The actual exchanges of information and knowledge between people".

Conceptions of IL in the workplace have also being the focus of an earlier paper by Bruce (1999) whereby she considered the relevance of the Seven Faces of IL to the workplace context exploring the different nuances of individual and organisational IL. Bruce (1999 p. 44) argues that:

> "...in the workplace, IL can be considered at both the individual and an organisational level...If the staff of a learning organisations are necessarily life-long learners, then they are also necessarily information literate".

Workplace IL is therefore conceptualised as context specific which connects back to the call for researchers of IL to be context sensitive (Lloyd 2010; 2005). In the context of workplace IL

communities of practice (Wenger 2010) organisational learning (Mezey 2009; Argyris and Schon 1978) and the learning organisation (Smith 2009; Senge and et al 2000; Senge 1992) become highly relevant and will be the subject of further attention when presenting the design of Chapter 3 Section 3.4 and in the subsequent presentation of and discussion of findings.

2.5 Conceptions of IL: IL frameworks, models and standards

Given that international schools will be influenced by national as well as international curricula and national LIS professional organisations and that the mix of stakeholders in an international school community context are representative of a diverse array of countries it is important to visit the literature arising from national and international institutions that have informed ILE practice.

This section will examine the ways IL is conceptualised and addressed in IL models, IL frameworks and IL standards which have primarily emerged from within the library and information profession and from governmental policies around state curriculum requirements. Collectively these frameworks, models and standards represent both aspirational and pedagogical principles that shape the IL experience and practice and the people who hold responsibility for their development represent key stakeholder groups impacting how IL is conceptualised and the ways ILE is designed and implemented in diverse contexts including some international schools such as the PS in this study.

2.5.1 IL Frameworks

A key stakeholder in terms of their role in informing IL practice at the global level is the International Federation of Library Associations and Institutions (IFLA) (Schultz-Jones and Oberg 2015). The IFLA recently published new revised School Library Guidelines invoking the term Media and Information Literacy (MIL) as one of the core pedagogical activities that school librarians must focus on in their instructional programmes.

These Guidelines state:

> "…that the MIL curriculum framework for teachers addresses three areas of teaching and learning: 1) knowledge and understanding of media and information for democratic and social participation; 2) evaluation of media texts and information sources (focusing on who created it, for whom was it created, what is the message); and 3) production and use of media and information… The goal of an instructional program based on a media and IL curriculum is to develop students who are responsible and ethical participants in society. Information literate students should be competent self-directed learners". (Schultz-Jones and Oberg 2015 p. 41).

In terms of the characteristics of an information literate person several key conceptions emerge to include being able to:

1. Manage technology tools to access information and communicate what they have learned
2. Operate comfortably in situations where there are multiple answers, as well as those with no answers.
3. Hold high standards for their work and create quality products.
4. Be flexible, able to adapt to change, and able to function both individually and in groups. (Schultz-Jones and Oberg 2015 p. 41).

A second major institution the ACRL have also recently published a new IL framework to replace their previous publication IL Competency Standards for HE which has played a central role in the standardisation of IL in HE and beyond for the past fifteen years. The major tenets of this new framework centre on the concept of the IC as a dynamic uncertain ecosystem and how the roles and responsibilities of the different stakeholders such as students, faculty and librarians are all evolving as the eco system itself changes (Association of College and Research Libraries 2016). The Framework documents clearly states:

> "The Framework offered here is called a framework intentionally because it is based on a cluster of interconnected core concepts, with flexible options for implementation, rather than on a set of standards or learning outcomes, or any prescriptive enumeration of skills." (Association of College and Research Libraries 2016 p. 2).

Threshold concepts are introduced to include knowledge practices and dispositions and there is also an emphasis on meta-literacies which:

> "…offers a renewed vision of IL as an overarching set of abilities in which students are consumers and creators of information who can participate successfully in collaborative spaces. Metaliteracy demands behavioural, affective, cognitive, and metacognitive engagement with the information ecosystem" (Association of College and Research Libraries 2016 p. 2).

The Framework contains six frames to include:

1. Authority is constructed and contextual;
2. Information creation as a process;
3. Information has value;
4. Research as inquiry;
5. Scholarship as conversation;
6. Searching as strategic exploration.

The concept of Metaliteracy in ILE is the focus of Mackey's and Jacobson's (2014) book of the same title in which they propose a "reinvention of IL" towards the conception of IL as a Metaliteracy. The authors argue this reinvention of IL is necessary as:

> "Metaliteracy promotes critical thinking and collaboration in a digital age, providing a comprehensive framework to effectively participate in social media and online communities. It is a unified construct that supports the acquisition, production, and sharing of knowledge in collaborative on-line communities. Metaliteracy challenges traditional skills-based approaches to IL by recognizing related literacy types and incorporating emerging technologies. Standard definitions of IL are insufficient for the revolutionary social technologies currently prevalent online" (Mackey and Jacobson 2014 p. 5).

It is beyond the remit of this study to offer a critique of the new ACRL Framework: given its very recent release it is premature to speculate on the ways it may impact the conceptualisation of IL going forward. Nonetheless Ariew (2014) in her article on the history of the academic teaching library and the changing role of librarians does refer to the discussion arising amongst the library profession in the lead up to its publication. Ariew (2014) argues that whatever the ultimate outcome of the new Framework it has already served as a vehicle to stimulate ongoing dialogue around IL instruction and affirmed that IL is essential to HE across the disciplines. The ACRL Framework and IFLA Guidelines for Libraries will be revisited in Chapter 6 in terms of comparing the conceptions of IL arising from this study.

With the exception of the more recently published ACRL Framework for IL the origins, development and impact of IL models and frameworks have been well documented elsewhere as have the IL standards (Association of College and Research Libraries 2016; Folk 2016; Mackey and Jacobson 2014; Ariew 2014; Whitworth 2014; and International Society for Technology Education 2008); Markless and Streatfield 2007; Williams and Wavell 2006 (a and b). Therefore, for the purposes of this segment of the review of literature the focus will be on the frameworks, models and standards that pre dated ACRL 2016 and IFLA 2014 in addition to models specific to middle school and international school library contexts such as the ASSL Standards (American Association of School Librarians 2007). Moreover, the AASL Standards for the 21st Century Learner will be compared with the ISTE IL standards as these standards have played a role in shaping IL and IT literacy learning and these standards have also been adopted in the PS (International Society for Technology Education 2007). The rationale being these pre 2014 publications would be the main IL practice and standards sources leading up to the timeframe of this study.

Williams and Wavell's (2006a) study of secondary school teachers' conceptions of IL is an important starting point for considering the relevance of IL frameworks to actual conceptions of IL held at ground level. Williams and Wavell (2006a) in conducting their research on teachers' conceptions of student IL had prepared a template comparing four major IL frameworks including Information Power (AASL & AECT, 1998), CILIP 2004, Seven faces of IL (Bruce 1997) and Kuhlthau (2004). Copies of this template were circulated to the teacher participant during the course of the research to

stimulate discussion and reflection. In reporting their findings of the six conceptions of IL outlined earlier Williams and Wavell (2006a p. 60) and their alignment with IL frameworks they observed whilst many of the elements of the conceptions appear in the frameworks to one degree or another:

> "…all existing frameworks give greater emphasis to the importance of defining the information need, and also emphasise building and communicating new knowledge and the ethical issues associated with information. Conversely these frameworks tend to place little emphasis on understanding basic verbal and textual information and making connections and meaning of subject specific information, two strong elements in teacher's perceptions".

More recently Whitworth (2014) identifies in his critical overview of the institutionalising of IL through the creation and implementation IL frameworks, models and standards a number of salient issues which he examines in detail in his book and two of which are highlighted here. Firstly, in regard to Bruce, Edwards and Lupton's (2006) Six Frames of IL as a way to understand variation in the ways IL is conceptualised he proposes a further two frames should be added including a practice frame and a philosophical frame in order to accommodate the development in the research and conceptualisation of IL that has occurred in recent years.

Despite this evolution in the thinking about IL Whitworth (2014 p. 81) argues that much of the documentation on IL still retains a very 'individual centric skills definition of IL' which is a reflection of the standardisation culture within IL practice. He goes on to reflect that the standardisation of IL has also contributed to a very linear model of information seeking which may not reflect the actual lived experience in a variety of contexts within and outside educational contexts.

Indeed, Folk (2016 p. 26) in her systematic and comprehensive overview of major IL frameworks originating in the UK, USA, and New Zealand also notes this criticism by some that "rigid adherence to core skills and standards can create tunnel vision and stifle creativity and innovation in teaching and learning". Whatever the shortcomings of these frameworks models and standards they have however collectively provided a formal robust base from which teachers, academic and librarians have been able to design, deliver and assess IL programs in their respective contexts (Folk 2016).

2.5.2 IL Models

As this study is focused on discovering conceptions of IL across multiple stakeholder groups in an international middle school context the discussion now moves to consider IL models and standards of particular relevance to this context.

Bucher (2000) provides an overview of six IL models that are of relevance to the middle school contexts in the USA which includes the Big6™ model (Eisenberg and Berkowitz 1990). In the UK context the Big Blue Framework for information skills is mentioned in Markless and Streatfield (2007)

study of IL in the UK. In terms of IL in the international school library context Gordon (1999) described a model for IL programmes in international elementary, middle and high school libraries as referred to in Section 2.4.3. Looking at the Big6™ Eisenberg and Berkowitz (1990) model and Big Blue (Markless and Streatfield) IL models presented in Table 2.4 it is clear that in regard to the recognition of the information need and the skills of finding, locating, evaluating and synthesising information are common to both models.

The Big Blue model as noted by Markless and Streatfield (2007) however differs in the two areas of communicating information and making use of information. In this sense the Big Blue model reflects not only the content and competency frames of Bruce, Edwards and Lupton's (2006) framework but also the personal relevance and social impact frames. Models such as these models offer a route for teachers in K-12 contexts to identify dimensions of the information experience against which to formulate learning outcomes in both library and teacher led IL learning however some have their limitations.

Table 2.4 Comparison of Big6™ and Big Blue IL Models

The Big6™ (Eisenberg and Berkowitz 1990)	Big Blue Framework (Markless and Streatfield 2007)
Task Definition Define the information problem; Identify the Information need	Recognises and addresses information need
Information Seeking Strategies Brainstorm all possible sources; Select the best sources.	Retrieves Information
Location and Access Locate sources; Find information within a source.	Evaluates Information critically
Use of information Engage the source; Extract relevant Information.	Adapts Information
Synthesis Organise Information from multiple sources; Present the Information.	Organises information
Evaluation Judge the process; Judge the product	Communicates information
	Makes use of information
	Reviews the process

However, Markless and Streatfield (2007 p. 10) identify a series of limitations in terms of their implementation in so far as they may:

- "…not connect to the actual experience of the learning process as we now understand it,

- that they ignore or don't take sufficient cognisance of reflection, iteration, trial and error and different learning styles and strategies,
- they are not linked to the learning process as we currently understand it,
- grounded in a technical view of IL (depending on mechanistic processes such as citation and keyword searching), with far too little emphasis on the cognitive and metacognitive elements,
- ignore peer interaction and the collaborative nature of much enquiry (Limberg, 2005),
- use a language that does not resonate with academic staff and students, does not reflect the language of the disciplines and, therefore, keeps IL separate and harder to embed in the curriculum. This poses yet another challenge for students who are likely to be overwhelmed by the plethora of 'new languages' especially at the start of their university experience".

The review of work by Limberg (2000; 1999) and Kulthau (Kuhlthau 1991; Kuhlthau, Heinström and Todd 2008) underlies these limitations as they have revealed the affective, procedural and social human dimension of the information experience which sequential or linear models do not reflect. Markless and Streatfield (2007 p. 10) recommend that some of these limitations can be redressed by "ensuring the IL is embedded in the curriculum rather than treated as a separate subject and by using pedagogically sound principles when designing IL materials, activities and sessions". A new IL framework was proposed by Markless and Streatfield (2007 p. 11) to include three core elements, connecting with information, interacting with information and making use of information which they sought to adapt and integrate in HE contexts.

2.5.3 IL Standards

The literature on the origins, development, strengths and limitations of IL frameworks and models has been reviewed in order to capture the sentiment of and reaction of researchers dedicated to IL research and practice. Two remaining key sets of standards of particular relevance to K-12 contexts are now compared as these standards which have been adopted in many educational contexts, not least by the PS, play an important part in influencing the ways IL learning is shaped by teachers, librarians and IT teachers.

Comparing these two sets of standards as revealed in Table 2.5 clearly points to a common ground area in terms of kills, knowledge, understandings and dispositions around IL and IT literacies. Specifically, the research and information fluency standard aligns with the Standards for the 21st Century. Murray (2008) has compared the extent of common ground language and intentions embedded in the AASL Standards for the 21st Century Learner, ISTE IT literacy standards for students and US National Academic Content Standards through the lens of the Big6™ model reporting that there is extensive alignment and that therefore recommends the application of the Big6™ to guide systematic and comprehensive development of IL in K-12 contexts.

Table 2.5 Comparison of AASL and ISTE Standards

	AASL Standards for 21st Century Learners (2007) (American Association of School Librarians (AASL)) *Standards for the 21st-Century Learner* offer vision for teaching and learning to both guide and beckon our profession as education leaders. They will both shape the library program and serve as a tool for school librarians to use to shape the learning of students in the school. (American Library Association. 2016)	**ISTE Standards for Students (2008)** (International Society for Technology Education (ISTE)) *ISTE standards describe the skills, and knowledge students need to learn effectively and live productively in an increasingly global and digital world.*
1.	Inquire, think critically and gain knowledge. Follow an inquiry-based process in seeking knowledge in curricular subjects, and make the real-world connection for using this process in own life.	Critical thinking; Problem Solving & Decision making. Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources
2.	Draw conclusions, make informed decisions, apply knowledge to new situations and create new knowledge. Create an inquiry based research process by applying critical thinking skills (analysis, synthesis, evaluation, and organisation) to information and knowledge in order to construct new understandings, draw conclusions and create new knowledge. Use technology and other information tools to analyse and organise information. Collaborate with others to exchange ideas, develop new understanding.	Research and information fluency Students apply digital tools to gather, evaluate and use information; Plan strategies to guide inquiry Locate, organise, analyse, evaluate, synthesise and ethically use information from a wide variety of sources and media; Evaluate and select information sources and digital tools based on the appropriateness to specific tasks; Process data and report results.
3.	Share knowledge and participate ethically and productively as members of our democratic society.	Communication and collaboration Students use digital media and environments to communicate and work collaboratively including at a distance, to support individual learning and contribute to the learning of others
4.	Pursue personal and aesthetic growth.	Creativity and Innovation Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology

Murray (2008 p. 42) states that:

> "The most widely-known and widely used approach to teaching information and technology literacy skills in the world" is the Big6™ model developed by Mike Eisenberg and Bob Berkowitz (Big6™). The Big6™ integrates information search and use skills with technology tools in a systematic process to find, use, apply, and evaluate information to specific needs and tasks. The Big6™ is designed to help students learn powerful and effective information and technology problem-solving strategies".

Concluding her comparative review of the standards through the Big6™ model lens Murray (2008 p. 42) recommends the model to educators arguing that:

> "If educators promote and use an information problem-solving process like the Big6™ Skills, they can help students learn to locate, select, evaluate, analyse, and synthesize information from a variety of sources in order to make intelligent decisions. These are the higher-level thinking skills people can use in any content area, at any level, and can continue to use throughout their lives, no matter what new technology or information systems they encounter".

However, based on review of the IL literature in this thesis there appears to be a definite shifting of focus from IL as a set of skills and dispositions to embrace a more process and practice phenomenon increasingly characterised by a social human dimension which is addressed in both the AASL Standards for the 21st Century learner and the ISTE Standards for students (American Association of School Librarians 2007; International Society for Technology Education 2008).

From a curriculum integration perspective, it is also interesting to see where Murray (2008 p. 41) juxtaposed the US National Academic Content Standards alongside the IL and IT standards as it offers an important and potentially powerful starting point to consider alignment of these differing sets of standards arising from governmental, LIS and IT professional bodies. Both sets of standards place an emphasis on IL as skills based, as a way of learning through critical thinking and inquiry focused on both school and life related tasks and experiences.

There is also an emphasis on contribution, collaboration, creativity and ethical participation in democratic society which encapsulates the sense of an information literate person being one who produces as well as consumes information to learn, to act and to interact not only in the sense of learner autonomy but also to be able to contribute towards other people' learning and life experience.

In attempting to generate a synthesis of the understanding about IL gained through the review of literature process the researcher has developed a framework as presented in Table 2.6 to profile the dimensions of IL that have been reviewed, characteristics of those dimensions and the gaps in the literature which this study seeks to address. The format is an adaptation of a framework the

researcher has become familiar with in her role as an IB teacher of the Theory of Knowledge which is part of the core of the IB Diploma programme. The knowledge framework has been designed by the IBO as a device for supporting students' exploration of the areas of knowledge (International Baccalaureate Organisation 2013). The framework will be used as a tool to facilitate concluding the literature review as presented in the following Section.

2.6 Conclusion

In reviewing the literature of conceptions of IL it is clear that there is a diversity of views as to the scope and applications of IL from the immediate need to find relevant sources to complete an academic project to ideas of critical inquiry and meta-literacy. Referring to the literature review summary Table 2.6 one can see that the conceptions of IL that appear to continue to have resonance include IL as a set of information skills (competency frame) and IL as a subject or discipline in its own right (competency frame) (Bruce, Edwards and Lupton 2006).

The learning to learn, personal relevance, social impact, relational frames identified by Bruce, Edwards and Lupton (2006) appear to manifest to differing degrees of emphasis over the years and across different contexts. These frames or ways of communicating the variation in the conceptualisation of IL require extending according to Whitworth (2014) to accommodate the practice and philosophical frames which he argues provides a more complete profile of the variation in the ways of conceptualising IL. In reviewing conceptions of IL, the challenge of establishing a common language and terminology around IL to achieve a shared understanding of IL equally appears to dominate the literature.

Therefore, the original problem which the researcher encountered in terms a lack of shared thinking around IL in her professional context continues to prevail and therefore evidences the need for this research. Furthermore, the conceptualisation of IL through the past three decades has been shaped and informed by major institutions from within the LIS profession and by the standardisation of IL via government and or professional stakeholder groups.

Collectively these institutions are themselves influenced by the reality of globalisation and the concern to ensure society's preparedness for life throughout life. IL has in this context being elevated to a high political status however the literature review indicates there may well be a rhetoric reality gap in this respect. Moreover, looking to the literature in regard to sensitising the research process to the IC within the context of international private education it is clear that there is a need for IL research to reflect this gap in literature.

Table 2.6 Summary of literature review: IL knowledge and gaps

Dimension of IL	Characteristics of Dimension	Gap in Literature which this research aims to explore
Scope & Application	- Immediate in terms of assignment on hand to life-long learning application	Where do multiple stakeholders groups in a school context align with scope & application of IL?
Concepts	Diversity - From information skills to critical thinking, critical inquiry, reflection - Independent & interdependent learner - Cognitive to meta cognitive - Meta-literacy	To what extent do multiple stakeholder groups align with such conceptions?
Language	- Continuity of some conceptions - Changed and changing of others.	What is the language of IL across multiple stakeholder groups?
IL Frameworks & Models	Rhetoric and Reality - IL Frames Bruce Edwards Lupton 2006 & Whitworth (2014) 2 additional frames. - Individual to shared collective collaborative, social practice - Social Impact	Do the models and frameworks fit to the ways IL is conceptualised across multiple stakeholder groups?
Historical Context	Impact of globalisation and net-work environment	What might be the legacies of ways of understanding IL in terms of their influencing multiple stakeholder groups' conception of IL today?
Information Context & Future	Dynamic context Multi modal experience in a connected environment/information eco system	How do multiple stakeholder groups conceptions align or differ with this perspective?
Personal and Shared experience	Affective Social Human Dimension of information experience.	What ways do multiple stakeholder groups perceive/ experience the IC?

Through this study the researcher will seek to establish the perceptions held across stakeholder groups of their IC thereby providing context for the emergent conceptions of IL. Secondly in this regard the literature review of the development and proliferation of international curricula is also an important element to study offering an important back drop against which to calibrate if the conceptions arising from this study align with the ideological and pedagogical underpinnings of these curricula.

In the context of this study being a study of peoples' ways of perceiving their IC and their conceptions of IL clearly there is value placed on participants own personal experiences of both the IC and concept of IL which are inextricably bound. In so doing the study seeks to address the affective

dimension of the information experience alongside the cognitive and add to the literature in terms of understanding the influence of the ways people feel about and perceive the IC.

The literature review of has revealed the inherent complexity and variation of the conceptual mindscape of IL across multiple stakeholder groups. There is also to some degree a sense of uncertainty as to the degree to which the rhetoric around IL does in fact align with information use experience across the levels of education and in workplace contexts. What is clear however, is that the studies of IL tend to be concentrated in the higher education sector and have mostly a single stakeholder viewpoint.

Furthermore, across many of the studies reviewed, whether the focus was on conceptions or information use experiences and regardless of the setting, there is a persistent call for increased collaborative approaches and partnerships and to establish a common ground understanding of IL from which to proceed with ILE for learners of all ages and contexts. Therefore, this research to gather an understanding from across multiple stakeholder groups in a school community context is timely and necessary and will potentially contribute to bridging this current gap in the literature.

In conclusion the literature review has provided a reflective account of the educational context within which this study is set, explored the nature of conceptions of IL in K-16 settings and examined the characteristics of IL models, frameworks and standards that inform or influence the ways IL is conceptualised in different contexts. However, the review has identified two significant gaps in the literature firstly, the lack of studies regarding conceptions of IL in the private international school context and more significantly the lack of joined-up thinking about the ways IL is understood across multiple stakeholder groups in different contexts. This study is designed to bridge these gaps by continuing in the phenomenographic research tradition to conduct a study of the variation in conceptions of IL in a private international school context. The following Chapter 3 provides the rationale for choosing the phenomenographic method and a critical account of the research process in advance of the presentation of findings in Chapters four and five.

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CHAPTER 3 Methodology

Introduction

The purpose of this Chapter is to provide a critical review of the rationale for the chosen research methodology, to document the research design, to describe the data collection and analysis processes and finally to critique the selected methodology as depicted in the flow chart in Figure 3.1. Whilst Chapter 2 provided a focus on the context of international education on a more generic level, the opening Section of this Chapter begins by profiling the Project School (PS) in detail thereby providing the relevant contextual information against which the research methodology and process can be considered.

The rationale for conducting the study in a single school community is fully explained in Section 3.3.1.

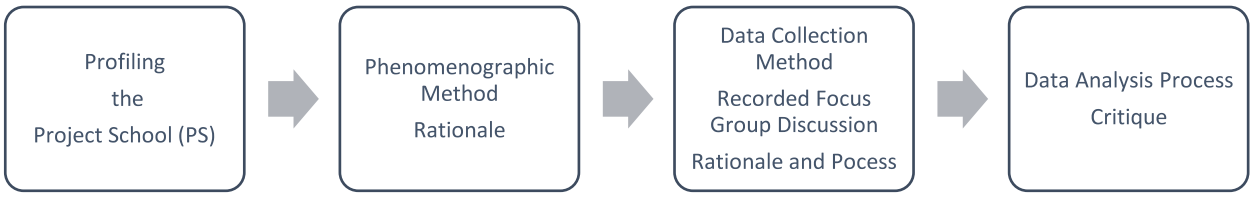


Figure 3.1 Methods chapter flowchart

3.1 Introducing the project school (PS)

The main sources used to build a profile of the PS included internal documentation private to the PS, PS web based information, PS curriculum and strategy documentation and information gathered from first-hand experience of observing library lessons and through discussion at various formal meetings with the PS Principal and Director for External Relations.

Figure 3.2 presents the major dimensions of the PS context including the underlying pedagogical assumptions of the education being offered, the financial costs of such an education, the nature of curriculum offered and the standards adopted by the IT and library in delivering their instruction to students, the international student body and sense of community that is prevalent within the PS locally and also in the wider context of the global international education community.

Figure 3.2 Profile of project school (PS)

3.1.1 Private fee paying CIS and MSA accredited school

The PS is a private, coeducational, premier international fee paying school run by a Board of Trustees who have responsibility for the long term educational and financial health of the school. The research was carried out in the middle school division of the school for reasons that are indicated in 3.3.2 the PS selection. The approximate annual tuition fee is twenty thousand euro with additional costs of capital and enrolment fee which can bring the costs up to nearer thirty thousand euros per annum at middle school level. There is a high standard of educational qualifications amongst the faculty with over eighty percent holding Master Degrees and many of the teachers have been at the school for over a decade. The PS has been in existence for over fifty years and is accredited by the CIS and MSA the two major accreditation bodies in the international education arena (Council of International Schools 2015; Middle States Association of Colleges and School 2011). Graduates from the PS have secured admission to top universities in the USA, Canada and in their home countries and the academic success rates are consistently strong relative to other similar international schools.

3.1.2 International student body and sense of community

The PS is populated by a high socioeconomic expatriate community coming mainly from the international business and diplomatic community with just over one thousand students at the time of study, split between the three school levels. Similar to other international schools the student body at the time of the study comprised of students from across the globe with the 40% U.S. and 10% Host Nation, and with the remaining 50% representing over 50 other nationalities.

Recognising the inherent challenges facing expatriate families in moving and settling into new countries and new schools the PS has developed an extensive network of layers of support by way of international parent ambassadors, student ambassadors and the Parent Teacher Organisation is dedicated to ensure support for smooth transitions and integration into the school community and the host country. Weekly parent networking meetings form part of the layers of support to members of the school community. Furthermore, the internal layer of the school's website provides a key point of access to information about school and student life. This multi-layered network of information and supports are designed to ensure strong lines of communication between the school and families. Adult education classes and afterschool activities and a diversity of sports and cultural programmes all form part of the school's service to its community. Parents are explicitly recognised as partners in the education process and this relationship is cultivated via the aforementioned layers of support and communication. Collectively these manifold layers of networking, communication and support serve to create a community spirit and identification with the school as a place of community by families in the community.

There is also a sense of belonging to the wider international school community in that there are formal international annual competitions around sports, arts and culture and academic areas whereby students have the opportunity to travel to other countries often being hosted by families in these countries when participating in these international events. In this way students not only have the constant experience of inter cultural exposure in their daily school lives but also on another level in terms of staying with host families in other countries and cultures. This experience also opens up a whole network of contacts on a global scale for students, parents and staff.

3.1.3 Project school curriculum

The school offers a learner-centred American curriculum that has been tailored to meet the particular needs of diverse international school community. The school has three divisions Elementary School (From Preschool through to grade 4), Middle School (Grades 5 -8) and High School (Grades 9-12). The school's Mission statement at the time of the study focused on students becoming critical inquirers, creative thinkers, and clear communicators and to hold a disposition

around a commitment to others. As a focus for learning these objectives are synonymous with the concepts underlying the narrative of the conceptualisation of IL as documented in Chapter 2. Whilst the International Baccalaureate Diploma Programme (IBDP) (2015) programme is offered alongside the School's High school diploma and the opportunity to pursue the American Advanced Placement (AP) exams offered through The College Board (2016) neither the International Baccalaureate (IB) Middle Years (MYP) (2016) nor Primary Years Programmes (PYP) (2014) of the IB curriculum are offered in the school.

3.1.4 Middle school library curriculum, and standards

The middle school has its own dedicated expansively resourced library staffed by two full time personnel including a professionally qualified librarian and library assistant. The librarian had developed and was implementing a progressive library curriculum aimed at the four middle school grade levels an excerpt from which s depicted in Table 3.1 (See Appendix 1 for copy of excerpts from PS documentation). This curriculum was designed to develop student's research skills and understandings of the content of curriculum through inquiry based learning. Students were supported to approach their learning through addressing the essential questions targeted for exploration within the content of the curriculum.

Furthermore, in developing the Library's IL curriculum the librarian drew on the work of Abilock (2005) who created the Information Literacy Essential Questions a copy of which is available in Appendix 2. The librarian used the PS mapping software to map the Library's IL curriculum which in turn was informed by the AASL Standards for the 21st century learner as outlined in Chapter 2 (American Association of School Librarians 2007).

Taking an example from this curriculum for Grade 6 IL skills the fifteen essential questions as developed by Abilock (2005) were integrated by the PS librarian alongside identifying content and instructional strategies that were targeted for development over the school year.

Table 3.1 presents an adapted version of the PS Grade 6 library IL skills map. What is interesting about this map of IL library curriculum is the emphasis on both IL skills and IT integration in tandem with a collaborative teacher librarian curriculum embedded approach to teaching IL skills as presented in Table 3.1. The use of essential questions aligns with inquiry based learning and the instructional strategies are designed to ensure differentiation in approach to the learning process. Finally, the PS librarian had also developed comprehensive child friendly Moodle pages to accompany the research skills sessions and learning of curriculum content by providing carefully selected age and language appropriate web pathways via the library's web page and through Moodle.

Table 3.1 PS Library IL Curriculum IT Content and Instructional Strategies (Appendix 1)

IT Content of PS Library IL Curriculum	Instructional Strategies for PS Library Curriculum
• Navigating the Web • Navigating library subscription databases and encyclopaedias • Moodle interactive activities • First Class e-mail • Destiny Quest - Online Catalo • Applications: Microsoft Office 2008, iLife, iWork, etc. • Widgets • Google Docs • Google Custom Search • Google Earth • Wordle • Smart Board	• Short lectures • Class discussions • Debates • Pair/small group discussions • Games • Vocabulary builders • KWL charts • Graphic organizers • Sticky notes • Skimming and scanning • Squeezing the juice • Reading strategies: Jigsaw, Drama, Buddies • Online Reading Logs • Learning centres

Comparing the narrative to Bruce, Edwards and Lupton's (2006) Six frames of information literacy education (ILE) there is a definite focus on the content and competency frames but additionally the learner's experience is being driven in an inquiry based learning approach.

The researcher was extended the opportunity to visit the PS library to observe lessons so as to achieve a more direct understanding of the library IL curriculum in action and also to give the grade 6 students a chance to meet the researcher before the research project got underway. These visits to the PS library were purely informal and did not form part of the research methodology but were important in terms of establishing a presence in the PS as preparations were underway to finalise the research process. As this experience afforded the researcher the opportunity to observe the curriculum in action it provided valuable insight when conducting the research particularly with the student stakeholder groups which is further explained in Section 3.4.2.

3.1.5 Information technology strategy and standards

At the time of conducting the study the PS was entering the final phase of a three-year technology plan designed to continue the progression of the integration of IT in all aspects of school life including academic and administrative in ways that facilitated the realisation of the school's mission of excellence in critical inquiry, creative thinking, clear communication and a commitment to others (see Appendix 1 Excerpts from PS Documentation). The comprehensive plan targeted seven areas for development including:

1. Technology Curriculum;
2. Integration of IT and Standards;

3. Infrastructure – networking and a wireless connectivity;
4. Software;
5. Hardware;
6. Professional development;
7. New developments.

In terms of strategic thinking around technology and curriculum the plan identified that International Society Technology Education (ISTE) (2008) Standards for both students and teachers as the standards to be integrated into the curriculum. Planning for opportunities for professional development to support teachers to develop as necessary their IT skills also formed part of the action to support the integration of technology and to realise the ISTE standards (2008). One of the major elements under the heading of new developments was to investigate and implement a one to one lap top programme alongside the installation of Smart boards in classrooms and additional video based technologies. The implementation of the lap top programme was in progress during the lifetime of this research.

To facilitate the implementation of the technology plan goals in terms of curriculum and the one-to-one lap top programme in the middle school there were both IT teachers to deliver the IT curriculum and technical support in terms of a dedicated member of staff to support the implementation of the lap top programme, who was available on a full time basis to support faculty and students deal with any lap top technical issues at the point of need. The IT teachers and technical support staff member were also actively involved in reaching out to support the Parent community with concerns and needs around the implementation of the lap top programme. Similar to the library IL curriculum the middle school IT teachers had also mapped the IT curriculum using the school's mapping software which was shared with the researcher.

An example of a grade 6 IT literacy development entitled CRASH (Create, Re Mix and Share) which students covered from week ten into the first term of the school year is presented in Table 3.2 which sets out the essential question, content and instructional strategies for this ten- week module of the grade 6 IT curriculum. It is evident that whilst the essential question is driving students to think about the integration of technology, the purpose is centred around sharing information about school experience so here again the competency frame of Bruce Edwards and Lupton's (2006) Six frames of ILE could be applied and also to a degree personal relevance as students are being asked to focus on their school life experience.

Table 3.2 PS IT Curriculum Grade 6 Create, Remix and Share (CRASH). (See Appendix 1. Excerpts from PS Documentation)

Essential Question	Content	Instructional Strategies
How can we use technology to explore and share information about our school experience?	• The student will create, edit, save, and share photograph image files. • The student will create, edit, save, and share graphics. • The student will create, edit, save, and share video clips. • The student will create, edit, save, and share audio clips. • The student will create, edit, and share web content for Color House websites.	Reinforcing effort and providing recognition Non-linguistic representations Cooperative learning Setting objectives and providing feedback

In both the IL learning and IT learning experience there is an emphasis on reflection by students in the process which has been emphasised as key to IL learning in IL literature (Godwin 2007; Saito and Miwa 2007; Williams and Wavell 2007; Bruce 2004).

3.1.6 Summary of PS context

Based on the profile of the PS it can be seen that the IC at the PS was very much in a state of transformation as the technology plan was realised which saw the introduction of new information technologies in the classroom, the roll-out of the one-to-one lap top programme, the introduction of online grading system, new school wide email interface, the development of the virtual learning environment and the creation of a new internal web interface for the PS community. Moreover, the middle school librarian was also transforming the library's on line functionality which included the development of Moodle pages for each grade level where carefully selected information pathways were brought together in one place and with easy access by the students.

The ongoing development of the library in terms of the investment in age and curriculum related data bases and software and new print and media resources alongside ongoing curriculum development ensured the realisation of the articulated goals for the library's development. Having established the nature of the PS context as a comprehensively resourced learning environment and detailed the nature of the curriculum in general and the library and IT curriculum specifically, it is clear that the PS in terms of both the IC and the information use for learning experience was clearly transitioning as the manifold new stimuli, both physical and virtual, were introduced. It is against such a dynamic backdrop that this study set out to discover what conceptions of IL prevailed across stakeholder groups in the PS community.

3.2 Rationale for phenomenographic methodology

Given the overall aim of this research to identify, compare and contrast conceptions of IL from multiple stakeholder perspectives the study required a research methodology that allowed the in-depth probing of variation in the conceptions of IL across multiple different stakeholder groups. The study also required that the process of gathering this understanding should be unfettered and in no way pre-empt stakeholder's contribution of thoughts and ideas about IL but rather to really get at the heart of how stakeholders within their groups conceptualised IL in their own words. Equally the choice of methodology was influenced by the need to be able to utilise a data collection method that would allow the stakeholders to have a stakeholder-stakeholder focus as opposed to a stakeholder researcher focus and thereby optimise the potential to truly surface the variation in the ways IL was conceptualised across stakeholder groups.

It was clear from the outset that a qualitative research approach was most appropriate as it provides for more open ended interview, observational or case study approaches as opposed to a quantitative approach involving the use of surveys or experimental research where the emphasis is more on statistical analysis. An ethnographic approach was one possible route to gather an understanding of variation in conceptions of IL if the study was only dealing with one or two stakeholder groups such as students and teachers. To conduct ethnographic research would have required studying groups of stakeholders in action in terms of information use over a protracted period of time and given the exigencies of school life it would not provide a practical methodological route to accommodate the overall aim of this research (Cresswell 2009).

Phenomenological research was also a potential method to gather information about how IL was conceptualised however the breath of stakeholder groups to be studied and the fact that phenomenology is more about identifying the essence of human experiences of a phenomenon in this case IL, may not have yielded the variation in ways of IL was conceptualised across multiple stakeholder groups. Moreover, a phenomenological approach according to Cresswell (2009 p. 13.) is more suited to studying a "small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning". As this study aimed to gather understanding from a wide range of stakeholder groups the more philosophical phenomenological approach did not best fit the aims and objectives of this study.

In the final analysis of the possible methodology choices phenomenography was selected as it met the needs of this study in ways that ethnography or phenomenology could not. Moreover, the phenomenographic method has at its heart a focus on capturing the qualitatively different ways people conceptualise phenomena. According to Bruce (1999 p. 23):

> "Researchers should consider phenomenography when they intend to understand the world from someone else's perspective, and when, simultaneously: there is an intention to describe variation in the experience, or conception of others; or when there is an interest in the relation between people and some information object, abstraction or system."

Therefore, adopting a phenomenographic approach as illustrated in Figure 3.3 provides clear alignment with the intended aim and objectives of this research. As Marton (Marton and Pang 1999 p. 1) one of the founding fathers of this methodological approach states the origin of the word phenomenography as being:

> "… derived from Greek words "phenomenon" and "graphein" which mean appearance and description, and phenomenography is thus about the description of things as they appear to us".

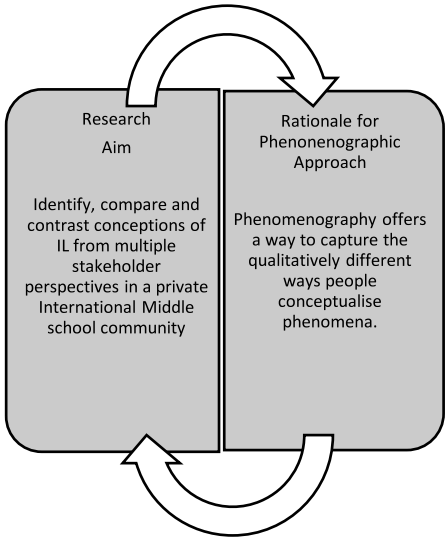


Figure 3.3 Rationale for phenomenographic approach

It is this description of the ways IL is conceptualised across stakeholder groups in an international school community that is the ultimate intended outcome of this study seeking to add to the knowledge base and understanding of the variation in the ways IL is conceptualised by distinct stakeholder groups in a school community.

Turning attention to the main objectives of the research as outlined in Figure 3.4 it is useful to revisit these again at this juncture to substantiate the appropriateness of the decision to use a phenomenographic approach.

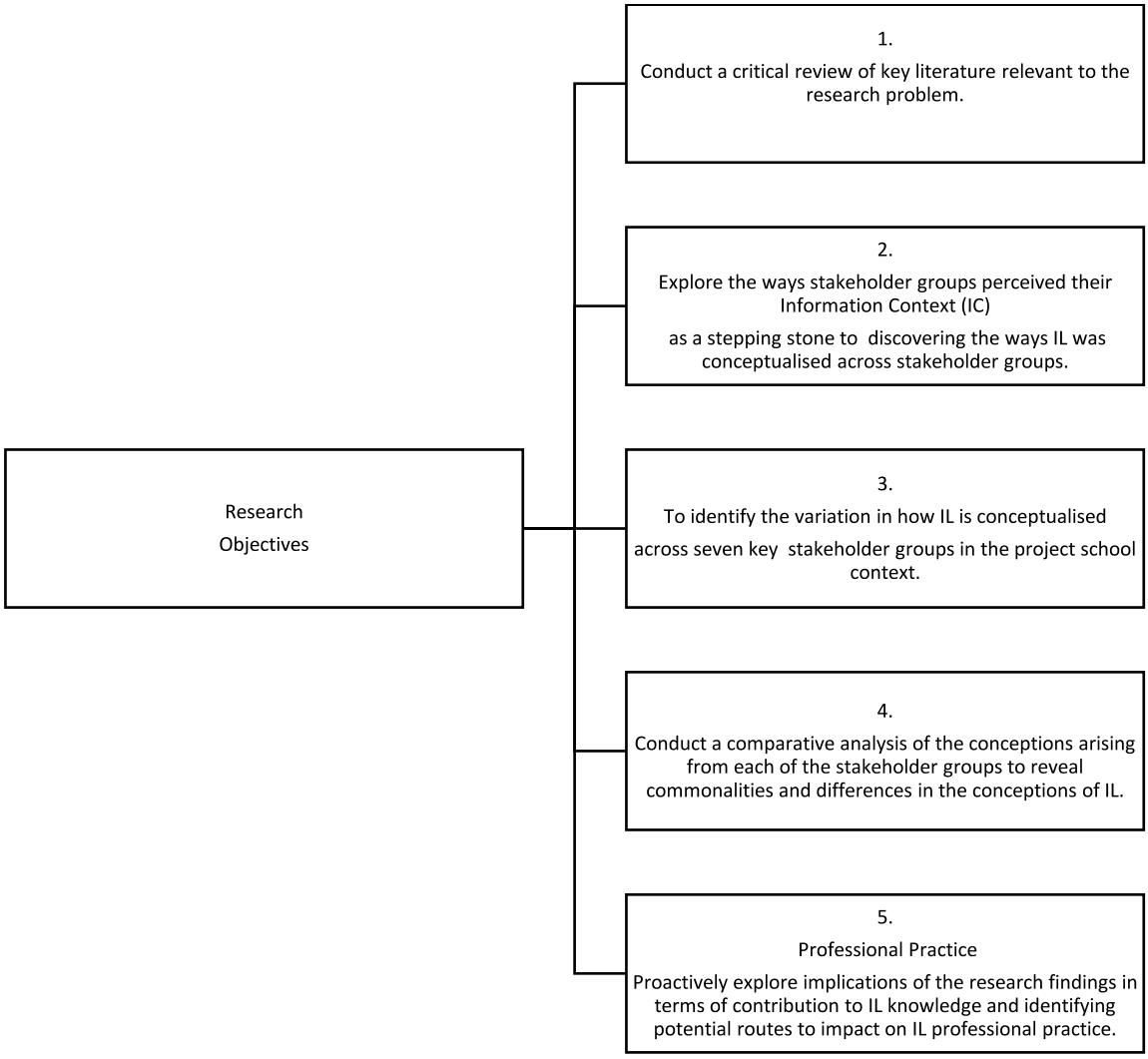


Figure 3.4 Research objectives

The first research objective to conduct a literature review relevant to the research problem as presented in Chapter 2 has indicated the successful application of the phenomenographic approach to studies of conceptions of IL in diverse contexts indicating the growing trend to use phenomenography within LIS and beyond in work place and community contexts (Cope and Sanabria 2014; Lundh, Limberg and Lloyd 2013; DaCosta 2010; Toledano O'Farrill 2010; Probert 2009; Edwards 2007; Boon, Johnston and Webber 2007; McGuinness and Andretta 2007; Williams and Wavell 2006; Limberg 2000; Bruce 1999; Bruce 1997b; Bruce et al. 1997; Limberg 1999; Kuhlthau 1991). Moreover, as the practice of phenomenographic research has evolved there is increasing interest to examine the variation in phenomenographic practice including data collection and analysis methods which provides a critical base against which to calibrate the relevance of the approach to this study (Bruce 1999; Bruce 2000; Åkerlind 2005; Pang 2003).

Turning attention to the second and third research objectives which were to:

- Explore the ways stakeholder groups perceived their information context (IC) as a stepping stone to discovering the ways IL was conceptualised across stakeholder groups.
- Identify the variation in how IL is conceptualised across seven key stakeholder groups in the PS context.

It is clear that achieving both of these objectives which involved a process of discovery of particularly abstract ideas and ways of thinking about phenomenon could be realised through applying the phenomenographic method. Phenomenography as a qualitative research method was felt most appropriate as it provides a way for "mapping the qualitatively different ways in which people experience, conceptualise, perceive and understand various aspects of, and phenomena in, the world around them" (Marton 1986 p. 36). The outcome of such research is that it delivers up categories of description that capture the variation in the ways the phenomenon is experienced.

Furthermore, the research seeks to redress the gap in research practice about IL in terms of a focus on sensitising the research process to the IC. The relationship between information users' perceptions of their IC and their ways of conceptualising IL is an important stepping stone to building the profile of the ways IL is conceptualised.

Boon, Johnston and Webber (2007 p. 209) provide an example of the way this approach adopts a more second order perspective which they exemplify as follows:

> "…so for example, a phenomenographic study of academic's concepts of teaching would not result in a description of teaching, but a rich and detailed expression of the varied ways in which academics apprehend, perceive, and experience teaching".

The value that such understanding can bring to informing the design development and delivery of IL learning strategy lies in its potential to craft IL learning experiences that are sensitive to such variation and developing IL learning outcomes to meet the learner's need for learners of all ages and contexts.

The fourth research objective was to:

- Conduct a comparative analysis of the conceptions arising from each of the stakeholder groups to reveal commonalities and differences in the conceptions of IL.

In regard to the objective of undertaking a comparative analysis of the conceptions of IL arising from each stakeholder group it is necessary to have definite identifiable sets of conceptions to compare. This study involves a series of seven mini studies of conceptions of IL arising from seven distinct

stakeholder groups. The phenomenographic approach through a rigorous and systematic process of analysis, interpretation, reflection and synthesis of the data set in respect of each of the seven stakeholder groups yields up a set of distinct categories of description for each stakeholder group and accordingly there are seven outcome spaces. Each outcome space captures both the conceptions which are termed the referential aspects of the phenomenon as conceptualised or experienced and the awareness structure.

The awareness structure is a way of capturing the complexity of the variation in conceptions or experiences of a phenomenon. The development of the dimensions of the awareness structure is achieved through the sustained, reflective analysis process whereby the researcher is interpreting and theming the data. The "researcher is not studying his or own reflection of a phenomenon but that of his subject" (Marton 1994 p. 2) not at the individual but the collective level. It is a process of attempting to make explicit or draw out and identify ideas and ways of seeing or experiencing a phenomenon that are implicit at a collective level (Åkerlind 2005; Yates, Partridge and Bruce 2012; Marton 1994; Marton 1986).

Thus phenomenographic research is seeking to discover the set of meanings or ways of conceptualising or experiencing a phenomenon and how to identify how these meanings relate to one another to provide a:

> "…way of looking at collective human experience of phenomenon holistically, despite the fact that the same phenomenon may be perceived differently by different people and under different circumstances" (Åkerlind 2005 p. 323).

Bruce (1999 p. 12) also expands on the ideas underlying the outcome space explaining how categories of description:

> "…explore the salient elements of each conception and the crucial differences between them. It is also usual for each category to identify some focus of attention that corresponds with the experienced meaning".

In terms of the aim of this research to discover the variation in the ways IL is conceptualised the outcome space describing each category of description of IL will necessarily be comprised of a structural component which is the focus of attention of the conception of IL and a referential component which is the meaning attached to the conception. The categories of description in turn are presented in a structural framework revealing the nature of the variation in the categories of description. As Bruce (1999 p. 12) points out:

> "These structural frameworks may be inclusive or hierarchical, they may relate to the history of interviewee's experience of the phenomenon, rather than to each other, or they may represent a developmental progression".

Given the focus is on abstract ideas and concepts it is important to clarify the idea of concept, conception and conceptualisation within the phenomenographic domain. Bruce (1999 p. 11) refers to the thinking of Svensson in this regard noting how he:

> "…describes a 'concept' as the abstract general meaning attributed to a phenomenon 'as it is present in a language'; a conception as the experienced meaning of a phenomenon and conceptualisation as cognitive activity, 'the thinking through which a conception is constituted".

In this sense the researcher through the interpretivist phenomenographic approach to the data collection and analysis can identify the nature of variation in conceptions and seek to make explicit the conceptualisation of IL from across the stakeholder groups within the community. With the objective being to compare and contrast the conceptions of IL the process of the development of outcome spaces by the same researcher offers a way to ensure a consistent approach to analysis, reflection and synthesis against which to conduct this secondary level of analysis.

Looking to the final research objective which was to:

- Proactively explore implications of the research findings in terms of contribution to IL knowledge and identifying potential routes to impact on IL professional practice,

It was necessary to apply a research approach that potentially delivers up understandings of a phenomenon from a collective perspective. By having the baseline of understanding of IL derived from stakeholder groups across a school community the researcher is better placed to develop a comparative analysis to discover the extent of common ground thinking regarding the conceptualisation of IL.

Furthermore, the literature review has demonstrated the strong track record of phenomenographic researchers applying the findings of their studies to professional practice. Bruce (1997b) for example based on her phenomenographic work about conceptions of IL in the academic context produced her book entitled the Seven Faces of Information Literacy which she in turn further applied and adapted to create the Informed Learning (Bruce 2008) approach to IL. Based on further collaborative work and ongoing reflection about the IL phenomenon Bruce and fellow researchers in the LIS field and beyond went on to develop the Six Frames of IL (Bruce, Edwards, et al. 2006) the advancement of a relational model to IL (Bruce 1997a) and numerous other ILE programmes and research studies about IL in diverse contexts (Bruce 2013; Bruce 2011; Huges et al. 2005; Bruce 2004; Edwards and Bruce 2002; Bruce 1999).

Similarly as has been documented in the literature review many of the researchers using phenomenographic research approach such as Kuhlthau, Limberg, Williams and Wavell, Boon

Webber and Johnston to name but a few have all applied the findings from their research to develop different dimensions of information literacy education (ILE) in their respective contexts (Lundh, Limberg and Lloyd 2013; Boon, Johnston and Webber 2007; Williams and Wavell 2006; Limberg 2000; Limberg 1999; Kuhlthau, Heinström and Todd 2008; Williams 2006; Williams 2005; Webber and Johnston 2000). Their findings have been applied in diverse ways such as the development of the Information Search Process (ISP) model by Kuhlthau. Singularly the output from these manifold studies have collectively served to sensitise and increase practitioners' awareness and understanding of the ways information use, IL and information models have been developed and applied.

Moreover, previous phenomenographic research has successfully delivered up frameworks for thinking about IL and the value of these frameworks according to Bruce, Edwards and Lupton (2006 p. 15):

> "…lies in their power to challenge each one of us to identify our primary(s) and to inquire into how our professional practice might develop if we were to adopt a differing frame or range of frames".

Williams (2005 1 p. 59) also endorses this view of the value of phenomenographic research stating that this type of research has begun to reveal differing real world conceptions and experiences of IL".

It is beyond the remit of this study to provide a review of the nature of the impact of phenomenographic studies however the continuing application and choice of phenomenography as a research approach not only in education contexts but more recently in work and community contexts is testament to its' value in terms of impact on knowledge understandings and learning around IL (Lundh, Limberg, and Lloyd, 2013; Lloyd 2010). As Bruce (1999 p. 19) pointed out some years ago now and which history now proves to be true in regard to results obtained through phenomenographic research:

> "Research results obtained from this approach may be used in further research, in training and education, in development and design of information products and other technologies".

To summarise phenomenography as Figure 3.5 indicates offers a qualitative interpretivist approach to uncover the layers of people's ways of understanding and conceptualising a phenomenon and offers opportunities to consider routes to impact in professional practice which serves this specific requirement of the professional doctorate degree.

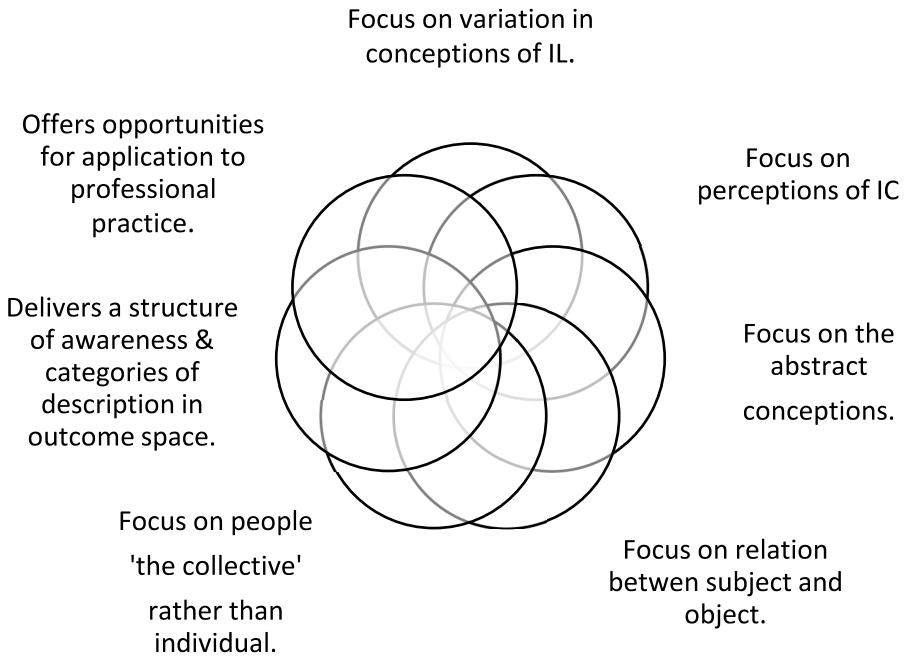


Figure 3.5 Summary of rationale for selection of phenomenographic approach

A particularly compelling metaphor that captures the essence of the rationale for selecting the phenomenographic approach as opposed to ethnography and phenomenology is offered by Bruce: (1999 p. 17) as follows:

> "... Whereas ethnography explores cultures, phenomenography explores conceptions, which are one element of a culture. The research results consequently differ; ethnography produces rich descriptions in which 'the whole forest' is described. Phenomenography, however, produces lean descriptions, depicting the distinctive elements of various forms of 'vegetation'. Essentially, ethnography tells a story while phenomenography develops a sort of classification. Phenomenography is also sometimes contrasted with phenomenology in that the former attends to variation and the latter attends to essences".

In the context of this study the researcher seeks to understand the classification of trees within their woodland setting and as such is a conceptions in context study. By sensitising the research process to both the perceptions of the IC as a stepping stone to discovering conceptions of IL the research embodies the underlying assumption of the relational nature of the ways phenomena are experienced. Åkerlind (2005 p. 210) quotes Marton in this respects as follows:

> "There is only one world: a really existing world, which is experienced and understood in different ways by different human beings. It is simultaneously objective and subjective…Phenomenography sees "experience ("conception", "understanding", "perception" "apprehension" etc.) as a relation between the subject and the object, as "something seen in some way by someone".

The concept of the IC as a "dynamic and often uncertain information ecosystem" as described in the new ACRL framework for IL (2016 p. 2) requires that the research approach also relates and is

sensitive to that ecosystem and to participants' perceptions of it. To conduct the study of variation in the conceptualisation of IL divorced from a sensitivity to understanding participants' perception of the IC indeed this "…uncertain information ecosystem" would close off a central dimension of understanding IL in context. In an ecosystem every element is entwined with the other and to focus on only one to the exclusion of the other would not generate a holistic understanding of the conceptualisation of IL. In this sense participants' perceptions' of the IC may reflect their experiences within it and towards it and it is to these nuances of understanding of the IC that the research seeks to uncover as the first step or basis for participants to share their understandings of their conceptions of IL.

The phenomenographic approach is the preferred approach for this study because it accommodates the realisation of the overall aim of this research to discover the qualitatively different ways seven stakeholder groups across an international middle school community conceptualise IL. Furthermore, as a research approach there is a strong evidential trail of the successful application of findings to inform professional practice and the development of ILE in diverse contexts. On a professional level the researcher is committed to evidenced based practice to inform policy development around ILE and this study is undertaken with a view to using the findings as a base to stimulate further dialogue amongst those charged with the responsibility to lead and manage the design of future focused IL learning strategies within and beyond their communities. In so doing the intent is to contribute to extending the territory of IL research into the realm of international private education

The discussion now moves to profile the research design including the data collection and analysis processes noting logistical, ethical and learning points of the research journey.

3.3 Evolution of research design

The overall aim of this research to identify, compare and contrast conceptions of IL from multiple stakeholder perspectives remained the constant focus underlying the research design throughout the process. However, when initially designing the original research proposal a secondary aim had been envisaged to determine the extent to which the dialogue process could potentially contribute to the creation of a holistic vision of IL within the PS as illustrated in the original flowchart of the background and proposed methodology of the research which is available at Appendix 3. The original proposal for the research process therefore was developed to accommodate both of these aims with the intent that the research be carried out in two stages as follows:

Stage 1 Hold homogenous stakeholder recorded focus group discussions (FGDs) to gather feedback on conceptions of IL. Analyse this data to create 7 sets of statements of conceptions about IL arising from each stakeholder group to bring forward to stage 2;
Stage 2 Hold heterogeneous recorded FGDs to share statements of conceptions of IL from stage 1 to determine if a singular profile of IL can be developed.

Following the completion of these two stages the intention was to compare the feedback from stage 1 with stage 2 and determine whether or not a singular conception of IL had emerged. The second intention was to analyse observations and notes made of the dialogue dynamic to address the original secondary aim as to whether the dialogue process had contributed to the development of a shared conceptualisation of IL.

However once Stage 1 of the process got underway it became clear that this phase needed to be extended to encompass additional homogenous FGDs to accommodate the level of interest within the PS and need for more extensive time for discussion. This necessitated scheduling a further teacher FGD, two separate longer one to one personal interviews with library personnel (librarian and library assistant), an additional session with IT personnel (IT teacher and IT lap top support person) and the inclusion of the administration which had not formed part of the original research design. This decision to arrange for the additional recorded focus group discussion (FGD) was felt to better accommodate the realisation of the overall aim of the research to gather an understanding of the conceptions of IL.

Moreover, the intention to gather an understanding of the perceptions of the IC as backdrop to sharing conceptions of IL yielded an unprecedented response that was far more extensive than originally anticipated. The revised research design as presented in Figure 3.6 reflects the aim and objectives of the research as presented in Section 3.2, and the data collection and analysis processes presented in Sections 3.4 and 3.5 respectively. The decision to extend stage 1 impacted the design of stage 2 and the final data analysis and reporting processes.

The time frame available to conduct the analysis of data from the homogenous discussion group was reduced. The option of extending the time frame to allow for further analysis wasn't viable in the context of the school calendar because the participants involved would be moving to another grade level and a different grade level teaching team so there would not be the opportunity to provide for the multi stakeholder dialogue which was central to the study's objectives. Therefore, in the interests of the overall aim and objectives of the study the researcher revised the design of stage 2 of the research process.

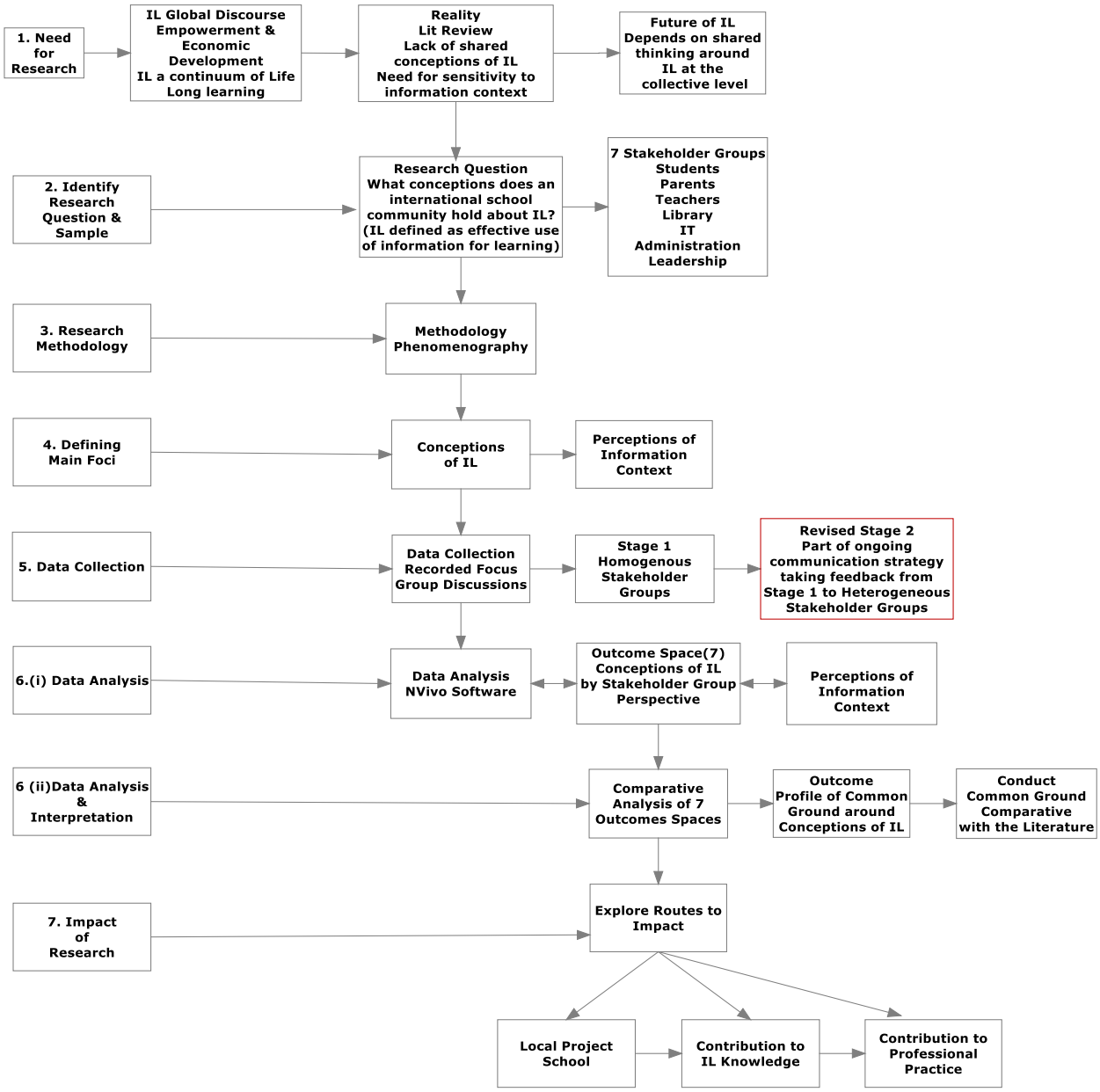


Figure 3.6 Revised research design

A revised element of the heterogeneous FGD was retained in the research with the purpose of communicating feedback from the homogenous FGDs. The original proposal to use a similar approach used by Andretta (2008) in her study of IL whereby she developed a series of posters containing statements of IL and asked participants to select the statement of IL that most aligned with their conception of IL, was retained but revised to contain quotations from stage 1 feedback, covering the four strands as detailed in Section 3.4.1 (Figure 3.8).

During the course of data transcription, the researcher selected quotations which were felt to be indicative of the range of ways participant groups perceived their IC and their ways of conceptualising IL. These posters were distributed during the heterogeneous FGDs to the participants based on their stakeholder reference group (see Appendix 4 for copy of the student poster). Name plates were placed on the table as was a copy of the poster relevant to that participant perspective. The researcher explained to the group that each participant would have the opportunity to share quotations from their stakeholder group concerning two of the key strands or if they wished to address another dimension. Using quotations served to keep the feedback from the focus groups authentic. Participants were also instructed to consider the guiding question as to what might be a community conception of IL as they listened to the feedback from across the stakeholder perspectives and this question was posed to each group towards the end of each heterogeneous discussion session.

The revision of the design resulted in Stage 2 becoming a key dimension of the continual cycle of communication about the purpose, process and progress of the research as discussed in Section 3.7 the research communication strategy. The original secondary aim of the research to address the extent to which the dialogue process could potentially contribute to the development of a shared conceptualisation of IL remained part of the data collection process whereby the researcher kept notes and observations of the discussion dialogue dynamics and explicitly invited feedback on this question in the heterogeneous discussion groups.

However, when it came to the final data analysis and writing up of the thesis the decision was taken in the interests of reporting on the central aim of the research to focus on the data set arising from the homogenous FGDs leaving the way open for a detailed and comprehensive analysis of this data and for the critical exploration of the routes to impact of the research findings thereby attending more directly to the specific criteria of the professional doctorate degree programme.

Revising the data collection process necessitated a revision of the data analysis process. The original intention was to compare feedback from stages 1 and 2 to determine the extent to which a singular conceptualisation of IL prevailed in the PS. However as indicated the actual data set arising from the homogenous FGDs was so expansive in terms of both the conceptions of IL and perceptions of the IC that it was decided that the overall aim of the study to discover variation in the conceptions of IL would be best achieved by:

1. Retaining the focus on analysing each stakeholder group data set from stage 1 to create the outcome space of conceptions of IL as reported in Chapter 4, but additionally,

2. To extend the analysis to conduct a comprehensive comparative analysis of these series of conceptions arising from stage 1 to determine the extent to which a common ground conceptualisation of IL was prevalent as reported in Chapter 5.

Combining these two data analyses processes as detailed in the research objectives in Section 3.2 delivered a more in-depth understanding of the variation in the ways IL was conceptualised to inform potential future multi stakeholder dialogue towards the development of IL strategy. Collectively the revisions to the data collection and analysis stages improved the overall research process and outcome in terms of meeting the criteria of a professional doctorate programme as follows:

1. At the PS level stakeholders had the opportunity for a more extended dialogue process thus meeting the need to discuss IL more extensively;
2. It enabled the generation of a more comprehensive data set upon which to discover variation in the conceptions of IL across a school community;
3. It provided a more relevant and responsive research approach to address the research question and analyse the feedback thereby contributing to the production of a focused and robust report of the central findings of the study to inform IL knowledge and practice; and
4. It provided an in-depth evidential base against which to explore routes to impact of the findings from the study.

3.3.1 Rationale for single school community focus

In order to optimise the potential to acquire a depth and breadth of the variation in the ways stakeholder groups conceptualised IL in an international education context it was decided that the study should be undertaken in a single international school. By focusing attention on one school community it would facilitate the creation of a collective and sustained focus on IL by the school community and leverage the personal and shared understandings prevailing amongst and across stakeholder groups. Furthermore, given the research is taking place in a school context where faculty, staff and students' time and resources are already stretched it was hugely important to ensure the researchers total focus, time and resources could be given to secure the trust and cooperation of the school community. Accordingly, the decision to design the study based on a single school focus represented another key element of the research design.

3.3.2 Project school selection

As the objective of the study from a professional point of view was to understand conceptions of IL held in an international school community context it was important to locate the research in a such a context, and which would accommodate the need for the researcher to be on site sufficiently to organise and facilitate multiple FGDs over a protracted time period. The discussions had to be held

during the school day using school facilities and the process of gathering such comprehensive data required being able to repeatedly return to the school for additional meetings to communicate the purpose and progress of the research with both the participants and the wider school community.

The PS chosen was located in close proximity to the researcher's home and as a Council for International Schools (CIS) and Middle States Association (MSA) accredited private international school community was the ideal school in which to conduct the study. The researcher's professional background of working in international school environments in other countries was a factor which helped during the initial approach to the school to conduct the study. Although the researcher's children had relocated to the school, one to the high school division and one to the middle school division (Grade 7), the researcher had no previous connection with the school and was new to the community and so the potential to occupy an objective empirical approach to the research was in no way comprised (Section 3.3.4 covers ethical issues and their management).

During the initial exploratory meeting with the PS Principal an overview of the purpose, process and potential benefit of the research to the PS and beyond was presented (see Appendix 5 for copy of the Minutes from the Exploratory Meeting). The Principal agreed to the research being conducted at the school on the basis that the community would benefit greatly from engaging with the dialogue process on an issue that is currently of concern to all stakeholders in the community. A formal proposal was sent to the school Director detailing the purpose, process and potential benefits to the school community, (Bogdan and Bilklen 1992) (see Appendix 6 for copy of Formal Proposal to PS). Final clarification of ethical, consent and permissions issues regarding the inclusion of children aged 10 and over, confidentiality and anonymity of the school was eventually established. The formal permission to conduct the research was granted and the PS Principal was identified as the key contact person in relation to co-ordination of the research and the Director for External Relations was the key contact person in regard to research protocol issues and communicating the research process (see Appendix 7 for copy of official permission from PS).

The middle school division was selected as the division within which the study would take place based on discussions with members of the PS leadership team. The grade 6 students and the grade 6 teaching team were identified by the leadership team as the grade level which the researcher should work with given the time and personnel demands of the research process and the exigencies of school life. Involving grade 6 students was also very much appropriate in the context of the study, involving young people born into the digital age and as such bringing an indigenous perspective to the study of IL. Moreover, the middle school division was in the process of implementing a one-to-one lap top programme so information technology and IL had therefore taken centre stage in terms

of the community's response and engagement with the question of how best to facilitate the effective seeking and use of information for learning in a rapidly changing IC.

3.3.3 The research sample

From the outset the PS stipulated that no attempt should be made to use contact names and addresses contained in the school Directory as a basis for the appeal for participants. The sample would be a self-selected or 'convenience' sample based on a series of appeals to the various stakeholder groups in the school community (Cresswell 2009). It was agreed with the PS leadership that the optimal approach in terms of defining and attracting a sample would be to narrow the appeal for faculty and student participation to the grade 6 level.

It was also agreed with the PS leadership that the appeal would be circulated to grade 6 parents and additionally to all middle school parents. Invitations to participate were circulated to the middle school library and IT staff and the leadership and administration teams. The request for participation was conducted by personally addressing the Parent Advisory Group, the Parent Teacher Association, and grade 6 Faculty during a scheduled faculty meeting, and grade 6 parents during an Information Evening for grade 6 parents. The student appeal was more difficult to orchestrate and was finally enabled by a member of the grade 6 team who agreed to the researcher conducting the appeal during the Science lesson block rotation (see Appendix 8 for copy of Appeal to Parent stakeholder groups).

A child friendly visual of the research process was prepared to use during the appeal to grade 6 students and a brightly covered permission slip returns box was left in the Science class room so students were aware where to return their parent and their own consent forms in advance of participating in the FGDs (see Appendix 9 for copy of visual used in the appeal to grade 6 students).

Five student appeals were made during the Science block rotation over a week at the PS and following the first appeal the researcher placed greater emphasis on the importance of the student's being able to help the research and the researcher appreciating and emphasising the value of the student's input. Thirty-five students originally signed up to participate in the study however the final number of actual student participants (17) was much less because only those students who had returned completed student consent and parent permission slips were allowed to participate. That said the representation from the student population was the highest from all stakeholder groups. A full report on the student appeal process is available in Appendix 10. The outcome of the combined personal and electronic based appeals was fifty-two members of the school community from nineteen different nationalities came forward to participate in the study as indicated in Figure 3.7.

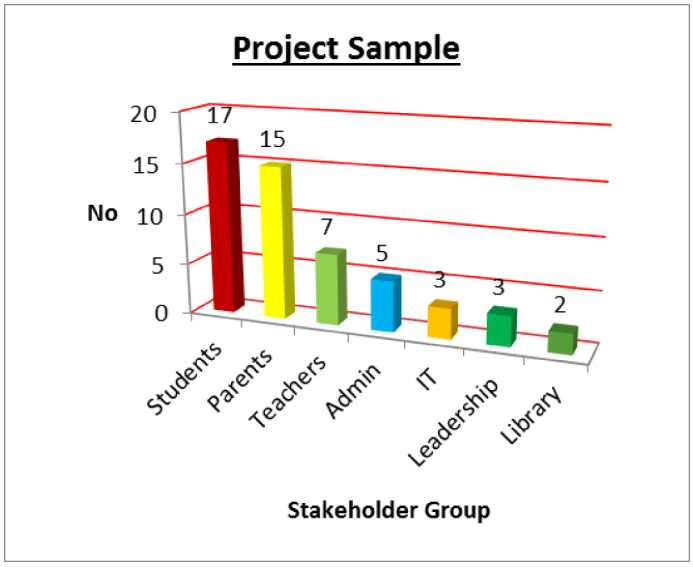


Figure 3.7 Project school (PS) sample

Almost half of the participants were American and the remaining participants came from Canada, the UK, Scotland, Germany, the Netherlands, Norway, Sweden, France, Spain, Italy, Belgium, Australia, Russia, South Africa, Singapore, Venezuela, Malaysia and Japan. The sample consisted of 17 students, 15 parents, 7 teachers, two IT teachers (one was involved with the pilot and the other in the main research project) and a member of the IT technical support personnel, 2 Library staff, 3 members of the leadership team including the PS Principal, and Curriculum director and IT director and five members of the administration team.

The literature on the process and practice of FGD highlights several issues that require close attention so as to maximise the chances of a successful outcome in terms of feedback relevant to the research aim and question. These include attending to the "individual differences of participants, interpersonal factors and environmental factors likely to affect a groups' behavioural dynamics" (Stewart, Shamdasini and Rook 2007 p. 35).

Mindful of this guidance the researcher set out to control for as many elements of these issues as possible within the boundaries of a self-selecting sample in the following ways:

- In terms of socioeconomic status and age there was no issue with the student sample as all students were sixth graders and so therefore were similar to one another in age and furthermore given they were attending private fee paying school were considered to be of similar socioeconomic status;
- The gender mix could not be controlled for as the sample was self-selected and in general there was representation of male and female students in the groups but not in equal numbers with more girls than boys taking part. Regarding the adult stakeholder groups there

was a considerable range of ages and nationalities and to a degree some differences in socioeconomic status among them. Again there were significantly more females that males taking part;

- The majority of child and adult participants came from different countries so they shared the similar experience of living in countries other than the country of their birth. The child participants for the most part would have known one another as students of the same grade level but not necessarily have been in the same advisory group. The faculty and staff members would also have known one another to varying degrees of familiarity and whilst some of the parent participants knew one another not all parents knew each other. Whilst English was not the first language for some of the participants it is the language of instruction at the school. To ensure participants understood the nature of the study and the ideas being discussed the researcher used different visual aids to ensure everyone could understand the nature of the research aim, objectives and discussion purpose and process. This is explained more fully in Sections 3.4.2.
- Controlling for environmental factors such as room size, seating, lighting, refreshments was something the researcher could influence to some extent but again the reality of finding appropriate rooms on the school campus within school hours meant the decision as to the venue was very often limited. The student and faculty FGDs were held in the grade 6 classrooms a place of familiarity for both students and teachers which was a positive factor in terms of ease of access and the children and teachers being in a familiar setting. The parent FGDs were held in a building slightly removed from the main school building but which was a community resource location and was a familiar setting for parents.
- In terms of the presence of technology in the form of small recording devices to record the discussions their presence did not appear to intrude in any way in terms of the flow and candour of discussions.
- The researcher provided home cooked baking and refreshments which participants enjoyed and appreciated and it seemed to contribute to the comfort of participants in the environment.

Being aware of these dimensions of influence that impact both participants' sense of comfort in a group dynamic and attending to those within the researcher's control was felt to really help in the creation of focused discussions where participants felt safe to share and listen and did so with respect and honesty to one another and to the research objectives. The depth and richness of the data collected became even more apparent when transcribing the recordings, analysing the data and building meaning from the feedback.

3.3.4 Ethical challenges and management

A review of the research process highlights the centrality of research ethics and governance in research practice, (Stewart, Shamdasini and Rook 2007; Silverman 2010; Krueger 1998; Creswell 2009; Sarandakos 2005). A series of key issues were identified and addressed in this regard. Firstly, at the local PS level there was the need to secure relevant permission to conduct the research including clarification of anonymity and confidentiality issues. The process of securing permission to conduct the research was lengthy because the research involved children and required an extensive commitment by PS staff, faculty, students and parents (see Appendix 11 for Table of review of ethical issues, procedures and processes). It was therefore very important that the researcher develop a concise but compelling, comprehensive proposal to the PS Director including coverage of anonymity and confidentiality process. Meetings were held with the PS Principal to secure a sound understanding of the expectations in this regard and facilitated the researcher to prepare the proposal the PS Director. Explicit statements regarding the anonymity of participants and confidentiality of content were included in the proposal to the PS Director which is available at Appendix 6.

Secondly, the development of agreed informed consent documentation for participants and parent permission and child informed consent for child participants was an important procedural step to gaining the trust and cooperation of the PS. The researcher held meetings with the PS Principal and Director for External Relations separately over a period of time to agree the format and wording of the informed consent forms. Students were required to sign a consent form but also had to have their parents sign a permission slip otherwise students could not participate. All other stakeholder participants had to sign their informed consent forms prior to the FGDs (see Appendix 12 for Parent Permission and Child Informed Consent Slip, Appendix 13 Child Consent Slip and Appendix 14 for a copy of the Adult Participant Informed Consent Form).

Thirdly clarification regarding both the National host country law in respect of involving young children aged ten and over alongside international school protocols in respect of child participants being involved in the study was sought from the PS Director of External Relations. The process of developing appropriately worded consent forms took some time and was aided by the PS Principal, Director of External Relations and the researcher's Principal supervisor who provided detailed guidance of the content and wording of the forms which were approved by them before use. A key proviso stipulated by the researcher and agreed with the PS was the presence of a member of staff during the four student FGDs. The grade 6 team leader and teachers generously agreed to be shoulder this responsibility ensuring a member of staff was present throughout each of the four student focus group sessions. This was agreed in advance of these sessions. The researcher

communicated fully the details surrounding the management of the ethical issues to the RGU External Ethics Committee ensuring ethical compliance at all levels. Finally, in line with the PS and RGU green agenda priority was given to using face-to-face and electronic communication and the researcher only made hard copies of the consent forms for all participants. The Chapter now moves to present the data collection and analysis processes in detail.

3.4 Data collection

It has been noted in Chapter 1 Section 1.4 how the researcher's development of subject knowledge in the management sciences has influenced her approach to the research process from the design to analysis phases. The concepts of organisational learning, leadership and change management, communities of practice and systemic theory influenced the approach taken in selecting methods for data collection to produce an evidence base of value to professionals in leadership positions.

Evidenced based practice is central to change management and it was important to identify a data collection method that would discover the variation in ways IL was conceptualised within a school community in a way that would support evidence-based decision-making. In this sense the concept of dialogue as presented by systemic thinker Senge (2000) pointed to the suitability of using FGD as the data collection method. According to Senge the dialogue process offers a pathway to generating a collective awareness and sensitivity to any given concern or issue being faced by an organisation and in this study the focus is on IL and how it is conceptualised in a school community context (Senge et al. 2000; Senge 1992). Through FGD stakeholders have the opportunity to come together and in thinking and talking about the ways they perceive their IC the pathway is opened up for the researcher to probe that feedback and offer the participants the opportunity to voice and share their understandings of IL.

Traditionally phenomenographic research has adopted a personal interview approach to facilitate such dialogue and reflection. However, in this study the principles of phenomenography were adapted to conduct FGDs in order to generate a deeper understanding of the ways stakeholder groups together conceptualised IL. A secondary reason for such an approach was to create the opportunity for stakeholders within their homogenous groups to both draw from their personal experiences of information use and, through the process of sharing, talking and thinking together, create a shared awareness of the variations in the ways IL was being thought about and experienced. This combination of personal and shared experiences had the potential to deliver a comprehensive understanding of the variation in conceptions of IL and indirectly expose participants to the ideas of one another. Williams and Wavell (2006b p. 9) in their phenomenographic study of teachers'

conceptions of students' IL similarly adopted a FGD "approach to encourage practitioner-practitioner discussion rather than practitioner-researcher dialogue".

Smith (2001 p. 43) suggests in his critical review of Senge theory and practice of the learning organisation that the "capacity to hold a shared picture of the future we seek to create" is one idea about leadership that has inspired organisations for thousands of years. Senge et al (2000) identify a process designed to develop a shared vision for creating a learning school based on learning organisation theory. The first purpose of the process is for stakeholders to voice their anxieties and concerns over current problems or issues. Secondly the voicing of issues and anxieties must be generative. People must be able to talk about their hopes and dreams for their children and the school community. The third purpose of the shared vision process in action where people must have inherent satisfaction recreating the school together, (Senge et al. 2000). Admittedly this shared vision process outlined by Senge et al (2000) relates to creating Schools That Learn, but the thinking has helped the researcher sensitise the dialogue process to surface variation in stakeholder groups thinking about IL inviting them to consider IL from their own stakeholder group perspective and equally to consider how they conceptualise IL from a school community focus.

The theory behind systemic thinking which holds the baseline assumption that an organisation operates as a complex system of interaction between its members is also a powerful starting point to set out on the research investigation. It potentially offered a critical perspective to approach the research endeavour in a way that was sensitive to the myriad of systems of thought, interaction and ways of seeing phenomena that prevail in an organisation. Moreover "The concept of 'metanoia' meaning a shift of mind which facilitates members of an organisation to re-perceiving their world and their relationship to it" put forward by Senge and discussed by Smith (2001 p. 43) is of relevance to phenomenographic based research which seeks to discover the variation in the ways a phenomenon is understood and conceptualised. The real value of making this discovery is that it offers a baseline for practitioners to juxtapose their own conceptions of, in this case, IL and to ask the question 'where would I place my ways of understanding IL compared to the conceptions of IL revealed by both previous phenomenographic studies of IL and the findings from this study?' Furthermore, it is possible to compare the conceptions of IL arising from such studies with the ways frameworks and standards of IL to understand the degree of alignment to inform ILE.

In this sense the data collection method of recorded FGDs enabled the discovery of variation in conceptions of IL across multiple stakeholder groups in the PS community. The origins and development of focus groups has been documented elsewhere (Stewart, Shamdasini and Rook 2007)

but it is important to highlight that as a data collection method "group depth interviews" or focus groups have a solid history of application for over a century. Stewart et al (2007 p. 2) note that:

> "…focus groups emerged in behavioural sciences research as a distinctive member of the qualitative research family…and that for over eighty year's researchers in numerous behavioural sciences disciplines have relied on focus groups as a source of primary data".

Group depth interviews or focus groups suggest that there is the presence of a group and drawing on Goldman's work Stewart et al (2007 p. 37) defined a group in this context as:

> "… a number of interacting individuals having a community of interest"; depth involves seeking meaning that is more profound than is usually present at the level of interpersonal relationships and interview implies the presence of a moderator who uses the group as a device for eliciting information. The term focus in the full title simply implies that the interview is limited to a small number of issues".

Applying this definition to the research project on hand each of the homogenous focus groups in this study shared a similar characteristic of being part of the same school community and as a self-selected convenience sample held a common interest to participate in the research about IL. The discussions involved participants' engagement in considering their IC and conceptions of IL in depth and the discussion was limited to a small number of issues in that the intent was to elicit feedback as to perceptions of the IC, conceptions of IL drawing from participants' information experiences.

3.4.1 Pilot study

The profile of the PS as detailed in Section 3.1 reveals the rich cultural, linguistic and academic experience of the school community. Given the aim of the study was to discover the variation in the conceptions of IL held across multiple stakeholder groups it was important to give critical consideration regarding how best to design the interview guide for the study to really capture not only the diversity of conceptions but also the international diversity present in the context. The challenge was to stimulate the kind of discussion that led stakeholder groups to reflect on both the perceptions of the IC and conceptions of IL. At the point of developing the interview guides for the Pilot the researcher identified three thematic strands to act as a scaffold for the FGDs which were:

1. Transition in conceptualisation of IL past to present to future
2. Variation in conceptualisation of IL across stakeholder groups
3. Relationship between conceptions of IL and Curriculum practice (learning).

The logistics of obtaining groups of people representing all stakeholder levels was challenging and the researcher necessarily drew on contacts within the library and information profession to test the interview guides. The Pilot involved two tests of the parent interview guide with five PS parents (one as a one to one interview and the second with a group of four PS parents, two PS grade 7 teachers,

an IT teacher from the PS, an international middle school librarian based in another international school, an IT consultant based in the USA, (recorded telephone interviews were used in these two scenarios), the PS Principal and given the sensitivity of approaching students – it was agreed at the suggestion of the PS Principal the researcher tested the Student guide by using the first student focus group as a test of the process. At the request of the PS Principal all communications about the research process including the student interview guides were submitted for preview in advance of circulation or use in the research process (see Appendix 15 for example of Pilot Interview Guide).

At the end of each Pilot session the researcher invited feedback from the participants as to how they felt the process went and how they felt the researcher could improve the process in the light of the discussion experience and the aims of the research. Whilst participants felt prompts were sufficient and relevant a number of suggestions were offered that could enhance the process to include:

1. The need to clarify at the outset the kinds of areas to be addressed and these should be no more than three or four aspects;
2. The need to place prompts on a visual and or place a visual on the table or in the room for participants to see what the points of focus of the research were;
3. To ensure each participant has an opportunity to speak limit to monitor the time each one can speak, thank the person who has spoken and invite others to contribute;
4. Have a timer available to keep track of the time as the discussion progresses.

Drawing from these suggestions and the researchers own critical reflection on the experience it was decided to change the approach to enable participants to draw more specifically on their information use experiences and to ask more directly about their perceptions of the IC as a basis to talk about their conceptions of IL. The original three themes used to guide the Pilot were revised to the following four key prompts as areas for the discussion:

1. Exploration of stakeholders' perceptions of their IC
2. Exploration of stakeholders' ways of conceptualising IL against the backdrop of IC
3. Exploration of stakeholders' information use for learning in practice
4. Exploration of stakeholders' ideas regarding the future IC and the conceptions of IL in regard to the ways they perceive the IC.

In terms of a phenomenographic approach which supports the discovery of variation in the ways participants experience and conceive phenomena these four strands are seen as related to each other as presented in Figure 3.8 and the FGD provided the opportunity for stakeholders to come together and focus their thoughts on these dimensions of IL.

Revising the prompts to these four areas helped to maintain a focus on the research aim and to enable a flow of thoughts in the discussion allowing the direction of discussion to go with the participants' ways of thinking and sharing thereby enabling a full and rich set of data to emerge.

During the pilot the term IL was explained to participants as being about the effective use of information for learning. The rationale for offering a basic definition of IL was because of the experience of other researchers studying conceptions of IL where it was found helpful to offer clarification of the concept as it may not always be a commonly used term by different stakeholder groups (Gross and Latham 2011; Andretta, Pope and Walton 2008).

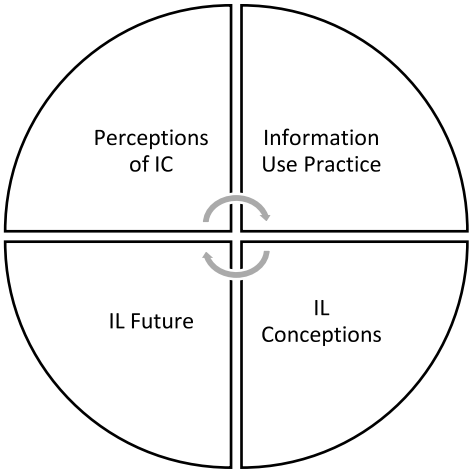


Figure 3.8 Four strands of focus for interview guide

With these four areas of focus new mind map interview guides were developed to replace the original guides. These mind maps focused in on the four themes of perceptions of IC, IL conceptions, information use experiences and a future focus of the IC and IL. The mind maps were introduced to the groups so they could have a visual of the kinds of avenues the dialogue might explore. In practice in many cases only a couple of the dimensions noted on the mind map were explored as the researcher was committed to ensuring all prompts and probing questions remained at all times as open ended as possible whilst still staying on track to discover stakeholders' perceptions of the IC and conceptions of IL.

The dimensions of such questions or prompts which stakeholders "choose to answer is an important source of data for the researcher because they reveal an aspect of the individual's relevance structure" (Marton 2005 p. 153). Accordingly, care was taken at all times to facilitate the discussion process in a manner that was open to the direction which participants sought to focus on but simultaneously maintaining a focus on the aim of the research. In practice once participants began to

share their ideas about the IC they did so by relating to their information use practice and experiences whether for work based learning or school related learning and also in regard to information use for learning at home. Moreover, as the FGD process progressed from the initial sessions onto the seventeenth session the researcher gained valuable practical experience and insight into ensuring the discussions were both free flowing and focused on the four key themes (see Appendix 16 for copy of Mind Map Guide).

Additional techniques used by the researcher to encourage candid dialogue in both student and adult FGDs are detailed in the following section on the FGD stage of the research process.

3.4.2 Recorded focus group discussion (FGD)

Finalising the schedule for recorded FGDs was challenging given the diversity of stakeholder groups and the need to complete the discussions within school hours. Additionally, ensuring a staff member was present for all student discussion groups required careful planning alongside securing parental and student consent for the students to participate. The consistent support and engagement of the grade 6 team and their leader alongside the solid support from the school Principal facilitated the organisation of the schedule and its smooth implementation during the period that the discussion groups were being held. The discussion sessions were held at the school during the lunch time period with the researcher providing lunch for all participants. Originally one lunch time period was assigned per discussion group but following the first session with the teachers it was clear that one session was too short a time for participants to voice their ideas and share their understanding of IL in all its complexity. Consequently, the discussion time for teachers was extended to three lunch time sessions, the IT personnel was extended over two lunch time periods adding a further four discussion sessions to the original schedule. Due to scheduling issues the middle school librarian and the library assistant were interviewed separately with the interview period with the librarian lasting ninety minutes and the library assistant just under an hour. The need for dialogue around IL was evident across the range of stakeholder groups.

This study was challenging in that there were seven stakeholder groups to gather understanding from and also there was such a high level of response from students and parents that multiple FGDs were held to ensure small group discussions where everyone had the opportunity to participate within the limited time frame allocated.

The researcher sought to incorporate approaches that would stimulate participants to draw on their imagination, memory, language and experience to help bring forth a comprehensive and reflective account of participants' perceptions of their IC and conception of IL from their own stakeholder perspective and also from a school community perspective. This was achieved in a number of ways:

Introduction to focus groups. Care was taken to emphasise at the outset of every FGD that the research project was exploratory in nature and not evaluative, clearly communicating there were no right or wrong answers within the context of the discussion. Furthermore, participants were reminded of the purpose of the research and its ultimate intention to be able to use the findings to influence the ways IL is thought about and to inform approaches to teaching and learning IL within the community.

Use of scenarios. Regarding the student FGDs the researcher began by inviting them to imagine a scenario where their school Principal had selected them to act as information coaches to the grade 5 students (i.e. the grade level below them) because they had great experience of the IC and could offer their insights about how to use it effectively for learning. A second reason for taking this approach to having the children talk about the phenomenon of IL itself rather the term IL which was based upon the advice the researcher received from Ference Marton during the course of an email communication to him seeking guidance regarding phenomenographic research at the outset of the study. The researcher prepared in advance a name tag for each student indicating them as coach---and their own name. This role based approach proved so effective in the discussion scenario whereby the students immediately began relating to their own information use experiences addressing one another as coach A or coach B which was gave them a feeling of the value of their experience and contribution to the study.

In adult FGDs participants were asked from the outset to share and imagine the scenario of trying to describe the information landscape to another colleague or parent new to the school. The rationale for adopting the scenario approach is grounded in concepts of harvesting the ideas and thoughts about IL prevalent within the participant's experience which also served to empower participants to reflect on their own wealth of experience and understanding of the effective use of information for learning.

Use of visuals. A jig saw puzzle was developed for use in student FGDs covering the big ideas that might arise in the discussion such as IC, finding information and sources (see Appendix 17). These pieces were left aside on a chair out of immediate view and if for example students mentioned finding information or sources then the researcher placed that piece on the table so only the ideas surfacing from the group were presented. This way of approaching things in the FGDs helped to get across the idea to the students that together they were helping to build a picture of student's understandings of using information for learning and their ways of perceiving the IC. This also helped address language challenges

and was helpful for the students to make their thinking visual is a way especially as the focus of the discussion involved quite abstract ideas. A second device used was a mind map interview guide which the researcher used to guide the discussion initially and once the discussion was underway it was possible to facilitate the discussion so that the ideas and experiences of participants came to the fore and if the discussion was going off target to be able to bring the focus in again.

Regarding the adult stakeholder groups, the researcher introduced at the start of the discussion two different kaleidoscopes which again the researcher kept beside her on the chair until the discussion process began. The idea here was to establish for participants that they were required to reflect and share about their understanding of IL from their individual perspective and stakeholder reference group but also to try and connect a community view. One kaleidoscope had a gadget to twist to bring elements into focus. The participant could bring into focus the various colored elements discerning a particular pattern by their action. This was explained by the researcher in terms of imagining all the elements at the bottom of the kaleidoscope could be seen as all the elements of a community understanding of the information world and ideas about IL. The second kaleidoscope was different in that the patterns the viewer came to see by looking through it depended on the individual themselves turning to focus on different aspects of room and so this perspective represented their own individual view of the IC and IL.

Handling the kaleidoscopes and engaging with this activity proved a very valuable ice breaker and generated a sharing reflective dynamic to commence the dialogue process. The introduction of the kaleidoscopes ignited the curiosity of participants helping to create a comfortable ambiance for dialogue among the participants. Adjusting and sensitising the approach to facilitating the dialogue process in these ways served to add to the candour and level of sharing in the dialogue process delivering extensive reflective feedback upon which to profile the school community's understanding of the effective use of information for learning (IL).

Having the opportunity to observe grade 6 library lessons as mentioned in Section 3.1.4 proved very helpful when it came to actually designing and facilitating the FGDs and laterally when conducting data analysis. For example, in one of the teacher librarian collaborative sessions the librarian had set up several learning work stations so students could experience information gathering and sharing in an interactive style learning experience. The subject was social studies and the topic was ancient China and students were able to go in a 'round robin' style experience to each learning station and

engage with information in a variety of ways. One workstation had a lap top set up with web links to relevant resources, another table had age and reader level appropriate books, another had bags with spices to smell and another bag had materials to touch. The librarian also used the Smart board to help students track and record points of learning so students could record their progress relative to tasks. The atmosphere of the learning was very dynamic, child friendly, interactive and reflective and students were on task engaged in the whole experience which the librarian and teacher were able mediate in ways appropriate to the student's learning style and needs. As a point of noting stages in the IL learning process students would also be requested to retain a note card for reflecting on their learning which the librarian could also refer to systematically check in on the student's progress. Having this prior knowledge of the approach to teaching IL and the content of the PS curriculum facilitated the researcher to probe student or other stakeholder responses with reference to actual information use experiences in the PS.

3.5 Data analysis

The aim of the study was to identify the varying conceptions of IL across seven stakeholder groups in a school community. As such the intent was to discover the conceptions of IL held at each stakeholder level and laterally to compare the categories of description emerging to understand the extent of common ground that prevailed. The data analysis process was developed to create seven outcome spaces describing categories of description of IL arising from each stakeholder group perspective. Perceptions of the IC were found to have similar key dimensions across all seven stakeholder groups as will be presented in Chapter 4 however the relationship between the perception of IC and conception of IL varies across categories of description of IL arising from the stakeholder groups which is explored in detail in Chapters 4 and 5.

There is no singular exact prescribed methodology for data analysis in regard to phenomenographic research (Yates, Partridge and Bruce 2012; Marton 1986). That said different data analysis methods have been developed in the context of diverse phenomenographic studies which are described by Yates Partridge and Bruce (Yates, Partridge and Bruce 2012) as profiling both linear and cyclical stages for the data analysis process. In this regard Yates Partridge and Bruce (2012) identify Åkerlind's three step stage method, Marton's seven step stage method and Barnard and Gerber's seven stage cycle of analysis noting how Barnard and Gerber described "the technique of analysis as being an iterative rather than sequential process that continues until the analysis is complete" (Yates Partridge and Bruce 2012 pp. 104-105).

As this phenomenographic study used FGDs as opposed to single individual interviews the data analysis method has been developed in a bespoke fashion to retain a sensitivity to the data and the

overall research aim and objectives. In this sense the data analysis process was ongoing from the moment researcher turned on the recorder and the FGDs got underway. Following every recording the researcher played it back within a twenty-four-hour period and noted key themes and ideas that appeared to come to the fore through this first initial listening back. These key themes and ideas were noted and shared in an email with the stakeholder group. Given these emails were written contemporaneously with the FGD events they proved to be a valuable focal point when reflecting laterally on codes, nodes, themes and patterns emerging through the cyclical analysis process. Therefore, in a sense data analysis began in a rudimentary way within the data collection phase.

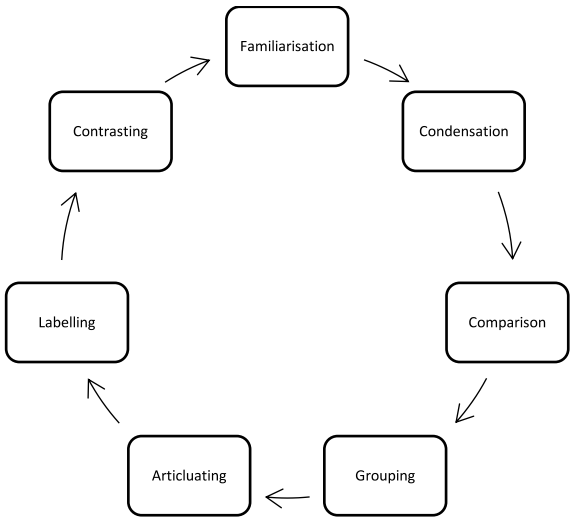


Figure 3.9 Visual of Barnard and Gerber's seven stage cycle of analysis as described in Yates, Partridge and Bruce 2012 pp.104-105.

Data analysis for this research manifested itself very much as a cyclical process which broadly followed Barnard and Gerber's model as outlined by Yates, Partridge and Bruce (2012 pp. 104-105) with the analysis process very much cycling back and forth between these stages until the final categories of description were reached as illustrated in Figure 3.9.

A template was created to copy the content of the transcription which included a column to begin the first preliminary round of coding. However, it became clear that given the extensive and complex data set that a qualitative software package would be required to manage the data analysis in a more systematic and effective manner. The decision was made to use NVivo, a well-established and flexible package for qualitative data analysis. Pending completion of NVivo training the researcher moved ahead with data transcription and the preliminary coding process.

3.5.1 Profile of data for analysis

To surface how the phenomenon of IL was understood a form of eclectic, elemental and affective coding based on Gibbs reflective cycle (MacDuff 2010) for textual analysis was invoked by the

researcher. This adaptation of Gibbs reflective cycle for textual analysis was presented by MacDuff (2010) during the RGU research methods certificate programme. The researcher isolated three levels of focus from this cycle for data coding and subsequent analysis as follows:

1. Descriptions: Which parts of the text are description of context, conception or experience?
2. Emotion: Which parts manifest feelings towards or about the IC and information use experience?
3. Experience: Which parts of the text evaluate experience whereby participants share how the experience was such as positive, negative, or frustrating and causing them to be cautious or excited for example?

The coding method involved primarily in vivo coding whereby the researcher selected complete statements from the transcript that reflected the various dimensions in perceptions of the IC and conceptions discussed in the context of information use for learning. Using the three levels of analysis - descriptions, emotion and experience - it was possible to begin the preliminary analysis of the meanings of these statements which in turn led to isolating various codes to capture these meanings and ultimately to surfacing variation in perceptions of the IC and conceptions of IL. In the process of coding the researcher also coded instances of metaphor to a separate code.

As Bruce (1999 p. 38) points out, researchers using this approach “ask what and how questions such as what meanings are being experienced and how is that meaning constituted?” These two questions became the essential questions guiding data coding and analysis process as it progressed to the development of the outcome space in respect of each of the seven stakeholder groups. In practice this involved a constant interpretive and analytical process to discern variation and explain the nature of the variation between categories of description in each outcome space.

Figure 3.10 provides an overview of the analysis framework which acted as constant reminder of the overall aim, research question and objectives ensuring the coding and analysis process was at all times aligned with the original intent of the study.

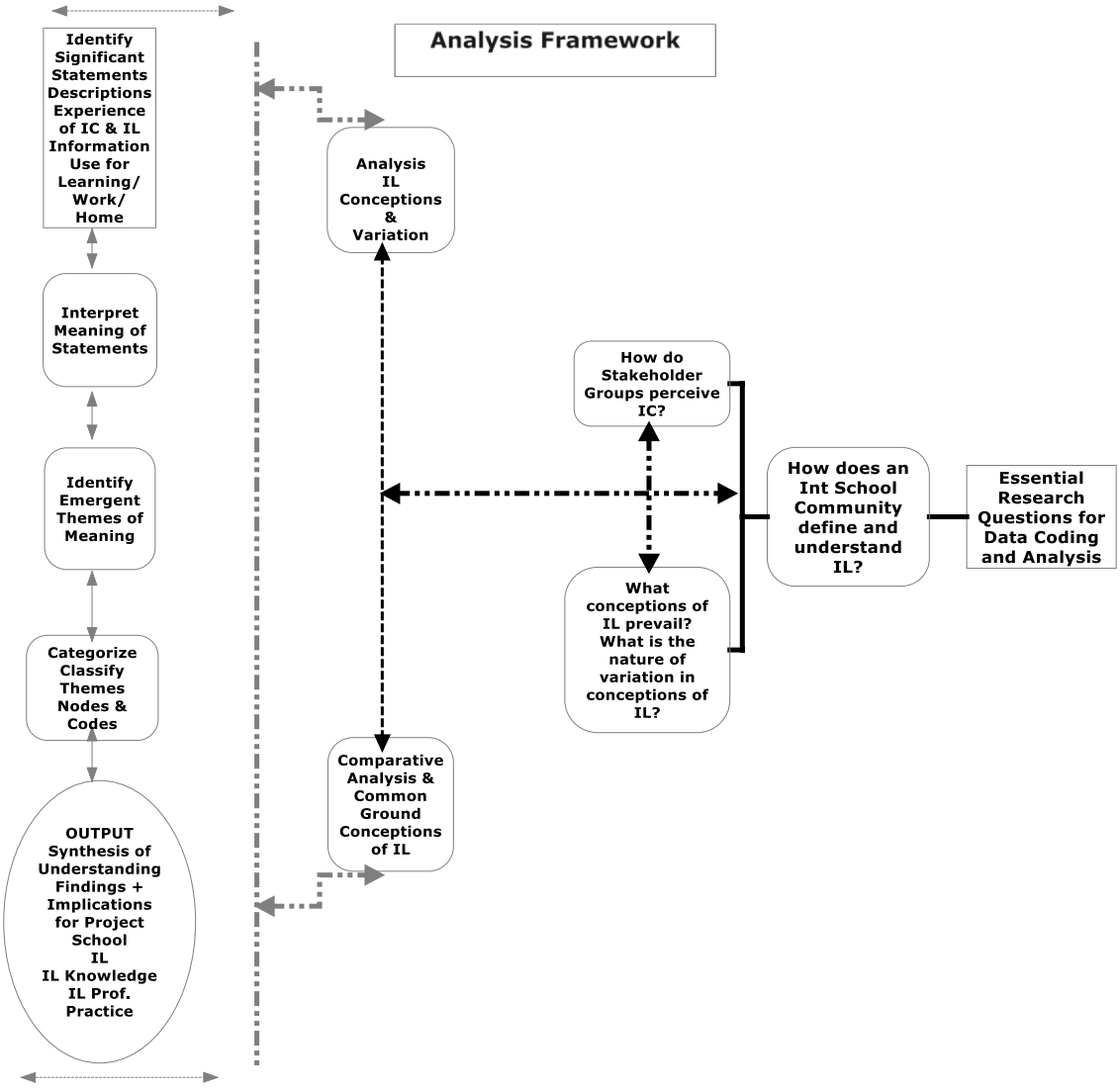


Figure 3.10 Overview of analysis framework

3.5.2 Data analysis process

A detailed and comprehensive descriptive account of the data analysis process from the preliminary coding phase through to the final creation of the outcome space, is presented here using one stakeholder group as an exemplar of the process.

The actual analysis process was cyclical and interpretative and in order to ensure a rigorous and robust data analysis process the same approach as presented in Figure 3.11 was utilised to analyse feedback from each of the seven stakeholder group perspectives. The data analysis from the student stakeholder group is singled out for attention here as it was considered a useful example to profile given the particular lack of coverage to the middle school student voice on conceptions of IL in the literature. Also from a future research practice viewpoint it may be of particular interest to

phenomenographic researchers to have an account of the process relative to the student feedback. Four student stakeholder FGDs were held during the students' lunch time with two groups of five students, one group of four and a small group of two (one student was absent due to a dental appointment).

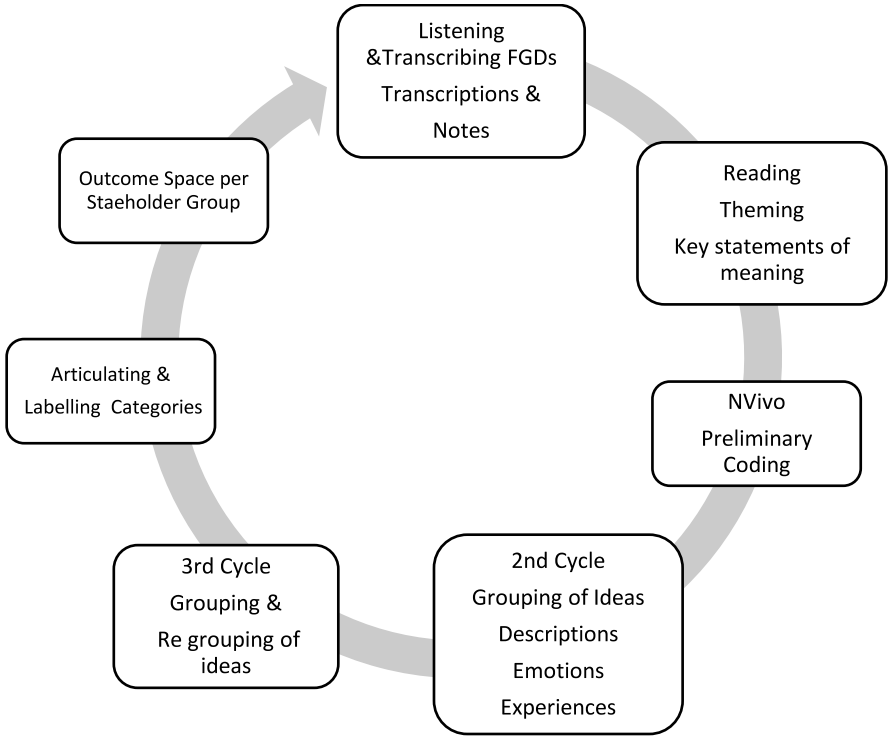


Figure 3.11 Data analysis process

A transcript was completed for each of the four recorded FGDs and each one was analysed separately first before building a synthesis of understandings arising from the feedback from the student stakeholder perspective. The initial coding began immediately during the transcription phase whereby the researcher made some notes regarding themes and ideas coming through the feedback both using a hard back notebook and on the transcripts. However once the use of NVivo was introduced a diary was kept of reflections in the research journal facility of NVivo software. This enabled the researcher to capture her thoughts and reflections as the coding and analysis process proceeded.

3.5.3 Preliminary and early stage coding

An important first step in the familiarisation with the data process is to begin by listening again to the recordings (Forster 2013) In practice the researcher began by listening again to each recording at least twice before making any notes. Then the next step was to read through and enter some preliminary notes in the template column in regard to key words, utterances, statements that were made in regard to IC, IL concept, practice and vision as illustrated in Figure 3.12 which is an excerpt

from the student FGD1 transcript. This phase happened in advance of the researcher obtaining the NVivo software and completion of training.

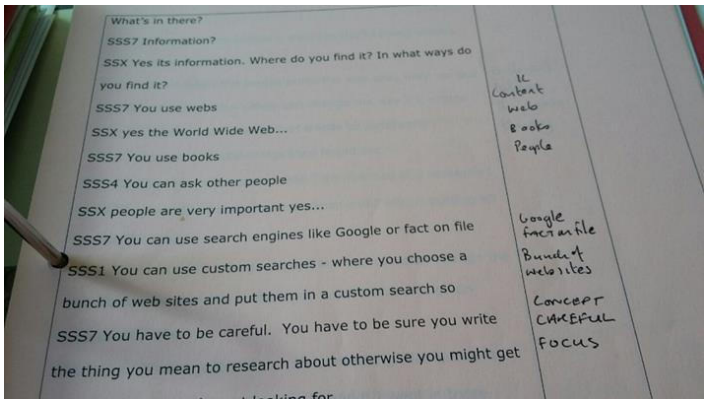


Figure 3.12 Extract from transcript coding student FGD1

In this way slowly and paying close attention to what was said, what was unsaid, how it was said, if the idea was developed for a particular length of time during the discussion, and how many of the participants developed the point or idea, it was possible to begin to get a sense of the ways student participants were thinking and feeling about their IC and information use experience. For example, the prompt which encouraged participants to describe their information world was something all participants found easy to share about making it possible to establish a way for participants to draw on their personal and shared experiences concerning the IC.

At the end of reading and note making the researcher wrote down some summary points that were coming to the fore of the discussion thereby beginning the process of discovery, interpretation and construction of the understanding of the ways students perceived their IC and the kinds of ideas they had about IL as the effective use of information for learning as shown in Figure 3.13 These early reading and note making exercises marked the beginning of creating a rudimentary profile of the conceptualisation of IL by the student stakeholder group.

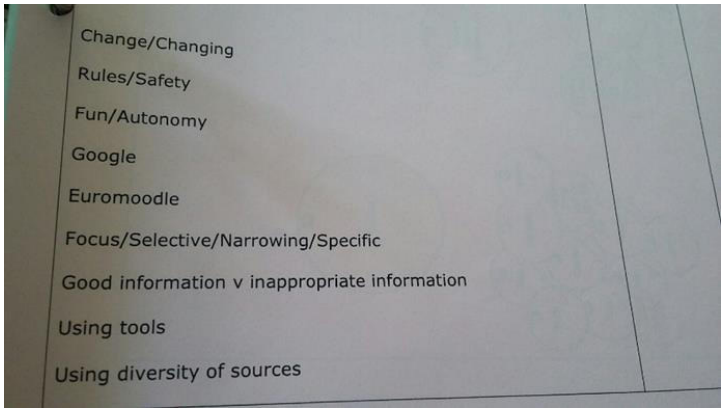


Figure 3.13 Extract from transcript student FGD: Summary notes

The process was always purposefully focused on the three dimensions of text analysis scanning to identify which parts of the text were descriptive of the IC, of conceptions of IL, which parts alluded to feelings towards the IC, towards the information experience and which parts were describing experiences from an evaluative perspective. During this phase of becoming familiar with the data set quotes were selected from each transcript that were felt to be representative of the participants' descriptions of the IC, their experiences of information use in this context and their feeling towards the context.

These were copied and pasted directly from the transcriptions into a poster template created to capture information landscape, conceptions of IL, learning and the future. These posters were used as described in Section 3.3 to share feedback with the PS community within the heterogeneous stakeholder groups. This process of preparing the feedback to the participants became part of forming the researcher's sense of the kinds of ideas and thoughts that were emerging but clearly were just intended very much as a snap shot of the extensive feedback requiring rigorous systematic analysis to surface variation in the way IL was conceptualised by the PS community.

One of the earliest records of ideas and themes emerging from this preliminary coding phase is presented in Table 3.3 containing the four headers in respect of each of the main strands of the research focus.

Table 3.3 Early Coding and analysis of Student Feedback

1. Information Landscape	2. IL Experience/Practice	3. IL Concept	4. IL Future/Vision
Web/Books/ people/Google/Fact on File/Moodle/First Class Power School/Firefox/Care/Truth/False Different Opinions/Old Info -new info Changing/People use source – more hits/Non stop Reliability/Safety/Viruses/Advertising – pop ups/Add to wikis/Rights to web - publish/Caution about putting stuff on web/Permanence/The web – has in appropriate weird stuff.../All mixed up internet/Internet world – anyone can post anything	Finding info - bunch of websites Key in words/Linking to other sites Finding images/Must focus key word searches Must narrow search words "internet will get confused.../Simple searches/Use minimum of words/Scan description of links/Homework online Revision /School Library has Moodle Section and reliable websites/Being all over the internet – it was all mixed up... I couldn't understand it (making sense -)	Finding/Seeking-Web knows/web doesn't know.../Must know what you are looking for Knowing what to look for/Knowing how to look for it/Knowing the internet... Understand expectations you have of web – it may not give you what you want Never know what might turn up Communicating info/homework Using First class and/Using Moodle safe – reliable search engines/Brain pop Britannica Encyclopaedia reliable /Narrowing search	Brain Pop/Mini Videos/Mini Quizzes for Understanding/Learning fun Funny videos that you can really learn from /Reliability/Safety
Emerging Codes Multi- faceted/Diversity/Reliability/Truth of information/False info/inappropriate info Diversity of opinions Change	**Emerging Codes** Finding/Authenticating Fact from Opinion-Know that v knowing how Focusing Search-Keyword searches Understanding the context/Understanding what you need to find out – understanding the Question/Understanding your expectations of the web/Making sense of information Communicating information/Managing information – power school first class/ Moodle folders/Creating info – putting on web/Critical use of web	**Emerging Codes** Frustration/Clarification of information needs in advance/Paradox Expectation going to web – answer is out there Yet Web is viewed with caution and a need for safety – finding reliable sources – internet doesn't know what you want – you must know what to look for	**Emerging Codes** Fun is key to the children's positive learning experience Challenge to help students learn how to critically use the web versus teachers provide reliable sources/pathways via Moodle – or what combination of these approaches must be taken for IL learning –

Key ideas and words coming through the preliminary analysis were captured in the top half of the Table and codes were created for these ideas, thoughts and feelings in the lower section. In regard to the IC the feedback suggests there are diverse descriptions of the physical elements of the context such as books and lap tops, the virtual such as the WWW and Moodle platform.

Students also describe the IC as being populated by people including their teachers, parents, friends, the school librarian and IT teachers so they perceive the context as having a social human dimensions. The feedback also indicates their feelings towards the context and their experience of engagement within it so themes are starting to surface from the feedback regarding perceptions of the IC.

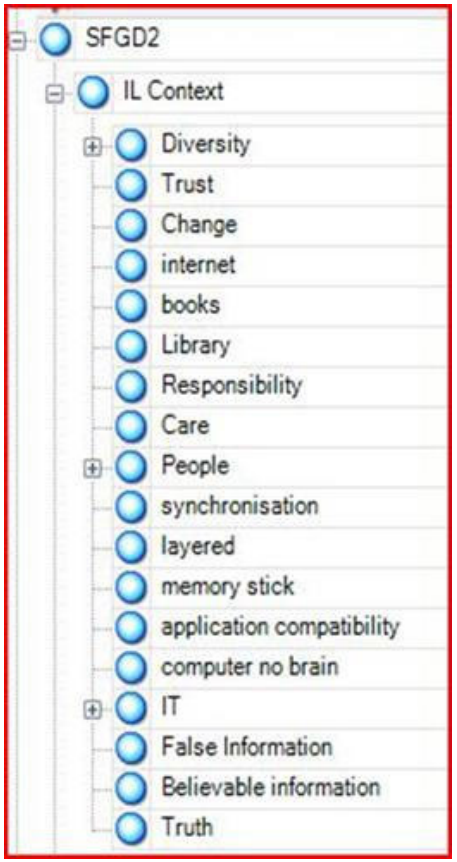
Looking across the content of columns two and three it was clear at this early stage of coding that utterances about how information use for learning was experienced and conceptions of IL were very much entwined. Quotations that conveyed the ways students experienced using information also contained their ideas as to how they conceptualised IL and vice versa. Equally quotes initially coded as students' ideas about the future IC spilled over into conceptions of IL and perceptions of context.

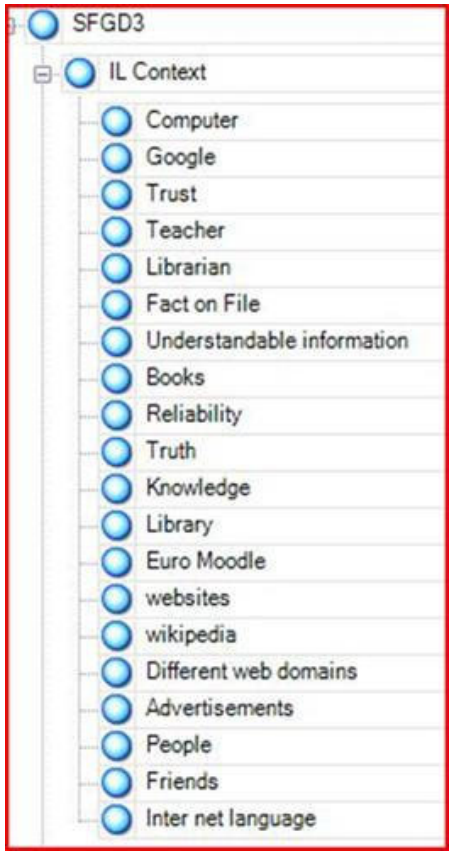
3.5.4 Second cycle of coding using NVivo software

This section describes the continuation in the coding and analysis phase which predominantly was completed using the NVivo software programme for qualitative research. The first step was to import all the transcriptions and create a coding tree for the data coding and analysis. As some preliminary work had been completed manually some of the ground work had been done which was very helpful when it came to the creation of parent nodes in NVivo and also the child nodes in respect of each parent node.

The following Table 3.4 represents the coding tree created in NVivo showing the preliminary coding for perceptions of the IC in respect of each of the four data sets for student feedback. During this phase of coding and analysis the primary focus was on coding up each transcript individually using some of the words identified in the preliminary stages and adhering to the four strands of IC, conceptions of IL, information use for learning (IL practice) and vision to form the parent nodes. Codes were then developed for statements of meaning identified in each transcription. By copying and pasting the coding tree from NVivo in respect of each of the four student stakeholder groups regarding their perceptions of the IC it was possible to begin the process of interpretation and comparison as illustrated in Table 3.5.

Table 3.4 Student Stakeholder Preliminary Coding for the IC. (Stakeholder Group Discussions x 4)





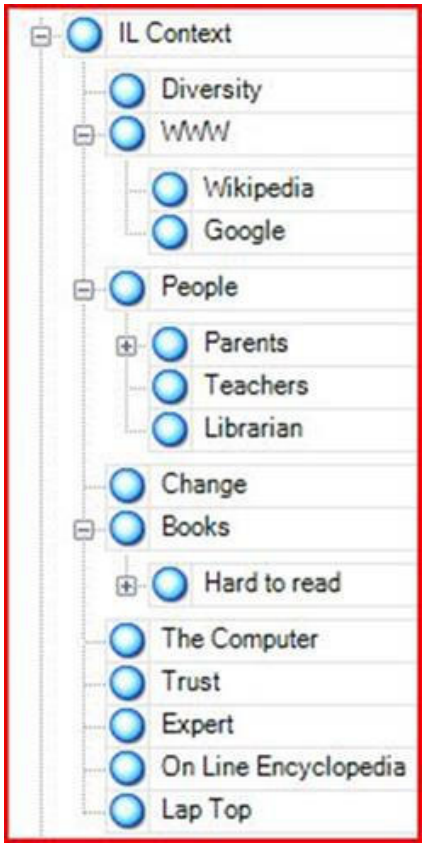
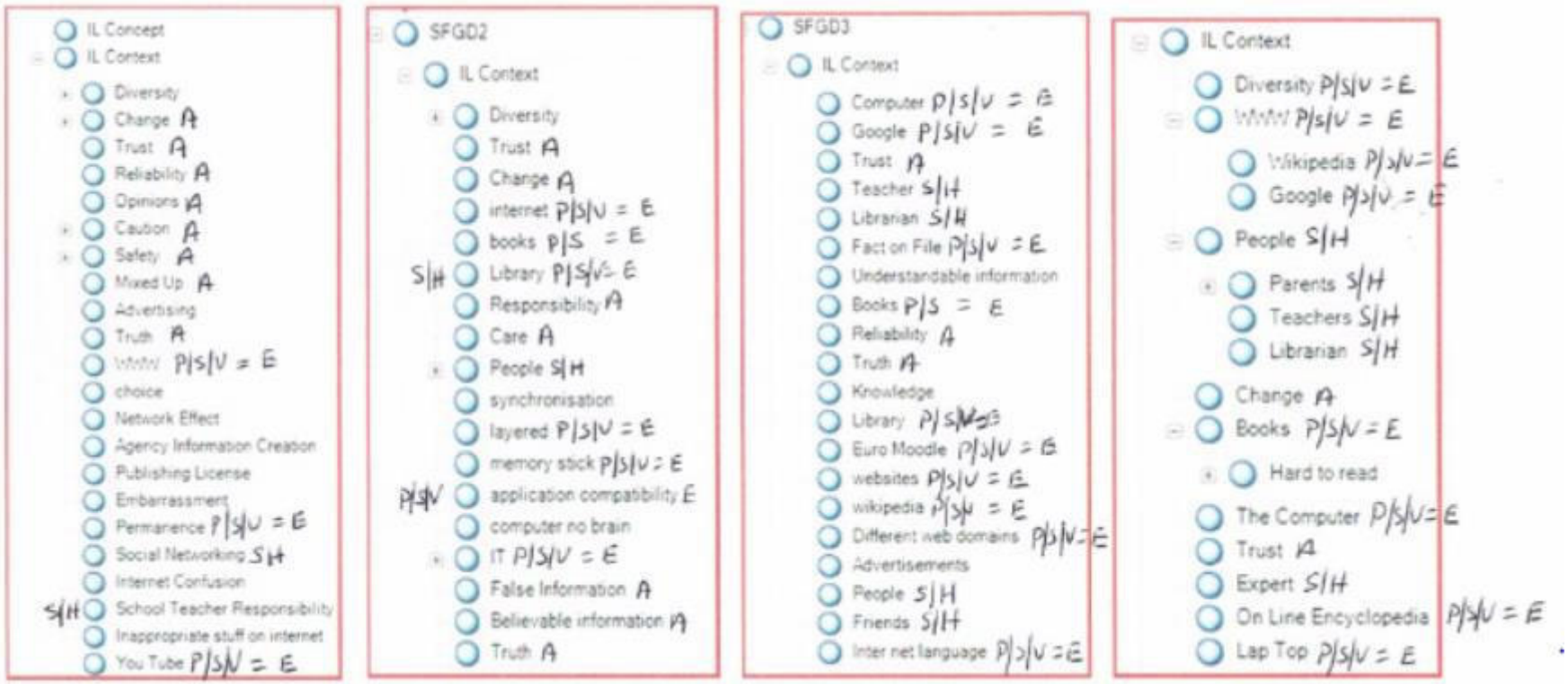


Table 3.5 Grouping and assigning attributes to data for Students' perceptions of IC



Dimensions of Information Context (IC):

P/S/Y = Physical Structural Virtual which was finally coded and replaced with composite terms environmental (E)

S/H = Social Human dimension and A = Affective Dimension

At this point the analysis and focus shifts from stakeholder groups and what they said towards a focus on understanding "the meanings embedded in the quotes themselves…In this sense each quote has two contexts in relation to which it has been interpreted: first the interview from which it was taken and second, the pool of meanings to which it belongs" (Åkerlind 2005 p. 325). As the interpretation, comparison and synthesis continued it became clear that statements of meaning in relation to information use for learning (practice) were bound up with ways of seeing either the IC or conceptions of IL and the vision of IL in the future. Consequently, a process was followed of systematically cycling through all of the quotes previously coded under the different strands to pre-existing or additional new codes under the context and conception of IL parent nodes. In this way the criterion attributes for each group were made explicit.

An emotion coding strategy (Saldana 2009) was adopted specifically to code the affective and social human elements in statements of meaning in regard to descriptions of experiences and feelings contained in the data. These were continually interpreted along a compare and contrast style of approach, feelings about the information use experience being positive, exciting or fearful or potentially frustrating. In this way it was possible to get closer to discovering the variation inherent in the 'meanings' of the statements under analysis. Through systematic analysis and interpretation, it became apparent that certain clusters of thought were surfacing around the IC being perceived to be characterised by an environmental dimension comprising of physical, structural virtual elements, a social human element and an affective element. As can be seen in Table 3.5 the researcher began the process of assigning codes to each element of variation.

Whilst these elements of the IC clearly indicated variation in how the IC was perceived there were responses that crossed over these dimensions. However, through repeated analysis and comparison and returning back to the transcripts the final meaning of statements was determined and coded in relation to their emphasis on the environmental, social human and affective dimensions. The multi-dimensional nature of the IC shapes its complexity as does people's engagement with it. Whilst the researcher used the term information landscape or information world in the FGD it was clear, based on the FGD feedback, that the term information landscape suggested a defined territory which did not seem to capture adequately the complexity and 'infinity' characteristic shared by participants.

Consequently, the term information context (IC) was chosen as the final term in reporting the study as this encompasses the different ways participants thought about and experienced information. Taking each element that formed this parent node they are explained as follows:

- Environmental refers to the physical structural and virtual elements that comprise the IC. Originally the terms physical structural dimension was used to refer to all

items of a physical nature or online via their lap tops or other physical electronic devices, print materials, media, web based applications and software. Later the term virtual was added to capture the interactive online aspects of the IC. However, in the final analysis these elements were coded to the composite term of the environmental dimension.

- Social Human refers to the human face of information including people as potential sources of information and to the social elements of the information experience.
- Affective dimension captures feedback from participants where they talk about their feelings and reactions to the context and within the context based upon their experience their perceptions of their children's experience of it or their family or friends.

At this point the researcher returned back to the actual hard copy transcript and using coloured markers began to highlight significant quotes against these attributes and cross check with the coding in NVivo ensuring everything of significance was included in the final analysis process as illustrated in Figure 3.14.

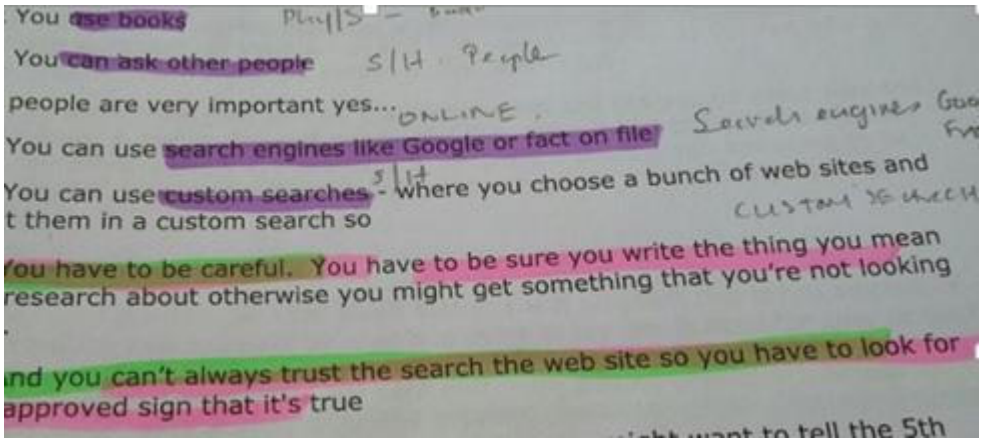
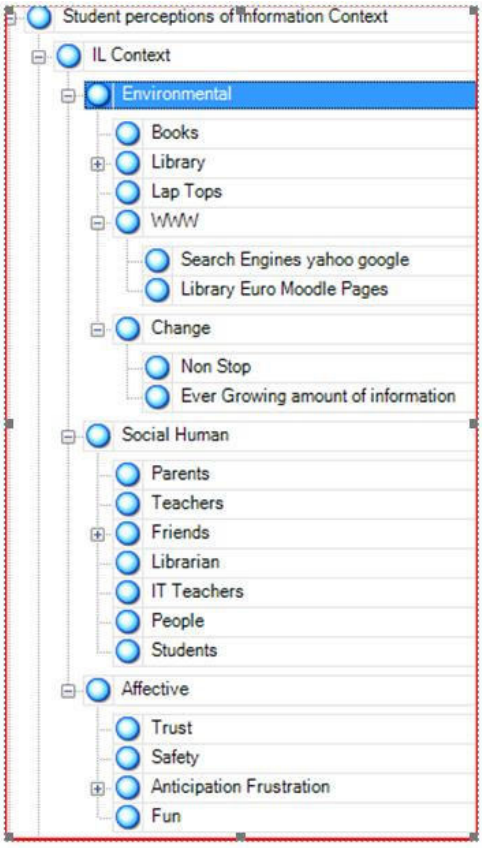


Figure 3.14 Colour coding key quotes

The approach proved a very effective method for cross checking back with the raw data to ensure for consistency with NVivo analysis and coverage of quotes. Furthermore, it helped confirm alignment of categories of description with the actual evidence in the transcripts and allowed for realigning as necessary as the phases of interpretation and analysis continued. Colour coding of quotes is a much used technique for focus group analysis as described by Stewart et al (Stewart, Shamdasini and Rook 2007). This process of continual close and consistent analysis, interpretation, synthesis and cross checking between transcripts, coding led to the creation of the final set of codes for the IC dimension as depicted in Table 3.6.

Table 3.6 Final Coding for Student Perceptions of IC



A detailed narrative was written up for the meanings of each of these categories and the nature of the variation prevailing between them. Indeed, this process also involved a further adjustment of some elements of the categories of description particularly regarding clarifying and explaining variation between the referential and structural aspects of categories of description in the outcome space. Throughout the process the researcher was also mindful to ensure understandings shared by all of the participants within the group were attended to and in this sense it was the collective understandings of the groups that went through this rigorous analysis within the statements of meaning or quotes selected for analysis and across statements of meaning within the four transcripts from the student stakeholder perspective. Moreover, the relational aspect of these categories of description to understanding the ways IL is conceptualised by this stakeholder group is further delineated when exploring the nature of variation in categories of descriptions of IL in the outcome space for the student stakeholder group presented in the following Chapter.

As with the analysis of perceptions of the IC the analysis of conceptions of IL proceeded in a similar fashion and Figure 3.15 presents the preliminary coding for the ways students understood IL.

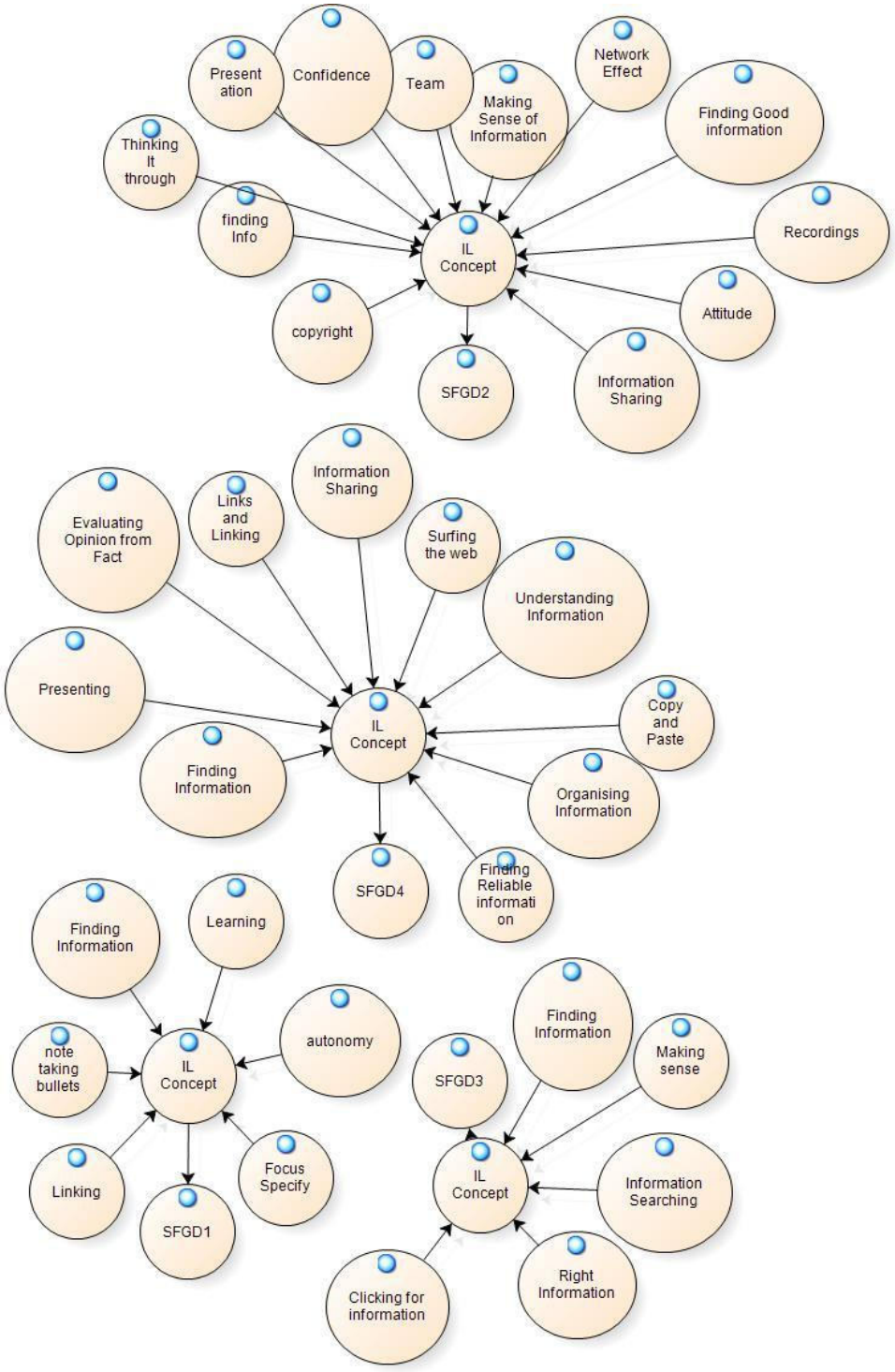


Figure 3.15 Preliminary coding for student stakeholder conceptions of IL for the 4 FGDs

3.5.5 Coding for conceptions of IL

The coding process to discover and construct categories of description of variation in the conceptions of IL was conducted parallel to the coding of perceptions of the IC. Again however for the purposes of reporting the process it is pragmatic to detail this separately. The same coding routine and process as used with perceptions of IC were used in relation to analysing conceptions of IL. The first

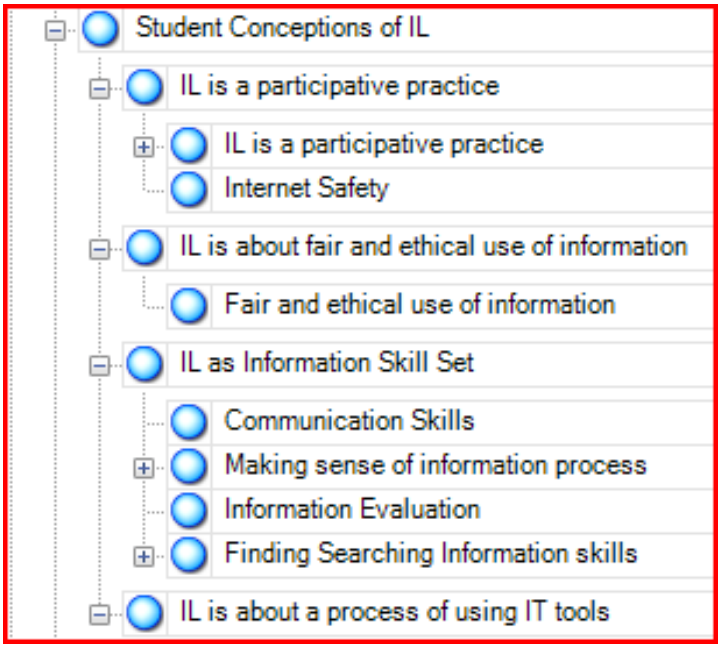
round of coding had coded significant statements of meaning to the conception of IL node and to IL practice node. As with the IC coding the researcher went back through the coding for information use for learning (Practice) and re coded the content either to perceptions of IC or conceptions of IL as relevant which ensured a truly phenomenographic approach to the data analysis and to sensitising analysis to the ways the IL phenomenon appeared to the student stakeholder group.

The earlier separation of this strand of IL had seemed to be important to capture the learning experience. However, the learning experience is so entwined in the IC experience and the ways that students conceptualise IL that it is necessary to relate these ideas directly. In practice however it was through describing various information use experiences that conceptions of IL surfaced as did perceptions of the IC. In this way the final categories of description reflected the variation in conceptions of IL developed as will be explored in the following Chapter.

Using the model tool in NVivo a visual was generated of the codes for conceptions of IL, relationships were explored, and statements of meaning around concepts and practice were interpreted and synthesised to develop a holistic understanding of the experience of the relationship between the subject and the object, i.e. the student and their conceptions of IL through their reported experiences. Equally it was possible to focus on the parent nodes for IC and practice and by going through the cycle of interpretation, analysis and synthesis eventually come to creating the categories of description of IL.

It is clear from this preliminary model of early rounds of coding that there are some similar ideas, thoughts and also variations in thoughts within and across the students' feedback thus reflecting the extensive variation in the ways IL is conceptualised. Through further analysis of the coding around IL practice or use of information for learning these codes, as shown in Table 3.7 were further developed to integrate statements of meaning relative to conceptions of IL and through a continuous analysis, interpretation and cross checking with the transcriptions the final categories of description were developed. The underlying assumption of phenomenography is that the subject and the object are seen as one. However, in order to discover how this object-subject relationship is experienced and to articulate that experience it was necessary and helpful to initially separate out the focus on information use for learning practice or experience and then laterally to interpret these meanings and place them within the context of the overall relational nature of the information use experience. The final coding and synthesis of meanings of statements resulted in four categories of description of the ways IL was conceptualised by students as shown in Table 3.7. These categories are fully explained in the following Chapter.

Table 3.7 Student Stakeholder final coding of conceptions of IL



The final set of categories regarding conceptions of IL are presented in Table 3.7 and the outcome space describing the variation between these categories on the basis of analysing their structural and referential aspects which connected to the perceptions of the IC is presented, along with a detailed discussion of the conceptions of IL, within the findings Chapter 4.

The data sets from the parent, teacher, library, IT, administration and leadership stakeholder groups were analysed using the same formula and NVivo models are presented in Chapter 4. The most challenging data set to code and analyse was the parent stakeholder group which took several months to complete. This was because of the extensive feedback but also because of the complex variation that surfaced from this group as regard the affective and cognitive dimensions of IL. At the time the researcher reflected in her research journal:

February 5th 2015 Excerpt from Research Journal… "I feel a key reason that I have struggled with this voice is that there is so much data and I was trying to include everything in the mix whereas now having gone through the process I have a fuller understanding of the different ways that parents experience the IC and their perceptions around their children's information experience in that context. Using the phenomenographic research process has really delivered up parent's subjective and objective experience in and around the information and information use phenomena. I have learned through working in this approach that you must really immerse yourself and listen …the experience of coding and consolidating writing and rewriting will I feel help me tackle the student and teacher voices…"

The coding and analysis work for the remaining stakeholder groups was completed over an extended two-year period eventually yielded up the seven outcome spaces and the writing up of the findings section in respect to each one. These are presented in the following Chapter where further models from NVivo capturing the methodological journey are presented.

On completion of the findings for each stakeholder group level the next phase of analysis involved a comparative analysis of the outcome spaces of the seven stakeholder groups and it is to this second area of analysis that this Chapter now turns.

3.6 Comparative analysis of outcome spaces process

After completion of the analysis phase the findings were written up from each stakeholder group perspective. This was the foundation of understanding against which the comparative analysis of outcome spaces was undertaken to determine the extent of common ground prevalent in regard to how a school community conceptualises IL.

The purpose of the comparative analysis was not to conflate the outcome spaces into one outcome space and thereby negate the distinctive and unique variation in understandings arising from the stakeholder groups but to attempt to understand the degree of common ground that prevailed and to explore the nature of variation between the categories of description surfacing from each stakeholder group perspective. The outcome of this analysis is presented in Chapter 5 which includes a meta-analysis of the categories of description across the seven stakeholder perspectives.

This stage of comparative analysis was carried out by deep reading, interpreting and analysing the narrative for each stakeholder group and through a process of creating Tables in excel (presented in Chapter 5) to capture similarities and differences in major common ground categories of description. The process equally involved returning to the transcripts again to pick up on particular nuances. For example, the category of description that IL is a set of information skills which arose in each stakeholder group outcome space held slightly different meanings and so it was important to go right back to the utterances again and tune into what was being said and what was the meaning about what had been said.

This process required several months of constant proximity and immersion in the data set and in reviewing the narratives written for each of the findings sections. The researcher found it helpful to record the process and her reflections in her diary as per the excerpt from July 4, 2015:

July 4 2015 Excerpt from Research Journal

I then began to consider the first category of description that IL is a set of information skills that are related to IT skills and began exploring the variation across the 7 voices and within the voices which reveals that IL is conceptualised as a set of information skills spreading across a complex range of skills from lower order reading note making skills to higher order cognitive skills including information evaluation, analysis and communication. I also found that Admin have a most different interpretation of IL as a set of skills where they emphasise information creation, management and dissemination. I created a table to capture the vast array of ways of describing information skills identifying similar and different nuances. I need to work on refining this table and analysis.

The process of comparative analysis really came together through the writing phase whereby the researcher developed drafts of the comparative analysis for submission to her Supervisor over several months. The feedback loop between the researcher and supervisor allowed the researcher to articulate the rationale for the findings in the comparative analysis and through the dialogue process to really bring forward the thoughts and reasons for the kinds of statements being revealed in regard to the comparative analysis. Retaining a critical questioning approach to the process helped bring clarity to the final articulation of the comparative analysis. The researcher summarised the key critical learning points in terms of the development of a sound analytical approach in her research journal. This proved to be a very helpful aide memoire when it came to taking action on the constructive criticism given in regard to undertaking the further drafts of the findings and analysis Chapters to the point where the researcher felt the coding analysis and practice was aligned with the criteria of a phenomenographic study.

A further important dimension of the comparative analysis work involved revisiting the literature review and further reflecting on the iterative nature of phenomenographic research (Bruce 1999; Marton and Pang 1999; Åkerlind 2005; Yates, Partridge and Bruce 2012; Marton 1986; Bruce 1997a; Andretta 2012). The processes of discovery and construction of the variation in the ways IL was conceptualised by the PS community was time intensive. As the analysis progressed the researcher developed a critical appreciation of the value of the constant cycling through the data to ensure the final categories of description were an accurate reflection of the experience and understandings' of IL as shared during the discussion process. Before moving on to consider a critique of the data collection and analysis process from both a methodological and professional practice perspective it is necessary to present an overview of the research communication strategy regarding the research process at the PS.

3.7 Research communication strategy

Throughout the course of the study at the PS there was a wealth of communication about its purpose, process, progress and potential benefit of the research to the community as shown in Figure 3.16. At the outset the objective of this communication was to persuade the school to come on board with the project. The next stage was the appeal to participants which involved motivating community stakeholders from across the school community to commit to the process. Once the participants were identified keeping them informed through electronic and face-to-face contact was pivotal to the process. The approach and content to information dissemination at the early stages ultimately impact the data collected which forms the basis of the study.

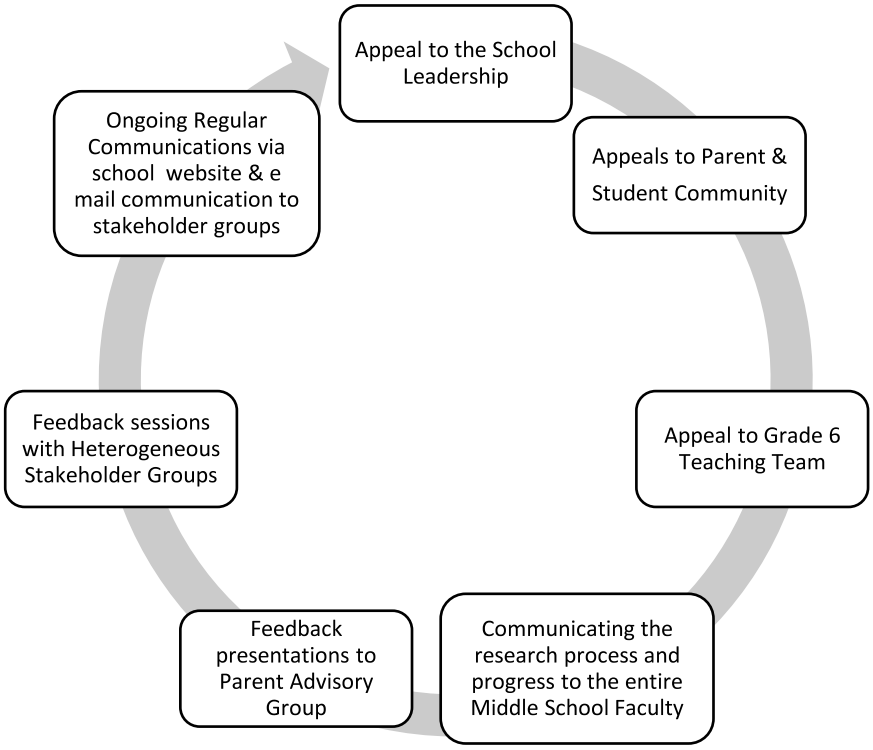


Figure 3.16 Cycle of communication about research in the project school

Two formal preliminary feedback presentations were made to the Parent Advisory Group and the entire Middle School Faculty at the PS following the FGDs, but prior to full data analysis. The intention was to raise levels of awareness in the community about the study. These presentations were positively received and offered the opportunity for the researcher to convey her appreciation of the community's involvement.

Once the FGD process was completed the researcher scheduled a series of five heterogeneous FGDs for the purpose of sharing feedback from the discussion process as detailed in Section 3.3. Each of the five groups were comprised of stakeholders from across the seven stakeholder groups each

having at least two/three students, three parents, one member of library and IT personnel respectively and one member of the leadership and the administration teams respectively totaling from nine to twelve participants.

Whilst the PS community reported that they valued the opportunity to think, talk and come together in their homogenous and heterogeneous groups which they felt generated a new level of awareness of the variation in the ways different stakeholder groups conceptualised IL and perceived their IC, there was unanimous agreement of the essential need for the researcher to make sense of all the "understandings" or feedback generated through the dialogue process and invest time and critical attention in a systematic and rigorous analysis of the data.

The discussion now moves to critique the methods invoked by the researcher to facilitate this systematic and rigorous data collection and analysis processes.

3.8 Critique of methods

To ensure a rigorous and robust phenomenographic approach the researcher drew on Krueger's (1998) nine critical ingredients of qualitative analysis and from the work of phenomenographic researchers throughout the stages of the research data collection and analysis processes. Krueger (1998 p. 9) identifies that qualitative "analysis must be systematic and verifiable; that it requires time and is jeopardised by delay; that it should seek to enlighten; entertain alternative explanations; is improved by feedback and is situationally responsive".

The profile of the data collection and analysis methods demonstrates that the research purpose, process and outcome at all times strove to align with these essential ingredients. In regard to the issue of verification of the study all the transcriptions, recordings, coding via NVivo and analysis in term of models created in NVivo are available and stored safely by the researcher. Time was a challenge from the outset not least because the data collection had to be scheduled within the school day and required an additional adult presence given that young children were involved. The study stimulated a high degree of interest within the PS community and the extension of the FGD schedule whilst greatly enhancing the quality of the data set did have a knock on impact in terms of the degree of analysis that could be completed in time to share within the heterogeneous stakeholder groups. Equally the time required for the comprehensive and systematic data analysis was lengthy but very necessary to achieve the construction of the final outcome spaces.

Through the ongoing cycle of literature review the researcher stayed alert to the ways that the data analysis compared with pre-existing and newly published research on the subject of IL. In this way the researcher was able to calibrate the ways the preliminary findings emerging from her study were

similar and or different so as to contribute to further enlightenment around conceptions of IL in an international school community context and furthermore to be sensitive to alternative ways of seeing IL that surfaced from the feedback.

Ensuring a continuous cycle of feedback to the PS by way of presentations to faculty, to the Parent Advisory Group and the heterogeneous FGDs alongside email feedback to all participants including the students ensured that both the researcher and the participants alongside the wider community were informed about the research from the beginning stages through to sharing preliminary findings. Moreover the previously mentioned Skype sessions involving the researcher and her supervisor provided a central dimension in the feedback experience for the researcher whereby the supervisor systematically walked through the drafts of findings Chapters constructively questioning the researcher to explain the rationale for decisions made in regard to codes and categories of description which was instrumental to ensure the researcher was critically considering and reflecting on the ways the analysis was being carried out. Finally, the researcher sought to be consistently responsive to the research context which was an international private school setting with multiple competing demands on participant's time and resources so it was always to the forefront of her mind to ensure both the experience of participation in the research process and its outcome was of value to participants in the immediate and longer term. In this sense sound communication pathways and respect for participant's input was at all times acknowledged throughout the process.

Turning to the phenomenographic level in terms of critiquing the research method and validity of findings it is argued by Åkerlind (2005 p. 330) that:

> "An interpretivist process can never be objective and in phenomenographic terms represents the data as experienced by the researcher, the focus of research quality shifts to ensuring that the research aims are appropriately reflected in the research methods used".

The rationale for the research approach has been clearly set out at the outset of this Chapter and the findings Chapters will serve as testament to the relevance of this approach to meet the overall aim and objective of the research.

Two types of validity checks commonly used in phenomenographic research according to Åkerlind (2005 p. 330) are termed "communicative and pragmatic validity". Communicative validity checks refer to the "researcher's ability to argue persuasively for the particular interpretation they have proposed" which in practice means ensuring that "the research methods and final interpretation are regarded as appropriate by the relevant research community" (Åkerlind 2005 p. 330). In this regard the researcher has presented her preliminary findings to different audiences in both national and

international education settings and in national primary, secondary and HE contexts as well as locally in the PS to both the entire faculty, parent organisation and the stakeholder groups involved.

In all cases there has been much interest in the research with various audiences expressing their interest to be kept informed of the final outcome of the research and its implications for professional practice. This will be discussed in more detail in Section 6.2, which will also consider the validity of the study in terms of its pragmatic validity which "includes the extent to which research outcomes are seen as useful and the extent to which they are meaningful for their intended audiences" (Åkerlind 2005 p. 331). Section 3.2 has already indicated how part of the rationale for selecting a phenomenographic approach is that it offers the possibility to achieve new insights about a phenomenon contributing to both the knowledge and practice areas of ILE in different contexts. Chapter 2 has also detailed the proven track record of phenomenographic based research in terms of informing new strategies, models for ILE and this research in turn, as will be shown in Chapter 6, has begun to have pragmatic value in terms of the researcher's own professional practice in regard to ILE in the international school context.

In regard to reliability checks for ensuring the quality and consistency of data interpretation the researcher, through the systematic and regular Skype meetings with her supervisor and during meetings held in situ at RGU University, was able to consistently scrutinise and question her decisions regarding her interpretations of the data. Equally using the feedback from actual drafts of findings as a further point of scrutiny the researcher could return to her coding and analysis and cross check between the raw data and the coded data multiple times to ensure accuracy and that the interpretation was reflective of the feedback. The researcher's completion of subject knowledge development and her professional experience in various contexts also helped her to approach her interpretation from a wide angle lens and to bracket her own knowledge and experience of IL when developing the outcome space. Moreover, the desire to fully discover how stakeholder groups were in fact conceptualising IL meant the researcher was wholly committed to being open to all the possible nuances and variations of conceptions that might prevail. This was the gap in professional understanding that she required to fill in order to be better placed to carry out her role to lead and manage learning the changing IC and experience. Finally, through maintaining her online research journal in NVivo it was possible to document data collection and analysis decisions as they unfolded and equally to simply maintain a critically reflective approach to the entire process.

In the context of critiquing the use of the phenomenographic approach it is also necessary to comment on the quality of the categories of description discovered and constructed in the research

process. In this respect Åkerlind (2005, p. 323) refers to Marton and Booths' three criteria to judge the quality of categories of descriptions as follows:

> "1. That each category in the outcome space reveals something distinctive about a way of understanding the phenomenon;
>
> 2. That the categories are logically related, typically as a hierarchy of structurally inclusive relationships; and
>
> 3. That the outcomes are parsimonious—i.e. that the critical variation in experience observed in the data be represented by a set of as few categories as possible"

Every attempt has been made through a rigorous and systematic analytical approach to ensure that the categories of description meet these criteria and this will be commented on in further detail in Chapter 6 after the findings have been revealed in the Chapters 4 and 5.

Moving to critique the research project from a professional research project management perspective it can be reported that the planning, organizing, evaluating and dissemination of information in regard to this research project have provided a major experiential and collaborative learning opportunity for the researcher. On reflection the success of the project in terms of bringing together over fifty participants for twenty-one hours of dialogue, representing seven different stakeholder groups, rested upon the development and maintenance of a sincere professional researcher relationship with the PS Principal and the community.

The methodological process has not been without its challenges and key amongst these has been centered primarily on managing the consent process with multiple type of consent forms given the participation of children. Secondly scheduling the time required to run the focus group process, transcribe and analyze the data and managing what was in effect seven mini phenomenographic studies with one study. If repeating the process, the researcher would have initiated help with the transcription process but that said the process of transcribing was key to the researcher becoming familiar with the discussion and preparing for coding and analysis.

3.9 Conclusion

As Bruce (1999 p. 20) has noted:

> "phenomenographic researchers would say that there are no algorithms for the conduct of their research...nevertheless the study is empirical and, therefore, involves the identification of a research problem, the formulation of a data gathering protocol, the implementation of the data gathering process, data analysis and reporting of outcomes. The need for these elements to conform to the overall intention of seeking variation in conceptions is a key aspect of ensuring 'valid' outcomes."

The aim of this study is to seek an understanding of the variation in the conceptions of IL across stakeholder groups in a school context and as has been documented this aim and its related objectives have been realised through the adoption of the phenomenographic methodological approach. This Chapter has set out to systematically map each of these components as listed by Bruce (2009) in the aforementioned quotation and in so doing has providing a detailed audit trail upon which the findings and analysis of the study can be validated.

The researcher's experience of using a phenomenographic research approach has shown it to be a highly intensive, immersive and iterative method but more importantly its outcome has been to illuminate the variation in the ways stakeholder groups across a school community conceptualise IL and thereby deliver new insights to professional practice. The reader at this juncture is now on the threshold of discovery as to the ways IL appears and is described by people of different ages, gender, languages, nationalities and cultures. In short a phenomenographic exploration of IL from the perspectives of stakeholders all of whom are vested in ensuring that current and future learning experiences instil preparedness for an uncertain and exciting future, which as the literature indicates includes a relevant and responsive ILE strategy but most importantly of all, one that is built on shared understandings of IL. The following Chapter 4 presents the findings from the research process before moving on to Chapter 5 which presents a comparative analysis of findings as a lead up to the discussion about the significance of these findings for knowledge development around IL and the potential routes to impact in Chapter 6.

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CHAPTER 4 Findings: Conceptions of Information Literacy by Stakeholder Group

Introduction

The presentation of the findings arising from this phenomenographic study of conceptions of IL has been designed to follow a sequence of steps addressing stakeholders' perceptions of the IC, conceptions of IL, the exploration of the nature of variation in conceptions of IL, a comparison of the findings with relevant IL models and standards and a conclusion as illustrated in Figure 4.1.

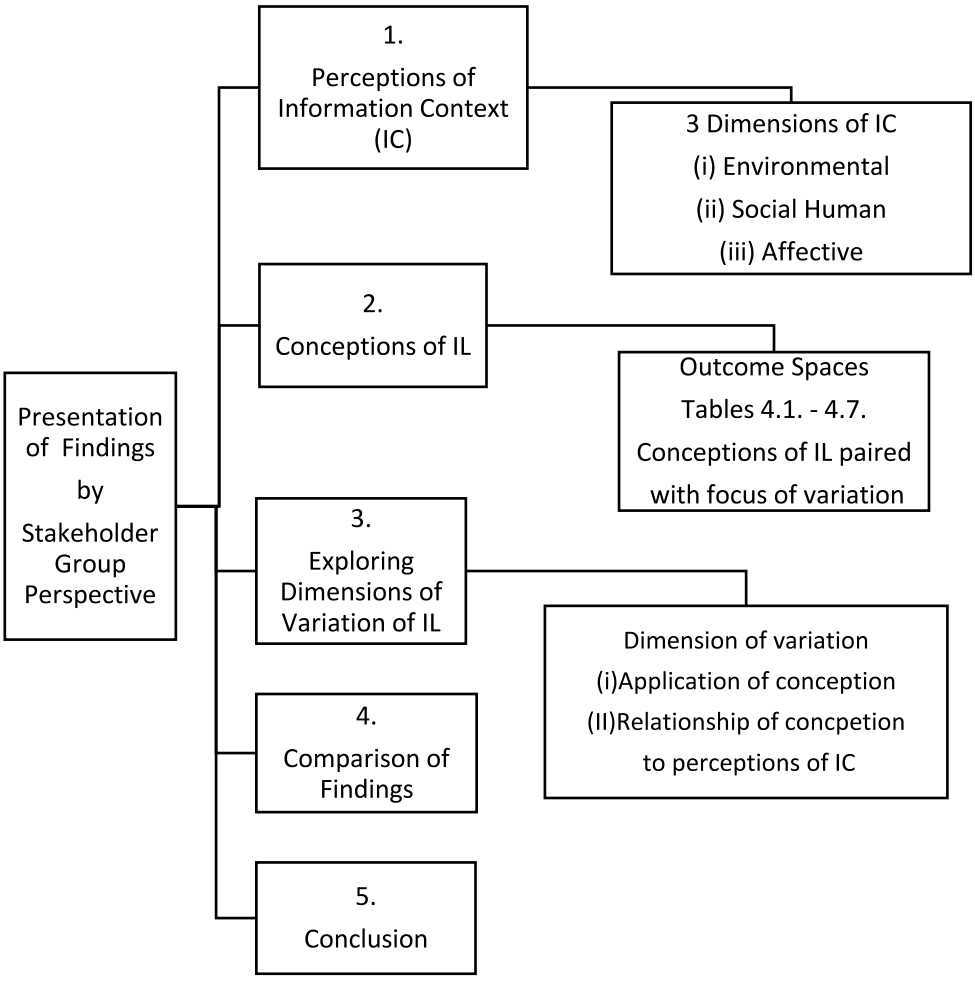

Figure 4.1 Overview of sequencing of presentation of findings

The first stage involves revealing the perceptions of the IC as the stepping stone to presenting the findings regarding conceptions of IL and it is useful from the outset to offer an overall comment in this respect before proceeding to the detail at each stakeholder group level. The analysis of feedback

shows that all stakeholder groups perceived their IC to be characterised by three dimensions to include the environmental, social human and affective which represent the three categories of description of the IC. These three dimensions are related and form part of the whole perceptual orientation and experience of the IC as represented in Figure 4.2. The social human dimension is placed at the centre as people were perceived by stakeholders to play a role both as sources of information and as mediators and creators of the IC and experience. The outer environmental layer arose from the feedback as being the most immediate dimension spoken of and there was a strong web-centric perspective in this regard. Finally, the affective dimension is placed in the middle layer because it is in relating to people, web based interactions and multi- media information sources that stakeholders' feelings within and about the IC and experience arise.

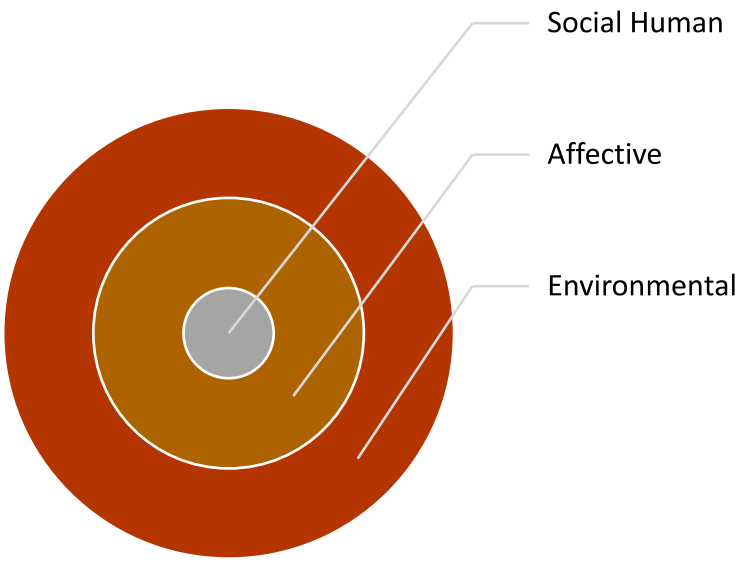

Figure 4.2 Stakeholder groups' perceptions of information context (IC)

This visual representation of the ways stakeholder groups perceived their IC was found to be consistent with the feedback from all seven stakeholder groups which will be demonstrated as the findings from each stakeholder group are presented. Clearly as with any phenomenographic analysis this visual representation is specific to the feedback generated in this PS context in a given time period however it is indicative of the ways stakeholders perceived their IC and it against this backdrop that they shared their ways of understanding IL.

Moving to stage two of the sequence of presenting the findings in regard to stakeholder groups' conceptions of IL, seven separate outcome spaces are presented in the order of students, parents, teachers, library personnel, IT personnel, administration and finally leadership. The outcome spaces are presented in a table format within each Section revealing the categories of description of IL and

the dimensions of variation in the conceptions of IL that arise representing step 3 of the process as indicated in Figure 4.1. The main dimensions of variation which are found to prevail in the seven stakeholder groups centre on:

- The application of the conception which refers to whether the conceptions relates to an immediate information need or if it has a cross curricular application, is curriculum embedded or goes beyond curriculum and school/home based learning and has application to life more generally. It also includes a focus on whether the application of the conception is conceived as an immediate one in the context of local school related learning or if it has application on a broader global learning level.

- The relationship to perceptions of the IC for example whether the conception relates to a perception of the IC being an environmental objective and external context, a mediated social subjective human context or both or whether it connects to the affective dimension of the IC. In this sense the final outcome space Table for each stakeholder group illustrates the relational nature of conceptions of IL with perceptions of the IC.

Moving to step four the conceptions of IL arising from the feedback at each stakeholder group level are then compared to published IL models and IL standards. In each case the models and standards used in the comparison were chosen as being relevant to the particular stakeholder group. This is followed by a concluding Section as shown in step five of Figure 4.1. This pattern of presenting the findings as shown in Figure 4.1 enables a systematic, consistent approach to the overview of findings arising from each of the seven stakeholder groups' conceptions of IL. This Chapter will in turn be followed by Chapter 5 which presents a comparative analysis of the conceptions of IL arising from across the seven stakeholder groups.

Before proceeding to the presentations of findings it is important to explain that in order to protect the anonymity of the fifty-two participants a coding system was developed whereby each of the participants were allocated a number from number 1 to number 52 and a designation for which single stakeholder group they belonged to i.e. students (S), parents (P), teachers (T), library personnel (LB), IT personnel (IT), administration (A) and finally leadership (L). For example, there were seventeen student participating in the single stakeholder focus group discussions so the code for student number 1 was SSS1 (**S**ingle **S**takeholder **S**tudent 1).

4.1 Student

4.1.1 Perspective on the information context (IC)

Students' perceptions of their IC span a multiplicity of dimensions including the environmental, social human and affective dimensions that are sometimes experienced in paradoxical ways as illustrated in Figure 4.3. The model based on the coding and theming of the data in NVIvo provides a close up visual of the diversity of ideas emerging in the feedback from students regarding their perceptions of their IC from which the three categories of description emerge. The discussion now moves to demonstrate how these are grounded in the feedback.

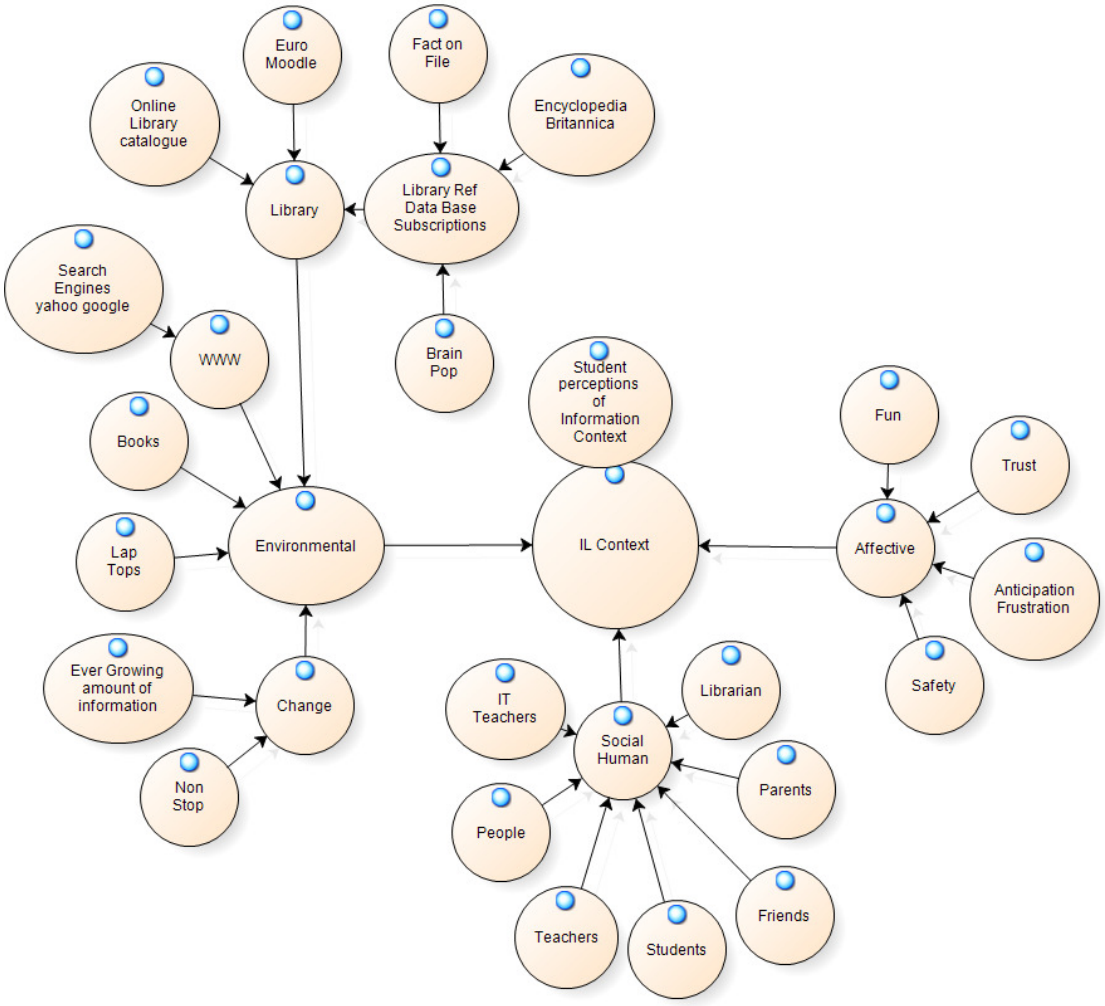

Figure 4.3 NVivo output from coding students' perceptions of the information context (IC)

4.1.1.1 Environmental

Looking to the environmental dimension it is evident that students perceive their IC context to exist in a diversity of formats across multiple domains and that this context is thought to be both fixed, changing and dynamic as evidenced in the following quotations:

> ***SSS7*** *"You use webs".*
> ***SSS7*** *"You can use search engines like Google or Fact on File".*
> ***SSS1*** *"You can use custom searches - where you choose a bunch of web sites and put them in a custom search so."*
> ***SSS13*** *"Well I sometimes use the ones on the school website [Library Euro Moodle pages] that they have there".*
> ***SSS11*** *"mm I don't use the library so much because then I forget to check them in..."*
> ***SSS13*** *"I normally just surf the web and I will often go on Wikipedia because I like Wikipedia".*
> ***SSS3*** *"[Re books] not much anymore now I mostly use only computers it is much quicker for me".*
> ***SSS13*** *"Well [books] they are a little bit harder than the computer".*
> **SSS7** "It's [WWW] non-stop".
> **SSS1** "I would say it's fixed but still growing".
> **SSS2** "Like everything it is changing all the time"'
> **SSS7**" It's never going to stop it's with us forever".

It is interesting how students perceive the environmental dimension of the IC in paradoxical ways in that they see the web dimension to be both fixed and changing. Students indicate that not only is their IC dynamic and changing so too are their perceptions of their own information use patterns which they perceive to becoming increasingly web centric. Books still feature in the narrative however there is a questioning as to whether web based versus book based information is faster to retrieve:

> **SSS8** *"...people think Google is much faster than reading books but then some other people say that books have more information than the internet".*

Speed appears to be an important consideration in terms of student's criteria for source selection.

4.1.1.2 Social Human

The focus of this perception of the IC as being a social human context is on people and their contribution to and interactions around information use for learning. These perceptions are evidenced in the following selection of quotations:

> ***SSS8*** *"You could ask your dad or parents whether they have any information because they might have studied it before. Maybe in the 1900 people thought there was no life or water on Mars and now they find information that there is evaporated water in the rocks."*
> ***SSS16*** *"The library is pretty good because like it well with the internet like you just ask it but like when you ask the librarian like she is actually really thinking it through. The computer doesn't really have a brain so like it's better to tell a person than a computer because the*

librarian she might actually know what you are looking for and what you actually mean. So it's like better to go to the library it might be more useful like it might not be exactly know what you are looking for but she you can tell her what you mean and she can help you a little bit."
SSS8 *"It's not the sites are good it's just the people who use it they suggest that you use it because it is one of the famous sites like Google everybody uses it so you are going to use it too."*
SSS3 "B*ecause if the teacher is telling you to do something and she has given you a list of sites that she recommends that you should go on then go to EM [Euro Moodle] but if she says oh say research a tiger for some reason then I would just go on Google so if she doesn't give you much information then I would just go on Google"*

Given the IC is perceived as both an environmental and a social human context students' information use experiences are encountered in various ways generating various reactions and feelings in regard to their experience which has been termed the affective dimension of the IC.

4.1.1.3 Affective Dimension

The feedback from the students in terms of their actual experience of engaging with the IC reveals they have both positive and negative experiences driven by what seems to be the paradoxical nature of this context from their viewpoint. Three main perceptions demonstrating the affective dimension of the information context arise. The IC is perceived as problematic due to reliability and bias concerns:

SSS9 "*You need to take care of what you use".*
SSS15 "*There is false information out there*".
SSS4 "*And you can't always trust the search the web site so you have to look for an approved sign that it's true."*
SSS7 "If *I was telling them [Grade 5 students] I would probably say that you have to be really careful and just know what you are looking for and don't go on random websites that you think that you are probably not going to find the information that you are looking for".*
SSS7 "*You can get inappropriate stuff on it (the internet)".*
SSS9 "*Well something's on Wikipedia is sometimes not true and you get the wrong answer".*

Students also hold mixed perceptions about their value of such sources as Wikipedia and You Tube as the following quotations suggest:

SSS15 "*You Tube is a really horrible place to go for information. If you want to waste time like just go on You Tube and search up like funny stuff or something but like if you want to find information, it's not the place to find it."*
SSS9 "*You Tube, people go on that and sometimes you can get things you don't want at all".*
SSS16 "*Well Wikipedia is not that good like".*
SSS11 "*You use it [Wikipedia] like for classes like SS like homework off of it and stuff but you like you can't use it as one of your sources to learn stuff from it".*
SSS13 *"I normally just surf the web and I will often go on Wikipedia because I like Wikipedia".*

In regard to these mixed perceptions as to the reliability and quality of sources it is interesting to note that students report that they use Google and Wikipedia more at home than when at school

where they are being guided to reliable information sources as the following quotations suggest:

> **SSS8** "*Yea [re using Euro Moodle links] because you can just type what you are searching for straight away and go to that website but if I am at home I will go on Wikipedia and Google".*
> **SSS11** [*Re using Euro Moodle links] "More at school because yea like when we have Social Studies when we had our person like to find information about it yea we used Facts on File [Library paid for reference subscription] and the World Book... [Library on line reference encyclopaedia]".*
> **SSS8** "*Well if I was in school or doing research I will go on Euro Moodle to search on one of the websites they provide".*
> **SSS16** *"Sometimes Euro Moodle is best for its just like for school like it for something you are learning in school but sometimes it is like for other stuff like it may not be best place to go because it might not be about that one topic you are learning about".*

This is an interesting revelation regarding how students may have different searching strategies in terms of selecting information pathways whilst at school where they are being guided as opposed to at home where they may be left to decide for themselves what resources to use. There appears to be an element of a knowing-doing gap in this regard in the sense that whilst students perceive the IC as having potentially unreliable sources they continue to use such sources more at home. This may indicate that their understanding at this grade level of the difference between resources is not so much to the fore in the absence of guidance from the teacher or librarian. In this sense it is perhaps important to consider parents' role as information guides to their children when they are searching for information at home. That said parents need to have the knowledge and understanding about the relevance and availability of these resources and how to access them if they are to offer this support to their children. Sections (4.2.1/2/3) will show that parents themselves sought IL training to help them better support their children's information experience.

Another level of the presence of this knowing-doing gap around perceptions of what reliable and unreliable information sources relates to the use of book sources. It is noticeable despite their own recognition that books can often be better sources of information compared to the World Wide Web (WWW) they perceive the sources on the WWW will be easier and faster to locate as the following quotation indicates:

> **SSS13** *"Actually it depends on what you are looking for if a book would be easier than the internet because like... Yea like Mars like, if you have a specific book on Mars and just Mars then probably that book would be easier and faster than the web".*
> **SSS16** "*I think that books have better facts than the internet but the internet is so good".*

The IC is perceived as a source of frustration particularly regarding the WWW:

> **SSS13** "*Well I would just put in water on Mars and then you know that the first four or five sites that come up are the most reliable so I would quickly click the first site and then if I didn't find anything on there I would go to the second site".*
> **SSS11** *"...but like words if you click on it sends you to another page about that so if I don't*

know a word and I click on it, and then it has another thing and then I click on it and click on it".
SSS12 "*And sometimes when you type things in on Google and click on something there will only be like 3 sentences about it and the whole rest of the page will be about something completely different but somehow they are linked in some sense but it is not what you're looking for".*

Students therefore perceive information to be a click away however their experience teaches them that this is not always the reality and they become frustrated with the process and need to switch off:

SSS10 *"Sometimes I just have to turn off the computer and re start".*

Thirdly, at the more positive end of their thinking the IC is perceived to offer fun interactive and transformative learning experiences via the school library online subscriptions:

SSS2 "*For example we had to do a report for social studies on an ancient Egyptian and I got Cleopatra and I was all over the internet trying to find information and it was all mixed up and I couldn't understand it. And I went on Brain pop and there it all was in a really short video all the information was laid out it. They have really funny videos and the kids like to watch them. Then there are little quizzes to make sure you understand. You can also try the activity boxes where you can do the activity and it tells you if you may want to watch the video again just to make sure you understand and then it will tell you that you really understand the subject."*
SSS4 "*Like Brain Pop – there is this thing where you have to share out money in maths and it was a big crime thing like how they would split it up and it actually really worked. They make funny videos which you actually really learn from. You learn a lot*".

4.1.2 Students' conceptions of IL

It is against this backdrop of perceptions of the IC that students bring forward their understandings of IL. In this sense information is not only perceived as something objective 'out there' to be discovered but information is also 'situated' involving friends, teachers, parents, librarians, ICT teachers and all the other artefacts of their IC including books and media and the virtual world of the WWW, in short information is experienced through all these channels and pathways collectively. In this sense the concept of information is very much a social and cultural one and it is against this perception of information and the IC that students conceptualise IL. Figure 4.4 reveals the multifaceted nature of how students conceptualise IL.

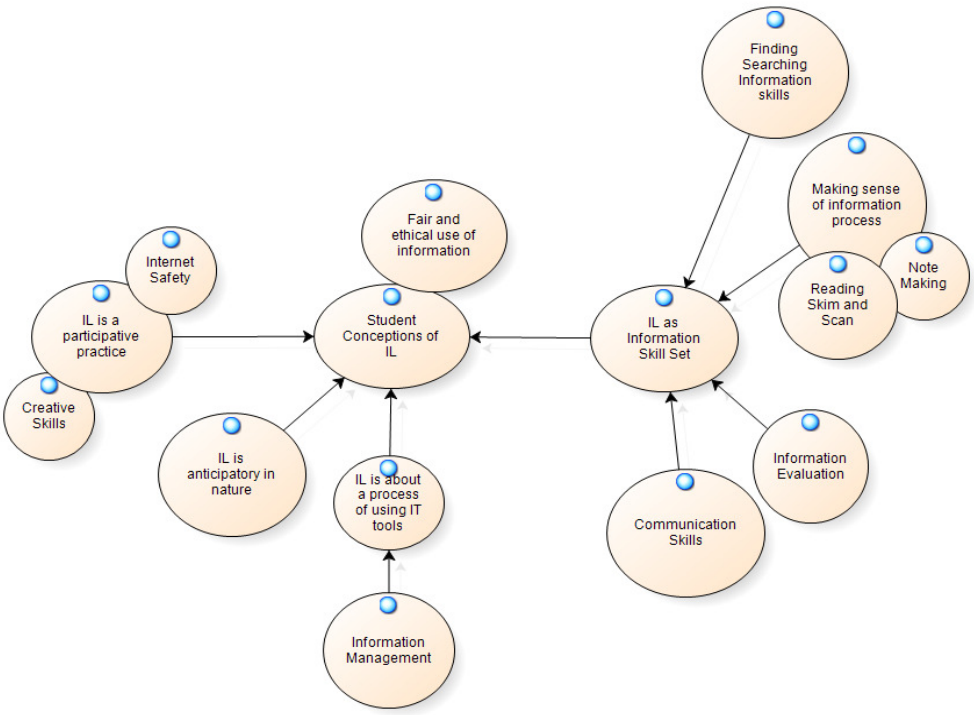

Figure 4.4 NVivo output from coding students' conceptions of IL

Through repeating the cycle of analysis interpretation, review of evidence and synthesis four categories of description of the conceptualisation of IL by students were discovered as presented in Figure 4.5.

The visual presents these categories of description which are as a cycle of inter related categories as this was felt to better represent the way IL is conceptualised by students. The findings show students conceptualise IL as a process of using IT tools, as a set of information skills, as a participative practice and is about the fair and ethical use of information. The discussion will now move to demonstrate how these categories of description are grounded in the feedback before going on to consider aspects of variation in Section 4.1.3.

4.1.2.1 IL is about a process of using IT tools

As established earlier the PS school operates a one to one lap top programme and this context creates the opportunity for differing methods of storing, organising, sharing and communicating information. The focus of this conception is around the process of using information technology (IT) tools for finding, organising and communicating information in relation to school based studies as exemplified in the following quotations:

> ***SSS16*** *"Well you can have these like folders on your computer like one is for health one is for math, one is for LA and they have other ones. Like if you like to look up recipes on something and you want to keep that one then you can have a folder of recipes. Then you have bunch of*

them and then you save them so you should try to keep things in the right folders and then it will be easier to find".
SSS13 *"Well I do one thing at a time but say I start with SS and the homework is say I have to find information on Ancient China or something and I put it down or something and well when I finish that I will well just save it in your folder called Social Studies and then I will send it to myself as well so when I get to school I have it on my e mail as well so I can use it there".*

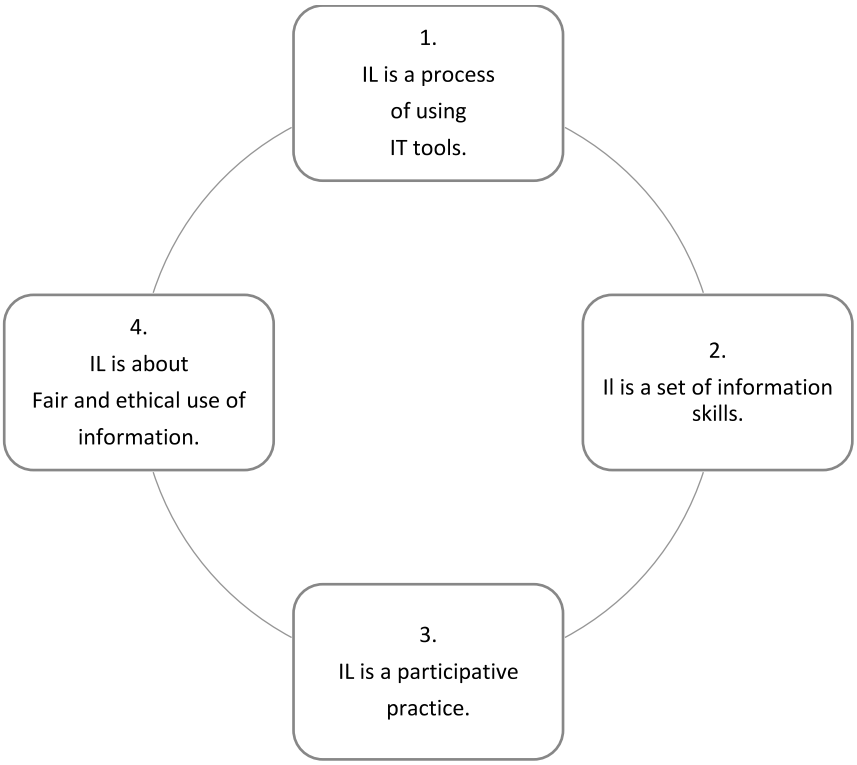

Figure 4.5 Student categories of description of IL

Students are also aware of the need to ensure information or work created in one format may not always synchronise when opened up using another computer interface as the following quotation suggests:

SSS8 *"Using First Class is not really a good idea I mean it was good but then mm Sometimes you lose it because of some mess up in First Class or like if you are doing a Power Point and you don't have Power Point 2008 and you have Power Point 2003 then you can open it in First Class".*

The First Class email which is the PS school's own email system is however recognised as a safer email environment by students:

SSS4 *"We all know it's [First Class] safe like and we don't have to be like all over the place like trying to email people asking what's going to happen and like sometimes when you email people they don't always get it or open it".*

The purpose is to develop these skills and apply them to gather, organise, clarify and communicate

around diverse information needs and experiences. The application is in this sense is immediate and confined to school based curriculum work which may also be undertaken at home.

4.1.2.2 IL is a set of information skills

The focus of this conception is on a series of skills including finding, evaluating, making sense of and communicating information in regard to students' individual and immediate studies. The communication of information involves a focus on 'other' students whereby students may share their learning with their class mates locally within the PS context. The IC context is perceived as both external objective in terms of the WWW and the library but is simultaneously a social human mediated and sometimes collaborative experience. Students also feel both positively and negatively towards the IC particularly the WWW information experience which relates to specific skills such as finding, evaluating and making sense of information.

Finding information

In Section 4.1.1 students' perceptions of the online IC indicated that they perceive the WWW as a place of vast quantities of information but they are sceptical about the reliability of this information. Students' experience 'finding good information' to be the hardest task within the IC as the following quotations reveal:

> ***SSS16*** *"I think the hardest part is actually trying to get a good web site to find good information".*
> ***SSS15*** *"Yes like information you actually want".*
> ***SSS16*** *"Yes because like it's about the topic but it's not like what you really want".*
> ***SSS11*** *and* ***SSS10*** *"That [finding good information] is the hard part".*

A practical example is shared in regard to a student's experience of trying to locate mountain ranges when studying Ancient China:

> **SSS3** *"Something's like things have different names like when we were studying Ancient China like some mountain ranges had lots of different names so you wouldn't know what was right and what was wrong so you get very confused".*

For middle school students then finding information particularly on the WWW is experienced as challenging however using a paid for online subscription such as Brain Pop appears to be a more positive experience as the following quotation reveals:

> **SSS2** *"Brain Pop helps you because your teachers might tell you like I know Ms X [Social Studies teacher] and the Science and Maths teachers use…they can type in whatever subject you want and you can log in and then you can type in anything about that subject and it comes up and you can watch video about it and you can take a quiz to see if you understand it".*

In this sense teachers are collaborating to offer more subject specific and age appropriate information resources to students and this helps students to have more positive information and learning experiences. Equally the teacher together with the librarian work collaboratively to support students' information searching experiences by pre selecting appropriate information pathways for students. Furthermore, students report on their library class experiences where they work in groups discovering new information together. The librarian prepared for the research experience by setting up different information resources at different tables or stations. The students were required to visit each station to find out different pieces of information and to share the information with the group as the following set of quotations describes:

> **SSS14** *"For social studies because we were starting ancient China so we went around to different stations...One [station] had a bunch of Chinese objects and then you had to talk about them and describe them and another one was like a zodiac signs".*
> **SSS16** *"Another one [station] has like paint and symbols and Brain Pop [activity set up on a lap top]*
> **SSS16** "*Oh there was this thrash in this one bag of garbage and you had to guess which type of family/Asian Chinese they were".*
> **SSS14** *"Also you found one of the stories about eh Gods and like a legend of China and then you read it to people".*
> **SSS8** *"I read one about myths and legends it was just about Chinese myths".*

In this experience students collaborated around the information seeking task and were actively engaged in a series of activities involving physical items including books as well as using the lap tops to navigate to Brain Pop and together they found out information about different aspects of Ancient China. That said however students drawing on their own experience of web based information clearly point to a need for pre search strategies and one of the most memorable quotations that summarises this recommendation was:

> **SSS17** *"I have something to say about the information world people post anything. If you know what you are looking for then look for it specifically. You can get all sorts of stuff you don't need you don' want and shouldn't have".*

This information skill of narrowing down the search is identified as key by the students and key word searches are perceived to be important in this respect as indicated in the following quotation:

> **SSS13** *"Well you have to put in sometimes key words and I don't know it's like sometimes things are just hard to find like people don't put in so much stuff about things that aren't that usual and there are less sites on that".*
> **SS10** *"Sometimes it is best to just use the most important word because even if you search Mars the Planet and you want to learn about mars then sometimes it will only look for the word like 'the'".*
> **SSS4** "*You have to specify what you want to find out about that subject".*
> **SSS1** *"You should never put in too much information for example little pink flowers that grow in the winter because then the internet will get confused and will only start looking for simple*

words for example winter and they'll bring you a completely different thing".
SSS7 *"Well you sort of keep your entry more specific like narrow it down to the bare minimum of what you need".*
SSS4 *"Well adding on what coach A said you have to look for what you mean because maybe you type in trucks and then you instead of finding that you look on one website and it says these are trucks and maybe you see another one named awesome trucks but this is actually the name of a coat so you never know".*

Students emphasise these pre search strategies as important information skills when searching for information online. Their advice to the younger students goes further to highlight that students should really know what the question is asking before trying to find information to answer it as this quotation indicates:

> **SSS10** *"Well first like I would tell them [Grade 5 students] that you should know what you are looking for like give the question details so that you know what you are looking for - you never know if it is really right but you can tell if it is wrong."*

This sense of anticipation that information being sought is to be found faster on the WWW is particularly relevant to the pre search phase of the information experience. The question arises does the 'clicking' for information cycle of anticipation enable the student over time to become a more knowledgeable searcher? Does the process of eliminating and selecting actually assist the student to refine more fully exactly the nature of the information required or does linking to many sources distract from the original focus of the searching or is a combination of these dynamics? As the web environment appears to be the one of choice as opposed to books for this sample group it is important to critique more fully this cycle of anticipation. Information decisions are being made rapidly as students link and hyper link fuelled by the desire for the speedy 'finding' of the right information. The world view of information, information use and information processing held by students is of relevance here specifically in terms of the development of curriculum to support IL learning and the library's collection development strategy.

Information evaluation

The information skills conception includes information evaluation skills as revealed in the narrative about students' information use experiences. This study does not set out to examine information literacy behaviours but the students in drawing from their experience reveal the kinds of decision making process, both covert and explicit, that they go through in their information evaluation decisions. In practice it would appear that students know that library sources both online and physical and preselected web links made available via Euro Moodle are reliable so there is no major evaluation or decision making apparent here. In practice information evaluation appears to come to the fore in regard to information available through the WWW. Section 4.1.1 highlighted that

students harbour a great deal of scepticism around the validity of web based sources and it is specifically in this information seeking process that students highlight the importance of skills and attitudes around knowing and making decisions on the reliability of information. Once students find information they identify that one strategy for deciding if a source is reliable is to cross check information against a book or library source as this quotation reveals:

> **SSS8** *"Maybe you could go to the library and check out a book and read about the topic and then come back to the web site and see what is true I mean the website won't have the exact same words as the book I mean like it the info from the book you can relate to the website and I guess if it's not true I guess then you don't use it".*

Another suggestion was to check with a person who might know the information:

> **SSS14** *"You go ask someone who might know".*

A second strategy was to select websites that are developed by known organisations for example NASSA if you are searching information about planets or space:

> **SSS8** "*Like NASA".*
> **SSS16** *"NASA you know like have already done things in space, I don't think like people would just go there and put false information like people who are like authors have to really think about facts".*

Equally students advise making decisions about the reliability of a source can be based upon whether the author or organisation has an expertise in the subject as this quotation suggests:

> **SSS3** "*Well like if it has a lot of information on it and it's made by someone who is an expert on it like the company that's known like National Geographic then you can use that but if it is something you don't know or it doesn't have much information then you just don't use that site".*

In the same vein another student highlighted the importance of using prior knowledge to decide if information found is true:

> **SSS16** *"Like take something you know is true like if you are doing a project like smoking like that we are doing in health right now like if it says like that it weakens your heart then you know like that is true like you know it is proven evidence on it*."

In so far as students identify what sites should be targeted to include in a search process they also appear to emphasise the need to eliminate sources en route to finding the good information amidst the 'Junk' on the web as this quotation indicates:

> **SSS3** *"Well sometimes like if you are on Google and you can't find it on the first page then its best just to go a couple of pages in and skip a few pages because it's just junk, junk, junk and then there is stuff that you are looking for so sometimes if you go farther into the website you can find good information".*

The information skills inherent in evaluating particularly online sources, as indicated in the student feedback, involves critical consideration of issues of expertise of the author, of whether the information aligns with prior knowledge and whether the validity can be confirmed by cross checking with a library or other authoritative source. The skill of evaluating information however also extends, according to the students, to decisions about whether the information found is biased:

> **SSS13** *"And like there is a lot of different information on things and like a lot of different people think differently about things so they put a lot of different things on there and you don't know which one is right".*

This feedback indicates a critical awareness that information found may represent different thinking by different people and this makes it difficult for students to decide which perspective is right. This decision making process relates to having the skills necessary to unpack and identify opinions, value statements and wider world view standpoints which are also part and parcel of information evaluation and decision making processes.

Making sense of information

Information finding and evaluating skills are two related information skills identified by students as necessary to engage in the IC. However, students also highlight skills around making sense of information which is a related but different information skill. The process of making sense of information, based on student feedback, involves reading skills including the ability to skim and scan texts, take notes manually or on the computer and essentially make sense of the information and develop one's own understanding of whatever topic is being researched. These skills are identified in the following series of quotations:

> **SSS11** *"...Like you're reading something and its super long so I skim a little bit and the teacher goes like that part that you skipped in class had clues and then I go like so you should always like read stuff - you don't have to read unnecessary stuff like you know let's say you clicked on a link and you know it had like Saturn and Jupiter in it then you don't have to read about Saturn and Jupiter just Mars".*
> **SSS15** *"First I read it slowly and then I skim looking for the words I want; like the information I want and then I write notes on sticky notes".*
> **SSS16** *"I write on Word".*
> **SSS9** "*I write it down on paper with my pencil".*
> **SSS16** *"Sometimes I use bullet points for facts or I make paragraphs".*
> **SSS8** *"Mm, well I find bullets helpful and I word you can get like a sketch book and we did that in social studies and it's like you're own virtual notebook so you can just put your notes in there".*
> **SSS15** *"Well with my sticky notes I write when I need to like facts and then I make a paragraph with my facts in it all the important facts and yea I write it down in a notebook".*

For some handwriting is important as it helps them to "think more" about what they are reading as these quotations indicate:

SSS11 "*We usually write down because then you really have to yea think about your writing I don't know about some people but for me when I am typing my fingers kind of just automatically type words so it makes me think more so I remember what I have to write and then".*
SSS10 *"Yea I like to write because also it is better when you write because you learn it and also I can see my mistakes better like with just pencil and paper because I don't know like it's just on computers it's so like every single letter look like perfect and you never know if it is wrong unless you do spell checks."*
SSS13 *"Yes sometimes because any time like I write it - it gets into my brain and then if there is a test coming sometimes just to really make sure I have it I 'll just write it down again just quickly to make notes just to make sure I really understand it".*

"Taking the meat from the bone" is also a stage in the making sense of information process as this quotation suggests:

SSS3 *"I sometimes just open new tabs so I have everything just there and then I go through all the websites I am going to go through until I Figure out which websites I am going to use and I go there and I will copy down some of the information, - so like I will take the meat from the bone from every single website".*

Reading however can be challenging for students because of the difficult language that is sometimes encountered in search for information sources:

SSS13 *"I would also look at whether it is easy stuff to read cause sometimes it is really difficult and it's got like weird stuff on it that you don't understand so sometimes it is easier to find something that's a little easier to read".*

Whilst difficult language is a problem generally, science language in particular was highlighted as particularly hard:

SSS10 "*Science language is pretty hard cause like it's all this complicated words - well pretty much everything on the internet is kind a hard to read - because most of them like are written like by people who are professionals so they think like everyone knows this word but actually you're like what does that mean?*

In this discussion students noted that books can be a better alternative:

SSS11 *"Like there were some that had really hard words that you couldn't really understand but I think that books are best to use because like you can always trust them like because a publisher and editor like had to go through it and make sure like most of it or all of it was true and also it's like lots of times when you go on the internet you have like 3 sources like 3 websites like that you use to write up a paragraph or whatever and like lots of times they are saying like 3 different things so like one is saying a person was born then and then like another page says like he was born another time".*

The skills of reading, note taking and tackling issues of difficult language are part of the making sense process as this quotation indicates:

> **SSS8** *"You can go on the web site and you can get information and put it on to word like make it in your own words and put it onto word and then you put it in and then when you are done taking notes just like space it out and then just make everything make sense".*

However, this student goes on to state that this making sense of information is hard because:

> **SSS8** "*You have to make sense of all this information you have and like most of is like all jumbled up so you have to say this goes here and that goes there and that goes right there and then after that you read it all and it makes sense".*

These vignettes from students about their information experience around making sense of information indicate the challenge students encounter and also the centrality of this information skill for their learning in a context where books are perceived to be better resources but the web appears to be the most used information environment which raises questions as to how such a knowing doing gap prevails and how might it be redressed in the development of IL learning strategy and frameworks.

Communication skills

Finding, evaluating and making sense of information are key information skills identified by students. However, they also talk about sharing their information and for students this means making their presentations or preparing projects and they emphasise the importance of having the best information possible so people can learn as these quotations suggest:

> **SSS16** *"Well sharing is a good thing cause like then you can teach other people. You want to make sure your information is like the best you can get. Make sure that it is good and that it is something that they will find interesting so then people can learn from".*

Sharing about learning was equated to how books came into being as this quotation suggests:

> **SSS16** *"Cause that's like kind of how the book became alive because like people were sharing information and that was how like the book was made".*

These quotations are interesting because they reveal the students' awareness of their responsibility to share good information and also their idea of teaching others about what they have learned. Furthermore, presentation skills are perceived by students to be connected to learning to be confident and to be positive as this quotation reveals:

> **SSS8** *"It really depends if you are confident that you will do great then I guess if you stay positive then yea then I guess you can do good but then like if you are like I think I am going to mess up - my friends are going to laugh at me and the girls are watching me and all that then you just say I can't do this".*

The importance of practice is noted also:

> **SSS9** *"Well I get really nervous and I like to practice it over and over. You should maybe share*

it first in front of other people cause that helps you".

Team or pair presentations appear to be less daunting for some students as this quotation suggests:

> **SSS8** *"Yea and also if you are doing with some other person then you are much more confident and you don't mind like cause I mean like everybody is looking at him and me so I am not in the centre of attention".*

Students conceptualise IL as a set of interrelated information skills and whilst certain skills have been documented here separately it is important to note they are not necessary stand alone in the students' experience. For example, searching and information evaluation may be occurring simultaneously but they have been presented separately to unpack the various layers of information experiences occurring that point to these skills as necessary to a positive information experience around learning. Furthermore, it is evident in the feedback from students that IL is something that permeates the curriculum and students perceive all their teachers to be involved with supporting their information experience. That said the school librarian is clearly perceived by the students as supporting their learning around the use of library sources and the IT teachers play a role in supporting students to learn how to use information technologies and how to be safe in the online information and communication environment.

4.1.2.3 IL is a participative practice

This conception of IL as a participative practice is focused on students themselves and people as creators of and contributors to the IC in the context of school based studies across the curriculum. The conception implies a more life related and beyond curriculum focus at both a local school level and at a more global level via interaction with the WWW. At the affective level there is positive feeling about the sense of agency student perceive themselves to have in the IC however there is also the sense of responsibility felt in regard to the consequences of participation in the IC.

A particularly memorable quote in this regard was:

> **SSS7** *"…every day more people are born and more people get more ideas so it (WWW) keeps growing and growing".*

Implicit in this quote is with the arrival of new people into the world there is also the potential for new ideas and within this IC these people have the potential to share their ideas in the online information environment. For these young middle school students, the internet as an information experience offers them opportunities to participate in the IC and it appears that this is a normal everyday expectation and occurrence or a natural practice. Students participate in the online IC

through creating their own websites, or correcting what they perceive as misinformation or to share information as these quotations reveal:

> **SSS4** *"Yes well I put up a website once and also there was this place on Wikipedia where you can't always rely on it. There was this thing that was wrong so I changed it I could edit it and I changed it so it was right".*

Equally when engaged in information finding and gathering experiences students report how they encounter other people's information, answers to questions and their opinions on various topics as this quotation reveals:

> **SSS16** *"Yea people can put their opinions in it so it's like there is this one Wiki answers or there is Yahoo answers so you can type in like and after there will be some people who like a year ago or a month ago and they put their answers down and then you put your answer".*

Moreover, this quote points to the students having the expectation to contribute to other people's learning as well as their own through participating in these mini learning forums or communities. This active participation is seen as part of the normal information experience for students which has important ILE implications for how students can be supported to learn and create connected learning encounters and experiences that are both individual and collaborative through using existing forums such as Google and Yahoo answers or through social media networks.

Furthermore, students understand their participation is not occurring in an anonymous vacuum and that there are consequences to their participating in the web based environment as this quotation reveals:

> ***SSS7*** *"Yes - you have to be careful cause once you post something there you can't take it off. Everybody is going to look at it and if there is something that you could get embarrassed about then better not be putting it there because then it is going to affect other things. Yes, it's not like oh well I posted it today - I will take it off tomorrow. I just realised this thing. No, once it's there it can't get off".*

Implicit in this advice is that IL as a participative practice requires students to understand the nature of that practice and the implications of their participation. Students also participate in many online information and communication contexts such as via e mail and are critically aware of the value of using for example the school's own e mail system First Class as they perceive this is a safer environ to share and communicate around school and home work. The sense of protection around participating in various information communication environments is evident in these quotations:

> **SSS4** *"The good side of first class is there aren't any advertising that maybe could have viruses. If you know somebody you want to send an e mail you only need to remember the first three letters of his name and you just need to type them and a bunch of names come out with those letters and you find the right one".*
> **SSS1** *"I think First Class is a lot more safe than Yahoo or Hotmail because there is nothing*

inappropriate that you might think oh 'My Gosh' why was that on there".
SSS14 *"Safety (is important) like because sometimes things come up on the internet like you have just won a new iPod and please give us your information."*

So participating requires an understanding and questioning of information sources which are relates back to the information skills set conception that identify finding and evaluating information as key information skills relevant to IL as a participative practice. The importance of staying safe online arises within this conception of IL as a participative practice as evidenced in the aforementioned quotations and includes understanding the importance of using a school e mail system, using online sources that the teachers and librarians have recommended or placed on Moodle and extends to protecting your personal information. The conception of IL as a participative practice is in turn connected to the final student conception of IL as fair and ethical use of information.

4.1.2.4 IL is about fair and ethical use of information

The narrative around students' perceptions of the IC and conceptions of IL reveal that students are critically aware that other people participate and contribute to the formation of their IC and experience. In connection with this awareness of the contribution of information, opinions and ideas by other people there is equally an understanding of the need to not take other people's ideas, information or creations. This thinking manifests in the conception of IL as the fair and ethical use of information. This conception focuses on understanding copyright and fair use of information as the following quotations indicate:

SSS16 "*Well like its people take other videos that people have made like something they have created and they kind of just took the idea and then maybe they say like hey this is my video".*
SSS16 *"...You could go like to prison its illegal and it costs a lot like you have to pay a fine. And also the IT [teachers] talk to us about cyber bullying and how people like can say means things on the internet and the number one thing is like not to give out personal information about yourself on the internet cause that's really bad cause she shown us all these e mails that's she's gotten like you have won 250000 dollars please fill in this blank but like there was a lot of spelling errors".*

Regarding copyright and students' understanding of this whole area on an applied level it seems this may be a difficult concept for them at Grade 6 level as this quotation suggests:

SSS8 *"But are we copy writing if we are copying information from encyclopaedia? cause normally I always highlight everything I mean I highlight the things I want and then I copy it and put it back onto word and then I make it mine I mean I change the words to more simpler words like".*

This quotation captures the sense of uncertainty students experience when working with information. Here the student shares that when they find information they highlight the things they want and copy the information changing the words to simpler words. The student here however

questions if the process of putting the information into their own words confers ownership of the information on them because as the following quotation indicates they do not want to plagiarise others people's work:

> **SSS10** *"Oh Like I write notes - bullet notes like when you write bullet notes you are going to have to transform it into a sentence because you don't like want to do plagiarism...".*

The key purpose of this conception in its applied sense is that students seek to ensure there is fair use of information and that they don't plagiarise another person's work or ideas.

4.1.3 Exploring dimensions of variation of conceptions of IL

In this section the dimensions of variation of conceptions of IL in relation to the perceptions of the IC are explored and Table 4.1 represents the outcome space capturing the categories of description of IL alongside the application of conceptions and the nature of variation. IL as a process of using IT tools captures students' awareness of the environmental dimension of their IC. IL as a set of information skills reflects the kinds of cognitive skills required to learn in the dynamic IC characterised by "everyone's" contributions including their own and as such students see IL as being able to develop skills to learn in this environment which is "never going to stop and is with us forever" (SSS7).

IL as a participative practice demonstrates students' perceptions of their IC as a social human context and experience where by people can be sources of information and mediate their information experience. Students themselves are also mediators expecting to contribute to other people's learning through responding to or asking questions in online learning forums such as wiki or yahoo answers in addition to sharing within the school based context.

Finally, the conception of IL as the fair and ethical use of information for learning directly connects with the conception of IL as a participative practice and information experiences exist at the social human level whereby information is perceived to be owned and cannot be taken as it is not only wrong to take other people's things but it is also illegal. This conception therefore could be described more as an attitudinal or dispositional conception whereas the other three may be described more in terms of the development of skills and understandings of ways to use information for learning.

Table 4.1 Outcome Space: Dimensions of Variation of Students' conceptions of IL

Referential Aspect Description of Conception	Focus RE Application of Conception	Relationship of conception to perceptions of information context (IC)		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	Primarily applies to the individual, self, local, immediate, technical and pragmatic levels in order to complete school work which may also be undertaken at home.	The IC is perceived as external including the WWW, the Library and books.	The IC is perceived as a social and mediated context whereby IT tools are utilised to communicate with friends and teachers via virtual learning platforms and social media.	Information context including WWW, IT software/and hardware and various IT applications which students encounter in both positive and negative ways.
IL is a set of information skills.	Primarily applies to the individual, self, local, immediate and pragmatic levels in order to complete school work. However, communicating information implies an 'other' focus to transfer what is being learnt to others.	The IC is perceived as external including the WWW, the Library and books.	The IC is perceived to be social and human whereby teachers, parents, friends act as information mediators, guides or as sources.	The IC is approached with scepticism due to perception of unreliability of WWW information. Students feel that finding right and good information is the hardest task.
IL is a participative practice.	Applies to both to the individual self- level and to the 'other' level in terms of application. The focus is primarily immediate and pragmatic but also embraces a wider school community and global application.	The IC is perceived as both external, internal and subjective. Students create and contribute to the context particularly regarding WWW.	The IC is particularly the WWW is created by people including the students themselves and is a social human context.	The IC (WWW) is created by people including students and there are responsibilities and consequences to that participation. Staying safe is important when participating in the IC.
IL is the fair and ethical use of information.	Applies to both to the individual self- level and to the collective level and also embraces a wider beyond school application.	The IC contains multiple types of sources available on the WWW, media, print materials, videos, film that legally belongs to other people.	The IC is perceived to have information sources that are owned and created by people including students and that this must be respected.	The IC is perceived to be created by other people and by students and it is wrong to take other peoples' property. There is a concern or fear not to plagiarise.

4.1.4 Comparison with AASL (2007) standards and the **Big6™**model (1990)

Students' conceptions of IL when compared to the AASL standards for the 21st Century Learner (2007) and the much used Big6™ Information Skills model developed by Eisenberg and Berkowitz (1990) indicate there are some dimensions that are similar and others that are definitely different as indicated in Figure 4.6.

First in regard to the AASL standards students' conceptions of IL as being about a set of information skills including, finding evaluating and making sense of information maps closely with the Inquiry based research process of the AASL standard 3 (American Association of School Librarians 2007). This

conception equally mirrors four of the elements of Eisenberg and Berkowitz (1990) Big6™ model including information seeking strategies, location and access, synthesis and evaluation.

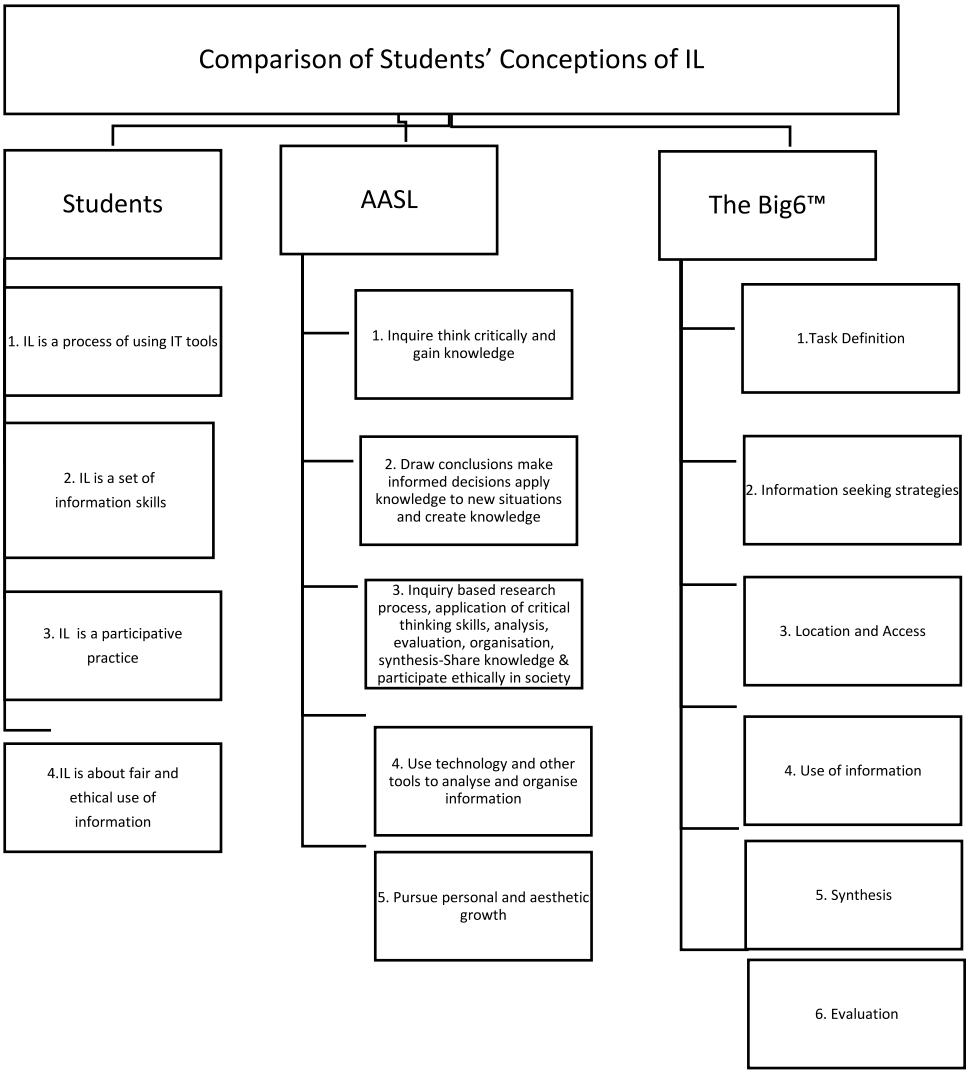

Figure 4.6 Comparison of students' conceptions of IL with IL models and standards

The students' conceptions of IL as a process of using IT tools aligns with both the ASSL standards (use technology and other information tools to analyse and organise information) and the Big6™ (Eisenberg and Berkowitz 1990) model of information seeking and location access skills. The students' conception of IL as fair and ethical use of information maps to the AASL (2007) standard to share knowledge and participate ethically and productively as members of our democratic society.

The main difference then revolves around the student conception of IL as a participative practice which captures the social human nature of the IC as perceived and experienced by students.

Whilst the ASSL standard does refer to the need for 21st learners to participate ethically as members of a democratic society this might be interpreted more as the dispositional conception of IL as the fair and ethical use of information identified by the students. The steps 1-6 tasks of the Big6™ model (Eisenberg and Berkowitz 1990) are also implicit in the skill set of finding and evaluating information in regard to learning.

Furthermore, in regard to the social human and affective dimension of the IC the conception of IL as a participative practice draws a focus towards the feeling and emotions experienced with the information encounter. Information is experienced relationally and not as something that is separate from the information user and this is an important dimension of the participative conception which does not come into focal awareness in the AASL (2007) standards or Big6™ model (Eisenberg and Berkowitz 1990).

This participatory conception of IL is an interesting finding which demands a widening of curriculum horizons to offer opportunities to students to develop a critical self -awareness of how and to what purpose they will seek to craft the IC and have their knowledge in turn influenced by their engagement in the context.

4.1.5 Conclusion

The analysis of student feedback regarding how students perceive their IC in Sections 4.1(1/2/3) as a vast connected and ever growing context at the environmental, social human and affective level can be interpreted to be of direct influence on their conceptions of IL. The IL experience is found to be correlated with information proximity and immediacy of the task which may manifest itself at times as being heavily web centric. In essence the experience is very much informed and mediated by the human and physical architecture of the IC in tandem with social dynamics.

The significance and implications of these findings will be discussed in Chapter 6 but now this Chapter moves to present the conceptions of IL that surfaced from the parent stakeholder group providing an interesting juxtaposition to students' conceptions.

4.2 Parent

Parents offer a unique perspective in progressing understanding of children's IL experience across school and home boundaries. In this sense parents witness their children's information behaviour patterns at home away from the scaffolding of the school environment. In the previous section it has been noted how students report that they perceive their parents as possible supports to their learning experience at home specifically in terms of potential information sources or guiding information searching.

4.2.1 Perspective on information context (IC)

The following analysis of parent feedback regarding perceptions of the IC reveals that for parents the IC is the source of both potentially positive and negative information experiences for their children, and as overwhelming in terms of the pace and nature of change specifically the integration of digital tools. As can be seen in Figure 4.7 parents identify a multiplicity of elements comprising the PS IC and through systematic coding and analysis three dimensions of the IC were identified from the data as follows: The Environmental, Social Human and Affective dimensions and within each category of description specific perceptions of that dimension are revealed as shown in Figure 4.7.

4.2.1.1 Environmental

Parents perceive the structure of the IC as something vastly different to the IC they experienced as children. Two main perceptions of the environmental dimension which relates to the physical structural and virtual elements of the IC arise from the feedback to include it is dynamic, compartmentalised, changed and changing with the introduction of the one to one lap top programme as a key driver of change as indicated in these quotations:

> ***SSP50*** *"Maybe I would use the word compartmentalise - there is a web site and in theory it should all be there but there are different aspects like Power School - if you want to look at the children's grades you have to go to Power School."*
> ***SSP46*** *"They go onto the computer but a lot of times I actually give them a book. They find the book a lot more useful for their projects. I have a wide range of books on many different topics and often when I was working in the Library I knew what they were doing so I would take the books out for the curriculum but at home I have simple books that are at the standard they need and it is often from the book that they get what they need."*

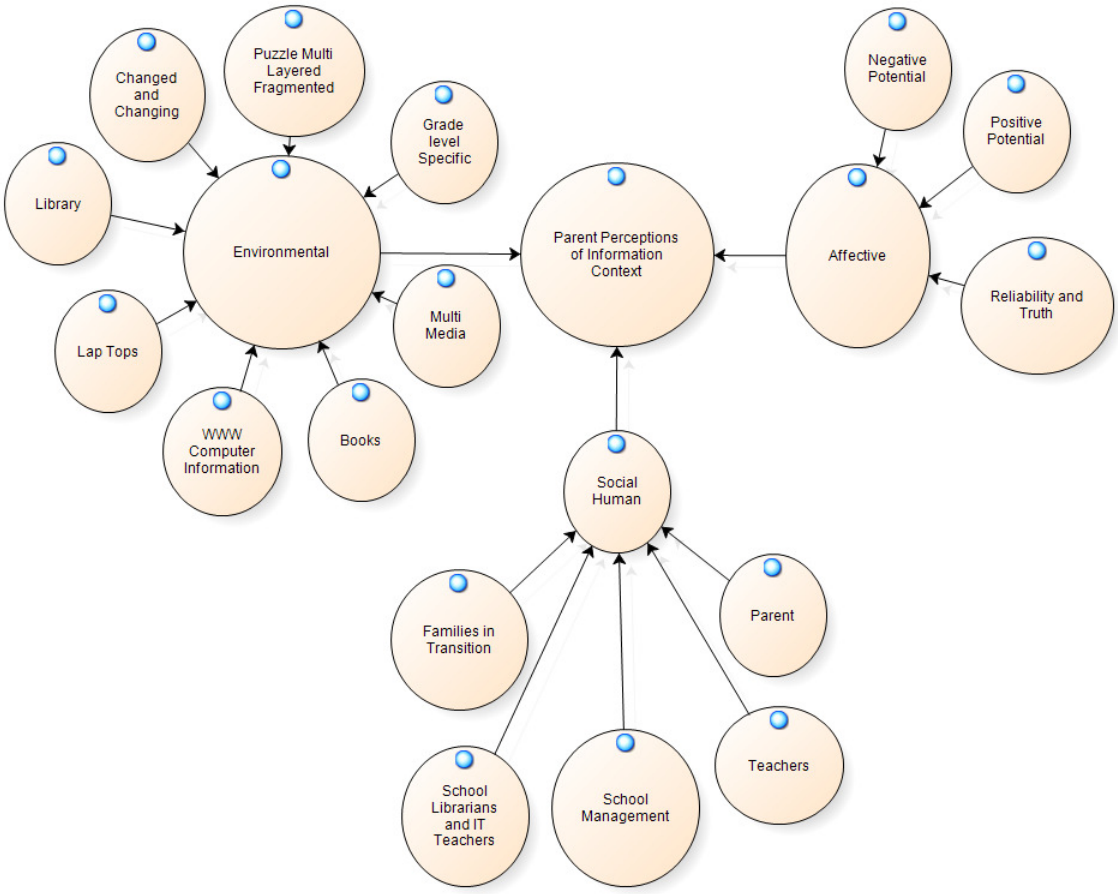

Figure 4.7 NVivo output from coding of parents' perceptions of the information context (IC)

The importance of children being able to source information at the 'standard' they need it to be refers to the reading level as such and so parents find that books that are carefully selected by them or provided through the library can supply the information the child needs. For students in high school parents notice that their high school child uses books more for maths and science whereas for social studies the internet is the preferred medium:

> ***SSP49*** *"...with my older one in high school, he looks for information more through the web in terms of social studies but when it comes to maths or science then he goes to the book and then he goes to the web that's very interesting."*

In this context parents highlight the excellent resources being provided and support given by the school librarians:

> **SSP40** "*We are so fortunate in an International School and I say it is so fortunate that you have a librarian to teach you this and the libraries here I am really very fascinated with they do such a good job because they don't just shelve books they don't just catalogue books they provide so many things for the children and the books are really good so good. The library has done a really good job*."

Nonetheless even when quality and reading level appropriate online subscriptions are made available through the library web pages they may not always be used consistently by students according to this quotation:

> ***SSP44*** *"My junior is in News Bank a lot but you know conversely you know I see the Middle schooler is Googling a lot because I think that is just an easy habit."*
> ***SSP42*** *"Mine - well certainly when it comes to research they immediately go to the internet they will not go to books first and I think the most popular one is Google."*

The findings indicate that parents sense a shift in the patterns of use of online and print resources and this sense of change also pertains to the trends in using the library relative to when they were children:

> **SSPD47** *"Yes of course I think things have changed and sometimes I find my daughters...they just collect I think from everywhere. In our day you would go to the library and you would pick from there but today it's just the way that information comes to them that is different. But the information is still there and twenty years ago the information was there but it came to you in a different way."*

Parents perceive that with the introduction of the one to one lap tops and the virtual learning interfaces such as Euro Moodle that the footprint of the IC now extends more immediately into their home life and as such is having an influence on home school relations. The IC is perceived as both objective and 'out there' at one level in regard to the WWW and lap tops but at the same time they see the IC as subjective experience with a human social dimension which will now be considered.

4.2.1.2 Social Human

The IC is perceived to be a socially mediated context crossing home and school information experiences. In the home domain parents see themselves as an information resource to their children especially to their younger children whether that is to supply information or support their children in their information seeking and use experiences.

> ***SSP49*** *".... Then my little school kids I think they just ask first you know ask Mom Dad."*

Equally parents perceive the IC at school is as a socially mediated environment whereby teachers, librarians, IT teachers and members of the leadership team are expected by parents to support their children to have a positive information use experience for their learning. Roles, expectations and responsibilities permeate parents' perceptions about IL learning at school and at home. The findings show there are various perceptions held by parents regarding the balance of ownership for IL learning as is evidenced in the following series of quotations:

> ***SSP49*** *"The Library and IT does." [Teaches IL skills]*
> ***SSP42*** *"I think the IT is especially on the safety side and I think the library has all these sites*

that they have subscribed to and which they recommend."
SSP40 *"The library has done a really good job."*

However, there appears to be differing perceptions regarding whether IT teachers or the librarians should teach IL. It is suggested that maybe IT should develop a module to help children develop a step stage information use process:

> ***SSP44****" I think there are just too many choices there are a lot of things in life you know some times when there are so many choices they are overwhelmed for a start and I think it is the teacher's job to try and help them focus and narrow it down and you are right [re what parent x said] then you need to know what to do with it I mean here's your step one two three you know."*
> ***SSP46****" I think that could be one of the IT modules"*
> ***SSP44*** *"Right because they do have some very useful IT Modules - safety is fantastic."*

And on the other hand it is suggested that the library take on more of this work because this is not an IT class objective:

> ***SSP50*** *"I would like to see more of it done through the library research because I think because teaching it in IT class they are failing to see that it is not only an IT issue it is an information issue - it is about how reliable this text book is?"*

Based on these findings the IC is perceived as a socially mediated context whereby parents expect teachers to have advance knowledge and understanding of the relevance and content of any information pathways they recommend to children:

> ***SSP46****" I think that boils down to responsibility I think that if children are directed to look on the internet for information there is a responsibility I think that should be placed on the person giving that job that task to students to make sure that there is a percentage say whatever percentage say a 90% satisfaction level with the sources and the links that they give them. And you know this problem has cropped up and its incredibly frustrating as they spend not this half hour on the homework but an hour and a half [other parents nod in agreement] searching and that is one piece of homework and as they get further up the school they don't have that time to be searching everywhere and the information is a lot more complex - the information they have to find and the questions they have to answer than they used to be."*

It is clear that parents perceive themselves and the teachers, librarians and IT teachers as all mediating children's information use experiences. What is unclear is who is perceived to have responsibility for the development of children's IL and it would seem parents hold varying expectations around the roles and responsibilities of teachers, librarians and IT teachers in this regard. The prevalence of such a varied range of perceptions regarding both the shifting nature of the physical structural architecture of the IC and its inherent social human dimension is interesting as these perceptions in turn appear to be bound up with an array of emotions and feeling towards the IC context and its use for learning which when pooled together compose the affective dimension of the IC.

4.2.1.3 Affective

Four main perceptions are identified in respect of the affective dimension of the IC to include: The IC offers a broader spectrum of information resources, a more enriching experience and more opportunities to make learning a fun experience compared to the past; the IC is "a double edged sword" creating a protection potential dilemma and anxiety for parents, is problematic due to reliability and bias concerns particularly in the web environment and to be potentially distracting having a negative impact on children's information and learning experiences.

At the positive end of this continuum parents welcome the new potential that the WWW offers their children in terms of it being a source for significantly more information:

> ***SSP39*** *"...and I think that's an aspect I really appreciate as a parent because I think it makes it wider broader information base so you can diversify the different learning opportunities I think."*

Equally the new technologically driven information environment offers the potential for learning to be more fun for children:

> ***SSP39*** *"Yes my youngest is in first grade and I have one in 5th grade but I think that they (teachers) use the smart board very early - in the Early Years program - to me I think that is a huge advantage actually you know making learning the alphabet more fun you know popping the letters into the right order."*

Parents also feel their children's interaction with the changing IC is more enriching demanding different levels of critical engagement involving all the senses when it comes to the experience of using the IC for learning and achieving good grades:

> ***SSP41*** *"...I think what you said [participant x} about the audio and the visual that that is a huge part of how it enriches their learning. And how it is no longer visual on a book page but it is auditory, its feel and touch, and kinetics and movement so the depth of learning is much greater because they are seeing it from many angles if your kid wants to get to that level of thought. I think they also watch You Tube."*

Parents welcome the introduction of the lap top programme for the potential it offers to their children as a gateway to information but they are challenged to know how to manage their children's use of school lap tops when the children are at home:

> ***SSP42*** *"…I mean the information is wonderful the way it's done at this school they do their best to teach the children …I have a bit of a problem with it in the sense that the children are given the laptop and it's with them always. At home because it's new, they want to use it. It's got all these features and they want to use it, so in a sense sometimes I feel like I am filling the role of the policeman and trying to monitor what is going on because you never know when it is homework or not."*

This quotation captures the uncertainty parents feel in terms of their children's access to a personal lap top and how to manage this new information interface with the inherent dilemma of questioning about playing the 'role of policeman' and the whole issue of trust around children's use of this tool. Parents appear to be caught in an uncertain situation as to how best to manage their children's use of these new digital tools which proves an interesting perception when it comes to how they conceptualise IL.

The IC is perceived as "a double edged sword" creating a protection potential dilemma and anxiety for parents:

> ***SSP40*** *"I think it [the WWW] is a double edged sword, yes, because it is so good the internet but if we misuse it - it can be many other things."*

They hold a mental image of the online information as being a potential source of "inappropriate information" for their children and this in turn is a source of anxiety and fear for parents:

> ***SSP38*** *"Well it is entirely in my experience well ...or maybe too because I want to protect my younger children from unimportant information or from very banal information or very explicit information. I want to keep them safe with the internet usage I really want to make sure that my children are protected from these unwanted sites but I don't know how to do that. I know that when you go to hotels you can block certain TV stations because you're parents or whatever."*

Parents feel threatened by the pace and unknown nature of the information context that is increasingly more technologically driven:

> ***SSP46****"... it is threatening I just feel there is so much out there and I just feel I am constantly running and they are always going to be ahead the kids are going to be ahead of me and the IT world is going to be ahead of the kids and it is threatening."*

Parents admit they themselves don't know what impact their children's engagement with the online information and communication environment is having and they want to know more and they want teachers to know also:

> ***SSP47****"That is the fear - the fear that you don't know the future and what you don't know you are always afraid for ..."*

To further compound the sense of fear and anxiety they share about the changing IC parents perceive that there are real issues about the reliability of information found on the WWW. Parents identify their children are challenged regarding how to decide what is good information. Relating to a child's information experience when completing a science project on insects the point is made that children just take information from a website believing it to be correct and true:

> ***SSP38*** *"Yes but that is very telling in many ways because she [the child writing the science*

assignment] is writing all the information, everything that is there...it is just like because it's there in the computer oh that's all good. But, even on Google we have got to realise well, what is really good in terms of the information in terms of the sites where are our children going to?"

Compared to their own experience as children, parents feel that they didn't have to question the reliability of their sources to the same extent. For example, parents speak about using books and the encyclopaedia as their key sources for information:

SSP50 *"...and it was definitive you didn't have to question the information source because it came from a text book whereas they are being taught that they have to from a very early age to think is this reliable - well one would hope that they are being taught that...how to you know say well where is it from - if it is published by a government then it might be alright."*

Not only do parents perceive their children's engagement with the IC to be potentially dangerous in terms of exposing them to inappropriate information but parents also question their children's continuous "clicking" for information and if this is really helping their child to focus and reflect:

SSP42 *"Sometimes I wonder you know I am one for repetition and so for me going through the experience of struggling through reading the books it just sank in more and sometimes I see all this click, click, click and you know they are all in this rush process you know we need to slow because the information is so easily accessible."*

The issue of focus is something that parents feel relates also to their older children whom they witness doing their homework and there are so many social media distractions:

SSP44 *"Yes I think it needs to be planned to the child's development also the child's maturity because the other thing I wanted to say to is that I am finding my 11th grader is doing his work he has got iTunes on, he has got his Skype on Talking, he has got Bing, Bing, Bing and you know you have to wonder you know they say you know you read and you say okay they are learning they are able to learn with all that going on - I don't know are we making sure that parents and teachers are up-to-date on the latest studies that really tell us how does your brain work?"*

4.2.2 Parents' conceptions of IL

The feedback generated from the dialogue involving parents revealed the complexity and diversity of their perceptions of that context revealing they experience it as a phenomenon that straddles the home and school domains. In this context parents are concerned about issues of control over and protection from potentially negative aspects of this IC which influences how they conceptualise IL as will be demonstrated in this section and at the same time are excited and value the opportunities this changing IC offers to enrich their children's information and learning experience. This complexity of parents' conceptions of IL is captured in Figure 4.8.

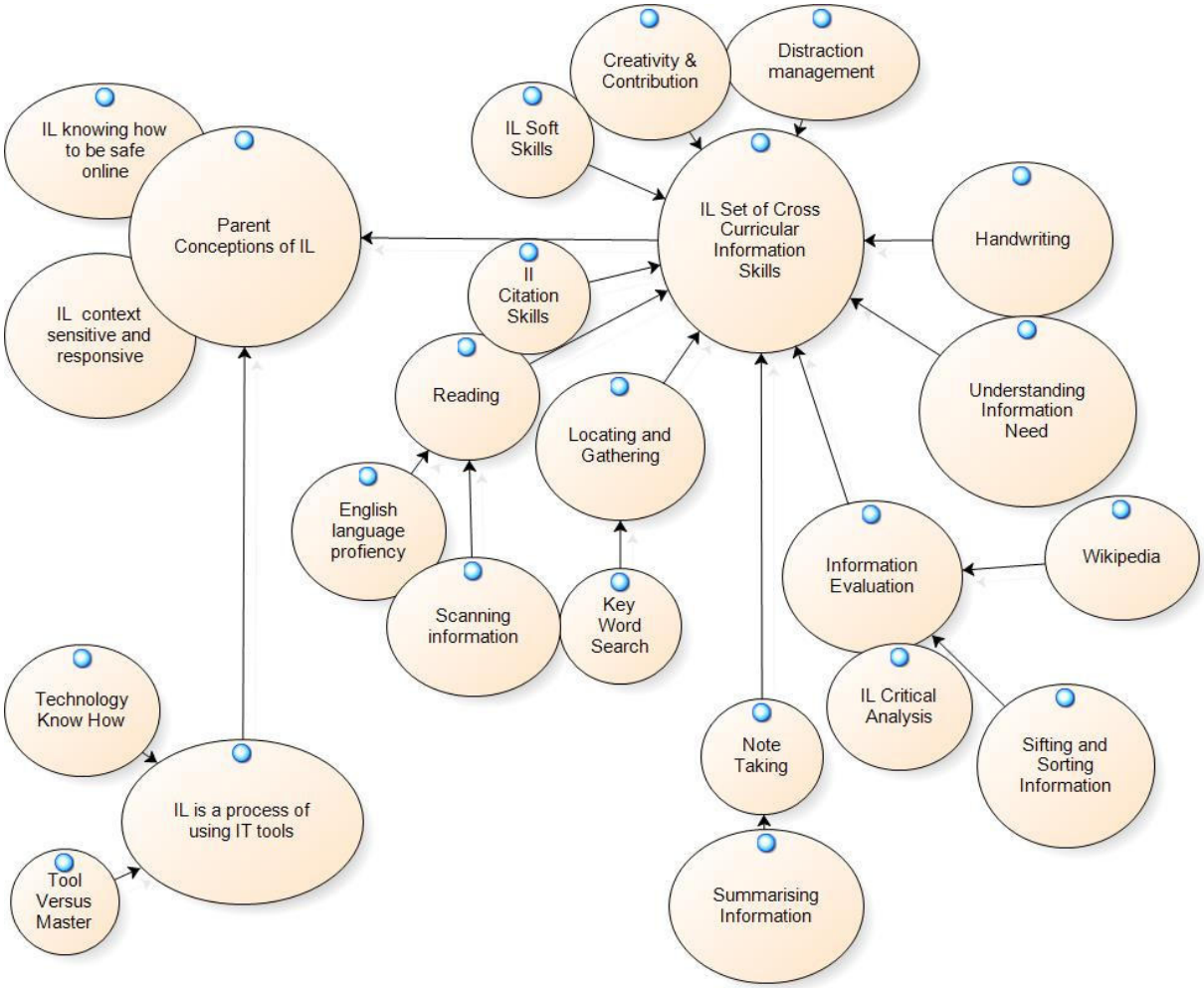

Figure 4.8 NVivo output from coding of parent conceptions of IL

Through repeating the cycle of analysis, interpretation and review of evidence and synthesis four categories of description were constructed as depicted in Figure 4.9 which shows the categories as a cycle of interdependent categories because this was felt to more accurately reflect the collective understanding from the feedback.

The findings show parents conceptualise IL as a process of using IT tools, as a set of information skills, as knowing how to stay safe online and as a way of learning. The discussion will now move to demonstrate how these categories of description are grounded in the feedback before going on to consider aspects of variation in Section 4.2.3.

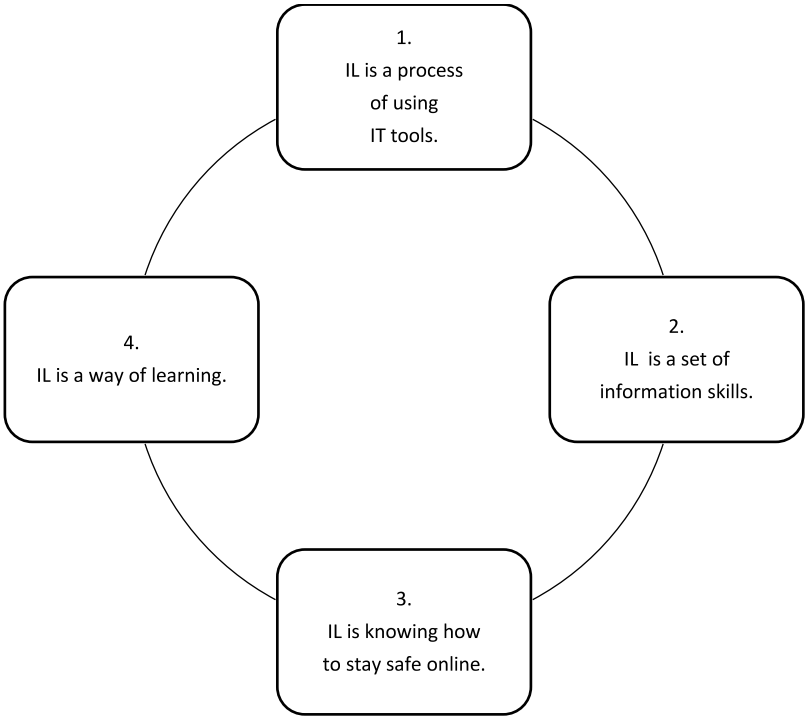

Figure 4.9 Parents' categories of description of IL

4.2.2.1 IL is a process of using IT tools

This conception is focused on children individually learning to use IT tools in order to gather, organise and communicate in regard to immediate information and learning needs for school based curriculum work as revealed in this quotation:

> ***SSP45****"Yes it's about skills and definitely to be able to navigate through that landscape you need to have some computer skills and if you don't then you are lost."*

However, whilst IL is about a process of using IT tool these tools shouldn't overshadow IL especially in terms of educators allowing a focus on IT to "blur" their understanding of it being a tool to enable learning:

> ***SSP50****" I think educators need to be very aware of the tools that are available that the students use of the journey that the kids take as they are doing their research. But equally to see ...just to see them as tools and that we never get away from the underlying learning of having information, and evaluating it, and of putting it together, and making choices about what you are going to include, and knowing when to stop, and then presenting it back, in a format that you can communicate to other people, that shows what you have learnt. All those basic ideas haven't changed and sometimes I think that technology tends to blur the educator's vision..."*

This quotation reveals the sense of struggle around clarifying intentions and expectations in regard to how IL is conceptualised and the need to retain a focus on supporting children's learning in terms of their information use experiences whilst also ensuring children are supported to learn how to use IT

tools in ways that enable various stages of the information experience. Each of these stages are clearly delineated as information evaluation, selection, making choices on what is relevant, knowing when to stop and moving on to communicating what has been learned. In this sense IL is a process of using IT tools to support or enhance the information experience embracing the online information context alongside recognising people and various other media as information resources as this quotation suggests:

> ***SSP46*** *"It is only a tool you learn how to use the tool the software that drives it your Microsoft Office know how to use Excel, know how to use a good data base ,know how to use a power point, know how to use a word processing the full tools you need and that is all you need to create whatever you need...It is only one tool and it seems to becoming the only tool people get information from people they get information from books they get information from other sources it just seems that everything now goes to that one instrument... just my comment on that is that I feel that the tool is becoming the master".*

Parents conceptualise IL as a process of using IT tools in terms of students managing information across different platforms highlighting their children's experience of problems they encountered transferring data from the home computer to the school computer:

> ***SSP49*** *"Recently she (the child) had a problem with transferring data from the computer at home to the computer at school and she said well how can I do this?"*

This scenario is an example of how IL as a process of using IT tools manifests itself across home school domains and parents indicate that this conception of IL is relevant to them as it relates to their experience of accessing information from the school regarding their children's school life or community events as this quotation reveals:

> ***SSP41*** *"You need to able to open an e mail account, you need English, a quite high level of English as they are using quite a high level of English to communicate. To add to that, you need to be able to write an e mail to download attachments because a lot of things come out as an attachment and unzip file folders as they often attach two things..."*

Throughout the feedback parents consistently refer to their children's information experiences as being centred on using IT tools and also as being highly web centric. Therefore, this conception of IL is very much connected with the conceptions of IL as a set of information skills which will now be presented.

4.2.2.2 IL is a set of information skills

The feedback from parents yields up the conception of IL as a set of information skills that collectively enable their children to not only effectively navigate this context for a positive information use experience but also to critically analyse information and to actively contribute to the context themselves. Seven information skills are identified by parents including understanding

information need, information gathering, information evaluation, making sense of information, communicating information, citation skills and soft skills as presented in Figure 4.10. The skills are presented as a cycle of skills rather than a prescriptive list or hierarchy of skills as this better represents the variation arising from parents' feedback.

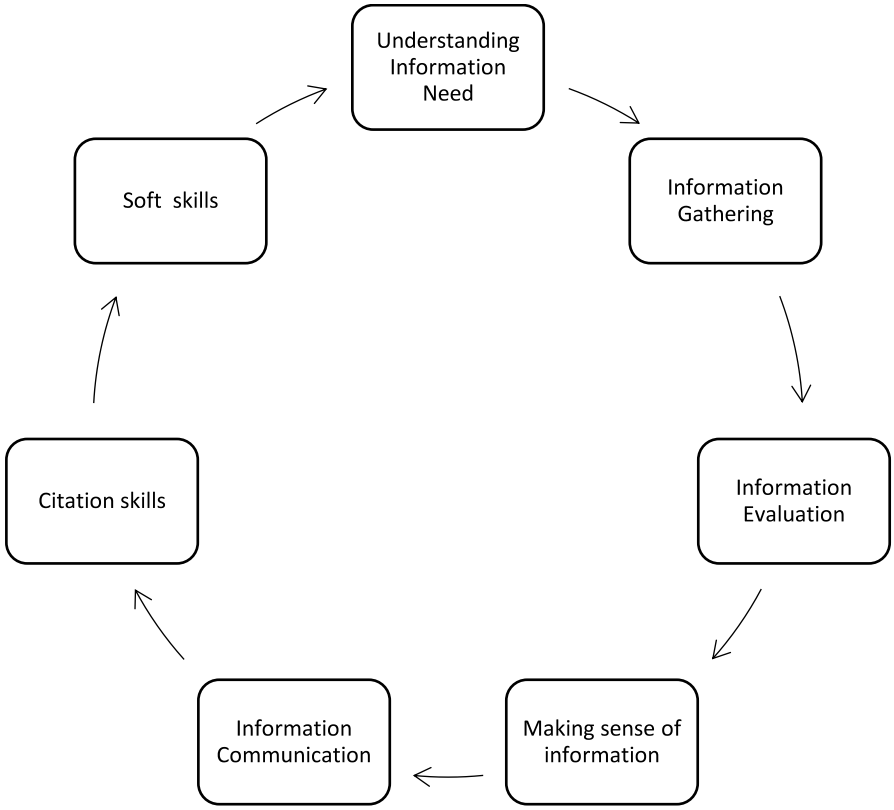

Figure 4.10 IL is a set of information skills

The skills of information gathering, evaluation and making sense of information are understood to be about making choices and decisions in respect of information with a significant focus on web based information. Whilst parents include books as sources for information (4.2.1.1.) their focus in terms of the information skills identified are very much web-centric. Each skill is now presented in detail and grounded in the feedback from parents.

Understanding information need

This skill is focused on children having a clear understanding of what information they need prior to the search process as parents feel children often don't have this clear in their minds before going to the WWW as evidenced in the following quotation:

> ***SSP41*** *"And they[students] don't always go into it with any clear idea what they are looking for example Mussolini and they go in and get a lot of information and you ask them so when was he born and when did he die? And they don't have a clue and you know and they go: do I need to know that?"*

Parents witness their children's information use experience at home and they also see themselves as playing a supportive role to assist and guide their children so in a sense this skill of understanding information need before jumping in to search for information really point to a need for slowing down information seeking process enough to allow time to digest what that need is. This skill in turn is relevant beyond school life to life more generally as are many of the skills identified by the Parent stakeholder group.

Information gathering

Parents perceive that the skill of understanding information need is in turn connected to the skill of information gathering whereby students need to know how to find relevant and sufficient information for the task. In Section 4.2.1.1 it was documented that Google and Yahoo alongside the library's online subscriptions and Moodle pages (containing pre- selected web links and lists of resources developed by the school librarian and subject teachers) were the main online information sources from which parents witness their children's information gathering to take place when in the home environment. Whilst the school library is recognised by parents as a source for books the narrative around their children's use of information sources suggests web based sources are the most usual information source and parents report the popularity of Google (4.2.1.1).

The reference back to these information sources which parents witness their children using in the home context is relevant in terms of putting the information skills that surface from parents into perspective. Gathering information in the online IC which is perceived as offering diverse information experiences, as being vast but also as having potentially inappropriate information (Section 4.2.1.1/2/3) requires the skill of being able to filter through information by using "critical words" (SSP46) in the search box as these quotations reveal:

> ***SSP44*** *"Yes I just wanted to say there is this huge need to somehow help them to filter I mean the information overload is huge even as an adult it is difficult to navigate."*
> ***SSP45*** *"...Perhaps with the information load what we need to teach children and what we all need to learn is how to be an effective seeker of information to know where to search for it to be an effective searcher so perhaps that is the important thing".*

Filtering skills are also related to sifting and sorting skills and the ability to be able to critically analyse information sources encountered on the WWW as suggested in these quotations:

> ***SSP52*** *"You need to be able to do to a degree some critical analyses - you need to be able to sort out -sift and sort..."*

Equally parents perceive that these types of skills can be learned through experiential learning or recursive learning opportunities as this quotation reveals:

> ***SSP44*** *"I think experiential learning, I mean you could spend class after class and I mean I think it would be valuable time to let us say – let us pick a topic and then let's see what information we can find by plugging in a variety of words and getting them to do that I mean that's all we all learned how to do it."*

Parents also emphasise that in reality the sifting and sorting process needs to be completed within a time frame so students need to learn how to use their time effectively as this quotation suggests:

> ***SSP41****" ... and if a homework assignment is due for a certain date so they have a limited amount of time so they have to learn to use that time effectively to do the sifting and sorting within a time frame."*

Nuggets, boulders, bunches of grapes and fruit salads were memorable images used by parents to try and flesh out what the skills of information gathering and sifting and sorting were about as the following feedback reveals:

> ***SSP41****" I think when they are younger you know they grab the nugget and I think when they get older they have to otherwise the teacher wouldn't give them a good grade - it's not just a bunch of grapes they need they have to create a fruit salad you know and they become much more able to put things together".*
> ***SSP43*** *"But you know on the flip side the kids probably also have the opposite problem - okay I have got a nugget I am done you know...but a nugget is not enough maybe they need a boulder".*

The skill of gathering information also involves students being able to know when they have got "enough" information as this quotation suggests

> **SSP41** *"And they don't know where to end either and that is one of the problems with the whole internet how do we teach them to know that they have got enough information to answer the question I mean that's hard for us to do".*

From a parent perspective the skill of gathering information is an inherently challenging dimension of their children's information experience especially when there is this sense that their children can now encounter such vast quantities of information in diverse formats offering huge choice but also exposing them to unreliable or inappropriate information. Similar to the conception of IL as a process of using IT tools being seen as relevant to parents themselves the skill of information gathering is also thought to be relevant. Parents perceive a need to develop these skills so they will know how to support their children at home as evidenced from the following quotation:

> ***SSP38*** *"Maybe I am not very versatile with using the web so I don't know what websites to tell them."*

Parents' identification that the skill of information gathering is important for them and for their children deserves consideration when it comes to designing a community IL learning strategy and this will be further explored in Chapter 6.

Information evaluation

The skill of gathering information is in turn closely related to the skill of information evaluation. As indicated in 4.2.1.1 parents perceive that online information may be inappropriate or unreliable and therefore they see that IL involves having the skills to know how to evaluate sources which they say involves a questioning approach towards information:

> **SSP47** *"It's that you hope I would hope for my children that they will get the right information and go the right way rather than just taking everything and believing everything they read."*
> ***SSP44*** *"So you know with my 11- year-old and also with what you're saying there as well about sources that are legitimate and are useful because they are there looking at it and they are thinking every site is gospel."*
> ***SSP39****" I am thinking about being able to sort out good and bad information."*

The words "right" information, "good information" and "bad information" relate to parents' perceptions particularly of the online information or WWW environment. The terms "right" and "good information" may equate with notions of relevant and reliable information whereas "bad" information could encompass a range of possible meanings from inappropriate information or false information. Implicit in the narrative around information gathering and evaluation is that these skills are very much decision making skills. Students must decide what to select when gathering their information and they must take decisions as to the reliability and relevance of information. In this regard parents, as was discussed in Section 4.2.1.2, expect teachers to take responsibility for pre selecting reliable information sources for their children and that not only should these preselected web pathways be provided to the students, teachers are expected to have checked out the web sites themselves and be aware of any safety or reliability issues. Equally parents expect teachers to provide students with feedback on how they are developing these information skills as these quotations reveal:

> ***SSP50*** *"But surely that is something that the teacher should be doing at the core giving them that kind of feedback you didn't find enough information or that you have too much information and how long did this take you?"*
> ***SSP45*** *"And I expect them to guide them through that journey as well when I said what I said before about when I say now limit yourself to 2 websites - of course this is a process between the children and the teacher so that they do it differently so my son who is today in 8th grade when he is in 12th grade he will have developed his skills better and will know what information and Web Pages to look for so it is the teacher's responsibility as well definitely."*

The reference made to the concept of "journey" in this quotation is interesting to highlight as it implies that the parent's perception of the information experience being journey like as opposed to a once off project or information experience. Equally the reference to this guiding by the teacher as being a progressive phenomenon whereby the student in Grade 8 will progressively develop these

information skills by the time they are in grade 12 further emphasises the progressive nature of IL learning.

Librarians are also recognised as participants in the child's information experience through providing pre-selected information sources for students and teaching student's research skills (4.2.1.2.) which is valued by parents. The dilemma however is how, against a backdrop of time limitations and such an expansive potential information base, teachers and librarians can consistently curate the web to meet these expectations? Moreover, is such an approach always meaningful in terms of students becoming competent in information decision making processes that are necessary to locate, evaluate and use information sources? Such intentions and expectations need to be clearly articulated in any potential school community wide IL learning strategy in terms of learning objectives, outcomes, assessment of IL which will be explored further in Chapter 6.

Making sense of information

Information gathering and evaluation are skills that relate to the skill of making sense of information and it is useful to explore this skill based on an example of a parent's experience of trying to support her child with finding and making sense of information where a child was off sick from school and the child was trying to do some catch up work at home. The worksheet had been e mailed to the student including links to web sources and a further list of web links were made available via the library's Moodle page as revealed in this quotation:

> **SSP52** "*I have an example of when my child was off sick for a number of days and so she was making up some work over the days and so I helped her because it was new information she had missed out on in class, so I sat next to her to try and help her navigate. I mean I just sat next to her she went to the school website then to middle school library and then started to use the references on there which is what was recommended and the teacher had also sent her a link. So if she chose to she could go directly via the link on the e mail which she also did. The links sent her to a school reference and she had a sheet of paper to complete... And we sourced a number of the references maybe half a dozen and the information she required, I mean the information she had to have to complete she couldn't do it just from the half a dozen references from the website. Now this is in Grade 5 and I found that intriguing so we did a search on the WWW and that was an interesting exercise because she would have gone to the first reference which wasn't the right one and so we had a discussion about how to find information".*

This vignette illustrates how even when the student is provided with pre- selected web links the student encounters difficulties in finding and making sense of the information to answer the questions on the worksheet. This may be due to the links perhaps not providing all the required information or that the links did contain information but it needed to be read through to find relevant information. Regardless of the cause of this gap it is an important example of the dilemma faced by teachers, librarians and students in terms of a balance between needing a student to make

sense of information and decipher what is relevant and providing information that explicitly answers the questions asked on a worksheet.

Information gathering, evaluation and making sense of information are all related skills and it is difficult to pinpoint in parent feedback where they see evaluation and making sense of information as processes beginning and ending. It would seem that parents see that these skills manifest themselves as an ongoing cycle of information experience. What is common however to the application of these skills in practice is that gathering, evaluating and making sense of information is about making decisions as to what is "good" or "bad" or "enough" information relevant to the task on hand. Parents see themselves as helping to guide their children with these decisions and also share that their expectations of teachers and librarians to help to facilitate these aspects of information literacy by teaching such skills to their children and to provide pre-selected information sources or pathways to their children. So whilst the focus for the development of these information skills is towards their children developing such skills as an independent learner, implicit in the feedback around parents' expectations and experience of supporting their child at home is that such information experiences can be also be collaborative in nature in that parents, teachers, librarians can potentially guide and support students information experiences in the classroom, the library and at home rendering IL very much a socially mediated experience.

Information communication skills

Information communication skills also form part of information skills conception and here the focus is on more traditional information skills such as handwriting and taking down notes as one reads information to communicate information and learning. In this sense parents value pen and paper and handwriting skills as necessary to communicate information and learning as this quotation reveals:

> ***SSP45*** *"Well I have to say that I would hate to see the writing skills go and I really think that is a big part of society as you [participant x] were saying and I think that retaining some of that and learning the new skills as well yes keeping some of the old and embracing some of the new would be a good thing so that's what I hope for."*

In terms of communicating one's learning in an exam environment parents also emphasise the necessity for continuing with handwriting skills at least until exams are conducted on PC's as for the most part they see their children's exams are handwritten which places students at a disadvantage in the exam situation as this quotation reveals:

> ***SSP50*** *"Well I think that is interesting because for students who haven't written much and then they have to go into an exam and write for three hours in an exam they haven't actually got the penmanship skills or the strength to sit down and do it. So I think there is a real disconnect in terms of that element. Having said that I don't think it would be difficult to make that transition once you get it so I don't think technology has quite caught up with it".*

Furthermore, the experience of writing down ones' thoughts is also perceived as a way of learning:

> ***SSP38*** *"I think learning also I mean you know our generation we had to use paper and pencil to write and also we had to write so much so our penmanship was good or whatever and we learnt through this writing I mean our five senses were actually used."*

Note taking skills using pencil and paper also come under the spotlight as these quotations reveal:

> ***SSP45*** *"Well surely they are still using pencil and paper in maths classes and things like that and I can also see that when my son is having homework he might have some questions from the teacher so he has to write them down. This is something he cannot do on the computer and for note taking they are now being taught how to take notes in their classes because it is so important for revising for their exams and for my older daughter this is especially important for biology and history as this is the key thing so to speak, to learn how to do and they do it by hand... So the pencil is still there and the piece of paper as well."*

In subjects such as the language arts and maths handwriting and note taking using pencil and paper are still the norm:

> ***SSP50*** *"Well I have two middle schoolers and still we have lots of paper a lot of pen/pencil and paper in language arts and writing a poem or piece of work probably goes onto paper before it goes onto the computer and maths of course they use their text books and pencil and paper*."

The focus on handwriting as a form of making sense of information through taking notes and also for communicating learning in the exam situation is an important consideration against the backdrop of new avenues for communicating information and learning. The point is however that from a parent perspective the older traditional ways enable and support that step of making sense and so even if in the first instance the notes and writing are handwritten they can be subsequently developed in a word document or power point or other medium.

Citation skills

Citation skills are also part of the information skills conception and the focus is on students acquiring citation skills as a normal part of their middle school learning that prepares students for the expectations of high school academic writing. Parents perceive that that such skills are being taught across the curriculum including library based research projects as these quotations reveal:

> ***SSP51*** *"They [students] learn it [citation skills] everywhere across the curriculum."*
> ***SSP47*** *"Oh they learn that very well I see that with my daughter because they do these projects and they have to get information and they have to quote everything and they have to cite it and the bibliography and so I think they are well trained on that. So they do know that the information is not from them."*
> **SSP51** *"Yes I think that is something they learn more in middle school because by the time they are in High School they are supposed to know it already."*

Parents are aware that citation skills are being taught and that their children learn that the information they use may not be their own so it must be acknowledged. What is interesting is there is nothing mentioned about a type of citation format being used or what online tools maybe used to create citations. In this sense citation skills are identified as necessary but there is no elaboration on the format required or the process of undertaking citation work which would need further clarification in terms of parents knowing how to support their children by reinforcing such skills at home.

Before concluding this Section on these six information skills it is important to note that in general terms throughout the focus group discussions parents did not allude to these skills as been exclusive to any one subject area. Rather they saw these skills to be fundamental skills that apply across the board and so in that sense these set of information skills are perceived as cross curricular:

> ***SSP52*** *"I think there would be the fundamental skills that apply across the board in every subject in every subject I don't know - you know I am not a curriculum developer so I don't know if it better to have one stand- alone subject that tells you how to critically appraise or that sort of thing or if it's given thing that every educator has to be committed to that and that needs to be measured - we need to measure that the teachers have achieved the goal not necessarily with children you can't measure with children because they are going to pass or fail or do as well or not with the tests and so forth but the teachers can be measured we can measure their effectiveness in teaching the children how to critically appraise."*

In the context of the conception of IL as a set of cross curricular information skills it is interesting that parents recommend that teachers' skills to teach IL should be measured to determine if they are reaching the goal of teaching children to critically appraise information. This is an interesting finding which has important implications around the question of establishing IL standards in the context of the development of a school or community wide IL learning strategy and will be revisited in Chapter 6.

Soft Skills: adaptability, creativity and distraction management

The focus of these soft skills as part of the set of information skills is on the need for students to be adaptable, creative and manage distractions that arise in the online connected environment.

Parents highlight the importance of adaptability as a key soft skill that their children need to develop in order that they can adapt to and cope with the volume and pace of change in the information context:

> ***SSP41*** *"Adaptability always aware that the world is changing all the time and they need to be able to cope with that change and to be able to deal with new information today that maybe different tomorrow but still be able to cope with that and solve problems in a certain amount of time to produce products because these guys will be employed and have a project to do and they have it to do by a certain date so they have to deal with that information and sift it*

and produce a product in a particular amount of time."
SSF51 "*Yes it is just part of their world they are just growing up with it. When we were growing up we learned new things and of course as they are growing up they are learning all these new things while they are growing up so it's just part of their education and they will learn it and they will learn to adapt. For them it is just part of their educational process. It's not new to them they just fall into it."*

Parents themselves also recognise their own adjustment challenges within the changing information context so in that sense adaptability is also of relevance for them (4.2.1.1/2/3).

Creativity is focused on the need for children to become creative contributors in the information context. They advocate for an approach to using the information environment that is not a passive one but one that encourages original thinking that enables students to produce new things:

SSP41 *"One thing we concentrate on is children going into the internet and finding information but who are these people who are producing that information the scientists and the writers? I mean let's not just be passive receivers of that information and you assimilate it and then you somehow regurgitate it in some changed form or whatever, what about teaching them to be original producing new things?"*

Not only do parents consider creativity as a key soft skill in terms of contributing to the information context they also witness their children's participation as this quotation reveals:

SSP50 *"yes that is right my son had a time when he was always on Yahoo Answers answering peoples' questions."*

Therefore, parents see IL as participative and requiring creativity skills.

Parents perceive the online information dimension of the IC as having many built in distractions and because of this they perceive IL as involving learning how to be focused on homework, study or research tasks:

SSP41 *"yes Face-book and when we are talking about children tackling the homework assignment and yes they are on the web and there are a lot of other things also and how to teach children not to have face book up there when they are trying to work on a homework assignment."*

Equally attention is also drawn to the fact that the internet can potentially be distracting because of its potential for linking out to other sources which may distract one from the topic on hand:

SSP43 *"...it is too easy to flip from topic to topic from page to page from link to link and just follow the distraction until you have forgotten what you were working on to begin with and I personally am very guilty of that when I sit down at the computer planning a holiday before I know it I don't know where I am I am not on the holiday anymore and I know my kids do the same and I don't know how much longer or less longer it takes them to come back on track or if it's me have you finished your homework have you finished your homework? And if it is me that is bringing them back on track I don't know but so I think the need the skills to focus to be able to filter through all those distractions."*

This focus by parents on the need for their children to learn distraction management skills reflects the socially connected nature of the information and communication context. It also reflects how parents perceive that the web environment is a problematic one for their children because of its potential to draw the child's attention towards the web but once connected and searching begins their child's focus and attention may be dispersed or diminished through the continuous linking and clicking to other sources that are not at all relevant. The searching experience therefore whilst self-directed and interactive can also be distracting and not yield the desired information. This focus on distraction management is indicative of the interactive, social human and affective dimensions of the information experience (4.2.1.2.) which are central to IL learning and will be revisited in Chapter 6.

4.2.2.3 IL is about knowing how to stay safe online

This conception of IL is focused on children knowing how to stay safe online in terms of protecting one's personal privacy and safeguarding oneself from inappropriate information or communication experiences as revealed in these quotations:

> ***SSP39*** *"Yes and knowing how to stay clear of all the horrible sites that are out there."*
> ***SSP49****"But you know there is a whole bad world out there and I would say they [students] just have to learn how to move about in it."*

Against this backdrop of a need to protect children at home and at school parents acknowledge that their children are learning how to handle the dangers of the internet in their IT, library classes and during advisory.

> ***SSP42*** *"I think the IT is especially on the safety side and I think the library has all these sites that they have subscribed to and which they recommend."*
> ***SSP38*** *"Yes my child also heard about this internet safety and cyber bullying is not allowed and all the things I did ask him well how did he define what was unwanted chat and cyber bullying and he seemed to know."*

Similar to the conception of IL as a set of information skills including information gathering and evaluation parents see this conceptions of IL as relevant to themselves also and acknowledge they need to learn how to keep their children safe with their internet usage as the following quotation reveals:

> ***SSP38*** *"...I want to keep them safe with the internet usage I really want to make sure that my children are protected from these unwanted sites but I don't know how to do that".*

4.2.2.4 IL is a way of learning

The focus of this conception of IL is on the learning experience whereby IL is a way of learning that is sensitive to the complex nature of the information environment and originates in the relativist

perspective held by parents regarding the changed and changing nature of the IC. The most significant changes being both global in terms of the advancement of the WWW and local in terms of the implementation of the one to one lap tops in the PS. Compared to their childhood learning experiences when books, newspapers, the library and Encyclopaedia Britannia were the main sources of information now everything has changed. The WWW and IT have transformed their own and their children's information experience leading to conceptions of IL that focus on IT, online safety, soft skills alongside what they see as the fundamental information skills of understanding information need, gathering, evaluating, making sense of information, information communication and citation skills. This sense of IL as a way of learning that is context sensitive can be interpreted from the following quotations:

> ***SSP47****"I mean before we had the Encyclopaedia Britannica but that's also on a CD rom and you can download it online now so basically before [the internet] one would go to the encyclopaedia to look up information and get to know what is what and all and then there was the Guinness Book of Records and so you would look in that also to see if there was a record for that but now like it's all computers and this in as much as it is advancing it is also fearsome in that you don't know where it leads to and what if the network fails what then? How are we how do you say equipped to go on (online) if we don't have access?*
> ***SSP52*** *"...my children know much more than I do about how to navigate so in terms of getting the kids on board it's fantastic because they are really into anything that's technology but from our perspective were not given the opportunity to understand what they are doing. We just heard of Euro Moodle and all these other search engines here but just from my kid's mouths or occasionally from the teachers when they are giving a presentation like ah yes this information is all on Euro Moodle or it's all on there and that is the first time you are hearing it without any background information".*
> ***SSP39*** *"As a generation of parents we are actually the first ones to have to ask our children how things are done – how this is done and how that is done? We are running you know behind our own children and that actually sometimes complicates the parent child relationship so if we feel frustrated many times it is because we need to be more educated so that when it comes to it we need to be ahead of our children and you know we are not because you know the moment we learn something at least for myself they are somewhere else."*

As the IC changes so too does the information experience demanding new approaches for learning to meet both parents own IL needs alongside that of their children and it is in this sense that IL as a way of learning that is context sensitive surfaces from the parent stakeholder group. For parents this means IL as a way of learning is sensitive to the potential and protection challenges inherent in web based information experiences and to the social human and affective dimensions of the IC as presented in Sections 4.2.1.1 /2/3/4. Such a conception of IL also addresses the dynamism of the IC and as such needs to be considered in any potential IL learning framework or school community IL learning strategy, the implications of which will be further examined in Chapter 6.

4.2.3 Exploring dimensions of variation of conceptions of IL

The variation in the categories of description of IL from the parent stakeholder group as depicted in the outcome space in Table 4.2 is shown to surface on two levels firstly in regard to the focus or application of the conception and secondly in terms of the relation of the conception of IL to the perceptions of the IC held by parents.

Table 4.2 Outcome Space: Dimensions of Variation of Parents' Conceptions of IL

Referential Aspect Description of Conception	Focus Application of Conception	Relationship of conception to perceptions of the Information Context (IC)		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	Primarily applies to the individual, self, local, immediate, technical and pragmatic levels in order to complete school and home-work.	Parents perceive IC as external whereby IT tools are used to find, organise, present and share learning.	Parents perceive IC as social and mediated whereby IT tools are utilised to communicate with friends and teachers via virtual learning platforms and social media.	Parents perceive the IC along a continuum from positive to negative which causes them to feel excited about their children using IT tools but also this stimulates anxiety as to what type of information experiences their children may encounter.
IL is a set of information skills.	Applies to the individual child at the local immediate pragmatic and cognitive levels. Applies to learning across the curriculum.	Parents perceive as external in terms of sources to be found on the WWW, in books, the school library and website, interactive media and the school's virtual learning platforms such as Moodle.	Parents perceive IC to be mediated by parents, and by teachers, IT teachers and Librarians. Parents have clear expectations around the role and responsibility of teachers to help their children develop the cross curricular information skills set needed for their children to learn.	Parents perceive IC from a relativist perspective as changed, changing and unknown causing them to feel positive and negative about the context thus they see IL as a set information skills including soft skills that will support their children to learn in the changing IC.
IL is knowing how to stay safe online.	Applies to the individual child's development of understanding the nature of IC.	Parents perceive IC as particularly web centric in terms of their children's preferred information resource and as primarily external context.	Parents perceive IC to be external and internal potentially populated by unknown people and inappropriate information placing their children at risk of exposure to negative influences.	Parents perceive that the IC is potentially an uncertain, unsafe and unknown information environment and are therefore see IL as knowing how to be safe online.
IL is a way of learning.	Applies to the individual child at the cognitive level in terms of their overall approach to information use for learning.	Parents perceive IC as external and objective.	Parents perceive IC as internal, subjective and social.	Parents perceive IC from a relativist perspective and see it as dynamic and unknown accordingly IL is a way of learning to learn that is sensitive to the dynamic unknown IC.

All four conceptions of IL apply to the use of information at primarily the individual and immediate levels in terms of students completing school work whilst at school and at home. The conception of IL

as process of using IT tools also has a technical focus given the software and hardware and technological character of this process of using IT tools. This conception is related to perceptions of the IC which parents perceive as both external and objective and internal and subjective which aligns with the perceptions of the IC as having environmental and social human dimensions. Furthermore, the conception relates to the perception of the affective dimension of the IC as parents perceive the IC along a continuum from positive to negative which causes them to feel excited about their children using IT tools but also this stimulates anxiety as to what type of information experiences their children may encounter.

Moving to the second category of description of IL as a set of information skills this conception has application in the immediate and pragmatic sense to children's school work and significantly as being applicable across the curriculum. Furthermore, the skill set is conceptualised to include soft skills which is connected to parents' perception of the dynamic nature of the IC. Equally the perception of the IC as both external and socially mediated is reflected in the diverse set of skills that constitute this conception of IL. This conception of IL is held in relation to parents' perception of the social human dimension of the IC as involving teachers, IT teachers, Librarians and themselves. Based on this perception parents have clear expectations around the responsibility of teachers, IT teachers and librarians to help their children develop this set of skills and to mediate the information experience across all subject areas.

The conception of IL as knowing how to stay safe online originates in the perception held by parents regarding the risk of exposure of their children to inappropriate information or inappropriate online experiences. This category is driven by the affective dimension of parents' perceptions of the IC. In practice this category of description involves the development of a disposition towards the context and is about children developing their understanding of the nature of the IC and skills to know how to use filters. From a parent perspective this concept is also of relevance to them and they would like to learn how to block inappropriate content. The conception of IL as a way of learning whilst still having a focus on the individual child level in terms of their development of a way of learning that is sensitive to the IC is a more holistic conception that arises from the relativist perspective towards the IC that parents hold.

The conception of IL as a way of learning that is sensitive to the IC applies to the individual child and their immediate information needs around learning whereby parents perceive the IC to be both external and objective in terms of the WWW and library print resources but also as social human and subjective involving people as information resources and guides.

4.2.4 Comparative with Big6™ model (1990) and UNESCO MIL framework (2013)

Given the international origins of the parent stakeholder group and their vested interest in their children's preparedness for their future the United Nations Educational Scientific and Cultural Organisation (UNESCO) (2013 pp. 56-58) Media and Information Literacy (MIL) Framework alongside the Big6™ information skills model (Eisenberg and Berkowitz 1990) will be compared to the conceptions of IL arising from the parent stakeholder group. The UNESCO MIL assessment framework is designed to cater for UNESCO member countries to assess their overall MIL competency and also contains the broad components identified for assessment in various educational contexts (United Nations Educational Scientific and Cultural Organisation 2013). As we see in Figure 4.11 three broad strands of competency are identified around access and retrieval of information, evaluation of information and the creation of information with each one in turn being further broken down into specific competencies. UNESCO brings together media, IT and information literacy under the umbrella concept of media and information literacy (United Nations Educational Scientific and Cultural Organisation 2013)

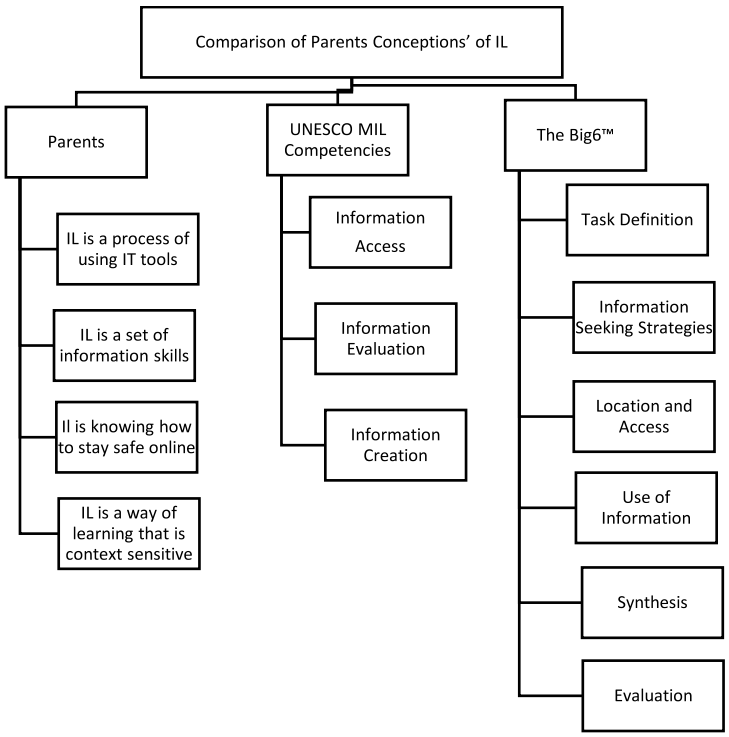

Figure 4.11 Comparison parents' conceptions of IL with UNESCO MIL Framework (2013) and the Big6™ model (1990)

The conceptions of IL as a process of using IT tools and as a set of information skills aligns with the first two competency concepts articulated in the UNESCO MIL framework (United Nations

Educational Scientific and Cultural Organisation 2013). Furthermore, the parents' first two conceptions of IL align with the six information skills listed in the Big6™ model (Eisenberg and Berkowitz 1990). Clearly then there is a strong sense of alignment apparent across these sets of conceptions of IL and media and IL.

The main area of contrast is perhaps around parents' concept of knowing how to stay safe online which does not feature explicitly in the United Nations Educational Scientific and Cultural Organisation (2013) MIL matrix or the Big6™ model (Eisenberg and Berkowitz 1990) and perhaps reflects parents' more immediate concerns around protecting their children in an uncertain potentially unsafe information environment. That said the UNESCO MIL competency number 3 which relates to participation and creation of information encompasses the ethical and reflective use of information so if this competency was targeted for development by countries through their educational systems perhaps in theory the information environment should pose less of a threat (United Nations Educational Scientific and Cultural Organisation 2013). In an age where social media and the WWW offers the opportunity to galvanise people to act around a perceived injustice and also on the other hand to radicalise people towards a cause then the competency of knowing how to stay safe online is imperative.

Finally the conception of IL as way of learning that is context sensitive is not made explicit in either the UNESCO framework (United Nations Educational Scientific and Cultural Organisation 2013) or the Big6™ (Eisenberg and Berkowitz 1990) model however the rhetoric of the UNESCO rationale for the need for a MIL assessment framework is very much couched in a world view that is founded on a belief in the need for countries to ensure their citizens become media and information literate as the route to greater world equality and a route to social economic and educational empowerment for all. Therefore, it could be argued that the UNESCO MIL framework of competencies aligns with the conception of IL as a way of learning with the MIL framework taking that a stage further in the sense of a way of learning that is context sensitive and offers a route to proactive engagement in the world both socially and economically (United Nations Educational Scientific and Cultural Organisation 2013).

4.2.5 Conclusion

The findings regarding the conceptualisation of IL from the PS's parent stakeholder group reveals four conceptions of IL. The conception of IL as being a process of using IT tools points to a need to question the value of continuing to separate these two literacies in the PS curriculum. The feedback also suggests parents perceive a crossover of roles in terms of librarians and IT teachers. Parents also

perceive there is a generation gap in this area of using IT tools and that the conception of IL as a process of using IT tools is as relevant to them as it is to their children.

Each of these conceptions in turn reflects parents' perceptions and experience of the changing IC and it is evident from within the narrative in this regard that IL is conceptualised as a way of learning that is context sensitive.

Parents occupy a unique position in their children's information experiences in the home context and their mind-set towards the IC is bound up with their concerns to protect their child but also ensure their child can enjoy the opportunities that new information technologies offer, alongside the potential to access vast amounts of information resources online. In their situation there is a mix of excitement, anxiety and fear around all this potential and one important message although not a conception of IL is that there is a need for information and understanding around the impact on learning, social interactions of all these new information technologies and web environment (4.2.1.3). This is an important consideration for the development of a school community IL learning strategy whereby stakeholders are kept informed on impact studies relevant to the information experience and thereby reduce the level of fear that prevails.

4.3 Teacher

The recent introduction in the PS of the one to one lap top programme, the integration of smart board technology, a new online grading system and a new intranet layer for school community communication on the school website appear to have collectively impacted teachers' perceptions, feelings and teaching experiences informing the discussion on IL. Their own and their student's exposure to new online platforms such as Moodle, Wiki Pages and Google Docs has also greatly informed the ways they perceive and experience the changing information and learning context in terms of both their own and their students IL experience.

4.3.1 Perspective of information context (IC)

As can be seen in Figure 4.12 teachers identify a multiplicity of elements comprising the PS IC and through systematic coding and analysis three categories of description representing the three dimensions of the IC were revealed from the data as follows: The Environmental, Social Human and Affective dimensions and within each of these dimensions' specific perceptions are revealed.

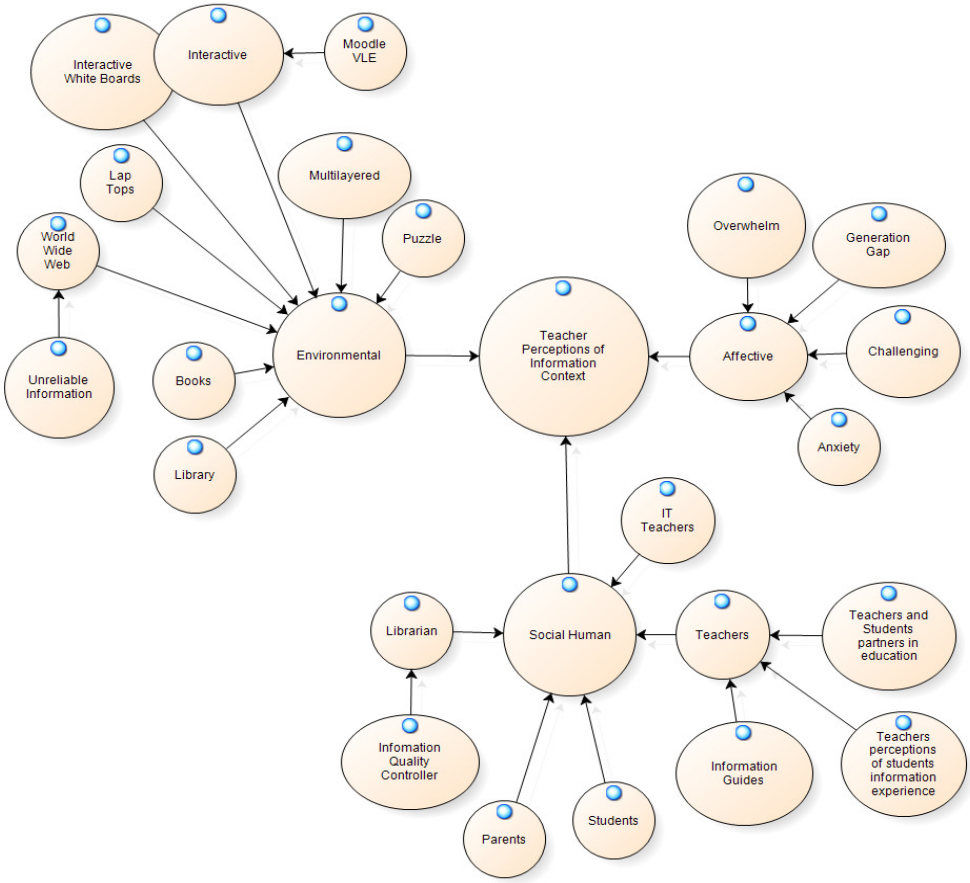

Figure 4.12 NVivo output from coding teachers' perceptions of the information context (IC)

4.3.1.1 Environmental

Teachers found it difficult to describe the IC and experience it as being multi layered and as a puzzle:

> **SST37** *"A picture is worth a thousand words...Em...the information landscape. There is a lot going on at the school I think it is a puzzle for most people in terms of the way that information comes in and the way it is disseminated to students but we are working on pulling it all together."*
> **SST31** "*The students are trying to manage it the teachers are trying to manage it and the IT group is trying to manage it all and then administration has to try to help fund it all - it's many layers."*

Teachers articulate the need to try and manipulate this architecture of the IC so that there would be clarity of purpose and direction for all the different layers of information needs:

> **SST34** "*Yes to follow a path - we should try to have the same rules so that the children will know - okay we are all going that line its important - now we do have a wide range of information all over the place it would be nice to clean up and to create a Section of what is proper for the school and then after what is proper for subjects the curriculum a base."*

These quotations would appear to suggest that teachers perceive information a set of resources or sources to support the curriculum rather than a phenomenon that is part of everyday living. It further reveals a view of information as existing independently of teachers and as being social and subjective in terms of their role in guiding, collaborating and mediating the IC.

On a practice level in terms of student learning the IC is perceived as an interactive context and experience as evidenced in this quotation:

> **SST31** "*It's difficult at best [to describe the information landscape] for instance I assign so the students have to go on this website - watch the video take the graded quiz and print it out and I said hey if you are having any printer problems e mail them to me or to your e mail address at school."*

This quotation captures the multi layered interactive nature of the IC that offers the student the opportunity to direct their learning pace, requires that they can navigate to a website, locate and watch the video and then print down the assessment quiz sheet, complete it and send it back by email to the teacher.

> **SST34** *"...8th grade they don't have the book - the physical book - it's only from the smart board and so we are reading and watching a video from the smart board."*

However, whilst there may be an intention to move away from physical text books to e-text books teachers identify a need for physical text books to meet different reading levels of students as these quotation reveal:

> **SST33** *"...right now I see it as the internet is supplementing our current literature that we have hard copy text books that we have and in some places replacing it completely so we are not even using textbooks any more so."*

The WWW is perceived by teachers as the main information source that students now use. However, teachers do recommend students to use a mix of hardcopy print and online sources as evidenced in the following quotations:

> **SST31** *"...I was a little concerned that they [students] were using the internet too much for sources but when I assign something in the classroom I say you have to have at least three sources and one has to be a book and the other two can be the internet or another printed source but I am really focusing on them getting more than just 1 source."*

In this sense the environmental (physical structural virtual) elements of the IC offer access to an online information world but the experience of the use of that online environment becomes a mediated experience between the student and teacher, IT teachers and librarians at school and parents in the home context.

4.3.1.2 Social Human

As the architecture of the IC changes so too do the patterns of information finding, using and sharing experiences between students and teachers. At one level teachers perceive that their students' capacity to independently access and locate online information sources for their learning is bringing about a new type of teacher-student partnership that is different to the relationship before the advent of the internet:

> **SST36** "*I think in the past it was not - in the past we were the ones giving the information but the younger generation they are such excellent learners such fast learners especially where the internet information is concerned. They are also teaching me stuff so."*
> **SST35** *"...and the teaching where we are partners in our children's education as opposed to the ones that are top down its not its umm we have hit a generation where these kids know as much if not more about an area because they are so savvy and they have been doing it for years and its really nice because you can open yourself up to that and learn so much from them."*

Clearly the opportunities presented by the easily accessible online IC are perceived to be opening the potential for students themselves to exert more autonomy in finding information resources which they are happy to share with their teachers:

> **SST36** *"Well in the sense that you just reminded me of something in my health class I do tobacco and I have gone on the internet and I have showed them a few things and then they come back and they send me emails Ms [teachers name] have you seen this and so they send the information to me and if it's good I will show it. So kids are also coming with information they are going onto the internet and I also incorporate that in my lessons then if it's good information."*
> **SST31** *"And it's a healthy information sharing because obviously the students are interested*

enough to go out there and look at websites about tobacco use and then they are sharing them with their teacher and I think that is really exciting."

These new patterns around the sharing of information and building understanding together in more collaborative or partnership style relationship suggests that whilst the IC is characterised as bound up with physical elements such as lap tops and technological infrastructure the information use for learning experience is very much based on social human interaction.

Teachers also acknowledge the role of parents as key supports to student learning as this quotation suggests:

SST31 *"I am really glad you [directed at researcher] are bringing the parents into this[study] because when we first started the lap top programme they were very concerned you know that there was consistency for the websites and the tools that the other teachers were using and I am glad because they are our learning leaders at home..."*

The perceptions regarding their own and their students' changing practices in the IC are further connected to how they feel towards this context and will be documented in the next section on the affective dimension of the IC.

4.3.1.3 Affective

Whilst teachers perceive there are positive outcomes in terms of the impact of new online information resources and technological advances they also perceive their role to be changing in other ways. Specifically, teachers articulate a clear perception that online information is problematic because of reliability issues and for them they feel their role is evolving to where they see themselves becoming more like information 'quality controllers' or 'information guides' of the online information environment as revealed by the following quotations:

SST37 *"I think just what's happening is you know like what [the librarian name] is doing we are becoming guides its almost our new roles with the internet available is to guide students into that and this."*

In practice teachers find themselves as the human mediator of the information experience as exemplified in this scenario:

SST33 *"There was a student in my advisory doing a project so during advisory she was ... Googling and she read some statistics and she asked me Ms [teacher's name] - " is Google a good source is that a good enough source for me?" and I said well and then this whole conversation comes up you know about where she was getting those numbers from you know and so that was really just an example where it is just open and how would I like her to get an accurate idea so I said well think about places where you know there would be accurate information like the Heart Association of USA or things like that - she would not know that on her own so it's really hard."*

And again this is echoed in the following quotation:

> ***SST31*** *"...and some of these websites are garbage so you really need the librarian, the science people, the math's people to say don't go there we have to be like the quality controllers."*

In a sense what teachers are articulating here is their perception of an online IC that is complex for middle school students to use in terms of making decisions on what is relevant and reliable information. The perception teachers have that their teaching role is changing to embrace reconnaissance and excavation work in the IC that would enable them to pre map it or carve out relevant and reliable information pathways is interesting. It raises questions regarding the feasibility of such work given limited time resources but on another level it also raises questions regarding whether this is a sustainable response in terms of development of student IL.

The concern regarding time constraints is highlighted in these quotations:

> ***SST36*** *"Oh its time consuming [to locate web sources]"*

However, it is not just about time, it is also that teachers themselves feel they may not know where to find the right information and they feel they need training to meet this gap in their understanding:

> ***SST34*** *"A lot of time maybe because we don't know where to go to find the right information."*
> ***SST33*** *"And training."*

During the discussion teachers reflected together about their information guiding role and began to question their practices in this regard as the following quotations reveal:

> **SST36** *"Well in health I do see that when I teach and mention you know this is the American Heart Association; the American Cancer Association and I hope kids pick up on that but I do not really tell them go to that site. I do tell them that what's on their poster must be accurate so they also have to do some research themselves so I do leave that open and maybe I should be more specific with it and tell them, guide them where to go to but the fact that I say make sure you don't put anything that is not true on it they do tend to do some extra research to make sure that what they put on the poster is true and correct information."*
> **SST33** *"Yes and how do you know if what you read is true or not or if it is accurate or not or you know even as adults...."*

The role of teachers as the human mediators of the information experience is seen to be important on yet another level. Teachers perceive that online information can potentially be unreliable and appear to value having pre- selected web sources available to students. The reality in practice however would appear to indicate a knowing-doing gap on the part of students. For example, students when provided with quality information sources by the librarian or teacher may sometimes choose to disregard these in preference for going directly on Google or they may make some attempt to use the pre-selected sources and then revert back to Google despite having an experience where

using a text book or pre- selected web source was in fact quicker. The following quotations reveal this knowing doing gap:

> **SST32** *"But they [students] think that the internet is the be all and end all like for example when [librarian's name] and I did the Egyptian wax museum research she was showing them subscriptions that we have you know in journals and they would look at the journals for five minutes, and they would then say can we go on Google and we were like no use the journal. You know I gave an assignment the other day and I said you can use your textbook which would make it easy or you could use the internet - the kids who used the internet it took an hour to do and the kids who used the text books it took them fifteen minutes."*
> ***SST32*** *"They [students] just assume that the internet is an easier way to do it and that it will have all the answers and when I questioned them about it and asked did you find one website that had the answer? No -"I had to like go to ten or fifteen different websites", then I said well who used the text books and they said well the answers were all on two pages and I said I told you that."*

It is worthwhile to unpack the teachers' perspective here in regard to students' preference to use online information. Going forward there is the reality that textbooks may not always be readily available to students and so it is becoming increasingly more important to ensure students have the necessary information literacy skills to search for reliable sources online. Equally the PS and similar schools need to consider e text books and their integration to the PS IC.

The integration of the one to one lap top has brought with it the potential to easily access the WWW which clearly has benefits for student learning. However, teachers also see it brings new issues concerning their ability to control student behaviour in terms of tracking if every student is always on task in the classroom when they are using their lap tops. This is a serious concern for teachers as the following quotation reveals:

> **SST31***"...As a teacher I have not been able to check histories or anything like that so I would not know if the students in my classroom have been off task, there is not enough time to be the gatekeeper."*

This raises the whole issue around trust between teacher and student and teachers recognise that it is not possible to control everything in regard to the ways children will use the WWW both at school and at home and more generally in their lives. This recognition by teachers that it is not possible to control for everything is indicated in the following quotation:

> **SST34** *"I think that we have to trust the children and that is something that is going to be important, we will have to trust just like with their mobile cell phone they will have to know their limits we cannot we will not be able to control everything."*

The rate and nature of change of the IC is causing teachers to feel overwhelmed, stressed and anxious as evidenced in the following quotations:

> **SST35** *"It's [information landscape] just overwhelming."*

> **SST33** "*Yes it's overwhelming just managing - managing yourself and then you have the other end which is what are you doing with IT stuff in the classroom and that a whole other thing because there are so many possibilities...*"

Teachers feel overwhelmed trying to adapt their teaching practice to accommodate new information technologies and the extensive online information environment.

This feeling is very well described in the image of the deer in the headlights:

> **SST31** *"We have what they call a deer in the headlight look right now."*

Furthermore, managing the changing information and technologically driven context is challenging because of the rate of change:

> **SST35** "*So it's you know how can we keep up with it how can we put all of those structures in place for kids and how can we adapt and how we grow at the rate where we are seeing we kind of need to and yet there simply isn't enough time in the day to become adept at everything and then to pick and choose what is most important umm it's a real challenge for the teacher."*

This anxiety is also driven by a perception of a generation gap in terms of teachers and the students as teachers perceive students to be more at ease in the context as they were born into it all, as opposed to the teachers who are trying to adapt to the change.

> **SST34** *"I think also it is a generation - young children now I mean from 10 years old they know nothing else and they will grow with it and for them the stress will be less than for us well…"*

Teachers also perceive a gap between younger graduate teachers and older teachers whereby some teachers feel that the more recently graduated teachers come on board and are comparatively more competent with various information environs and technologies. So when they arrive at the school with their skills the older teachers feel less skilled:

> ***SST34*** *"But then they [newly graduated teachers] are confronted with IT already …so when they come to school they will not have this big of a difference with the students because they have been trained and compared to us when we studied to become teachers we were not trained with IT."*

So in a sense there is a perceived pressure emanating from the student-teacher generation gap and the new graduate teacher versus older teacher know how gap when it comes to information technology skills but also IL.

In terms of looking to the future and the potential impact of engagement with new information technologies and the WWW teachers articulate a sense that they are working very much in an unknown territory as to what might be the longer term impact of this changing human experience on a number of levels as these quotations indicate:

SST34 "*And nobody knows the danger of it [information technologies/internet use] yet and that is why it has to be researched because we are not aware for example about physical problems, for hearing problems and the eyes... we don't know how far it's going or is it going to stop - is it going to be controlled or if it stays open.*"
SST36 "*I would also like to add one point I don't know if you are going to look into this but as a PE teacher how much time do children still play outside because I was talking to a parent and she was saying my daughter is behind the computer the whole time and in the past she used to go out and play and that's not happening anymore.*"
SST31 "*It impacts science too I am not seeing the fine motor and gross motor I would like to see in there and it gets back to that playing outside.*"

These perceptions of the changing IC form teachers' mind-set towards their conceptualisation of IL. Teachers also sense that these concerns regarding the unknown impact of the effect of the internet and its use alongside using new information technologies are a much broader school community issue:

SST37 *"You know all these different threads ...and pulling them together or them falling apart, it is not going to be an issue just for the school but everybody you know parents, students, teachers - to me the problem is getting bigger and bigger."*

4.3.2 Teachers' conceptions of IL

Through an extensive coding analysis and synthesis process the final coding in NVivo revealed a number of key themes relating to teachers' conceptions of IL surfaced as indicated in Figure 4.13.

The final cycle of coding and analysis revealed four discrete conceptions of IL as presented in Figure 4.14. Firstly, teachers conceptualise IL as a set of information skills that include: finding and evaluating information sources to determine their reliability. Secondly IL is a process of using IT tools and thirdly IL is about understanding the nature of information and finally they conceptualise IL as content reading to extract relevant information. The discussion will now move to demonstrate how these categories of description are grounded in the feedback before going on to consider aspects of variation in Section 4.3.3.

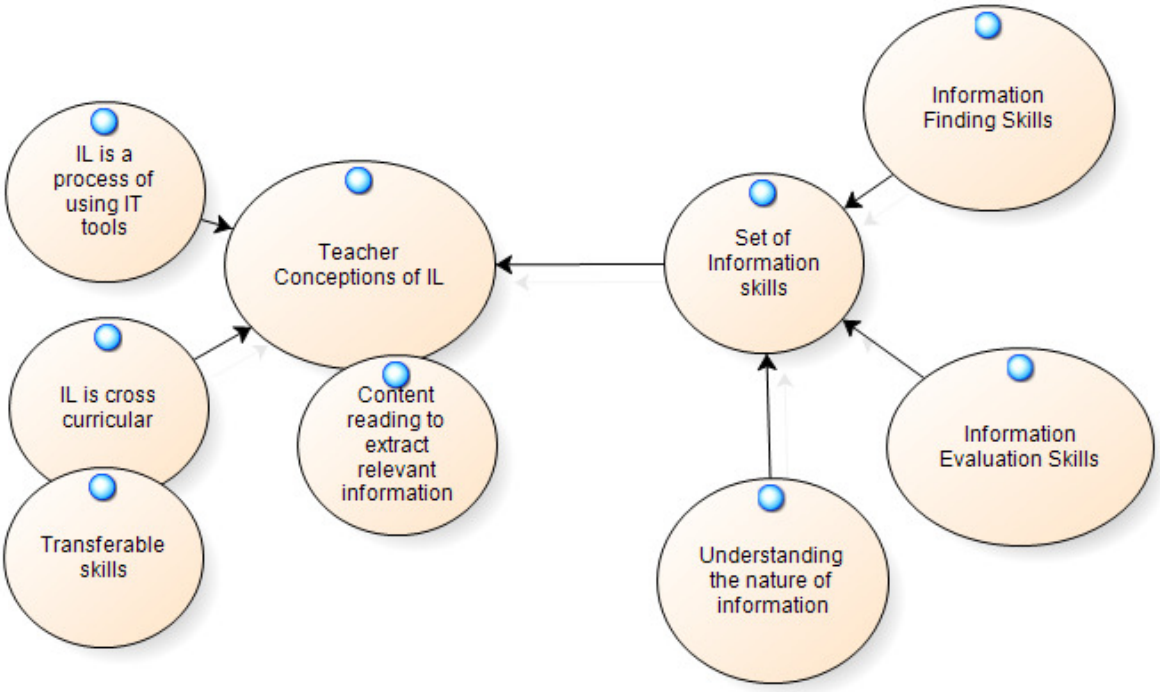

Figure 4.13 NVivo output from coding teachers' conceptions of IL

4.3.2.1 IL is a process of using IT tools

The focus of this conception is on students using IT tools to access, share and communicate information for their studies as these quotations reveal:

> **SST31** "*Well I would define it [Information Literacy] well it's too big but I would define it can the students survive in this environment? Can they learn through the computer? If so how can we best help them to learn through the computer - well the teacher part comes in seriously by you guiding them to specific areas specific websites.*"
> **SST35** "*About the definition of IL I see it as a way for people for students to gain information and express what they know with the tool but they need the tools to get there and right now the toolbox is a way too big and like they are not always grabbing for the right tools.*"

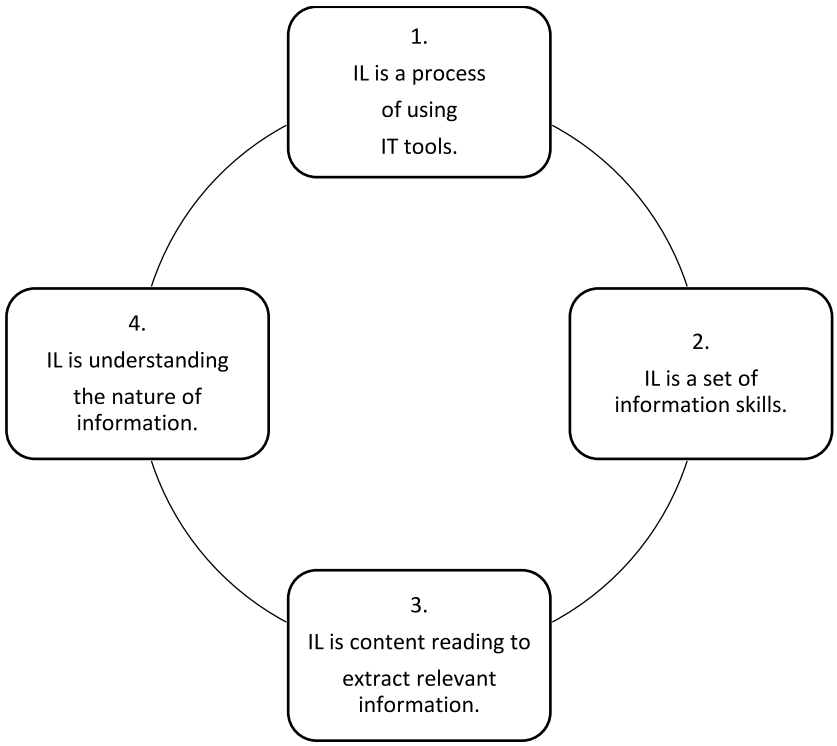

Figure 4.14 Teachers' categories of description of IL

Teachers perceive that students enjoy the interactive dimension of using IT tools as evidenced in this quotation where the teacher notes how students appear more interested when information is being delivered using interactive tools as opposed to more traditional methods:

> **SST37** *"Its leaps and bounds first of all the students are very savvy and younger people I'd say the same thing like for some of my younger colleagues who have grown up with it and so it's a great source of information for me whenever I need it. But in terms of students they seem to you know find it terribly exciting to be using their lap tops or smart board and if I do the same thing on the Smart Board as I do on there(pointing to white board) they hardly pay attention but as soon as the colours go on they go ooh so there is a fascination with the technical world itself and for them of course being very well able to use it, they like to use it and therefore probably get more out of it because not necessarily for the information but for the interaction with it."*

The conception of IL as a process of using IT tools is very much derived from the teachers' experience of supporting students learning and use of information as this quotation reveals regarding students being requested to use Brain Pop an online information and education tool:

> **SST31** *"I mentioned last week about the Brain Pops and they had to print it [i.e. a quiz] out and if they had a problem to print them out they could put them on a USB stick or they could e mail them to me but some of them didn't use their First Class accounts so they used other accounts so I think this is a fairly complex situation for a 6th grader to deal ..and you know I still have about 10 students who you know haven't jumped through that hoop so you know they really need to be able to recover you know if the printer at home is not working or there is no printer at home. It is that group that I am trying to work with because they do need to know how to survive through the system and just kind of just not to survive but also to*

succeed and I certainly won't want to hold a child back because they didn't have access to a printer or something silly like that."

Whilst teachers conceptualise IL as a process of using IT tools they do so with a degree of caution in terms of them continuing to place value on the need for a balanced approach and not creating an over reliance on IT tools as evidenced in this quotation:

> **SST35** *"...I also think that there are times where we don't want them to be accessing information in certain places where we want them to do that work themselves and I am going to speak to spelling for a moment because that's one in this day and age it's so easy to hit that spell-check. Where okay so I want you to see that squiggly line and I want you to use your own brain not the computer. I don't want something to feed you that information because there are certain skills that we need to have that are developed that we have acknowledged in our own brain and we just don't access a machine for and so that's another element that I feel feeds into this."*

This conception of IL is connected to the view of the IC as being primarily external involving students using their lap tops to gain access to the WWW for both school related work which is also undertaken at home. Teachers also perceive that they mediate this aspect of IL by their integration of IT tools in the teaching and learning experiences of students. At the affective level the process of using IT tools for learning is perceived positively and also with a degree of caution around retaining a balance in the use of IT tools.

4.3.2.2 IL is a set of information skills

The focus of this conception is on IL as involving the information skills to find and evaluate information for school related tasks at the individual student level to meet immediate information needs around learning. Teachers tended to perceive these two skills as related in that when a student is finding information they are simultaneously and unconsciously filtering and evaluating the sources in very dynamic ways using their own criteria for deciding what they will select as evidenced in the following quotation:

> ***SST37*** *"Yes well if they had to do it on their own I wouldn't dare to think what they would come up with. It's a good supplemental source but I think the whole thing is they have to learn how to find information - how and why and where."*
> ***SST37"*** *I think they should be able to analyse what they are doing and I think that's the major key as far as I see it - they really just have to know how to narrow it down and do things like .com less."*
> ***SST32*** *"If they can really establish the validity of websites well that's just a jumping off point you know."*

In this sense the conception of IL connects to a perception of the IC as external and objective in terms of locating information resources but simultaneously a subjective experience whereby students need to determine the validity of information found. The finding and evaluating experience

in turn is perceived by teachers to require mediation and support which is available from the librarian. Librarians not only help students with developing these information skills around searching for and evaluating information they also collaborate with teachers to identify pre- selected curriculum aligned information pathways for students:

> **SST35** *"I think here at the school they (librarians) are trying very hard to get students not to go in Google to start searching because they can't differentiate between what's reliable information so we kind a contain that and in 6th grade and even 7th I am not sure about what is happening in the 8th grade right now, but the librarian when there is a project going on she will also help the teacher get some web sites that they can go to for the information and they just keep it to kind of that and she does talk a lot in the library about training students so they can be better judges of you know what is accurate and what is not."*

In this way this conception of IL relates to the social human dimension of IL as a mediated experience involving teachers and librarians guiding the information search and evaluation experience.

4.3.2.3 IL is about content reading to extract relevant information

This conception of IL is focused on students being able to read texts and extract relevant information for the learning task on hand as this quotation reveals:

> ***SST31"*** *Well I ended up buying a text book last year ... getting back to this content reading and can the students read nonfiction material and pull the information out of it? So I was glad to get another set of classroom text books because it was a little bit easier reading... so I was really happy that I could get that textbook that was a little lower level but I am finding that the students are still struggling with that textbook. Actually the majority are struggling with both - they are struggling with reading nonfiction and they are struggling with pulling out the information..."*

In contrast in terms of reading online information teachers perceive that students' reading behaviour is influenced by what catches their eye and their motivation to read a source in terms of their level of interest:

> ***SST36*** *"...They [students] start for immediate information and then they read something that catches their interest and then they will go into it some more and I guess that is depending on the subject their interested as well."*

In a sense this conception of IL as content reading to extract relevant information is a classical literacy conception as reading represents a central dimension of the information experience. This conception applies to the individual student and their immediate need to be able to extract relevant information from texts which may be a traditional print textbook or an online text source and in this sense the IC is perceived to be external but the act and experience of reading is an internal subjective encounter. Teachers feel that students may struggle with this process of reading and extracting relevant information and therefore content reading to extract relevant information is a key

conception of IL.

4.3.2.4 IL is understanding the nature of information

The focus of this conception is on students developing their understanding of the nature of information particularly web based information because of validity and reliability issues in regard to such information. Furthermore, the teachers perceive that students can trust too readily what they read online as valid without questioning it as the following quotations suggests:

> **SST35** "*You know the students have no boundaries no limits - they see an information world that is open and they are not scared to jump in there and they just get right in but there is no one putting up those boundaries for them so they are not old enough to have the ability to differentiate between information."*
> ***SST32*** *"But as adults we know that what we read on the internet we can take with a grain of salt and we know that we can trust you know.edu sites or you know generally trust .org sites and if it's a .com site then we say well alright well I will read it but it's a free for all kind of and I'll see this and we know that intellectually - the kids don't know that - the kids don't understand the different websites and what they mean."*
> ***SST37*** *"I just find that it's this sort of 'instant gratification idea' that students have in their lives anyway with all the media and so forth and when they are looking for something they want something like real quick. And just to be maths specific they will come up with a 1000 sources and all these different games and ways to do their math or learn a concept but so much of it is junk and they don't know what's good and what's bad so that's our role from our experience to sort of guide them that would be where once we had a couple of sources NOW we have two thousand and I hope to keep within 50 to keep my own sanity... well we could lead that's easy but I still think that it's good that they get on there and find sources But then how do we teach them to understand this is a good source and this isn't I mean as a learning process for the 6th grade it is pretty tough but the same applies to the history student to look at the author - it might help them to think a little differently."*

This conception of IL relates to a view of the IC as an external place and is very much focused on the WWW as a key source that students use to search for information. The perception of this IC as containing large quantities of information of varying reliability requires students to develop their knowledge and understanding of the nature of information found particularly on the WWW and this development is very much a subjective individual experience for students. The purpose is for students to understand that online information is a common open source for information where everyone can potentially participate and contribute. The accessible nature of the information environment offers great opportunities for sourcing and contributing to the information pool, nonetheless this open information platform can bring its own challenges to students. Wikipedia is a case in point as shown in this quotation:

> ***SST31*** *"Yes especially in the sciences like I have had to ban certain websites like Wikipedia anyone can edit so I don't want students to get mixed up on their facts and the first time I used Wikipedia in my classroom last year there was an error in Einstein's theory of relativity - somebody had forgot to put in a paragraph so I was showing them on the website look you*

can self- edit this - this information is inaccurate you need a paragraph here to separate one thought from the other...so I am kind like thinking of IL as the whole nine yards its science its maths its LA..."

Teachers recognise at grade 6 students are beginning to become aware of the nature of information within the school environs but are unsure regarding the nature of the information decision making practices students engage in when there is no adult to guide them as suggested in this quotation:

SST33 *"So they are starting to be aware that there is information that is more valid than other information but where are they when they are on their own to be able to make that decision is that a good website or not? They are not there yet."*

It is noticeable that when teachers are discussing this conception of IL they are relating it to their experience of teaching within their subject area for example maths and sciences so in this sense IL is embedded in their subject area and not something entirely separate. However, they also recognise the value of collaborative work with the school librarian to support students develop their IL alongside supporting the teachers by providing information pathways that are age appropriate and relevant to the curriculum.

4.3.3 Exploring dimensions of variation of conceptions of IL

The variation in the categories of description of IL from the teacher stakeholder group as depicted in the outcome space in Table 4.3 shows that the focus of application of each of the four conception is on the individual student level and apply primarily to curriculum related learning experience. The IT focus of the conception of IL as a process of using IT tools is focused on information access and interaction relevant to curriculum needs for learning in each of the subject areas. The IL as a set of information skills including finding and evaluating is focused on student learning across the curriculum but here the emphasis is on higher order selection and evaluative skills.

IL as understanding the nature of information, whilst focused on the immediate learning needs of the individual student in regard to the curriculum, also has a wider application in terms of a way of approach information and using it for learning. This conception is very much tied to the perception of the IC as having changed significantly and as a dynamic context characterised by vast quantities of information which isn't necessarily scholarly or peer reviewed as text books and more traditional information sources would have been. Similarly, the content reading to extract relevant information is connected to the perception of the IC as changed and changing and the need for students to continue to develop basic sound literacy skills remains central to the information and learning experience across all subject areas.

All four categories of description relate to teachers' perceptions of the IC which is both a social human subjective context and physical structural objective particularly in regard to the increasing preference of students to use the WWW.

Table 4.3 Outcome Space: Dimensions of Variation of Teachers' conceptions of IL

Referential Aspect Description of Conception	Focus RE Application of Conception	Relationship of conception to perceptions of information context		
		Environmental	Social Human	Affective
IL is a process of using IT tools	Primarily applies to the individual, self, local, immediate, technical and pragmatic levels in order to complete school work which may also be undertaken at home.	Information context perceived as external whereby IT tools are used to find and organise, share learning.	Information context is perceived as social and mediated whereby teachers and students use IT tools to facilitate the information use experience for learning.	Information context including WWW, IT software/and hardware and various IT applications which teachers and students utilise for teaching and learning which is experienced in both positive and negative ways.
IL is a set of information skills	Primarily applies to the individual, self, local, immediate and pragmatic levels in order to complete school work. These skills are conceived to apply across the curriculum and are transferable.	Information context is perceived as external in terms of sources to be found on the WWW, in books, the school library and interactive media.	Teachers perceive IC as complex and finding and evaluating information requires teachers to become more like information guides, mediators and as partners with students in the information experience. Teachers also see parents as key partners in this endeavour.	Teachers perceive IC is characterised by overwhelming amounts of information which teachers perceive as problematic when it comes to students finding and evaluating information particularly web based information.
IL is content reading to extract relevant information.	Applies to the individual self- level in the immediate sense of learning at school and at home.	Teachers perceive IC to be external and as transitioning with text books still having relevance but WWW being the preferred choice of students.	Teachers perceive that web based information and text book information can have different appeal for students when reading information which is an individual subjective experience.	Teachers perceive IC as generating vast quantities of information and feel that students find it hard to read and make sense of information thus IL is about content reading to extract relevant information.
IL is understanding the nature of information.	Applies to both to the individual self-level and to the 'other' level in terms of application. The focus is primarily immediate and pragmatic but also has a wider life application.	Information context is perceived as external particularly in regard to the WWW.	Teachers perceive IC to contain information ideas opinions of people in vast quantities so information is subjective in this sense.	Teachers perceive the IC particularly the WWW contains information that can be unreliable or complicated for students needs and IL is therefore about students developing their knowledge and understanding about the nature of information.

That said the experience of learning in this context is a mediated one as teachers become more like information guides, quality controllers and partner with their student creating a more collective type of information and learning experience. Considered collectively the four categories of description of IL have to a varying degree both a textual (Conception 3) and contextual elements (Conceptions 1, 2, 4) which is similar to two of the conceptions arising from Cope and Sanabria's study (2014).

The conceptions of IL apply to using information for learning across the curriculum and teachers own experience of the changing IC and their witnessing of students' engagement within the IC has generated a sense of excitement in regard to the potential for more interactive and independent and collaborative learning. However, there is also a sense of apprehension as to the complexity, reliability of information and the longer term impact of the changing information experience on teaching and learning.

4.3.4 Comparison with Williams and Wavell (2007) study of teachers' conceptions of student IL and the Big6™ (1990) model for IL

Looking at Figure 4.15 one can see a definite sense of alignment between teachers' conceptions of IL found in this study with the Williams and Wavell (2007) study specifically in terms of categories 1, 2, 3 of this study and categories 1 through 4 of Williams and Wavell's (2007) study. Equally the IL as a set of information skills including finding and evaluating equates with Eisenberg and Berkowitz's (1990) model categories 2, 3, and 6.

The main difference in the categories of description arising from this study and those arising from Williams and Wavell's (2007) study is that IL is understanding the nature of information in its own right. In contrast the conception of making meaning arising in the Williams and Wavell (2007) study does not surface in this study. Finally, the task definition skill that forms part of the Big6™ (Eisenberg and Berkowitz 1990) model does not arise in either this study or Williams and Wavell's (2007) study so in this sense from the teacher's perspective greater emphasis is placed on the more basic literacy elements of reading and extracting relevant content from texts when it comes to teachers' conceptions of IL.

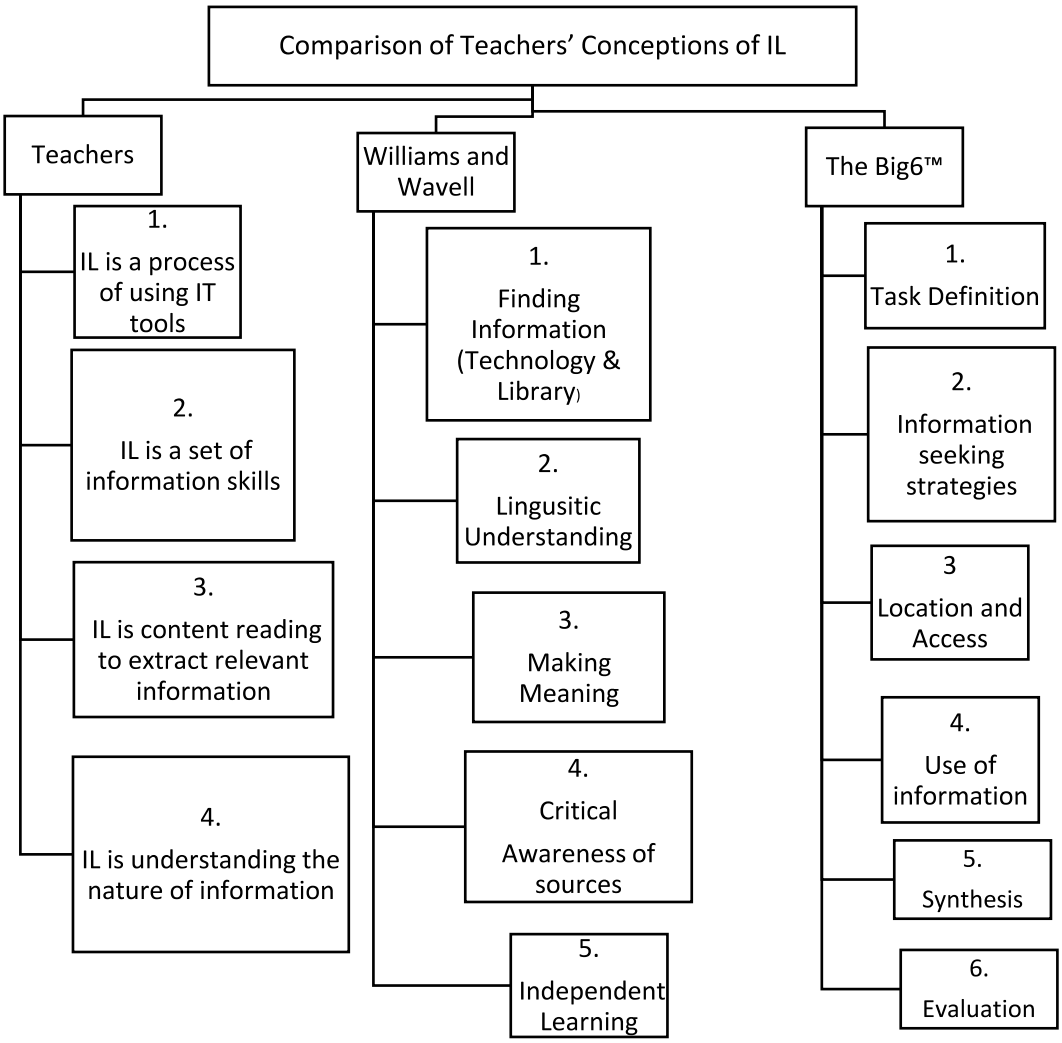

Figure 4.15 Comparing Teachers' conceptions of IL with Williams and Wavell (2007) study of Teachers' conceptions of students IL and the Big6™ model (1990)

4.3.5 Conclusion

From the teacher stakeholder perspective their conceptions of IL relate to their perceptions of the IC as one which offers more expansive quantities of information and opportunities for interactive and collaborative learning experiences which leads to a variation in the ways IL is understood. The conception of IL as content reading to extract relevant information which is a cornerstone basic literacy is continuous with teaching their subject area and as such IL is not a separate additional area of learning but forms part and parcel of teaching content within and across the curriculum. The conception of IL as finding and evaluating information are skills associated with learning in every subject area and again is seen as a curriculum embedded. Similarly, IL as understanding the nature of information is applicable across teaching and learning. This way of conceptualising IL indicates that teachers see IL as integral to teaching and learning and they don't necessarily use the terms IL in the

ways they talk about IL, rather the narrative is more about IL in its applied sense as related to daily teaching and learning practice. This is an important observation when it comes to building collaborative partnerships between the teachers, IT teachers and librarians which will be revisited in Chapter 6 in the discussion of findings.

4.4 Library Personnel

4.4.1 Perspective of information context (IC)

The PS library represents a significant dimension of the PS IC context and it is clear from the feedback that the perceptions about the physical layout function and purpose of the library are very much in transition. The library is perceived by the library personnel as both shaping and being shaped by the transitioning nature of the IC which in turn is generating variation in their conceptions of the IL. The feedback from the library personnel reveals extensive variation in their perceptions of the IC as evidenced in Figure 4.16. However, through sustained and systematic coding processes three categories of description representing the three dimensions of the IC emerged from the data as follows: The Environmental, Social Human and Affective dimensions.

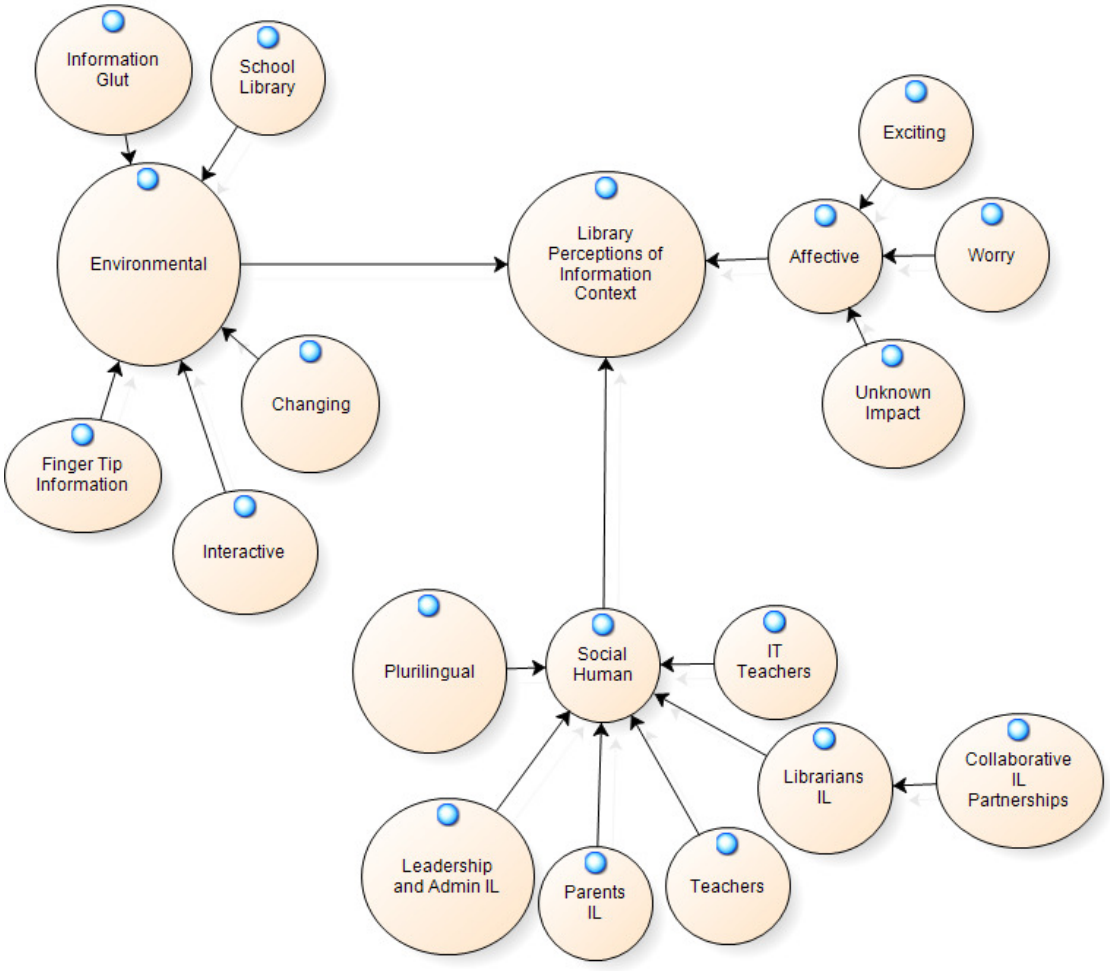

Figure 4.16 NVivo Output from Coding Library Personnel's Perceptions of the Information Context

The discussion now moves to demonstrate how each of these categories of description of the IC and the perceptions associated with each one are grounded in the feedback.

4.4.1.1 Environmental

Library personnel perceive the IC to have an environmental dimension encompassing physical structural and virtual elements. They perceive the environmental dimension of the context to be changing and that the WWW, school lap tops and integration of online learning platforms such as Moodle are key drivers of this change which is felt to be simultaneously exciting, challenging and to a degree unknown. They perceive that this change has generated a 'Glut' of information and this is problematic in terms of the experience of locating good information:

> ***SLB21*** *"Well it's a very interesting time to be a librarian because of the changing nature of information and the Information Glut! I would say. It is also a very difficult - it's an exciting time but it is also very challenging and especially in our school which is socioeconomically high level school - They have everything at their "fingertips".*

The concept of 'finger- tip' information is an interesting one because it suggests the perception of the immediate availability of information but raises concerns amongst library personnel who consider the information searching experience as being about finding the 'jewel' pieces of information amidst the 'garbage' that is to be found online:

> **SSLB21** *"I certainly think they have a lot more information at their finger- tips but whether they are actually finding it - finding the right resources - if they were left to their own devices - NO they think Wikipedia has everything."*

The emergence of the WWW as offering greater quantities of information does not always equate with there being more quality information generating a perception of the IC as a competitive context as this quotation captures:

> ***SSLB21*** *"...I think the confusion is actually for the students because the students haven't learned to index and to categorise and to locate information that is worthy - as adults haven't either. As librarians are always the ones to look for the best information the most accurate information and reliability and this is the sort of jargon we use so we are a sort of specialist in that field."*

The perception of the IC as a site of competing information sources is interesting also as it indicates that the library personnel sense there is the feeling of competing with search engines such as Google and from their point of view they can offer a certain human expertise in this context. The perception of the context as being competitive is also reflected in how library personnel have sought to respond to this competitive force as is reflected in their actions to try to create a more "*Amazonish*" feel to the library by having a lap top dedicated to searching the catalogue interface at the entry to the library:

> ***SSLB22*** *"… I think it was last year because we went with this new Catalogue Destiny and this has Destiny Quest which is very geared to the kids to look sort of 'Amazonish' you know with the picture of the book and you know just fun and easy and it has the option of the most checked out books on it and the newest books just pop up automatically that have been processed in and just kind of visual stuff just to grab them so we keep that always on the catalogue and so that way they can always come in and take a look there and then that is one thing."*

There is a definite perception held by library personnel that online information resources are becoming increasingly more popular and when combined with the lap top programme and all the "gadgetry" that comes with them students now have everything available to them online. This is creating a dilemma for librarians who provide an excellent range of print resources but they perceive that it is increasingly more difficult for them to compete with the online dimension of the information context.

> ***SSLB21*** *"...We accommodate their interests and their needs - we purchase things that support the curriculum - but also their interests so really our library is changing in the sense that it used to be more for the curriculum and now it's becoming more and more for their interests because there is too much competition with online resources."*

The IC is perceived to be a stimulus for library personnel to proactively adapt their facility, service and pedagogical approach to become more interactive and school community centre resource for learning and leisure interests based on the Learning Commons Model (Ontario School Libraries Association OSLA 2010). To that end the library personnel speak about how they are taking active steps towards reducing the number of books in the collection in favour of making space for greater interactivity and leisure interests such as crafts and chess:

> **SSLB21** "*And maybe there might not be as many books and I am certainly reducing the collection...Well we are not an archive right and if I see that the kids are changing their ways in looking for information, do I need a reference section? I have been reading up on the "learning commons" idea …and I have kind of made a little plunge already in that direction. If I cannot get them in here purely to read books, then I need to change the environment so that they will still come in and be exposed to books so have a lot of things there for them that are also physical not necessarily computer related. That's why I have little chess sets out that's why I have my little crafts club thing at lunch and we have the novel writers group that come at lunch time now for the month of November. We have this reading room you know with quick reads …and I think the "learning commons" idea is very good and what they are really saying... is that the media centre is going to become a place where people will learn whether it is from books or computers or other hand held devices."*

The intentions and expectations implicit in this quotation suggest a proactive and pragmatic open mind-set towards the adaptation of the library facility and role to meet the perceived change in the nature of the information, reading and library experience. The initiatives spoken about here which are identified to have been inspired by the Learning Commons concept all point to a perception

about the library as not being an archive but rather an experience. The library context is considered not to be a physical place but very much an interactive social space. Indeed, the library personnel perceive the role of the school library in an international school setting to be very much that of the community centre of the school serving parents, teachers and students:

> ***SSLB22*** *"Yes I feel this is a really important part of what we do for the kids and for people of any age even for the parents as well. So when they walk in the door there is the parenting books space and then there is the travel books together so they can have their area and so they can use it without interrupting the classes. And we have a very different role than most school libraries because international schools in general in that it is much more of a community library or a public library…"*

This concept of the library as being a school community library and the emphasis being placed on the need for warm and welcoming space is revealing in that it depicts a physical place that requires the infusion of a sense of warmth and welcome. Perhaps this is an unconscious desire or need that is emerging out of the ever more technologically driven information experience:

> ***SSLB22*** *"Yes we try to do a lot of colours and the chairs the fat boy cushions they can sit on and yes a lot of thing changing and even the generifying of the fiction collection and just trying to make it more immediately accessible."*

The space is also perceived as an open classroom by library personnel which they feel is a unique position to be in as everything you do is on view:

> ***SSLB21*** *"ours is a very open place - everything we do is open to the public… People have no idea of who comes in here its parents, its teachers, its parents with their toddlers, its kids coming in - its visitors I mean this is like an open classroom..."*

4.4.1.2 Social Human

In an attempt to scaffold good information use experience in this maze of information librarians represent a key human interface and mediator of students' information experience. Increasingly their role is perceived as being one of web curation which in turn offers a more bespoke IC for the students:

> ***SSLB21*** *"Well first of all we never in the library expose them to all the possible media in one go, never. We usually start with print resources...we will intermix them with some online and even then it will be limiting them to I might have a video clip online – a little lap top ready, there might be brain pop running on another one as one of the stations or the focus might be on pathfinders that I have developed which would be ten to fifteen to twenty preselected websites so that they don't go everywhere online. Or it would be to teach them how to use one of the databases that are child friendly or a specific website. We never ever have them come and say right go for it because they would be lost."*

However, this raises the question of time and resources in terms of the expansive nature of the IC and the diversity of learning outcomes across the curriculum as in reality the librarian may only see the students for four or five projects in the year:

> **SSLB21** "*...but the dilemma is how you get each grade level often enough and regularly enough so that you can build something? I don't know how much of an affect I have on them hopefully you know you plant a seed...*"

In essence these quotations reveal a perception of the social human dimension of the IC in terms of the librarians being able to offer that human guidance through a complex terrain. This role is challenging because the community is plurilingual but the language of instruction is English:

> **SSLB21** *"...we do have support with the EAL/ESL teachers and our learning centre teachers and I try to touch base with them so that they know what I did sometimes what I would do... is I would summarise the lesson and explain what we covered and I would send it to the whole grade team…"*

Library personnel note how they have responded to catering for the diversity of language and learning abilities by investing in online resources that are more tailor made to meet such needs such as World Book Discoverer:

> **SSLB21** *"World book discoverer is a new one that is specifically designed for the low end readers and EAL students. It has very short [articles] and the font is bigger and they don't get into really complex articles...and they give simple language and they have all the dictionaries so like you click on a word to get the glossary of terms."*

Students also choose sometimes to use their own search engines;

> **SSLB21** *"Or their own search engines sometimes they would be using their own search engines for their own country."*

The option to use Google translator is noted alongside the fact that some of the library databases have a translation device which makes it helpful for students:

> **SSLB21** *"For example, we have an ESL child from Korea and also one who speaks Arabic they can actually get that page translated – it's a computer translation so it's not perfect so they can get the gist of what's there."*

The findings reveal that library personnel perceive their role as being that social human mediator and quality controller of the IC in terms of supporting students, teachers and parents with the research and reading experience. Due to the perceptions regarding the unreliability of much online information along with perceptions about students' tendency to "pick something quickly" librarians believe their role is to provide pre-selected pathways to reliable information pathways for the students:

> **SSLB22***" I especially see them [students]picking something quickly you know just picking the first thing that pops up because it's easier and it's easier not to get overwhelmed. So I think that is why you know having these reliable sources picked out for them is important because they are not as patient so part of the role is to provide them with something that is more accessible and that is easier and more reliable."*

Furthermore, librarians are very much concerned to create a child friendly IC that is designed with children's cognitive level, interests and sensitivities in mind. For example, the promotion of reading is carefully considered in terms of being aware of the different needs of the children regarding language challenges and the varying levels of interest students have in reading. In this sense the library becomes a very much more bespoke IC because it is tailored to the multiple reading tastes, levels and interests of the students:

> **SSLB22** "*I think with our print resources we have tried to gear things so we have been doing a lot of graphic novels to get kids interested and started you know maybe when they are having especially the ESL readers or the boys or the reluctant readers and we have done a lot of biographies that are graphic or historical events or graphic representations of those sorts of things. We also offer a quick read section but we find that the kids don't really like to go to that section because they feel that it is separate and they don't really want to go to the little kids books so we have actually started mixing them more in the regular collection and just finding books within that range so you can always have a wide variety. The books which are higher interest but lower reading level are kind of mixed in with the regular collection so we can always find them."*

The actions taken by the librarians to be sensitive to the social nuances around the reading habits and practices enables them to create an IC that the students feel comfortable in and that feels accessible and inclusive. These actions demonstrate the student-centred mindedness of the librarians which in turn directly impacts the students' perceptions of the library and its role in their daily school experience.

At the PS the library staff also recognise the value of collaborating with likeminded colleagues and they feel especially lucky to have IT teachers:

> ***SSLB21*** *"who are also IL teachers as these are the ones who are talking the same talk in the classroom about digital citizenship and about thinking carefully about where you get your information and about citing your sources, they are very good."*

Equally teachers are perceived to play an essential role in supporting students' learning in this complex and changing IL context and as such represent a key social human dimension of this context. However, library personnel perceive that there are many differing perceptions of what the library is and what IL means which can put the optimum mediation of the context at risk as the following quotation suggests:

> **SSLB21** *"Most teachers don't know that there is a curriculum for IL..."*

The origin of the problematic nature of the perception of libraries by teachers is seen to be connected to past experiences the teachers may have had of libraries that were run by librarians who were:

> **SSLB21***"...resource centre keepers – they were a key to a resource centre rather than a dynamic collaborative attractive space..."*

In attempting to bridge this gap in perceptions the library personnel highlight the value of working collaboratively through formal and informal professional development opportunities. Library staff have found it particularly helpful to connect IL to IT professional development and give the example of the librarian and IT teachers offering a PD half day on the use of Moodle where the;

> **SSLB21** "*idea was to share and show how Moodle is used, the interactive parts of Moodle"*.

IT professional development is perceived as one hook to connect in IL:

> **SSLB22** *"...Information literacy you try to sneak in things about information literacy everywhere in daily conversations with teachers I mean just having a workshop on information literacy is not going to help. The best way you can teach information literacy is when you have a collaborative project with the teacher and you teach it to the kids and you hope the teacher learns too."*

Equally more informal opportunities for library staff to offer IL learning to teachers occur on a one to one basis with teachers:

> ***SSLB21****"I do a lot of teaching teachers on a one to one basis...we do a lot of it behind the scenes one on one before school starts and after school at break..."*

Library staff recognise that by being IT savvy themselves this is sometimes the gateway to teachers for IL:

> **SSLB21** *"And if you are IT savvy and I think most media specialists are they tend to be on top of IT and that is sometimes your gateway to teachers so they might not be thinking about IL but you can sneak that in, it's funny...."*

It is not only the students, librarians and teachers who constitute the social human dimension of the information context, library staff also recognise the role parents have in terms of supporting their children's experience of the IC. However, against a backdrop of so many competing demands the librarians recognise it is hard to offer this kind of support to parents:

> **SSLB21** *"I would love to teach the parents and I just don't know when seriously I don't know with the twenty-four hours in the day how much more I can actually do. "*

Nonetheless they feel:

> ***SSLB21****"there should be parent education but I just don't see how the school can accommodate it..."*

The findings show the complexity of the IL needs library staff is trying to meet across the range of patrons. Not only do library personnel perceive a sense of competition from the emergent online IC

but equally there are many competing demands in terms of meeting the diversity of IL needs of students, teachers and parents.

One remaining finding that is worthy of consideration in terms of the overall social human perceptions regarding the role of the library and the librarian is that librarians believe that they are uniquely placed to understand information use experiences as they see the bigger picture in terms of children's cognitive abilities as they progress through the grades and across all the different aspects of the curriculum:

> **SSLB21** *"...And I think there is another thing to be said about librarians...it's just the profession of the library if you are doing it properly the library is actually an amazing resource. I mean how many people do you know who actually teach 5th to 8th grade in one day? Most of the teachers stick to one grade so they never see the big picture... I think the librarians have a better idea of what's being taught of how it's being taught and what kids are exposed to what the day looks like."*

Equally library staff perceive they have an important advocacy role to play in helping administrators to have a fuller understanding of the role of the library and librarians as the following quotations suggest:

> **SSLB21** *"...they [administrators] are supportive they love the libraries it's funny they love the space and the atmosphere but they don't know quite what it does..."*
> **SSLB22** *"...we are always saying here's what we have here's what we do here's what we offer and I think it's about making it interesting and exciting for them [the administration] as well as the kids because they always come on tours in here and now as the library is looking nicer and nicer and that it is more colourful and accessible you see them so when anyone is being taken on tour they always bring them into the library and that's kind of a nice step. So then we can get them more informed you know."*

In terms of perceptions regarding the role of the library as a key dimension of the IC the findings suggest that library personnel perceive there to be a diversity of perceptions and levels of understanding prevalent amongst teachers and administrators which influence their potential to implement their conceptions of what the library and the library's IL curriculum should be.

4.4.1.3 Affective

On the one hand library personnel are excited and open to the potential that new learning technologies have to offer but also there is a sense of worry and concern about the unknown impact of the engagement with these technologies and online information in terms of the social human interaction and indeed social development of students as evidenced in the quotation:

> **SSLB21**"... *It is ever changing [Information landscape] and who knows what it is going to look like five years down the line? - I don't even know what computers will look like the way they do now or if handwriting is going out the door or if e books are really going to take over books I am not really so sure about those things, it's very exciting but I am not convinced."*

Key among the changes identified by the library personnel is the change in the nature of reading patterns and the use of hard print book resources:

> **SSLB22** *"...Truthfully I see libraries, the actual book I mean things like the coffee table book the picture book and the fiction book, I see them as always being there but truthfully most of the stuff you are going to look at is going to be online and it will be for them as well most of the things they are doing in that sense other than their pleasure time is probably going to be online because it's the most up to date information they can get."*

Books have played a central role in the library users' experience and now library personnel are witnessing shifts in patterns of reader preference in light of the competition from e book and online information. Books have been a key element of the architecture of the library and IC as has development and promotion of the collection for patrons. The library personnel perceive the future of the physical book is uncertain and this uncertainty is compounded by the unknown outcome or impact of e reading for the reading and learning experience. There is also a sense of the worry about what the likely impact of the increasing popularity of using online information amongst students will ultimately have on student's learning and social development. The demise of the book is a source of mixed feelings:

> **SSLB21** *"...and maybe there might not be as many books...I am saddened [about there being less books] but on the other hand there is nothing wrong with all these new things I mean I think we are in transition and kind of in limbo but I don't know where we are going with it. I would hate to see the book go who knows what the book form will take...some people feel the e book read is great because you can put five hundred books on there. I just don't see it as the same feeling of accomplishment when you have finished reading an e book…"*

These quotations reveal a genuine concern about the unknown impact of new information technologies in terms of student learning, reading experiences and beyond that to their social human development. "Glut", "garbage" and "jewels" are three memorable images of the IC arising from the feedback from library personnel. Coupled with a strong sense of the competitive nature of the IC context in regard to libraries facing increasing competition from the WWW it is a challenging time for librarians to understand how best to lead and manage this dynamic context.

4.4.2 Library personnel's conceptions of IL

The conceptions of IL arising from the library stakeholder group originate in their reflections concerning their experience and practice of teaching IL in the PS Library. It should be noted from the outset that an IL curriculum had been developed by the school librarian based on the American Association of School Libraries (AASL) Standards for 21st Learner (2007). Equally library personnel conceptions of IL are informed by their perceptions of the IC which they see as very much in transition with the evolution of the WWW and introduction of the one to one lap top programme being identified as key stimuli impacting the physical structural, social human and affective

dimensions of the context. Figure 4.17 presents a visual of the main themes arising from the coding process.

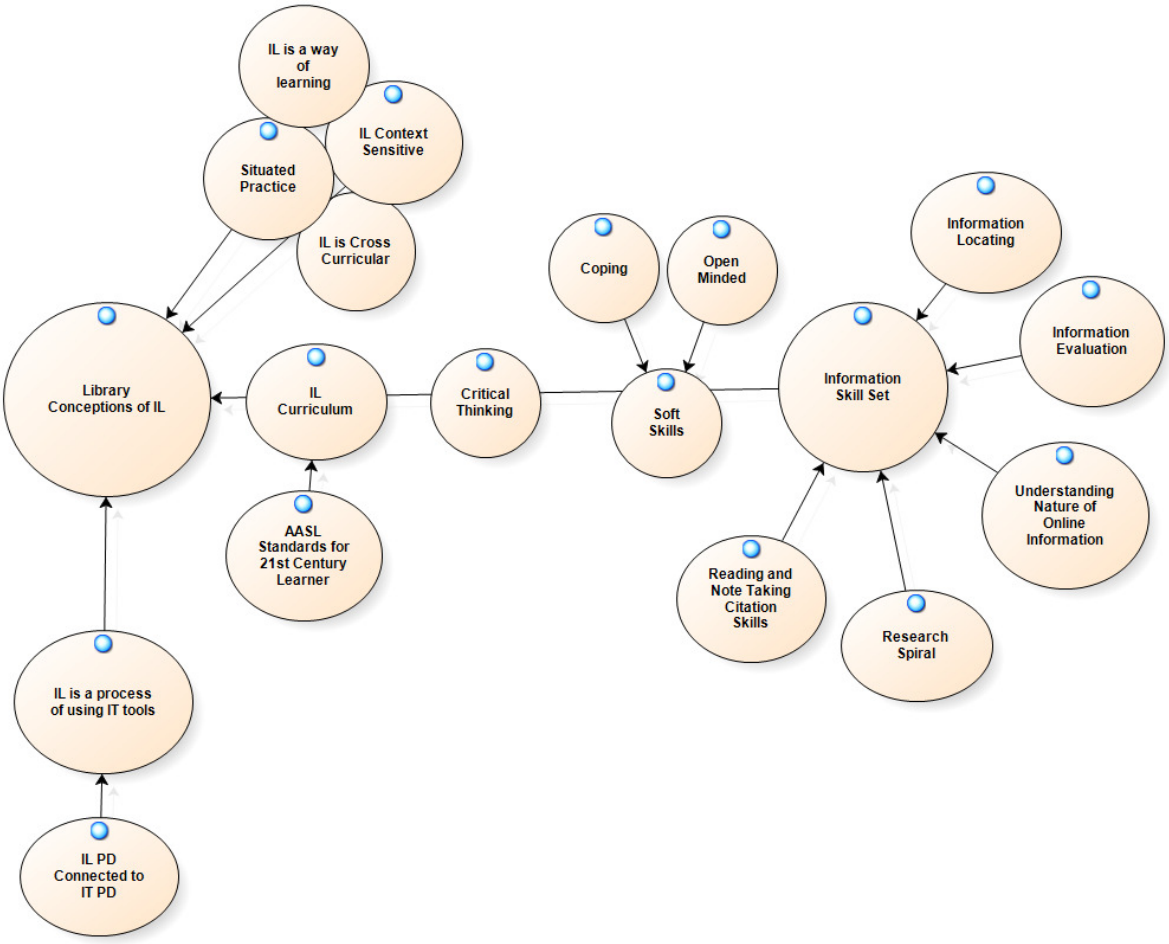

Figure 4.17 NVivo Output from Coding of Library Personnel's Conceptions of IL

Four main conceptions of IL surface from the library stakeholder group including IL is a process of using IT tools, is a set of information skills, is critical thinking about the origin and nature of information and that IL is a way of learning. The library feedback is focused on IL in terms of the librarian's experiences around teaching IL to both students and teachers.

Through repeating the cycle of analysis, interpretation, review of evidence and synthesis the four categories of description of the conceptualisation of IL by library personnel were developed as depicted in Figure 4.18.

These categories of description articulate the variation in the conceptualisation of IL and are presented as a cycle of interdependent categories because this was felt to better represent the way

IL is conceptualised. The discussion now moves to demonstrate how these categories of description are grounded in this feedback before going on to consider aspects of variation in Section 4.4.3.

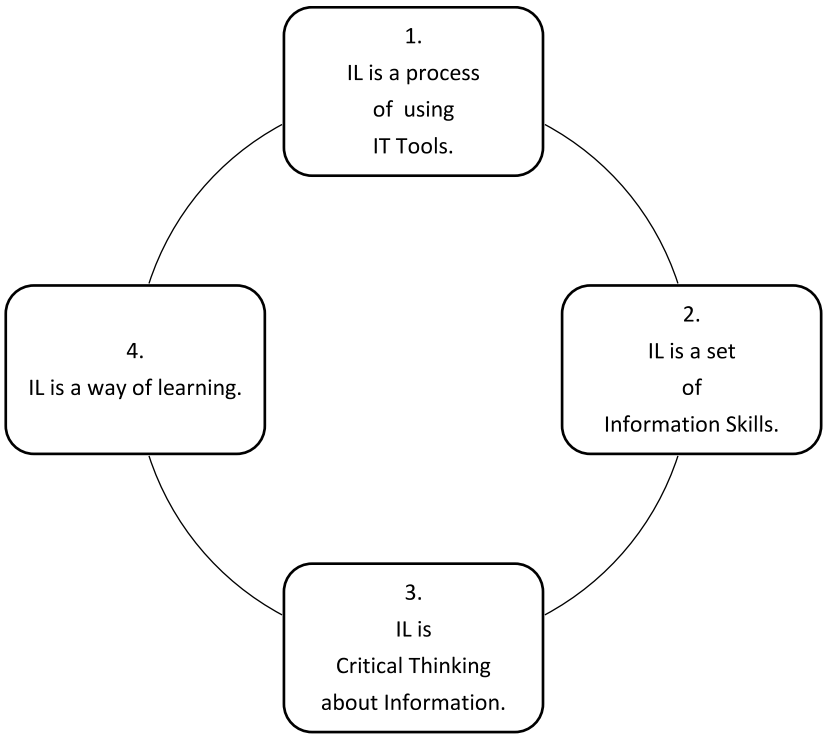

Figure 4.18 Library Personnel's Categories of Description of IL

4.4.2.1 IL is a process of using IT tools

The focus of this conception is on students using IT tools to access, organise and communicate around information as evidenced in the following quotation:

> ***SSLB21*** *"That's right I mean because it is integrated I mean after all it is IT that we are concerned about we are concerned about the information that is out there virtually that is the information that we have to tackle the most in terms of information literacy right so you might as well go through the lines of IT."*

The conception applies to both students and teachers whereby library personnel report collaborating with IT colleagues in the development and delivery of professional development around supporting teachers to use Moodle and in this way they can train the teachers about how to create pathfinders for students thereby carving out better quality information pathways for student as this quotation indicates:

> **SLB21** *"there is so many things that you can do with it [Moodle] - do you [addressing teachers] want to learn how to make a post on a Google search engine that is what I did which means all the pathfinders I find for a unit I can put on a Google search engine so in one search the kids can look up all those 15 sites that I had preselected rather than going to individual links."*

Nonetheless library personnel do perceive that whilst IL and IT are inter related they are also different in so far as IT teachers offer training specifically on the use of software programmes and hardware as indicated in the quotation:

> ***SSLB21****" I think they are more expert in programmes that they run showing kids how to use hardware and software - probably much more advanced than I am I mean I embrace it I love it and I hope I am on top of it if they come to me to experiment with me if there is something they want to try - Moodle is a good example."*

A final connection between IL and IT centres on internet safety which is covered by the IT teachers' lessons and not in library instruction as documented in (4.2.1.2) however library personnel are very much aware of how this is a major concern for parents as this quotation indicates:

> **SSLB22** "*I think parents tend to focus on their concerns for internet abuse and the things kids might be exposed to.... I think they are more worried about other issues that go along with parenting so..."*

4.4.2.2 IL is a set of Information Skills

Information location and evaluation skills

The focus of this conception of IL is on students becoming discriminating searchers and critics of information found for their school related work which may also be undertaken at home as this quotation reveals:

> **SSLB22** "*Yes and to have them to be more discriminating I think I mean to help them because the internet is going to always be there like when they are at home on their own so they just have to learn and in the long run they just have to use sites they know they can trust and it's better to be more discriminating that to be taking you know whatever pops up on their screen."*

The conception applies to the immediate information experience but also has is about a longer term application and about becoming a way of learning as one moves through the different stages of education as this quotation reveals:

> ***SSLB22*** *"…so hopefully as they go through (middle school) and go to high school and go onto college that that just becomes part of how they learn in terms of discriminating. I mean with print sources as well, in print or computer or whatever that this becomes a part of how they learn. I mean these are the processes of doing research that become so engrained that as they go along it is easy for them that it becomes comfortable and so it takes away a lot of the stress."*

One strategy used by the library personnel to foster students' practice to search for different types of sources is to require a mixture of print and non- print sources in project work:

> **SSLB22** *"Right I would say that a pretty large percentage at this age would tend to go to the computer. I think so and generally what we do in that we require one print source and one*

online source. So we have that requirement like for example with World War 2 they had to have 3 print sources and then however many online ones. That sort of forces them to at least look at it right."

Library personnel emphasise that ensuring this balance of choice of online and print resources is very much part of the teaching strategy:

> **SSLB21** *"...I think that the kids sometimes are very narrow in that they think only the digital and I think that is part of our role as well like encouraging the hands on stuff and maybe not going for such immediate or misleading information or whatever but actually going to reliable sources as well as all the things we teach in here so trying to get them to go to the books and hands on stuff as well."*

It is clear from the above quotation that the perceptions of the IC as a competitive context (4.4.1) in terms of the library seeking to promote the extensive range of library resources poses a challenge for librarians who perceive the ever accessible "finger- tip" information to be a source of real competition and so the realisation of the conception of IL as information locating and evaluation skills is not without its challenges.

Sifting and sorting Skills

Equally the skill of being able to sift and sort through all the information sources to find relevant information comes to the fore when library personnel reflect on their IL teaching practice as this quotation indicates:

> **SSLB21** "*I just am worried that the glut is a burden both for students and those who don't understand information and how to find proper information that is a concern but part of my job is to teach them to sift through garbage to find possible jewels that are online and this is why we subscribe to a lot of online subscriptions databases and encyclopaedias although there is a lot of competition with Wikipedia and Google..."*
> **SSLB22** *"...And so I think the thing that we can do is to help it be less stressful by helping them learn to target the information and taking reliable information and making them realise how important it is to get the correct information and reliable information I mean I see that as our biggest goal."*

Collectively these quotations focusing on the library personnel's perceptions and experience of the ways students behave when they are gathering information and using it for learning showing that students' practices tend to be very speedy or quick and that there is this sense of quickly taking the first source that comes up in their search. The response of the library staff in practice is to focus on supporting students to develop a set of information skills to include reading, note taking and citation skills in addition to the aforementioned information evaluation and sifting sorting skills.

Reading, note taking and citation skills

These examples of how IL is taught in practice demonstrate that the PS library's IL curriculum dovetails the school curriculum. What is interesting is the teaching strategy of IL "drills" which are perceived to form part of a research spiral philosophy and point to a recursive approach to teaching IL in practice as this quotation indicates:

> ***SSLB21*** *"Well the drill would be well you know we have a bit of a research spiral philosophy that well it depends on the project you know, some really just come to learn how to use a data base 7th grade science news summaries are an example. We teach them first how to take notes from a magazine that is a print source so we have a wide range of science magazines they can choose from. We try to differentiate by having a huge range of reading levels so that they can find an article and what do you do with it so note taking strategies is a skill a drill, or how do you cite that source that's another drill - you know they are things that they kind of hear over and over again from me and being critical once they go on line."*

It is also interesting to note that in practice the library staff experience challenges around teaching children who are non- English speakers and in this regard emphasise their need to have a differentiated approach to meet the diversity of language and learning needs.

> **SSLB21** "...I *think every resource that we provide we try to always have the EAL students in mind always whether it is my print sources my magazines my online data bases and that is why we have such a huge range our low end our first time users and also our low end readers so we have too the reluctant readers or the very low end readers and for students who are just new to English."*

This is an important dimension informing PS collection development as was noted in the earlier Section 4.4.1.1 regarding the environmental dimension of the PS IC. The plurilingual dimension is also highlighted in the conceptualisation of the IC as a social human context.

Soft Skills: Open minded and coping skills

IL is conceptualised as a set of information skills that includes soft skills such as being open minded to embracing the changing information environment and learning skills to cope with the demands of a fluid and vast online information environment as evidenced in the following quotations:

> **SSLB21** *"I think for me IL really means being open and to embrace the changes that come along because I think it is always changing and it will continue to change and I think the things that we see now I think we have no idea what it is going to look like 20 years from now…I don't think that books will ever be gone but I do think you have to have both. I think you really have to have that because kids are just too used to having that immediate access you know on the go access..."*
> **SSLB21** *"...I don't teach content so for me that is a pretty easy thing to do because you are teaching them skills coping skills - well in this age it is coping skills its information searching skills locating skills."*

The ability to cope and adapt are key soft skills within the information skill set conception and reflect the inherent ongoing processes of decision making by students when engaged in the online information environment particularly against the backdrop of the vast "glut" of information. These decision making processes however also relate to the next conception of IL as critical thinking about information which represent higher order thinking skills.

4.4.2.3 IL is critical thinking about information

From the library perspective a key conception of IL coming to the fore from their reflection on their IL teaching experience is that IL involves critically thinking about information as the following quotation reveals:

> ***SSLB21*** *"Well I think information literacy just means that you know how to find and work with information that's all it is but the finding part and the evaluating part is the most crucial. If you can be a critical thinker about what the information is about where it came from, what it was written for, and who it was written for - if you can understand that and be a critical thinker all along the way you are probably information literate. And to know that there is not just one place to look for information - if you limit yourself to Google and what's happening is they are clicking on the first link which could be Wikipedia or it could be a great website but it could also just be nonsense because it has been accessed so often then you are not literate. That's I guess my summary."*

This is further emphasised in the quotation:

> ***SSLB21*** *"It is to make them critical thinkers - always judge what you are looking at what you are reading - asking those questions - I think once they have developed that to be critical thinkers they will be okay but if they think that everything out there is true I mean even if you are just reading a newspaper you should be a critical thinker right - there is no real difference except that often we are hopeful that we have good journalists who are really doing their research and have good ethical conduct who are actually writing the articles especially in the reputable newspapers not tabloids so it is the same thing if you can distinguish what's good what's bad where is it coming from who is it written for and you are being judgmental the whole way - a critical thinker then I think you are okay."*

Critically thinking about information involves students digging deeper to understand the origin of the information and this is relevant no matter what medium the information takes as this quotation indicates:

> **SSLB21** *"Yes deep learning and yes don't just jump to conclusions and don't take everything for face value you really have to dig deeper and see where the information is coming from and I think that is a worthwhile skill no matter what information you are looking at no matter whether it is on line."*

It is interesting to unpack this concept of IL as critical thinking by considering how this is taught in practice by the Librarian:

> **SSLB21** *"I think they [students] ...have exposure to information literacy early on to a certain extent in my case it's from 5th grade. We try to instil in them, well in 5th grade they are still very young but in 6th grade as well once they get to 7th grade we start asking these poignant questions about well, so what exactly are you searching for? Where are you looking? Who is the author? Especially in 8th grade you know, where their thinking skills have really developed to a certain point... I think where we ask these questions and really I think we focus a lot on reflection and the research process becomes more important than the content instead."*

However, whilst the intent is to develop critical thinking around information it is recognised that the ultimate impact is harder to measure:

> **SSLB21***"... that's my attempt but whether it has an effect I see them only so many times hopefully I see them for 4 or 5 projects in the year if I am lucky…Hopefully you know you plant a seed but I do think they are pretty information literate when I see new kids come in I usually have to start from scratch with them."*

In this sense there is a clear wish to ensure all students have this kind of targeted IL learning experience but to realise such an objective requires an alignment of thinking and understanding between the library and teacher stakeholder groups. This is an important takeaway point from this stakeholder group and will be further explored in the comparative analysis of conceptions of IL in Chapter 5.

4.4.2.4 IL is a way of learning

It is possible to interpret from the findings regarding the perceptions of library personnel about the IC (particularly 4.4.1.2 on the social human dimension) and from their conceptualisation of IL that IL is a way of learning that is context sensitive and cross curricular involving independent, collaborative and situated practices. Situated practice is particularly highlighted in terms of IL teacher training.

The PS library had adopted AASL standards for the 21st Century Learner (2007) as the basis for its IL curriculum, lending rigor and system to their approach to IL which permeates their conceptions of IL:

> **SSLB21**"W*e have fully adopted the AASL standards for the 21st century learner which they have totally revamped and are very current and easy to use and so that is our curriculum…"*

The librarian offers an example of the IL curriculum in action in terms of a new unit of inquiry on Ancient China they are about to undertake in collaboration with the Social Studies teachers in Grade 6:

> **SSLB21** "*Okay so let's take an example I am going to be starting Ancient China in a few days...I would have on the 6th grade links page of the MS school library I would have the lesson what's going to happen in the Library, what I want them to know, what I want them to understand and what I want them to be able to do these are called the 'SKUD' [Skills, Knowledge, Understanding and Disposition) and this is a differentiation term. It's nothing*

more than making sure that you are aligning your standards with what you want the children to know, understand and do during that unit. So that's for the information literacy aspect I might have path finders of ancient China websites that I have found on there I might have little video clips that I want them to watch and actually we are doing a lot of work stations so it's more of a physical place…it's for me it's to align my standards. If there are any assessments then I want them to be aligned and I also have on each grade level link page an IL checklist…and on the checklist I have the 'know' 'understand' 'do's' - my standards, the ones I am aligning..."

The concepts of IL shared by the library personnel are clearly reflective of the pedagogical underpinnings of the AASL Standards and as such it is clear that the role of the librarian is not to teach content but very much to teach information skills that enable the student to become a critical thinker about information. Furthermore, library staff conceptualise IL as being a cross curricular concept whereby all teachers must be concerned with IL and that it's not the sole responsibility of the librarians:

SSLB21*"I don't think its [IL] is just my responsibility – I do think I am the specialist in the field just like you have IT teachers who are specialists but everyone should be IT literate and everyone should be thinking about IL in my mind you cannot say no well let me take an example literacy is not important because I teach math – well that is totally nonsense because how are you going to problem solve if they can't read a question or analyse a situation or a dilemma in order to understand the problem – literacy is everywhere, literacy is the responsibility of every single teacher as is IT because you cannot separate it anymore."*

IL is therefore perceived as cross curricular and in this regard library led collaborative learning initiatives with teachers are perceived to offer real opportunities for teachers to learn from the librarians in situ and vice versa.

SSLB21*"…If you actually collaborate the advantage that you have two adults in the classroom and that you support each other – it's not territorial it's not one covers the content and the other covers IL you both do it together. We are both specialists but it's a team effort..."*

These collaborative classes offer teachers real opportunities for learning about IL through situated practice and for the librarian to understand more about the content of the curriculum. Whilst library staff specifically identify IL as situated practice in terms of teachers learning from the librarian in the context of collaborative initiatives it is also true that the way the librarian designs teaching student's information skills builds in opportunities for students to learn from one another in situ. This is evidenced in the account about research classes on the topic of Ancient China. As students were learning new information and ideas they were sharing it with their peers.

4.4.3 Exploring dimensions of variation of conceptions of IL

The key dimensions of variation in regard to the four categories of description of IL appear in regard to the focus of the application of the conception in practice and the focus on the relationship between the conception of IL and perceptions of the IC as presented in the outcome space for library personnel's' conceptions' of IL in Table 4.4. Taking each conception in turn the focus of IL as a process of using IT tools is on data collection relative to the immediate study or learning task being undertaken by the individual student particularly in terms of using IT tools to navigate the online information environment.

In this sense the IT tools are used to access information that is perceived to be external such as the web or on Moodle pages on the library's website where students can navigate to safe reliable information curriculum related information pathways. However, this conception of IL as a process of using IT tools is not exclusively about the external physical information context but the process of using IT tools is experienced as a social interactive human encounter in that students can use IT tools to connect to sources and to their teachers and class mates around their information and learning experiences. The conception is connected to the library personnel's feelings about using IT tools which they are excited about and interestingly express the feeling helping students learn how to use IT tools is a way to teach IL.

Similar to the IL as a process of using IT tools the conception of IL as set of information skills including soft skills is very much focused on the immediate school work project and the information use experience around a particular curriculum based project. The IC in regard to this conception is perceived to be external, primarily web-centric and competitive in terms of choice between library print resources and the WWW. The conception clusters together a complex range of skills including finding, evaluating, sifting and sorting, reading, note taking and citation skills and soft skills including being open minded and coping skills.

As the library personnel see themselves as having a 'birds eye' view of middle school curriculum and have the expertise in regard to understanding the nature of the IC they feel best placed to support students learning the skills contained in this conception and feel that their role is very much a skills focus and not a content focus. In this regard collaborative partnerships with the middle school teachers are central to the development of student and teachers' information skill set. The social human dimension of IL is very much central to this conception of IL and is further reinforced by the belief that all teachers have responsibility for the development of these information skills. In this sense IL becomes a situated and collaborative practice between the librarian, students and teachers with parents also perceived to play a role.

Table 4.4 Outcome Space: Dimensions of Variation of Library Personnel's conceptions of IL

Referential Aspect Description of Conception	Focus RE Application of Conception	Relationship of conception to perceptions of information context		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	Primarily applies to the individual, self, local, immediate, technical and pragmatic levels in order to complete school work which may also be undertaken at home.	Information context perceived as external whereby IT tools are used to find and organise, share learning.	Librarians perceive their role as the human face of the IC and as carving out quality information pathways for students and teacher by using IT tools which in turn students need to learn how to use to support their learning.	Librarians feel excited about the potential of IT tools to support student learning especially in regard to online information. Linking IL to IT is important for the development of IL.
IL is a set of information skills.	Primarily applies to the individual, self, local, immediate and pragmatic levels in order to complete school work. These skills are conceived to apply across the curriculum.	Information context is perceived as external in terms of sources to be found on the WWW, in books, the school library and interactive media.	Librarians have a 'birds' eye' view of the MS curriculum working with students across grades 6-8. And have expertise of the IC they draw on to support student IL development as mediators and guides of the information experiences in collaboration with teachers and parents.	Librarians perceive IC is characterised by overwhelming amounts of information which can vary in quality from jewels to garbage which is problematic for students and thus requires a range of information skills including coping skills.
IL is critical thinking about information.	Primarily applies to the individual, self, local, immediate and pragmatic levels in order to complete school work at school and at home and is also a way of approaching learning through life.	View of information context as external 'Finger-tip' information prevailing in a competitive information context.	Critical thinking occurs at subjective individual level but mediated and supported and reinforced by teachers, librarians and parents.	Librarians perceive the IC particularly the WWW contains information that can be unreliable or complicated for students needs and IL is therefore about students developing critical thinking skills to always question information as an approach to learning.
IL is a way of learning.	Primarily applies to immediate student school place learning that can be Independent/Collaborative Situated. Applies across the curriculum. Life Long Learning (Work place focus).	Independent use of information available externally on the web is one dimension of this concept.	Information is seen as situated and social students' information use experience manifests in different ways from an independent individual practice to a collaborative and situated practice.	Librarians perceive IC as changing and dynamic requiring a holistic approach to the ways IL that is sensitive to its interactive and dynamic nature.

The conception of IL as critical thinking about information is focused on school work in the immediate sense however there is an emerging sense of this conception of IL having a broader application beyond the school project whereby this conception is more about a disposition toward the IC that students develop and apply as an approach to learning in general.

The view of the IC in regard to the WWW is very much that it is external "finger-tip" like information but the application of the conception of critical thinking is naturally a subjective individual experience for the student. This critical way of thinking about information is something that is developed though mediated information experiences whereby the teacher, parent or librarian can create the opportunities and contexts to facilitate critical thinking by having a questioning approach to information sources. This conception of critical thinking about information is also influenced by the perception of the IC as being a place of potentially good and bad quality of information and thus the need for the development of a discerning mind.

Moreover, critical thinking is also a pedagogical concept informing learning and forms part of the AASL Standards for 21st Century Learner which the librarian has adopted to inform the IL curriculum. The final conception of IL as a way of learning that is context sensitive, cross curricular and involving independent, collaborative and situated practices whilst having an immediate application to student learning in the school context is similar to IL as critical thinking about information and has a wider reach in terms of the idea this conception holds about IL as way of learning that is sensitive to the IC. This implies a wider application beyond school and is about a learning approach that invokes life-long learning.

The application of this conception also extends to work place learning in that the librarian perceives the potential for situated learning that arises through collaborative partnerships with colleagues where the advantage is teachers learn to become information literate in situ through partnering up with the librarian and the librarian develops a more extensive understanding of the curriculum.

This conception of IL is also connected to the library personnel's perception of the changed and dynamic IC so conceptions of IL needs to embrace this sensitivity and aim towards the development of an approach to this IC that supports student learning.

4.4.4 Comparative with AASL (2007) and **Big6™ m**odel (1990)

As the PS library has adopted the American Association of School Libraries (AASL) (2007) Standards for the 21st Learner it is useful to compare the conceptions surfacing from the feedback to these standards alongside the popular Big6™ (Eisenberg and Berkowitz 1990) information skills model as presented in Figure 4.19.

In comparing the four conceptions of IL arising from the library feedback it is clear that these conceptions are strongly aligned with the AASL standards for 21st Century Learner used to inform the library's IL curriculum. IL as a process of using IT tools aligns with AASL use of technology and other tools to analyse and organise information.

IL as an information skills set and as critical thinking about information aligns closely with AASL number 2 inquiry based learning and IL as a way of learning that is independent situated collaborative is similar to ASSL collaboration standard. The main difference between this study's findings and AASL standards is the emphasis AASL places on the creation of new knowledge and the decision making ideas apparent in the last two AASL standards (American Association of School Librarians 2007). That said the conceptions of IL as critical thinking and as a way of learning encompasses some of the thinking about decision making.

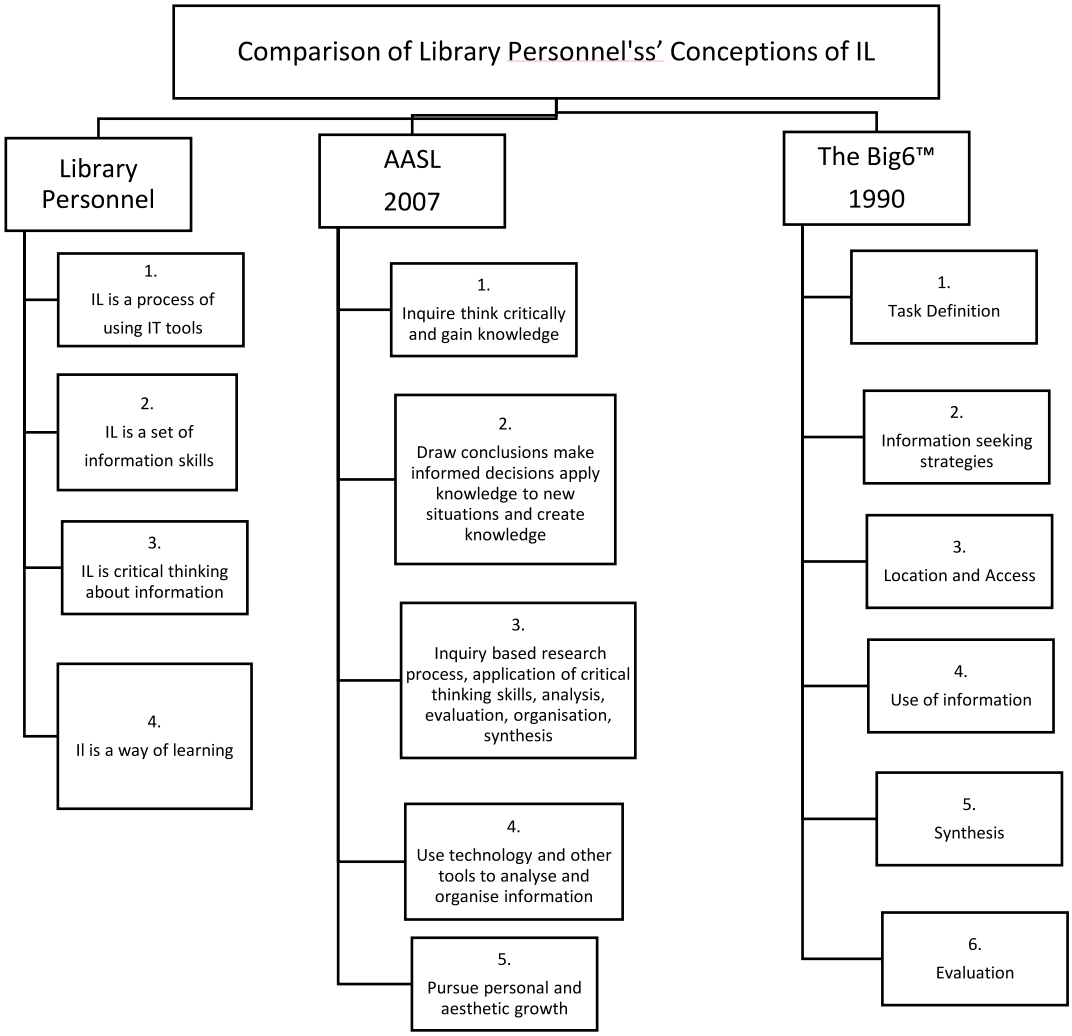

Figure 4.19 Comparison with AASL Standards for 21st Century Learner (2007) and Big6™ model (1990)

The AASL (2007) standard regarding the pursuit of personal and aesthetic growth did not surface in the conceptions of IL as such but definitely emerged in the perceptions about the changing function and role of the library as a facility whereby the library personnel discussed in detail the actions being taken to create a library collection and facility more geared towards students' leisure interests. The concept of the learning commons is particularly relevant in this regard (Section 4.4.1.1 /3).

Comparing the conceptions of IL from this study with the Big6™ (Eisenberg and Berkowitz 1990) model it is clear that the conceptions of IL as a set of skills is aligned with skills two to six in the Big6™ (Eisenberg and Berkowitz 1990) model however the skill number one, task definition, does not feature in this study's findings of conceptions of IL. Equally the conceptions of IL as process of using IT tools, as critical thinking about information and as a way of learning are not comparable to the Big6™ model. That said the Big6™ model as a model to advance the development of the skill set identified in conception 2 is highly relevant (Eisenberg and Berkowitz 1990).

4.4.5 Conclusion

The conceptions of IL emerging from the library feedback reflect their critical awareness the changing nature of the information experience in the context of a dynamic interactive and ever growing online information environment. Information is perceived to be both objective and external in terms of the WWW and library physical and online resources and subjective and social involving mediated and collaborative learning whereby students, teachers and librarians engage in coaching middle school students to find, evaluate and make sense of information. The concept of critical thinking arises from the pedagogical basis of the AASL standards for 21st Century Learner and this concept is at the heart of library personnel's conceptualisation of IL (American Association of School Librarians 2007). Finally, IL as a way of learning applies beyond school and curriculum related information experiences to encompass ideas of the application of IL as a life-long endeavour. The alignment of library conceptions of IL with the AASL standards and the Big6™ (Eisenberg and Berkowitz 1990) model is strong however the feedback suggests a need to grow a collective awareness of IL between stakeholder groups regarding the library's curriculum and further opportunities for dialogue to understand not only how IL is conceptualised but to consider its application in regard to students preparedness for transition points as they progress through their education and beyond into the world of work and community life which is a point for further discussion in Chapter 6.

4.5 IT Personnel

4.5.1 Perspective of information context (IC)

IT personnel perceive their IC from a relativist perspective in terms of pre and post the emergence of the WWW. Figure 4.20 captures the diversity of perceptions held by the IT personnel and following repeated coding and systematic analysis and review of the feedback three main categories of description representing the three dimensions of the IC emerged from the feedback namely the Environmental, Social Human and Affective. Within each category of description specific perceptions of that dimension are revealed and the discussion now moves to demonstrate how each dimension is grounded in the feedback.

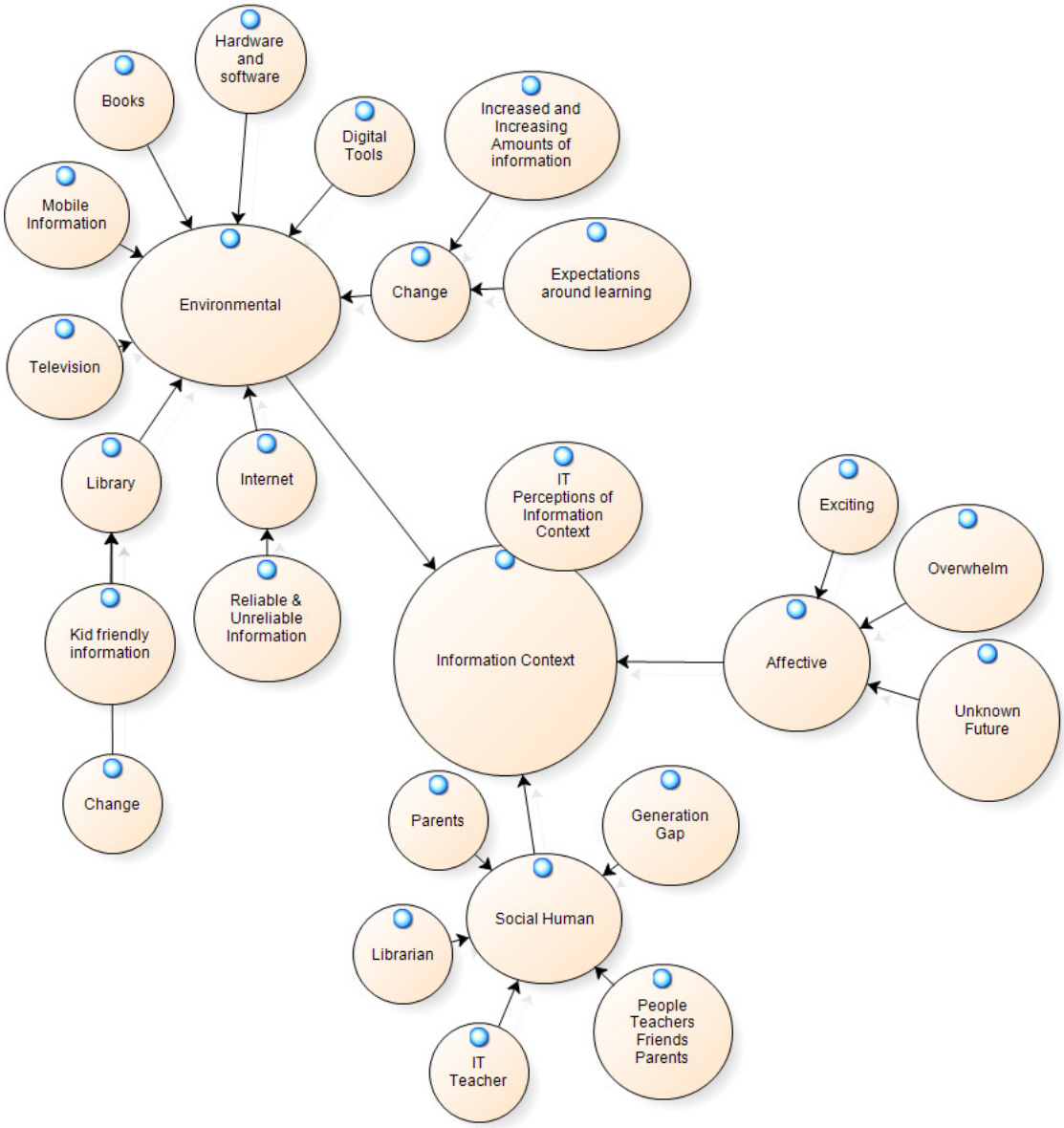

Figure 4.20 NVivo Output from Coding IT Personnel's Perceptions of the Information Context

4.5.1.1 Environmental

From the IT perspective the IC is perceived to prevail in terms of IT hardware and software but also as will be further explored in the social human dimension it is perceived to manifest in terms of people's interaction and engagement with these IT tools and technologies as the following quotations suggests:

> **SSIT18** *"...It [the information landscape] goes from the physical and the personal - or tangible non tangible. Essentially we have got a set of inter-connected tools that from my perspective are managed to provide people with the greatest experience or learning opportunity - that's from my perspective. So essentially all the computers the wiring all those kinds of physical items are just tools to give students and teachers so that they can learn a system. That is essentially the way I see it so I might be over simplifying it but there is so much stuff that if you don't try to simplify it you would spend hours talking about this down to nuts and bolts so."*
> **SSIT19** *"There is all of that hardware and then we have software and then we have the internet but we also have books and the teachers' minds that filter or give information to children and the children take from each location sometimes a little bit more from the internet than they do from books and they create knowledge for themselves."*
> **SSIT19** "*... It's not just the computers and what comes out of them but what comes out of their teachers' mouths and their friends' mouths and their parents' mouths and TV and books and newspapers magazines and social networks, there is so much information and I think our job has changed. It used to be to give the kids the information but now it is to help children determine which sources of information are the most reliable and to take from the reliable sources and not just all the sources."*

Coexisting alongside the newer information pathways there is equally an emphasis on the need for a balanced approach in terms of continuing to use more traditional information formats and teaching methods as this quotation reveals:

> **SSIT18** *"That is the balance that we and the other teachers have to use when you have got a teaching methodology that works very well for a subject matter then I see no reason to abandon that to use IT …I see teachers who are teaching languages are taking great advantage of using the computers on a daily basis because there is the ability for the students to record things and listen to themselves doing things, that wasn't possible before and not just the audio they can video and see the pronunciation and all that. But there are other things that say the traditional book and saying I would like you to look up this maybe they are core concepts that don't go away they stay as key elements you know you don't just abandon some of those things."*

Whilst IT personnel share their perceptions about how technology has changed the information and learning experience they also speak about the ever increasing quantity of information and that in itself is placing new expectations on students in regard to their use of information for learning:

> **SSIT18** *"Well I think it [information landscape] has changed so much - ...when I think back to my own childhood you were taught a very straightforward approach. People, teenagers, kids,*

adults now our days are faced with so much more information. There is a process of digesting that and understanding that to determine which sources are valid and which ones are not and in some respects kids even at middle school level, are put in a position almost where a grad student was almost 20 years ago where you are doing all this research and you have to validate each piece to make your hypothesis valid or not. They are almost asked that at 5th and 6th grade level because they have access to so much. If they are asked to put a report together they still have to kind of figure out what is the real thing and what is the kind of fun thing that they are looking at but it's you know which one has the most truth to it."

IT personnel perceive that the evolution of the IC is opening up new opportunities for greater connectivity of people which will now be explored alongside various other elements that constitute the social human dimension of the IC.

4.5.1.2 Social Human

A key dimension of the social human face of the IC is perceived by IT personnel to be the role played by the library personnel as the following quotation indicates:

> **SSIT19** *"One thing our librarian in middle school does and I think the high school librarian does as well for teachers is if the science teacher in grade 7 goes to the librarian in advance of teaching a unit say on astronomy - we are going to be studying astronomy in a few weeks and these are the standards and these are the things we want the kids to learn - help me locate the information so the librarian pulls books for the astronomy unit but the other thing she does… is a Google custom search so instead of saying kids search astronomy she finds 6/10 websites that she knows in advance that are valid, they are readable for kids and they are reliable sources like Nassa.gov and they have the information that match the standards that the teacher has shown them so she finds the sites and puts them in a Google search. And so the kids who are finding the information only search on those websites so instead of searching the whole internet they are more likely to find the information."*

By providing these information pathways and pre-selected books to students, IT personnel perceive that the librarians are helping support a much more bespoke kid friendly information experience:

> **SSIT18** *"Information that is kid friendly and reliable or suitable age wise - you could have someone talking about the chemical analysis of cosmic dust relates to the rings around Saturn and what layer and all this and it is just like you know they just get that glossy eyes look - like that's not want they want to know they may need to now just the names of the planets and how often the orbit - you know they don't need that granular stuff like a grad student needs then it's about the efficiency of the research."*

IT personnel also note that the librarian bases the selection against the learning standards which the teachers need to meet around their curriculum and it places the child in an information environment that is safe:

> **SSIT19** *[The pre-selected websites and books] "...meets the learning standards that the teachers looking for… But if today I am to find out about life on other planets or whatever it is these websites will give the information and it's good because it lets them learn in an environment that is safe and is likely to have the information they need. If they go right out there on the internet they will get the million hits and they won't necessarily be from reliable*

sources and they may not even answer the question."

A further reinforcement of the centrality of the librarian as a mediator of the IC is revealed in this quotation:

> **SSIT18** *"…The librarian's job is the most important job in the world of research because otherwise a person doesn't have time to go through the volumes of information. They [librarians] take it filter it, narrow it down and provide only the most necessary items to perform a task and I hear it from teachers that they don't have enough time to get the teaching they want to do in their lesson periods so that role of librarian is to help refine, that is so important to get six weeks- worth of a course or something completed, you can't be floundering around there is no time for it."*

IT personnel therefore perceive the librarian's role as being to help teachers and students refine and scope out the IC to support learning across the curriculum while they perceive their own role as IT teachers as helping teachers at the point of need around the integration of information technologies to support learning and teaching as this quotation suggests:

> **SSIT19** "*All three of us in the middle school have one block free for IT integration - I spend that block with grade 6 teachers and during F Block which 6th grade teachers also have free; I teach them whatever they feel they need to know to be able to teach their students."*

This narrative around the social human dimension of the IC suggests people form the heart of the context. The librarians are perceived by IT personnel to be like excavators of the context carving out safe, age appropriate, learning outcomes aligned information pathways or information havens for students. IT personnel see their own role as supporting teachers and students to develop a way of learning that involves using various IT tools but in ways that support deeper learning and critical thinking about information.

IT personnel also perceive themselves to have a role to support parents around adapting to the potential of new technologies specifically the one to one lap top programme. A key issue for parents in this regard is how to manage their child's use of the lap top when the child brings it home from school. IT personnel note parental concerns around this issue as this quotation indicates:

> **SSIT18** *"I think it is time spent on the computer [by children] and not having been confronting with needing to take something away from their child and... I mean in some respects that's not a lot different than we were kids and you had a little electronic game that you would play and you know if you played it too much the parent would take it away from you for a while."*

A solution to redress this aspect around positive behaviours in terms of using the lap tops is suggested:

> **SSIT18** *"...I have always said you know if you [referring to parents] feel like they [children] are spending too much time to do out a time line there or ask them to hand it to you or make up a little paper contract and sign it that I will only use it so much - if they violate their personal*

contract at home then they have to sign it out or do something like that - you know things like that can adjust some of that behaviour."

The changing social human behaviours being referred to form part and parcel of the integration of new technologies and information communication tools into student school and family life suggesting a need to consider the development of specific skills dispositions towards new information technologies and media as indicated in parents' conceptions of IL in Section 4.1.2.

This emphasis on the social, human and behavioural dimensions of the IC and experience by IT personnel is interesting as it poses a question regarding the extent to which traditional library and more contemporary definitions and models of IL in education and non-educational contexts accommodate such a perspective.

4.5.1.3 Affective

IT personnel perceive there is a range of feelings towards the changed and changing IC ranging from positive to negative. On the positive side IT personnel are excited about the potential that new information technologies and online information resources offer to students:

> **SSIT18** "*Yes, these kids that you have in this MS right now in four years I expect incredible things from because some of them really get that learning and the information and how to use it I mean they should feel as empowered as juniors and seniors in college. I would imagine with their ability to use the resources that they have I mean I am not going to pressure on them but I just mean that they are very lucky and in a very good situation at the moment."*

However, whilst IT personnel perceive the emerging context to offer greater levels of empowerment to students in their lives they perceive that parents in contrast have become anxious and uncertain in this time of where the IC is transitioning to a context that is different and unfamiliar to them as this quotation reveals:

> **SSIT18** *"...I still have a corporate mentality the way I sometimes look at things is beneficial because I am looking at things from a different angle...But one thing for sure is there is a very large generational difference. We are in a transitional period in between where our parents were and our kids are. That is the biggest void you have ever seen. I mean we are right in the middle of that so aside from looking at the education side of things, our kids have never been in a world where there was no internet and our parents barely touched a computer so we are straddling the line of trying to be traditional and also trying to be full go on the whole digital way which scares the hell out of people…I have been working lately with some parents on some things and you know they ask some tough questions you know sometimes and a lot of it almost comes out of fear of not being on the same knowledge level as their kids are."*

This sense of a generational difference has been highlighted in the findings from parents in Section 4.2.1(1/2/3). There is also a perception that the availability of so much information can be overwhelming for both students and teachers as the following quotations reveal:

SSIT19 *"…kids get really overwhelmed unless they have a method to you know and a directed line you know, well what about the rain forest? What am I supposed to find out? - Is it the people in the rain forest? What's happening to the rainforest? Is it the animals in the rain forest? Kids need to be guided to narrow down that focus otherwise if they search the rain forest they are going to find a 100,000 things on Google...But teachers also I think have the same overwhelming feeling. Ooh how can I find all the information there is so much that I could teach the kids about this? What are the key points the need to know so it's happening to students but it's happening to teachers as well and technology is part of that and some of them feel like they have to toss their books aside and find it all on the internet because it seems like that's what everybody else is doing but it is not whatever body should do it doesn't mean that the information in the books is bad, it means that we take what is in the books and there is some information there and there might be more newer on the internet because our text books may not be necessarily the newest information."*

This sense of being overwhelmed which the IT personnel perceive to prevail for teachers and students is similar to perceptions surfacing from the parent, teacher and librarian stakeholder groups deserving careful examination the implications for the development of ILE and will returned to in Chapter 6.

Finally, whilst IT personnel perceive the IC as affecting people in positive and negative ways they admit that they don't know what the future will look like as the following quotations reveal:

SSIT18 *"...So it's always evolving I don't know, maybe you know, maybe we will step back in a couple of years and say we shouldn't have done this or that was really great it just not static."*
SSIT19 "*We don't know where it is going."*
SSIT18 "I *think you are extremely naive if you do think that you know what is going to happen."*
SSIT19 "*Yes we are running slightly ahead of the snowball and trying to clear its path".*

The recognition by IT personnel of the difficulty inherent in defining the unknown future of the IC and information experience is interesting as it offers an interesting starting point to identify what kinds of conceptions of IL or information technology will be relevant for learners.

4.5.2 IT Personnel's conceptions of IL

The PS at the time of the study were very much in a state of significant transition in terms of their strategic thinking around the integration of new information and learning technologies alongside the integration of the International Society for Technology Education (ISTE) Standards (2008) for both students and teachers in the teaching and learning practices. Standard 3 of the ISTE standards (2008) states:

"Students apply digital tools to gather, evaluate and use information, plan strategies to guide inquiry, locate organise, analyse, synthesize and ethically use information from a variety of sources and media, evaluate and select information sources and digital tools based on the appropriateness to specific tasks and process data and report results."

It is clear from the feedback from the IT personnel and their ways of speaking about both IL and IT are informed by the language and terms contained in this standard. Moreover, in Section 4.5.1.2 regarding IT personnel's perceptions of the social human dimension of the IC that they perceive the librarian as playing a central role in teaching IL and that they see their role as supporting teachers and students (and parents) to utilise new information technologies to facilitate teaching and learning. It is against this backdrop of both IT strategic thinking and standards in tandem with their perceptions regarding roles that the IT personnel bring forward their conceptions of IL. In Figure 4.21 the output from coding the feedback on conceptions of IL is presented and illustrates the complex variation in the ways IT personnel conceptualise IL.

Through repeating the cycle of analysis interpretation, review of evidence and synthesis three categories of description of IL were developed as presented in Figure 4.22. These categories include conceptions of IL as a process of using IT tools, that IL is a set of information skills; that IL combined with IT literacy skills is a way of learning how to learn. The categories are represented as an open cycle of conception categories which aims to reflect both stand- alone conceptions but also to capture a sense of the inter relatedness of conceptions. IT personnel clearly have definite separate conceptions of IL skills and IT skills however in their teaching practice and experiences with students and subject teachers the feedback clearly points to a melding or crossover of these two skill areas.

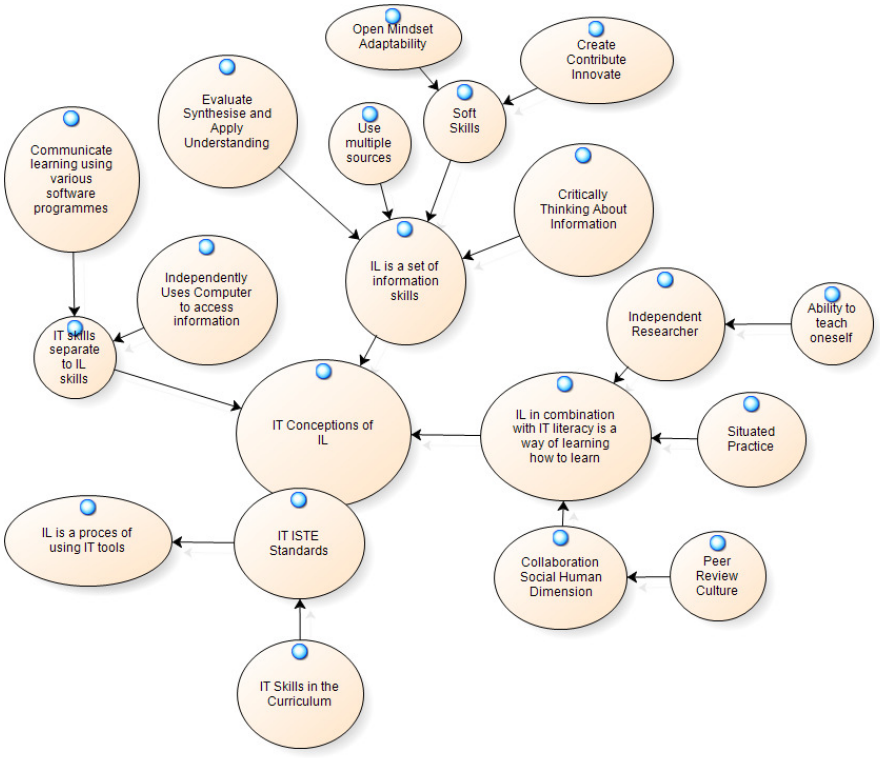

Figure 4.21 NVivo Output from Coding IT Personnel's Conceptions of IL

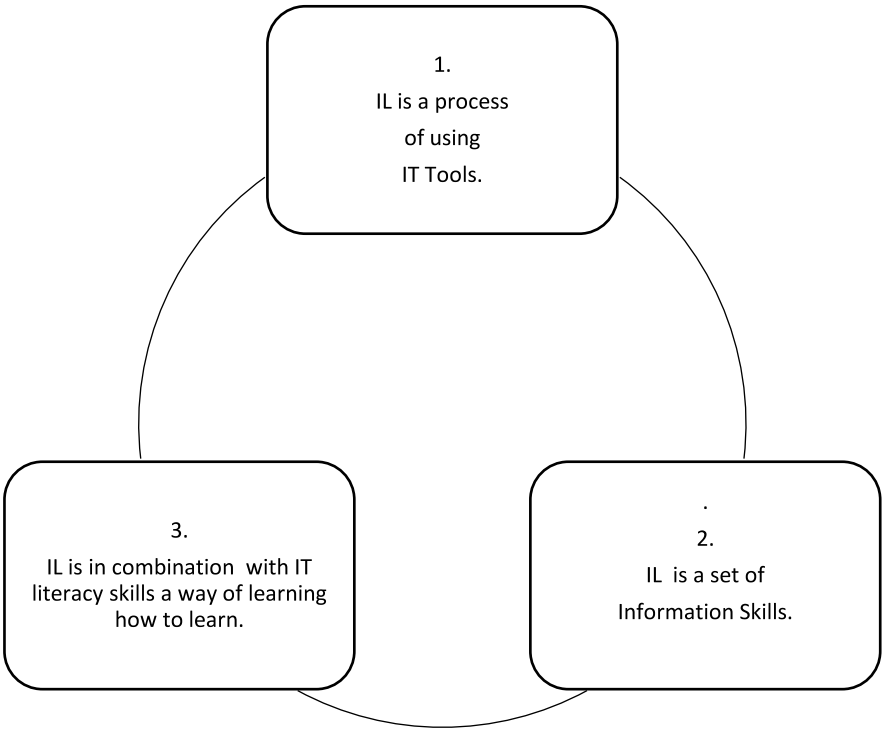

Figure 4.22 IT Personnel's Categories of Description of IL

The dimensions of variation in the ways IL is conceptualised is centred on the application of the conception and the relationship of the conception to the perceptions of the IC. The discussion will now move to demonstrate how these categories of description are grounded in the feedback before going on to explore dimensions of variation in Section 4.5.3.

4.5.2.1 IL is a process of using IT tools

The focus of this conception is on students being able to access and use IT tools to support their information needs around school based learning. That said it is clear when IT personnel speak about their conceptions of IL they do so on two levels. On one level they perceive IL to involve a set of information skills and on another level they see information and information technology skills as connected and that IL is a process of using IT tools as the following quotations reveal:

> **SSIT18** "*If it's the information literate in terms of using the net I would say...an information literate student would be the one that understands and has a skill set to use a computer or electronic device or whatever it is to access information sources which otherwise wouldn't be available to them and to use that information for critical thought. It's just that you can get a tool the network or whatever mechanism that has the information you want to access and to use that information glean from it and apply it toward the task at hand that is how I see it.*"

The above quotation and the following one illustrate how IT personnel see IL and IT literacy as related but separate:

> **SSIT19** *"I agree with that [definition of IL]. The technology changes the way we have done it because in the past it was easier for us as teachers to just define for the children what the information was but now we as teachers show the children how to use the tools not just the computers but online databases and search engines and Google docs whatever we need them to use to access the information".*

IL as a process of using IT tools is also focused on students having the potential for independent and mobile learning as this quotation suggests:

> **SSIT18** *"...with the technology they [students] have especially with the one to one lap top programme they have every tool or access to knowledge anytime anywhere so their learning is not being defined as being in computer class... And I know that this is a kind of now impatient generation because everything is a click away but in some respects that ability to learn when they want to is very powerful too and that is how I see it...I mean sometimes they get side tracked but I mean they can learn when they want to if it's now or after school they have all of their projects all of their homework is essentially is all with them all the time, in the past I don't think you had it the same or it wasn't as possible."*

4.5.2.2 IL is a set of information skills

The focus of this conception is on IL as a set of discrete information skills the student needs to develop in order to complete school based projects. The skills they identify are the same as the skills listed in Standard 3 of the ISTE Standards (2008) for research fluency which include finding evaluating, synthesising and making sure the information is relevant to the task as evidenced in the quotation:

> ***SSIT19*** *"We used to hand them the information now we hand them the tools and show them how to use the tools and direct them to find the information themselves and then comes the toughest part which is what [colleague] said apply it and synthesise it and evaluate it and make sure it works for whatever the task is."*

It is clear that there is a crossover of conceptions of IL and IT in the ways IT personnel articulate their conceptions of IL that is driven by their integration of the ISTE Standards (2008) and are seen to apply across all of their IT classes as evidenced in this quotation:

> ***SSIT19*** *" ...those are the standards for all our courses in the school which are based in the ISTE Standards for the 21 Century Learner...We address them in very different ways in all of our classes but those are the core that we teach and the core of what we hope to get out when we are helping teachers with integration into their own classes."*

When questioned to describe IT skills again there was this cross pollination of ideas that IT skills involved using IT tools but simultaneously IT literacy was more about interacting with information as evidenced in the following quotation:

SSIT18*" ...It's [IT]more than just the Mac Book or lap top it's more about the ability to interact, exchange information, gather information easily."*

4.5.2.3 IL in combination with IT literacy skills is a way of learning how to learn

A third conception of IL relates to IT personnel's perceptions of the new information and technologically driven IC offering students opportunities to teach themselves. In this context IL in combination with IT literacy skills is conceptualised as a way of learning how to learn encompassing the idea of IL as a meta-literacy as advanced in the ACRL framework 2016 and discussed in Chapter 2 Section 2.4.1. The ACRL framework places a focus on metacognition and critical self -reflection as being central to becoming more self -directed learners. The feedback from IT personnel suggests that this self-teaching which students are learning in classes across the curriculum is not perceived as a solitary experience but more a situated one in terms of collaborating and connecting to a diversity of resources including peers as revealed in the following quotation:

SSIT19 *"But there is one more thing that they are learning in our classes in all classes that they can take with them for the future and it's the idea that they have the potential to teach themselves. Like when they are doing excel in science and they are graphing the data that they collected during the lab the teacher doesn't stand there and say in A1 c you need to put the following information in B2 put this information. They say we need a graph of the following set it up to you however you want but it needs to be clear you need to label your axis and so on but the students get more time to figure out how things work and because they take the lap tops home in 7/8 and soon in 6th grade they have these huge amount of time with this amazing tool that we as adults don't even have and it's the reason why the kids are so good at technology they sit there and figure things out."*

This conceptions of IL in combination with IT as a way of learning how to learn encompasses the idea of self-directed learning. In this sense students direct their own learning for example in maths studies. Students can access information via online sources about their maths task and then use the audio function to record their thinking process about their maths problem which enables the student to become more active in their own learning:

SSIT19 "*I think they will have a better understanding - that used to be harder to draw that understanding out of kids - it would end at a knowledge level and now when kids get that involved in making a video or using some other technology product for example some of the maths teachers had them[students] record the audio of their thinking process of their math's problem on video and you can actually see that the students hear and understand better than when the handed in the final product on a piece of paper and they [students] can see and understand their thinking process better too. This is what's great about the computer too because students are thinking about their own learning than they were beforehand. They [students] are much more active in their learning."*

An important characteristic of this learning how to learn conception relates to the role of 'play' as a route to understanding how to use new tools and also the centrality of friends, teachers and the

potential to use online information guidance via You Tube which gives a more interactive and social dimension to learning:

> ***SSIT19*** *"If I say we are going to use Adobe Flash to create and animation they start in class I do the basics they come back two days later because they have it every two days they have already figured out all the hard stuff and they have got these amazing animations and they figure it out by playing with it and sometimes checking things out by using help menus or going on You Tube or watching tutorials or asking their friends - they are not getting all their knowledge from us, they are not getting most of their knowledge from us they are figuring things out on their own and their potential for them continuing to learn in the future is much greater because they are realising that they have that power - it's not like we have to hand it to them anymore."*
> **SSIT18** "*They will have resources by then, they will have a hundred friends on their Skype channel they will have it categorised by someone who can actually help me or someone who will make me feel better about my problem they can just hit the whole group."*

In this sense students can gather new information and understanding not only from one another within their set of friends via social media but they also potentially can locate other people via various online forums and blogs or yahoo or wiki spaces to connect and direct the pace and manner of their search for information and understanding about school based or life related topics. This sense of IL being both an independent, collaborative and situated social human experience is also evident in the following quotation:

> **SSIT18** *"...we talked about learning in the beginning that was just teacher-student- textbook and that it is more of one to one. Now… what I really think is a wonderful thing is more like here is the assignment, the student has an idea of how they want to complete that. You take a concept you work on it a little bit you get you get a peer review from your friends, from different teachers and come back and refine it and then present it and I am thinking of your e class the business class as an example where it is more than the teacher to the student it is you know the student has the opportunity to take and give feedback from his friends, his friends can interject and say well that's great and why don't you that..."*

This way of learning how to learn is thought by IT personnel to involve not so much an intellectual or knowledge dimension but a more a 'feeling' as this quotation suggests:

> ***SSIT19*** *"I alluded to it earlier what I hope is that we are providing for kids is something within themselves that tells them they are capable of learning using technology and it's when they are seeking information or it is or synthesising it and evaluating it and turning it into a product of their own I don't know exactly what they are going to be doing with it in the future but I want them to have it is more a feeling than a knowledge, it is not intellectual."*

This conception of IL in combination with IT literacy as a way of learning how to learn embraces ideas about a sensitivity to the changing IC as it evolves over time so in this sense whilst the conception is focused on learning across the curriculum at school it also relates to learning beyond the school experience.

This is evident in the following quotations:

> ***SSIT19*** *"No matter how things change that have this experience now that they have the ability to learn on their own with technology. The Mac and the Windows will go away. Office could be completely gone and it won't make any difference...you know kids will Figure it out you know that not even a question and they don't do by reading the manual some of them read something but most of them look at some kind of video assistance or ask a friend and they build on that knowledge the little bit of knowledge that we give them they build on it and that is where the amazing things are coming from. It's not necessarily happening in our classrooms any more - it's happening outside that's where the twenty-four seven learning is they have so much potential for doing so much more because they have a tool and inside it are resources that can help them learn even when they are not at school."*
> **SSIT19** *"It's good to add some variety to the way you do things ...so they [students] also need to do things that are hands on and involve research outside of that text book you know talk to their friends and find information from experts. There is just so much information that the teachers can't possibly be the ones to give it all to them."*

Finally, in the context of the findings regarding the relatedness of IT and IL, IT personnel also emphasise the development of students' soft skills such as creativity and innovation in the learning experience:

> **SSIT19** *"And those over-riding things are creativity and innovation, these are not technology skills."*

The narrative around this conception of IL in combination with IT literacy as a way of learning how to learn that is not about acquiring a set computer or digital skills but more about exploration and experimentation and very much a social human experience.

*(**A note about IL is about copyright and fair use of information**).*

One conception of IL that came out strongly in the pilot stage involving a member of the middle school IT teaching team was that IL is about intellectual property, copy right and fair use of information and whilst this did not come to the surface in the main IT focus group discussion it was felt important to include it here separately because it is covered in the IT curriculum and it surfaced from the student stakeholder group so clearly it forms part of their learning and awareness about IL.

The conception arises in the following quotation:

> ***SSSIT20*** *"IL is about intellectual property that we all create and have rights to and that includes the right to share it and the right to decide what to do with it if we do share it…you would not want someone to come and use your stuff and not give you credit or have your permission…so IL relates to the idea of ownership or relinquishing ownership …and copyright and fair use. It's about modelling good copy right practice from the top down and similarly with teachers modelling it in class for their students".*

As the conception did not surface in the main IT discussion group it is included here for mention because it is clear from the student feedback that they hold a conception of IL as the fair and ethical use of information which is related to the IT curriculum taught to middle school students.

4.5.3 Exploring dimensions of variation of conceptions of IL

The key dimensions of variation in regard to the three categories of description of IL appear in regard to the focus of the application of the conception in practice and the focus on the relationship between the conception of IL and perceptions of the IC as illustrated in the final outcome space for IT conceptions of IL in Table 4.5. Taking each in turn the conception of IL as a process of using IT tools is focused very much on the immediate information or project task on hand at the individual level. The perception of the IC is that it is an external context that is heavily web centric and IT tools are used to locate information organise, communicate and share information. This conception relates to the perception of the IC as being vast dynamic and connected therefore there are far more opportunities now for people to collaborate around information use for learning than heretofore. In this way IL is a process of using IT tools to connect to people around information and learning.
At the affective level this conception of IL as a process of using IT tools is connected to the reality of the changing nature of peoples' roles in education which has seen a shift from teacher as giver of information and knowledge to teacher as giver of tools and skills to use these tools to navigate to the information in order to learn.

Moving to the second conception of IL as a set of information skills this conception is similar to the first in its focus on the individual level in the sense of the student being focused on a research task or school project however communication skills suggests the creation of new information or understanding to share with other people so there is a sense of application beyond the individual level. These skills include finding, evaluating, synthesising and applying learning to the task on hand. It has been noted that the IT teachers have adopted the ISTE Nets standards (2008) to inform their curriculum and research fluency is one of these standards which uses the same pedagogical terminology.

From the social human perspective of the IC IT personnel perceive that the development of these skills is very much a mediated experience and see librarians as having the IL expertise to support this learning in collaboration with teachers. Relating this conception to the perceptions of the IC at the affective level the IT personnel perceive the IC to be a vast changing dynamic and connected environment that requires students have this information skill set in order to navigate and effectively engage in this environment.

Table 4.5 Outcome Space: Dimensions of Variation of IT personnel's conceptions of IL

Referential Aspect Description of Conception	Focus RE Application of Conception	Relationship of conception to perceptions of information context		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	Primarily applies to the individual, self, local, immediate, technical and pragmatic levels in order to complete the school work task on hand. The tools enable independent and mobile learning.	IC perceived as external whereby IT tools are used to find and organise, communicate and share learning.	The IC is perceived to be vast dynamic and connected through the use of various IT tools and infrastructure which opens up opportunities for greater connectivity between people around information and learning.	The development of IT tools is perceived to have caused a paradigm shift in the learning experience changing the roles of educators from the giver of information to the giver of tools to locate access organise communicate and present information.
IL is a set of information skills.	Primarily applies to the individual, self, local, immediate and to complete school work but there is also the idea of communicating to others and applies across the curriculum.	IC is perceived as external in terms of sources to be found on the WWW, in books, the school library and interactive media.	IT teachers see librarians as the IL experts fostering these information skills amongst students and see themselves as having the technology expertise to train students to develop their IT skills.	The IC is felt to ne complex vast and uncertain and for students to be enabled to learn in this context IL is conceptualised as a set of information skills.
IL in combination with IT literacy skills is a way of learning how to learn.	Applies to immediate learning tasks on hand at school and to homework and to beyond school work to learning in the broader sense as a social human experience. Applies to independent and global learning.	IC is perceived on one level as external in terms of WWW and library resources.	IC is perceived to external on one level in terms of the WWW and all the various Library resources but is also very much a social human connected context mediated by librarians, teachers, friends and parents.	IT teachers have witnessed and reported the changing nature of their roles as IT teachers where once the pedagogical emphasis was on scope and sequences now the objective is to ensure authentic curriculum embedded IT learning. IT literacy in combination with IL is felt to be the way forward to best accommodate student learning in the context of an unknown future.

Moving to the third conception that IL in combination with IT literacy skills is a way of learning how to learn that enables self -directed learning and learning collaboratively in situ, reveals a holistic conception of IL as both an individual and social experience. This conception has application on two levels in terms of the immediate school work or related project on hand. Secondly the concept has a much broader focus and application in that IL in combination with IT literacy is a way of learning that enables students to become independent learners for both school and beyond school to life and learning throughout life both locally and more globally through an increasingly connected world.

This conception encapsulates the idea of IL that reflects the perceptions of the changing nature of the IC at the environmental, social human and affective levels as shown in Figure 4.28. The IC context is both external and internal in the sense that the WWW exists as an environment but people shape and create that information environment and in so doing shapes their information experience. IL then is conceived as a social human experience which is different to the conception of IL as a set of information skills or a process of using IT tools. This conception relates to the perceptions of the IC held by the IT personnel which sees that context as connected through technology and the use of IT tools. At the affective level IT personnel feel that the future manifestation of the information world and IT is unknowable and in this unknown context what matters is that students be prepared to learn how to learn and it is in this sense that IL in combination with IT literacy skills is a way of learning how to learn that is a context sensitive conception of IL. Finally, this way of conceptualising IL runs very much in parallel with the thinking arising in the new ACRL Framework definition of IL which places a focus on meta-literacy. According to the ACRL framework "meta-literacy demands behavioural, affective, cognitive and metacognitive engagement in the rapidly changing information ecosystem" (Association of College and Research Libraries 2016 p. 2).

4.5.4 Comparison of findings with ISTE (2008), AASL Standards (2007) and ACRL IL Framework (2016)

As the IT personnel have integrated the ISTE Standards in their IT curriculum it was felt relevant to compare the conceptions of IL that have arisen in this study to the conceptions and language of these standards as presented in Figure 4.23 (International Society of Technology Education 2008). The conceptions are also compared to the AASL Standards for the 21st Century Learner which has been adopted by the PS librarian in the library IL curriculum and given the conception of IL in combination with IT literacy that arises from the IT personnel's conceptions of IL it was felt to be important to also extend the comparison to include the threshold concepts of IL in the ACRL framework (American Association of School Librarians 2007; American College and Research Libraries 2016).

In Figure 4.23 it is evident that the focus of the conceptions 1 and 2 of this study on the immediate task on hand is also present in this ISTE standard where the terms specific tasks are used. The critical thinking element of conception 3 from this study is also similar to the AASL standards for 21st Century Learner, Conception 1 of the findings from this study is also similar to standard 1 of the AASL Standards.

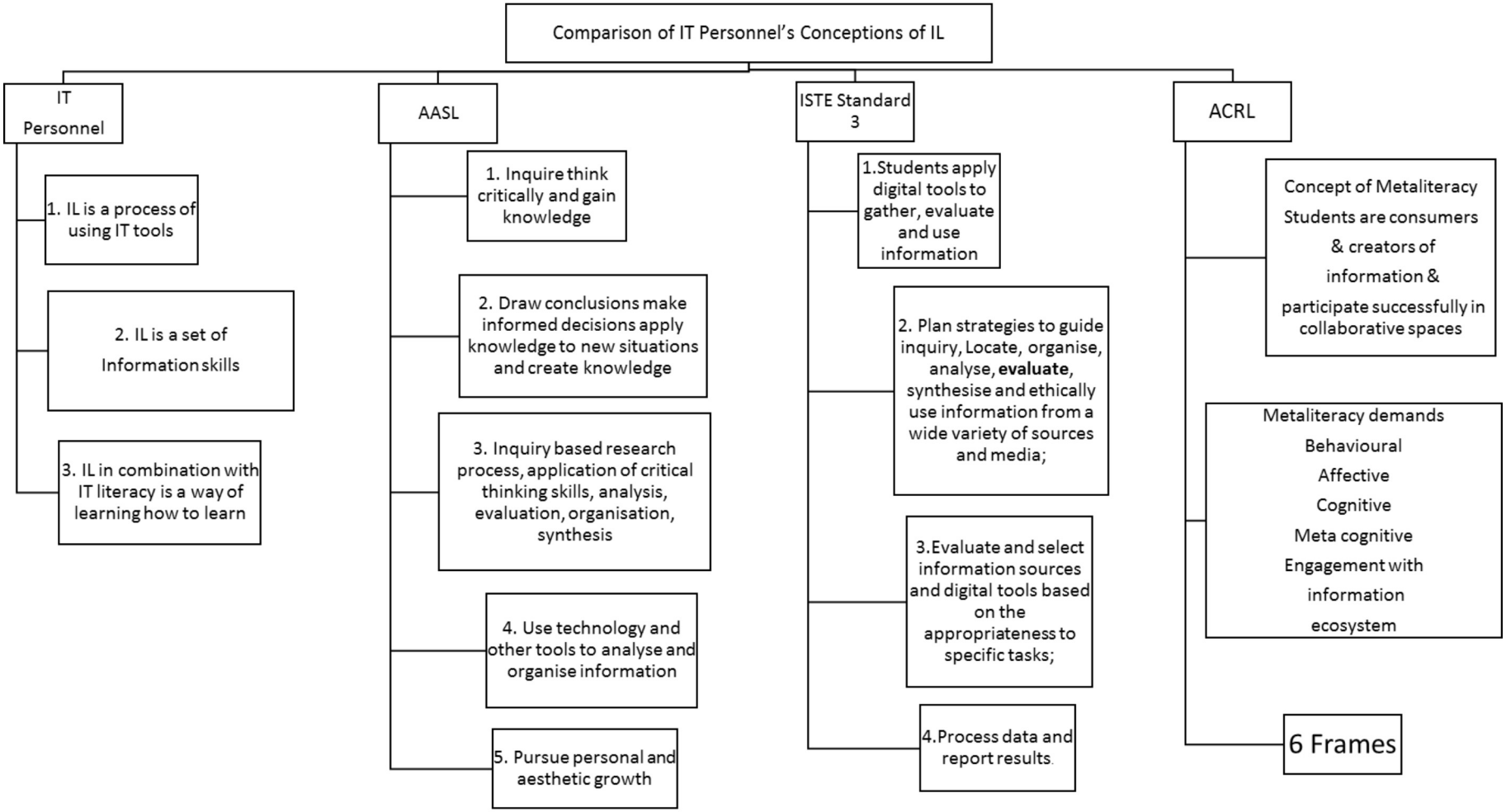

Figure 4.23 Comparison of IT personnel's conceptions with AASL (2007), ISTE Standard 3 (2008) and ACRL 2016

Given these sets of Standards have been adopted by the IT teachers to inform their curriculum it is not surprising that there is such a high degree of alignment between the findings of this study and the conceptions inherent in these two sets of standards. A key difference between the findings from this study compared with the other Standards specifically conception 3 is the focus on students helping one another to learn amidst their own immediate school friends and peers but also more extensively with other learners in online communities who are perceived as information resources both in terms of asking for information to answer a question and contributing information to answering the questions.

A further difference between the conceptions from this study and the AASL standard 5 regarding the pursuit of personal and aesthetic growth does not explicitly come to the fore however the enactment of Conception 3 from the IT conceptions may be interpreted as enabling learners to pursue their own learning in a diversity of areas not solely in curriculum content so in this sense there may be a covert degree of alignment with the AASL Standard 5 (American Association of School Librarians 2007).

Moving across to comparing IT personnel's conceptions of IL it is interesting to see a definite sense of alignment between the conception of IL in combination with IT literacy as a way of learning how to learn as similar to the ACRL's threshold concept of IL as a meta-literacy (Association of College and Research Libraries 2016). The ideas housed in the IT personnel's conceptions clearly point to a sense of meta-literacy and meta-cognitive dimension of IL and this has important implications for how ILE and learning strategies are designed by key stakeholder groups which will be further explored in Chapter 6 discussion of findings.

4.5.5 Conclusion

It is clear from the conceptions of IL by IT that there is a cross over between IL and IT literacies but at the same time there is a definite conception that IT literacy skills are different. In this sense IL is conceptualised as related to IT and is more about the combination of skills enabling a way of learning that perhaps IL or IT independent of one another can offer. IT personnel recognise how their own teaching strategy has evolved over time to where the emphasis is now placed on the value of developing skills through authentic learning experiences embedded in the curriculum that are life applicable which mirrors the philosophy underlying the ISTE Standards for IT education (International Society for Technology Education 2008). The feedback also points to their role in supporting teacher learning specifically in regard to IT skills. What appears to be unfolding is that IT teachers, librarians and teachers all conceptualise IL as a cross curricular phenomenon however in the everyday logistics of school life it would appear IL is developed in more decentralised ways. The three conceptions of IL

surfacing from the IT stakeholder group illuminate the relatedness between IL and IT reflecting the inherent complexity of the informational, technological and social human experiences encountered in the changing IC as discussed in sections 4.5.1.1/2.

It has been shown that the IT stakeholder groups' conceptions of IL are informed by their adoption and implementation of the ISTE standards which includes the research and information fluency standard and that the school library has adopted and implemented the AASL standards with both sets of standards sharing some key common ground standards in regard to IL. This triggers the question as to what value there would be in terms of the development of a progressive IL strategy to come together to consider the value of consolidating these two separate set of standards for a more holistic approach to IL and IT in the PS curriculum. It may arise that certain ISTE standards and AASL standards remain stand-alone but more importantly the common ground standards could be articulated to inform IL/IT strategy (International Society for Technology Education 2008; American Association of School Libraries 2007). Furthermore, the conception of IL in combination with IT literacy as a way of learning how to learn has been identified to be mirror the idea of IL as meta-literacy emerging from the new ACRL framework and as discussed in Chapter 2 Section 2.1.4 (Association of College and Research Libraries 2016). The implications of these conceptions for professional practice is further explored in Chapter 6 in the discussion of findings.

4.6 Administration

4.6.1 Perspective of information context (IC)

The administration group experience the PS as a workplace learning space hybrid context which provides an interesting juxtaposition to the five previous stakeholder groups. Figure 4.24 captures the diversity of perceptions of the IC held by the administration and following repeated coding and systematic analysis and review of the feedback three categories of description representing the three dimensions of the IC emerged from the feedback including the Environmental, Social Human and Affective dimensions with specific perceptions pertaining to each dimension as revealed and are presented in Figure 4.24. The discussion will now move to demonstrate how these perceptions are grounded in the feedback

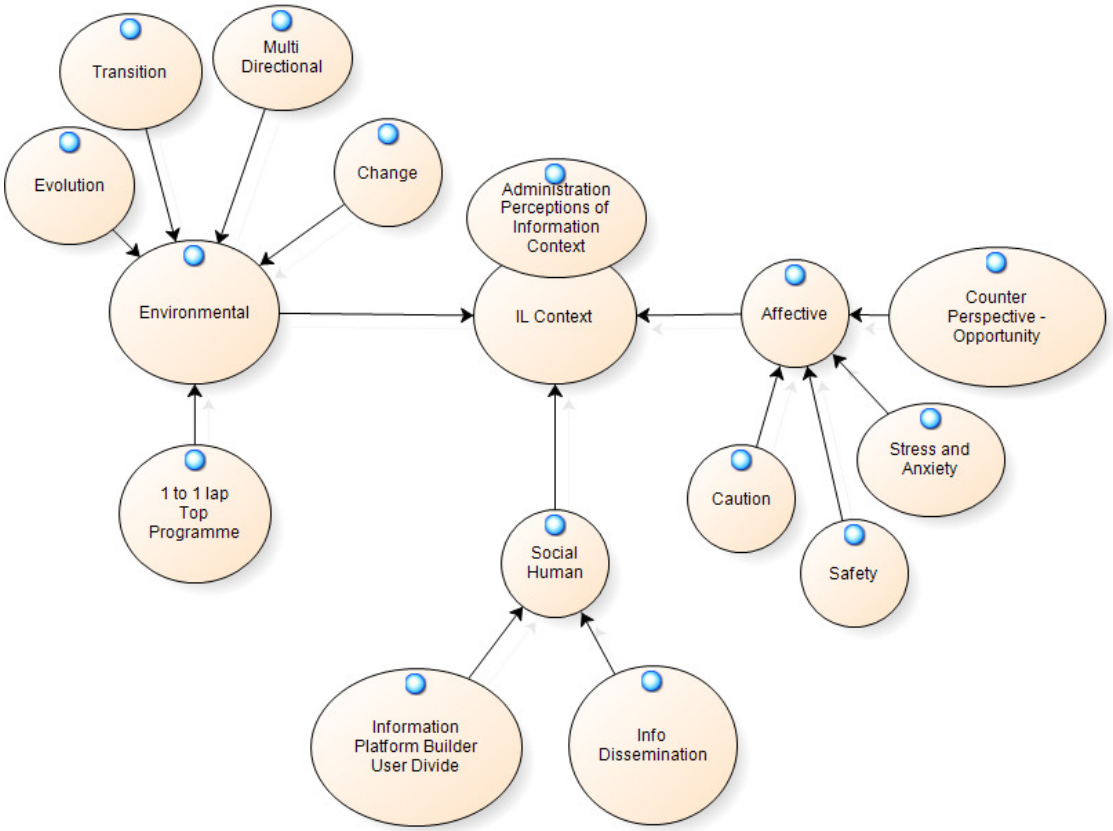

Figure 4.24 NVivo Output from Coding the Administration Stakeholder Group' Perceptions of the Information Context

4.6.1.1 Environmental

The IC context is perceived to be evolving in terms of workplace and learning needs and that this transition is being driven by the introduction of new information and communication platforms to accommodate these needs across stakeholder groups as these quotations reveal:

> ***SSA27*** *"I feel it (the information landscape) is very broad is it not? - its mm it goes off in a lot of different directions... so I think it is very disconnected in many ways that there is a lot of communication not only within the grade level but also within the school and across the schools …and it seems to not get less but just to keep growing out more and more and more and that is what I see when I think about it".*

Whilst the IC is perceived to be used in different ways across and within the school divisions there is equally a perception that the context is evolving to become more centralised and that there has been progress towards that intent in the past five years:

> ***SSA23*** *"I would say that it (information landscape) is evolving all the time at (this school) like (my colleague) this is my fifth year now and when I look at how far we have come in terms of being able to communicate and also to mm pull things together we have made some big strides in that respect but we still have a way to go and I think the goal is to try to bring things together to a central location and from that to communicate outwards".*

There is also the perception that the nature of information communication both internally within the school and externally on a more global level evolved to embrace newer social media platforms as this quotation reveals:

> ***SSA24*** *"...we are trying to use what technology is available within the e office in order to get information out to families... (information) bulletins are sent out through Podium to all our potential families...we have moved probably 90% away from hard copy applications (application to attend the school) ...email is so important and we feel when families go to our website that they are able to find the information they need…"*

Administrators are responsible for managing the IC in ways that are different to teachers and students in that their focus is on the school as a place of work as opposed to having a teaching role or student learning role. This perspective delivers another way of considering the PS IC from an organisational learning perspective as will be revealed in their perceptions of the social human dimension of their IC.

4.6.1.2 Social Human

Administration see that their roles and work experience are evolving in the changing IC whereby they appreciate the interdependent nature of their roles as they create and co-create the context. The IC is perceived to be stimulating greater interdependency across stakeholder's professional roles with

librarian and IT roles merging in some cases. The perception of the emerging interdependence of stakeholders within the changing IC is captured in this quotation:

> **SSA23** *"...you start to get mm dependent on each other. The skills are there and it is a matter of interlocking them and making us one unit. For example, somewhere else in some schools the library has been completely separate from IT and in others they have been merged because they have been dealing with the same thing it is information literacy ...and I think we are seeing more of that that inter dependency on each other..."*

The recognition of the IC being the site of role change is influential when it comes to presenting the administration's conceptions of IL as will be demonstrated later in this section. This sense of interdependency extends to a second perception of the social human dimension of the information context whereby the administration stakeholder group perceive there are different experiences within the information environment relating to the different roles stakeholders perform in that environment. Specifically, some inhabitants of the information context are considered more the builders of the context applying and integrating different tools to build the platform or interface for information creation, retrieval and use by others as reflected in the words of one administrator:

> ***SSA28*** *"Also roles and understanding the platform - IT gives us a platform to work with and we put the information on that platform to be communicated to target groups or stakeholders and the people who use the infra structure aren't the ones that build it so questions come about the information and you can answer that but when you have questions about the infrastructure that I don't know and then you have to go back to the people that have given you the infrastructure or who have helped you set it up to understand what the actual problem is because we manage the information but we don't manage the infra structure so that's why there is a real joining I think of information and communications..."*

This is a particularly important insight from the administration focus group dialogue as it highlights a key dimension of the community's information use experience. Whether it is a potential parent trying to access information about the PS, whether it is the student trying to access their grades on line, whether it is the teacher communicating with their students or the parents it would seem beneficial to have close communication and dialogue between those creating the information interface and those using it for a diversity of information needs. This sharing around the need for developing understanding between different stakeholders regarding the experience of the IC reveals that the context is also conceptualised as affecting people on an emotional level which will now be discussed.

4.6.1.3 Affective

The changed and changing IC is the source of a range of changed workplace information experiences from the administration perspective and they are aware of the impact of these changes on staff and students alike. The introduction of the one to one lap top programme for grades 5 to 8 in middle

school for example was considered as a potential source for anxiety and stress in terms of new students arriving during the course of the school year:

> **SSA24** *"...the kids that arrive throughout the school year there is a certain heightened I think stress within our faculty in those grade levels about what does the student know and what don't they know and how are we going to get them caught up quickly so that they are able to work at the same level or thereabouts with the students who already have their lap tops and who have been working on this since the beginning of the year. And I think that is one place where we are working as well, to try and streamline that a little bit…It's not going to be easy that is going to be part of the teaching process but still I think there is a certain level of anxiety..."*

The administration group also perceive a need for a cautious reflective fit for purpose approach in terms of the introduction and implementation of new IT tools and information platforms so as to offer time for reflection and adjustment as this quotation reveals:

> ***SSA26*** *"I would say caution for me because that's illustrated by the fact that we tried a non e mail day - talking about information overload which is something we really need to keep in our minds... when we do try to coordinate...all these different parts of the system and I believe in coordination and I believe in consistency but at the same time we need to bear in mind that horse trail next to the super information highway because there will always be people who prefer riding the horse and going slowly and taking it at their own pace rather than just charging by the head and taking it for changes sake."*

In contrast however it was also voiced that new communication technologies offer new collaborative learning opportunities:

> **SSA27** "*Oh well I was thinking in a different context about people ...I would expect and hope that whereas we would have greater capabilities for students to be able to cross collaborate and also internationally and also things like you can attend virtual forums - … and I don't know if eh these are tools that people are using in the school already but I am personally interested. "*

The thoughts revealed in this quotation capture the sense of the PS IC as prevailing across work place and learning environs with new technologies offering the potential for greater connectivity around learning for students but also offering new avenues for colleagues to share information and collaborate around work place information needs and expectations.

4.6.2 Administrations' conceptions of IL

A distillation of these diverse ideas and ways of thinking about IL as captured in Figure 4.25 yielded four discrete but related conceptions of IL as revealed in the Figure 4.26 conceptions of IL from an administration stakeholder group. A number of themes clearly emerge from the feedback. Firstly, the concept of IL is inextricably bound to information technology and is a process of using IT tools.

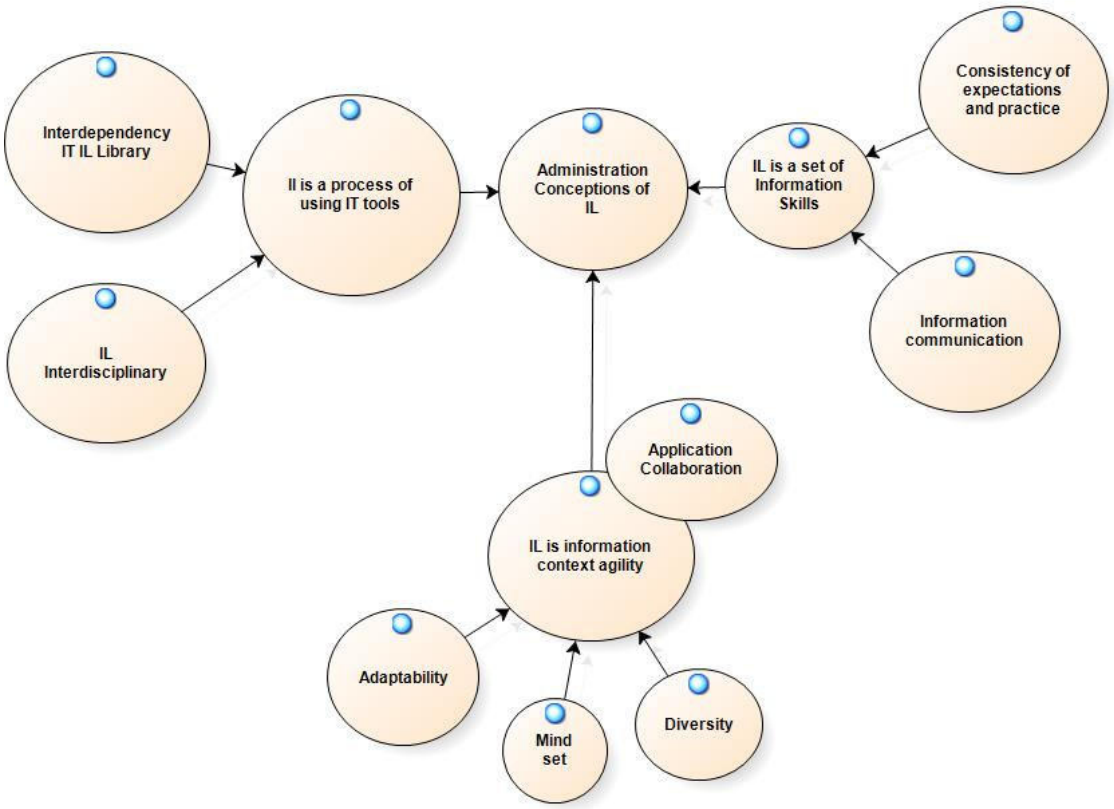

Figure 4.25 NVivo Output from Coding of Administrations' Conceptions of IL

Secondly IL is a set of information skills including information creation, dissemination, and communication and management skills. Thirdly IL is about information context agility involving situated practice which requires the cultivation of soft skills such as adaptability, flexibility and maintaining an open mind set and to have good people skills in order to proactively engage in the changing IC.

These categories of description are presented in Figure 4.26 as a cycle of interrelated categories because this was felt to more accurately reflect the collective understanding generated by the focus group discussion process. The main dimensions of variation arise in regard to the application of the conception in practice and the relationship of the conception to the perceptions of the IC. The discussion will now move to demonstrate how these categories of description are grounded in the feedback before going on the consider dimensions of variation in Section 4.6.3.

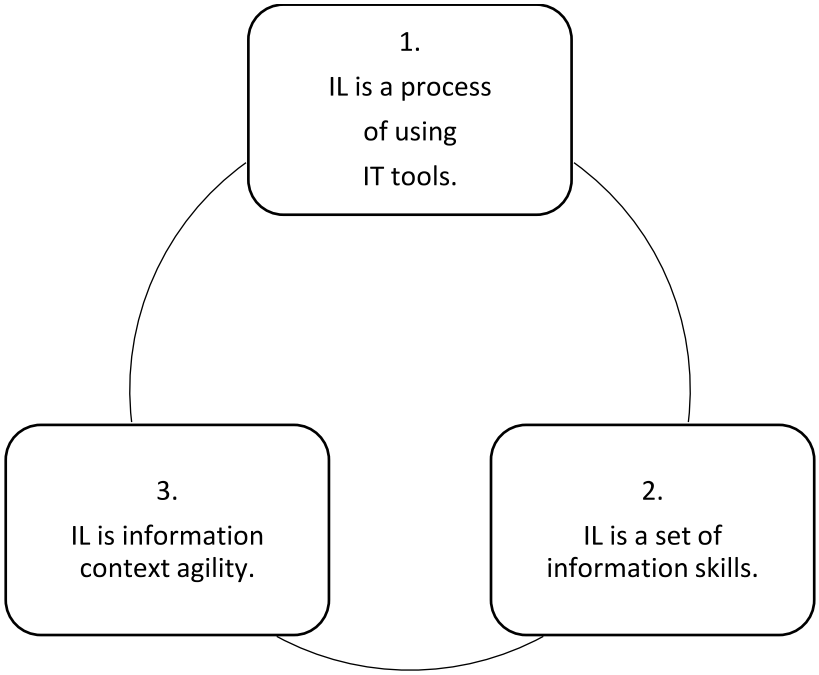

Figure 4.26 Administrations' Categories of Description of IL

4.6.2.1 IL is a process of using IT tools

The focus of this conception of IL is on using IT tools to undertake information related workplace tasks in the immediate sense. It is primarily focused at the individual level relative to work place information related responsibilities which involve both administrators and faculty as this quotation reveals:

> ***SSA27*** *"...for example just this morning I had one of the elementary school teachers come over and ask me about getting a website published on her webpage and she had used a medium that some other people were using in the school – I-web. But it turns out that there were a whole group of teachers that set up these I-web pages and did it through our elementary school IT Coordinator..."*

Based on their work experience the transitioning nature of the IC demands a constant up skilling to be able to use digital tools and new social media interfaces as this quotation suggests:

> ***SSA26*** *"I was going to say (the information landscape) is in transition but I would say in large part that is the nature of the beast at the moment. Even where you think you have caught up and then something new comes out or some new social networking is an issue and it's a constant learning process for not only us to know what tools are available for us and for the students but also for the staff, the teaching staff as well as parents...? ...I hadn't stop to think about how on earth are we are educating or expecting parents to be at the level that we make assumptions about when we put information out there for them..."*

In this context the emphasis is not only placed on themselves to have the necessary IL skills to use these tools but equally all stakeholders need to be educated including parents. This raises questions for the administration regarding how such expectations can be met in practice. Information is channelled by administrators via numerous networks using a variety of tools requiring the necessary IL skills captured in the conceptions of IL as a process of using IT tools. This digital competence is secured through ongoing training and learning for all PS stakeholders in order to effectively manage the dynamic technologically driven information and communication environment.

4.6.2.2 IL is a set of Information Skills

The focus of this conception is that IL is a set of information skills including information creation, dissemination, communication and management which are necessary from a work place perspective. Clearly this set of information skill is different from the information skills of finding, evaluating, synthesising information that have been identified in terms of school based learning. Administrators perceive IL based on their responsibility for communication and dissemination of information to internal and external audiences on a local and global level. There is a perceived demand for information sharing about school community life within the PS whereas before the emphasis was getting information out to potential families and corporate bodies about the school. Accordingly, the information needs are evolving creating different expectations and responsibilities for the administration as evidenced in the following quotation:

> **SSA28** *"...but External Relations is now becoming Internal Relations. External Relations is a title that means that we communicate information to the corporate family bodies - we go and do presentations. We communicate with the Alumni; we advertise and do marketing work with the community to develop different events. And now, it's becoming internal communication and so the workload has basically tripled, because the community inside of (the project school) is much greater than this spectrum of people that we work with on a day to day basis, the external community. So it's difficult because the term External Relations doesn't fit anymore it seems it is now more about communications".*

This conception of IL is also perceived to apply to fellow staff and faculty in the PS. The need for collaborative approaches to establish agreements about uniformity in the ways information is communicated to various stakeholders is further highlighted in the discussion about school report card writing and sharing. The issue of creating a uniformity of protocol around this information sharing process which is of major significance to the teachers, students and parents is captured in these quotations:

> ***SSA23*** *"...I mean a very simple example is if I take reports if I go back to parents there are 3 different divisions and 3 different cells to me that is okay because it is a different way of reporting each division but if there were some formal type of consistency in whatever it is then it is clear then this is from the Project School ____ whether it is ES MS OR HS - it is also*

when you go to another school they say okay yea this is from ____and they pick it up and they see at the bottom oh this is from ____and these are things that indicate we have come a long way in looking at making it consistent..."
***SSA27**" I just have something to say about that consistency that to get that consistency it is important to inform your stakeholders what you want from them and what's available because sometimes I think people choose information pathways because they were talking to different individuals and that's what they used so they get the information on how to use or go on that pathway and choose it because it's there and not because it's the best one. So for consistency you need to say these are the ways you make reports - this is the one that has the most options so this is the one that should be used by the three school divisions in this particular example…"*

There was a persistent message voiced by the administration around the need to establish and then share clear expectations about information dissemination processes from the outset to parent groups. Communicating a shared set of expectations would improve the information access and use experience as this quotation suggests:

SSA23 "*If we do it from the beginning - this is how you will get information from us then they (parents) know it from the beginning but if that line is fuzzy and we say okay well your classroom teacher will be giving you information in this direction so if that is clear from the beginning I know it will make life a lot easier...*"

The development of a common set of expectations to secure ease of engagement with the information would also serve to support various stakeholders such as parents, trying to access information about their child's school life and academic performance and teachers trying to create and share information about their student's learning and development. It is also interesting to note that the challenge of managing the evolution of the changing IC is not perceived by the administration as an isolated experience within the PS but something common to other International Schools as the following quotation shows:

SSA23 *"I think that it is a goal for us to make communication channels more easier and more accessible and that information that goes to the parents, students, faculty and staff is easy in that sense. So that is why I say it is evolving,….and when you talk to different companies and different schools it's the same story in so many schools and the path that we have taken is similar to so many other schools even within Europe alone and when you start bouncing ideas off one another you realise they are following the same path or we are going the same path as they are, you know at different stages in each of these schools and I think for me that is how it's being evolving and how far we have come in five years its mm really great and we still have a ways to go…"*

These are the kinds of challenges facing all schools where there has been a one to one lap top or the introduction of personal computers or the creation of a bring your own device environment. The discussion around the introduction of one to one lap tops revealed that there is intent to ensure the:

***SSA23** "…creation of a vision for the school and that vision is incorporated into the technology plan and the strategic plan for the school. The technology plan lays down everything from the*

curriculum side to the infrastructure side so it's a big picture of what technology plays..."

IL as a set of information skills from the administration perspective is very much focused on information communication and dissemination tasks in the workplace and not about information skills such as those identified in regard to school place learning. However, it is important to note that information skills can therefore mean different kinds of skills depending on the stakeholder group perspective even within the same context of a school community. This point relates back to the challenges faced by different stakeholder groups in sharing a common language around IL which was discussed in greater detail in Chapter 2 Section 2.3 and will be returned to in Chapter 6 in the discussion of findings.

4.6.2.3 IL is information context agility

The focus of this conception is on the need for staff to be agile in their information roles and relates back to their environmental, social human and affective perceptions of the IC. In this sense IL is conceptualised as context agility that includes soft skills such as - adaptability, flexibility and people skills, being able to collaborate, network, communicate and cope with the complexity, enormity and fluidity of the information environment (Talwar 2012; Wagner 2008). This thinking is reflected in the following quotation:

> ***SSA28*** *"Flexibility - you need to be able to adapt to different applications so some school work is in one application and some school work is in another and they need to be able to recognise that it is not the same system and that information is being given to them in a different way and that that is okay because it is a choice between teaching staff or a school division so they need to be able to flexible and also to be able to adapt to different information technology that is used in the school to communicate the information that they need..."*
> ***SSA28*** *"But also to application crossover too like compatibility of applications so when teachers decide to use things...for example there are 4 teachers in 4 grades who decide to use 4 different applications that there is one application that can bring it together in the sense that it is not overwhelming to the users so application collaboration I guess..."*

This conception of IL as a context agility equally encompasses situated practice placing an emphasis on the role of people being flexible and adaptable in their information interaction through digital applications but also in their information interactions at the individual personal level. In this sense individuals are themselves sources of information and knowledge around workplace information tasks and processes whereby colleagues potentially learn from one another in situ.

An example of this in situ IL practice is revealed in the experience when a new member of staff first came on board as this quotation reveals:

> ***SSA28*** *"Well from a user perspective it is a lot so I have been here one year so and partly I am in the role of a new employee learning how to manage the information to my particular situation so then on the management perspective it is also a lot there are many applications*

to look at to find information and a lot of people to connect to get what you want and also to relay what you want to say though from both sides I agree with {colleague} it is a large spectrum of applications and types of content and individuals, you have to talk to and to work your way around that needs like a user manual and I mean I can say that I really didn't get a user manual when I started the job but you find your way around based on just talking to people..."

Here the administrator is referring directly to their experience of situated practice whereby new employees to the organisation learn from colleagues in situ. Not all information required to carry out one's role prevails in an explicit format; very often information and knowledge is a tacit phenomenon which can only be accessed through verbal communication or conversation and connecting directly with colleagues. Indeed, the PS had orchestrated a no email day in an attempt to highlight the need for balance between electronic communication and more personal face to face communication within the community. A shared sentiment around this was voiced by the administration as evidenced in the following quotations:

SSA24 *"You need that personal touch absolutely, face to face. I mean I think that's just to say that the no email day I think that the one thing that came out of there was that folks had positive comments on at least this is my understanding, was that it did get some people off their butts and go down to a classroom or speak to somebody else - it even happened for me you know where I might just email a counsellor it got me down to the classroom and into their room to say Hi and ask the question and that I think was the most important thing if it somehow a reminder that we do that more often but still can email do you know what I mean but to try and remember that you need that touch."*

This way of conceptualising IL as a context agility that involves situated practice demonstrates that from the administration perspective IL is seen to be intrinsically social in nature and is learned through social interaction, conversation, collaboration and experiential learning both digitally through various applications and platforms and personally by way of sharing tacit personal knowledge and information related to work place roles. This perspective offers another way of seeing IL against which to compare and contrast the understandings of IL from the other six stakeholder groups.

Before concluding the categories of conceptualisation of IL by the administration stakeholder group it is interesting to note one particular insight in regard to how IL might be conceptualised in the future as per the following quotation:

SSA24 "…*children born in 1991 well that was when the internet was really launched and so in a way we are still babies in all of this...so give it another 20 years those competencies in many ways will be even more part of you, you know what I mean, because this is what they have grown up with".*

In this context IL appears to shift emphasis from a set of skills to a situation of the normalisation or assimilation of skills, and the natural development of know-how for engagement. As such then IL is

viewed not so much as a set of technical skills or competencies necessarily that are singled out for special attention but more like a way of working or learning be that for work based roles or for academic learning. Recognising the digital era is inhabited by different generations including those who are adapting to the change alongside those who were born into the era has significant implications for the conceptualisation of IL and may account for some of the variation revealed in this study.

4.6.3 Exploring dimensions of variation of conceptions of IL

The final outcome space for the administrations' conceptions of IL and the nature of variation present across these conceptions is presented in Table 4.6. The three conceptions are similar in that they have a focus on the individual and organisational workplace information experience.

IL as process of using IT tools is a discrete conception in that it places the focus on the use of IT tools to enable workplace information practices. It is connected to the perception of the IC being increasingly technologically driven but that there is also greater potential via the new technologies for greater connectivity between colleagues around work place information needs.

That said at the social human level there is a sense of a need for balance and a value is placed on face to face communication around information as opposed to pushing information through e mails.

IL as set of information skills involving information creation, dissemination, communication and management places the focus on workplace information use experiences in the immediate pragmatic sense but also from an organisational perspective. This conception connects to the perceptions of the IC as changed and dynamic and that information needs and expectations of stakeholders are also changing within the context.

The information skills differ in terms of their emphasis on information creation, communication and management as opposed to information gathering and evaluation skills identified in other stakeholder groups' information skill set conception.

IL as a context agility is a reflection of the perception of the IC as complex and dynamic requiring administrators to be at all times flexible and IL is therefore the ability to be agile in the context adapting to new information technologies, sources and resources. On the one hand the IC is perceived to an external objective environment with an emphasis on web based information and communication use but also there is a sense of the potential for increased collaborative via online opportunities.

Table 4.6 Outcome Space: Dimensions of Variation of Administrations' conceptions of IL

Referential Aspect Description of Conception	**Focus RE Application of Conception**	**Relationship of conception to perceptions of information context**		
		Environmental	**Social Human**	**Affective**
IL is a process of using IT tools.	Applies to the individual and to the organisational levels with a work place application.	IC perceived as external whereby IT tools are used to create information infrastructure and to access, control, manage information.	The IC is perceived to be vast changed and changing which can lead to information overwhelm and overload requiring a balanced approach between technology and face to face personal communication around information.	The development of IT tools is perceived to have caused a paradigm shift in the nature of workplace information experiences internally within the school and in the context of communicating externally. IL in this context involves ongoing training to learn how to use these tools for workplace tasks.
IL is a set of information skills.	Applies to the individual and to the organisational levels with a work place application in terms of information creation communication and management.	On one level the IC is perceived as a multi-layered external network of applications, platforms and shifting to e communication.	The IC is perceived as both external and internal in that people are sources of tacit information and understanding regarding workplace processes and practices.	The IC has changed and is changing and dynamic and the work of administrators requires IL skills around information creation, dissemination, communication and management.
IL is information context agility.	Applies to the individual and the organisational levels with a workplace application.	The IC is perceived to be external existing in many formats in an online environment.	The IC is perceived to be dynamic and connected requiring staff and faculty to become agile users of different information interfaces and the IC is also perceived to be mediated through collaborative and situated work place practices.	Administrators feel their IC to be changing rapidly and the nature of this change leads them to consider IL as a context agility reflecting a disposition towards the IC.

On the other hand, however the conception of context agility also places considerable emphasis on the social human dimension of the IC and as such information is perceived to be tacit, internal and subjective involving situated practice as people look to one another to find out information about workplace practices and processes. The conception of agility suggests a more dispositional approach to IL that requires an open mind-set to change which points to attitudinal dimension of IL which places a value on personal and shared knowledge and information in the workplace context.

4.6.4 Comparison with work place conceptions of IL and MIL competency framework (2013)

The UNESCO Media and Information Literacy (MIL) competency matrix and the conceptions of workplace IL emerging from Lloyd's (2010) work as presented in Figure 4.27 are compared to the conceptions arising from this study as they are particularly relevant to the stakeholder group (United Nations Educational Scientific and Cultural Organisation 2013). It is evident that the findings regarding the administrations conceptions' of IL are aligned with elements of Lloyds' conceptions of workplace IL specifically the concept of a social cultural practice and that IL is situational as shown in Figure 4.27. Specifically, when discussing the experience of a newly arrived member of staff getting accustomed to and learning about the information processes and practices it was evident that in the PS as a workplace new staff do take up the role of the novice (Lloyd 2010) connecting with colleagues to learn to find their way around the IC. Similarly, Bruce (2008 p. 117) when considering the Seven Faces of Informed Learning in terms of their relevance to the workplace context highlights that "...ensuring participants are empowered to use information to learn requires ... social collaboration or interdependence between colleagues..."

When compared to UNESCO's competency matrix there is also a clear alignment between IL as a process of using IT tools and the information access competency noted in the UNESCO matrix (United Nations Educational Scientific and Cultural Organisation 2013).

Equally the conception of IL as a set of skills including information creation, dissemination communication and management is similar to the UNESCO MIL competency: Information creation and communication (United Nations Educational Scientific and Cultural Organisation 2013). The administrations' conception of IL as context agility involving situated practice links with the participation competency mentioned in the UNESCO MIL matrix. The key difference in regard to conceptions of IL held by the administration the UNESCO MIL matrix is the emphasis on IL as an information context agility (United Nations Educational Scientific and Cultural Organisation 2013). However, Lloyd's (2010) work in this area argues that information is both physical and social, objective and subjective and as such workers will need to become adaptable and flexible to work in ways that are sensitive to the IC so in that sense the concept of context agility may align with Lloyd's (2010) conceptualisation of workplace IL.

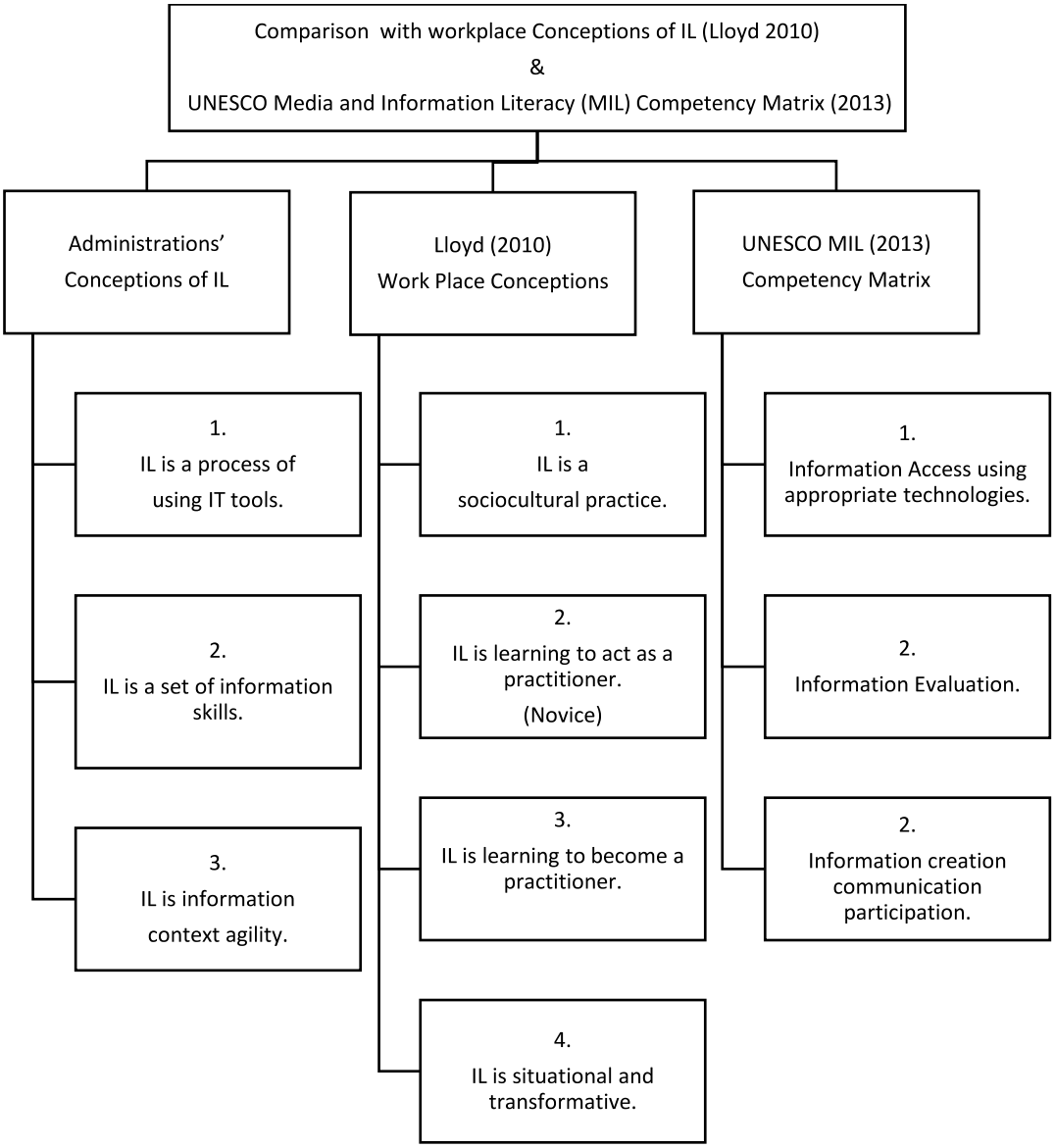

Figure 4.27 Comparison of Administrations' conceptions of IL with Lloyd (2010) and UNESCO MIL Competency Matrix (2013)

The comparative analysis of conceptions of IL will be further revisited in the overall comparative of the seven stakeholder groups in Chapter 5.

4.6.5 Conclusion

Implicit in the administrations' way of conceptualising IL is the idea that developing IL is about a set of tools on the one hand whereby the potential user of these tools engages in a process that is linear. Equally there is a parallel conception that IL is about a process that is dynamic and cyclical that requires context agility that involves situated practice, collaborative learning and the value of learning from one another through conversation as key pathways to gathering information and for knowing how to carry out their roles in the workplace. However, this raises questions regarding how

best to design instructional approaches to IL that support a person to become information literate from a work place needs perspective and also from pedagogical or school place learning perspective.

4.7 Leadership

4.7.1 Perspective of information context (IC)

What is particularly interesting regarding the leadership perceptions of their IC is the sense of a need to reflect, i.e. to stand back from the whole context and what it has to offer and try to establish which elements offer the best enrichment for learning. Equally there is this feeling of working in the unknown in the sense that it is difficult to foresee what the outcomes intended and unintended might be from engagement in this rapidly changing environment so leadership feel they must plan in the unknown for the unknown. Similar to all stakeholder groups the analysis of the feedback surfaced three categories of description representing the three dimensions of the IC namely: The Environmental, Social Human and Affective. The discussion now moves to demonstrate how these perceptions are grounded in the feedback.

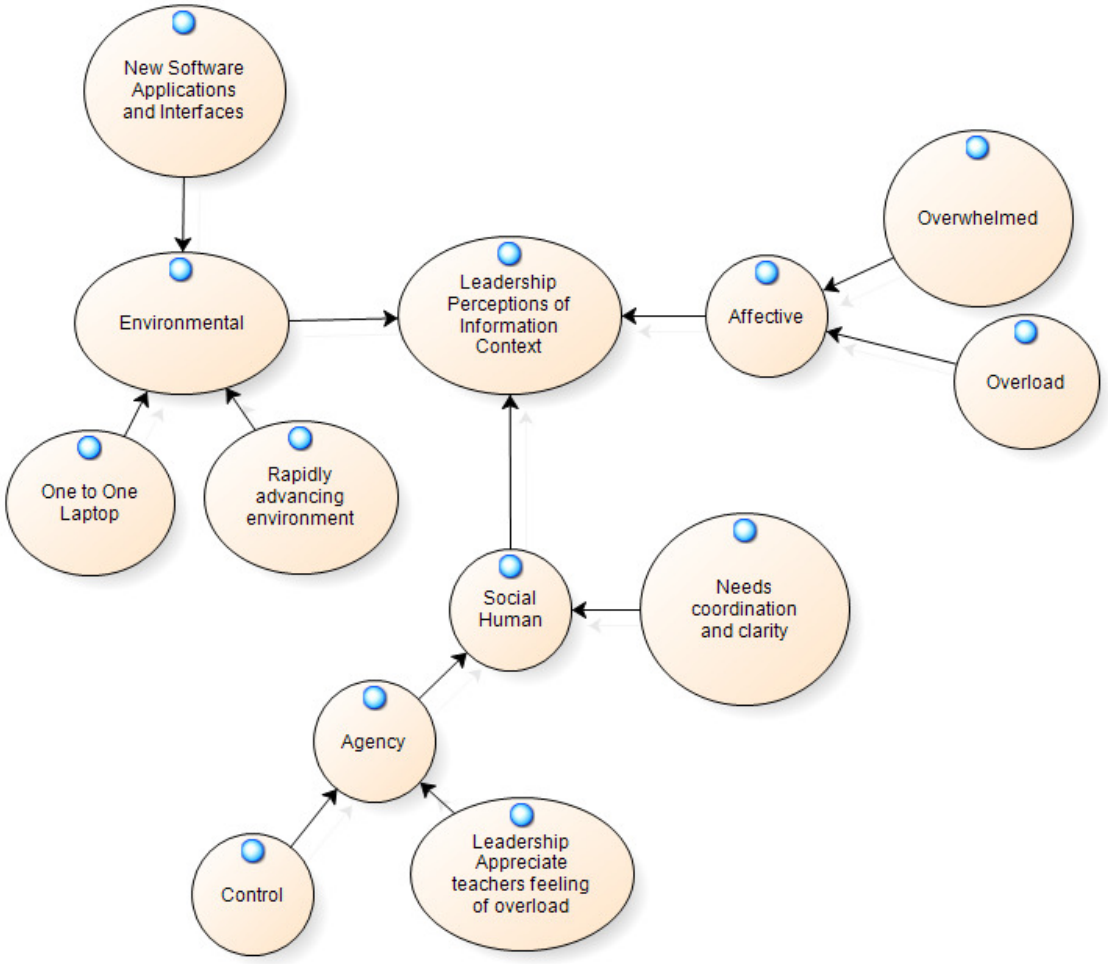

Figure 4.28 NVivo Output from Coding the Leadership Stakeholder Groups' Perceptions of the Information Context

4.7.1.1 Environmental

As can be seen in Figure 4.28 the leadership stakeholder group perceive the IC to be a rapidly changing one characterised by multiple new information patways and platforms requiring a reflective consistent approach as to how best to lead this change for authentic learning experiences:

> **SSL30** "*…sometimes I feel like it's[the information landscape] all over, there is too much information everywhere and coming at you from so many different angles you know whether it is the new Inside [Project School]… or whether it is First Class email system whether it is putting things out on Moodle or whether it is using Rubicon Atlas[Curriculum Mapping Software]; - depending what you want you can find it - it is knowing where it is, that is why sometimes I think that can lead to frustration with some people."*
> **SSL29** "*I agree with [colleague] I think that there are a lot of venues for finding information. I think they lack coordination and clarity for what could be used for the best purpose and I think that is indicative of the fact that there are so many opportunities out there and that we are doing our best to try and utilise them all; and we need to take a step back perhaps and to think about how to best do it."*

The complexity and fluidity of the IC is perceived as challenging to coordinate and as the next section will reveal it impacts the perceptions leadership hold in regard to the social human and affective dimensions of this context.

4.1.7.2 Social Human

As the environmental aspects of the IC changes leadership perceive that these changes are in turn generating a shifting of the roles of teachers, librarians and IT teachers to accommodate the new ways of teaching and learning offered in this dynamic IC. In this sense the evolving context is perceived to require a convergence of the IT teacher, librarian and teacher roles around IL:

> ***SSL29*** *"...well gone are the days when you had the IT teachers and that was it and you {Colleague} mentioned our librarians are particularly au fait - very current on IL and the use of technology and they share it and do PD about it - professional development about it…and our librarian was involved in one of the first IT long range plans created for the Middle school and so she without any prompting at all is running courses just like what you have said that she is teaching the kids the skills and then how to seek out more information more knowledge how to share it and really the kids learn an awful lot just by going into the library and working on any kind of project..."*
> ***SSL30*** *"... it's quite that way at the high school level more and more teachers are going into the library with their students and working with the librarian and using the librarian as the IL expert and I see in the future yes that the IT teachers and the information literacy specialists who used to be the librarians but now have become just not all books any more you know going tech - I see them actually melding and becoming one team instead of two separate teams."*

In this sense leadership perceive that as the IC changes it brings in its wake changes in the roles and expectations around both IT skills and IL which manifest themselves in the expectation that the

competencies these professionals have should now meld together to form a unified approach to teaching IL.

Leadership also recognise the central role of parents in partnering with the school to embrace the introduction of new information technologies that are opening up new information pathways and experiences for their children. Leading and implementing change impacts the school parent relationship and also the child parent relationship at home as children were being given their own lap top to take home so they could continue to learn and do their various school related projects. In this sense it was a difficult issue for the school to legislate for the ways students would engage with their lap tops at home and parents were concerned about controlling their children's use of the lap top. This social human challenge is captured in the following quotation:

> ***SSL30*** *"…and so I was so surprised just like my colleague] you know, about the concepts that were out there you know the nervousness amongst the parents to have lap tops in their homes…Now that the kids were going home with them –the biggest suggestion we can make you know is that the kids work in a community setting within the house in the living room or on the dining room table but they are not allowed up in their rooms- now that's sometimes easier said than done but it was really amazing how much we had to educate the parents so because of information literacy there has to be more education not just student education. I think that we are not the only ones I think every school around the world is finding they have to educate parents more".*

The IC is perceived to be a social human context involving all the stakeholder groups in the PS community whereby leadership play the role to lead and manage the changing IC in terms of the development of relevant curriculum, training and technology to support learning however this is done in partnership through consultative processes.

4.7.1.3 Affective

The increasingly technologically driven and multi layered context is recognised by the leadership as a source of stress for their faculty and parents. They themselves are also experiencing a sense that the quantity and pace of change is challenging when it comes to knowing how best to harness the dynamic information context for learning.

> ***SSL30*** *"I mean the leadership team... I mean it was our decision to bring in Rubicon a couple of years ago - it was our decision to bring in Power School - it was our decision to bring in the new First Class system so I can see why teachers would feel that it's just coming at them."*
> ***SSL29*** *"I am nodding my head up and down in agreement with you {colleague} I think these were all very necessary decisions to keep us as current as we possibly could be to educate our kids to be the best learners they could be for the 21st century. That doesn't mean it is easy and the point of feeling overwhelmed at times with learning is so much and trying to make the wise decision on which way to go when which way to go may not have even been invented yet - it may be a year down the road or two years down the road..."*

The dilemma for educational leaders is how to ensure students experience the best learning experience in the changing information and learning context but at the same time empower and support teachers to embrace the new information platforms and applications almost simultaneously. It is interesting how the leadership stakeholder group emphasises a type of bottom up grassroots approach by teachers to embracing using Moodle as a virtual learning platform. However, this grass roots approach is perceived in turn as being a potential source for stress and anxiety for some teachers.

> ***SSL30*** *"Yes I mean this whole Moodle thing came from the grassroots that came from the teachers... and when I say fear its more it is that anxiety of oh my God I am a teacher in the {Project School} and 35 out of the 45 colleagues...have had Moodle pages and I don't... - Oh God I better go and get one..."*

The challenge for leadership is how to support consistent universal practice and simultaneously support individual teachers who introduce Wikis or Google docs and or Moodle courses.

> ***SSL30*** *"Yes I see that there are a few even at the Elementary level who don't want a Moodle page and who are saying, well I am kind a liking that [Project School Central Online Information Platform] -can you show me more? In fact, that is something we are trying to reign in a little bit because we don't want one more thing to be on everybody's plate, and it will keep growing because there is a lot of potential with that particular piece or that programme...but there are plenty who say na, na, na you know I don't want a Moodle or that one doesn't really work for me can I try this."*

The way to manage this dilemma from the leadership perspective is to ensure teachers seeking to introduce a new software application or a learning interface should only do so if such an initiative is going to promote learning:

> ***SSL29*** *"I come back to what we said earlier about authentic use of something when [Project School] teachers say to me must I do this? I usually say no you don't have to. Will this promote learning will this deepen their understanding...And, that when they do self- reflect I think it helps enormously? There is going to be a certain amount of stress no matter what the concept of this is. Something else has been put on their plate and nothing has been taken off and I would be surprised if the teachers didn't mention that in their piece of it all; because I feel that very keenly. And so I never want this to feel like you know ...this is yet another thing I have to do, instead of seeing it more as this is something that is going to help me to do things better."*
> ***SSL29*** *"Well you can make the plans but you cannot necessarily plan the results. And just in a short period of time when you look for instance at social networking for example, any school starting a lap top programme barely touched on social networking and now it's a hot topic. And 5 years ago if you were touching on social networking you would have touched on Myspace - Myspace has fallen by the way but we have now have Face book and Twitter and I am sure there will be a new Twitter or a new Face book next year or if not the year after".*

On yet another level there is a distinct feeling of concern being voiced by the leadership in regard to how to lead and manage change within the changing IC when it not possible to know what the outcomes or impact will be.

4.7.2 Leaderships' conceptions of IL

It is against the backdrop of perceptions of the IC as changed and changing, offering new exciting ways for learning and simultaneously generating different kinds of feeling and pressures at school for the teachers and at home for the parents, that leadership bring forward their conceptions of IL. Figure 4.29 which is the output from NVivo coding provides a sense of the complex array of ideas at play in the way that leadership conceptualise IL. Based on a systematic distillation of the manifold ideas and ways of thinking about IL five interrelated categories of description of IL surfaced indicating extensive variation in how IL is conceptualised by leadership.

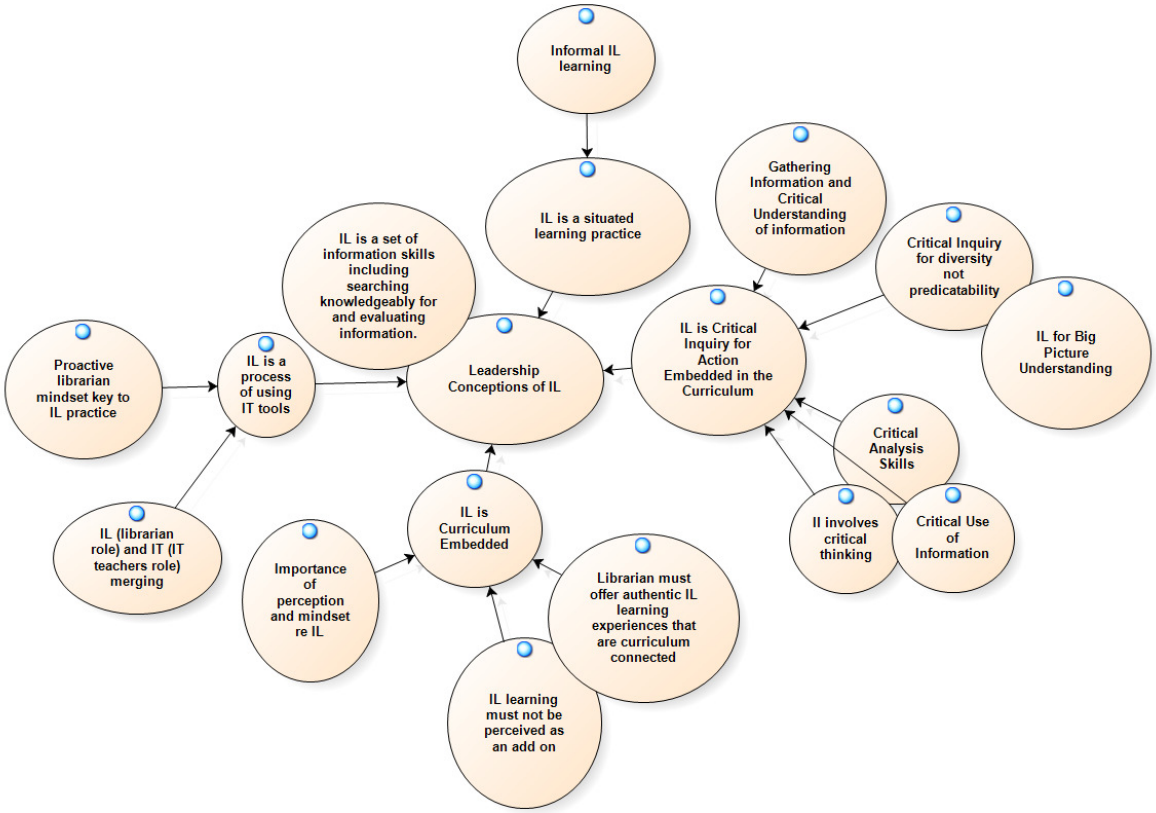

Figure 4.29 NVivo Output from coding Leaderships' Conceptions of IL

The visual presented in Figure 4.30 that IL is a process of using IT tools, is a set of information skills including searching knowledgably for information and evaluating information, that IL is critical inquiry for action embedded in the curriculum and IL is cognitive agility. Finally; IL is a situated learning practice.

The discussion will now move to demonstrate how these categories of description are grounded in the feedback from the leadership FGD and laterally will explore the dimensions of variation before moving on to comparing the conceptions with the AASL Standards (2008) and the Big6™ Model for IL (1990).

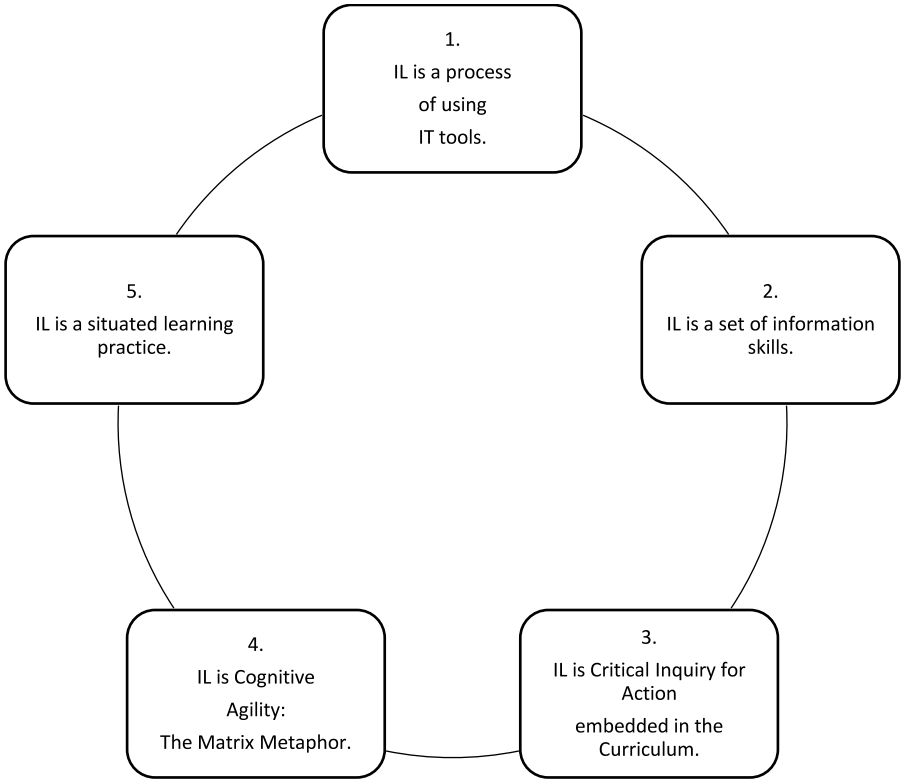

Figure 4.30 Leadership Categories of description of IL

4.7.2.1 IL is a process of using IT tools

The focus of this conception is on students using IT tools to support their learning at an individual level based on the immediate curriculum related information and learning tasks. Leadership speak about IL and IT as inextricably bound together and see that library and IT courses are a key source of support for developing student's ability to use IL/IT tools. Equally these Library and IT classes are perceived as offering authentic learning and not seen as 'add ons' but are curriculum embedded.

> ***SSL29*** *"And I think part of the whole exposure to making sure that things are authentic that they cannot just create an experience in the library for the heck of it - you are using the disciplines as a vehicle to teach the lessons or the skills that need to be learned and so everyone benefits. Social studies benefit, science benefits, maths benefits - anyone who comes in, it's sort of a nice symbiotic relationship between the discipline and the teaching of the skills for information literacy."*

Using IT tools to support the information use for learning experience is perceived to be applicable across the curriculum involving librarians, IT teachers and all subject teachers mapping out their learning objectives in the PS curriculum mapping interface as these quotations reveal:

> ***SSL30*** *"I think when we first started or embarked on the mapping process with the curriculum writing, - it was very individualised you know here is my map here is my social studies just all went in there. And now, it is becoming more intertwined with library support or information literacy and IT, so that an IT teacher may go to into a class because they are helping particular teacher use particular software for this unit. So more and more, we are seeing that more embedded into the core disciplines - in the sciences in the math you know and they are using more technology and it's more evident in the written curriculum. You know, it still needs to grow but a good example is any of the library curriculum for middle and high school is all always tying into the social studies curriculum and across the curriculum. Always, always..."*
> ***SSL29*** *"... the days are gone when I originally started teaching when things were disciplines or succinct schools of thought and you taught in one way for history and another way for maths and another way for art whereas now we encourage the cross curricular learning and when it is absent it is noticeable and it is commented on. And to assume that this supports only one part of the curriculum or one part of the programme just like only one person can be the IT teacher or the librarian is responsible for nursing it along doesn't work any longer".*

This is an interesting revelation by the leadership team because implicit is the idea that all teachers have a responsibility towards the development of IL. The conceptualisation of IL as being a process of using IT tools points to the relatedness of IL and IT and forms the impetus for a definite transitioning of role expectations in regard to where responsibility lies for teaching these skills (4.7.1.2.).

4.7.2.2 IL is a set of information skills

Whilst leadership conceptualise IL as a process of using IT tools the feedback also indicates that these technical skills need to be combined with information skills specifically for students to be able to search knowledgably for more information as this quotation suggests:

> ***SSL29*** *"... we need to become better facilitators of their search it's not just knowing how to do a wiki space or Moodle or Google docs those are in my mind the technical pieces there is a bigger overarching idea of how do we encourage kids to search knowledgably for more information."*
> ***SSL30*** *"And I think that is where a lot of the IT courses and the library classes are a big help with that, because they're so much more supporting of the other areas of the curriculum. So much more, I mean they are constantly using research search skills; they are constantly being asked where did you get that website? Is it valuable? Is it not? Where did you get that information? How old is that information? So it is starting but for sure I agree with {my colleague} it's going to have to keep continuing."*

Equally this conception is focused on the skills of information evaluation whereby students need to critically appraise sources for their relevance and reliability as the following quotation suggests:

> ***SSL30*** *"Right it is all that analysis you know that critical analysis being able to look at a site and saying no, this site didn't work for me or hey this is a great site. Or, being really able to analyse you know and where we used to have kids and we still do analyse what you are reading, newspaper articles or magazine articles, texts novels, we still do that, but now we have got to do it also for websites or any information that they get from the web. And gee, it could be as easy as gee should I open that e mail you know because that looks like a really stupid title on it or subject line".*

From the leadership perspective the conception of IL as a set of information skills including evaluating sources it is important to note that text in this context holds a much broader meaning encompassing not only traditional print but also the diversity of textual formats encountered through the WWW online interactive learning tools and the textual world of social media. This conception is in turn associated with the conception of IL as critical inquiry for action embedded in the curriculum.

4.7.2.3 IL is critical inquiry for action embedded in the curriculum

The focus of this conception is on the pedagogical concept of critical inquiry which informed the PS teaching and learning strategy. The focus of this critical inquiry is on the information sources that are used as a basis for the development of knowledge and understanding about curriculum content so this conception has an immediate school based application. Critical Inquiry for action involves a further dimension that extends beyond the information skills conception to include the ability to connect thoughts and ideas emerging from one discipline to other areas of learning with the objective of developing the skill for "Bigger Picture" thinking as this quotation suggests:

> ***SSL30*** *"...I think just in all of the research that has been going on for the past years even twenty years; hundreds of years; it all shows you really need to help them, help students connect and we don't mean connect technology wise I mean connect the different ways that they are thinking within each of the different areas or disciplines you know that they have to connect those disciplines so that they see the bigger picture yes."*

On another level leadership see IL not only as critical inquiry at the individual level but also as information sharing globally and about engaging in critical inquiry for action as opposed to simply a product.

> ***SSL29*** *"I want to see a stronger use of how we can share information around the world and that is one piece that I am not satisfied with - we have the technology we have the hardware but how much time we actually spend with kids looking at well how much information are you getting and how are you using it - I think that might be the next big bump in that we have got the technology the kids know how to use it but now that they have this stuff in their hands and their heads what are they doing with it and I think that is going to be the next big push."*

Implicit in this conception of IL as critical inquiry for action in tandem with the ideas of information sharing at a more global level is the principle of IL for action or a social impact model for IL advanced

by Bruce Edwards and Lupton (2006). Building on from the concept of IL as being about critical inquiry the leadership group recognise that teaching students to become critical thinkers is very much central to the school's strategic thinking:

> **SSL29** *"Our strategic planning group from the Board is looking at our vision/mission and has searched out feedback on it. And, part of what they were worried about that would not translate to the general public was... the concept of critical inquiry, and yet, this is exactly what I am hoping for in the future, that this will inspire our 10 year olds to think wow there is a reason why people settle near rivers, if I put these 2 chemicals together this might happen but if I put these 2 chemicals together and put a 3rd one in I wonder what would happen and a lot of that information out there can be put together by them in very new and unique ways ...I am hoping that our kids are encouraged to think and act in many different ways rather than predictable patterns".*

In terms of a future focus on IL the leadership feedback emphasises the importance of the transferable nature of critical thinking and analysis skills as suggested in the following quotation:

> ***SSL30*** *"I think that one of the big things is that we will never be able to teach everything, - that just not possible. And, it changes so quickly that the thing that we can teach is that critical thinking and how I can transfer this, or they as individuals can transfer the skills that are learnt here to over here. Because the software and the technology and everything will change - you know you buy a phone and 2 days later there is a one and you think oh I should have gotten that one and its better...I mean it's just coming from all over as long we can transfer what we are teaching them."*

This concept of IL as empowering students not only to think about things in different ways but equally to act in many different ways rather than predictable patterns points to a social impact model of IL which furthermore has a global focus or application. Equally the focus on the transferability of such skills as critical inquiry and thinking skills is significant for the development of ILE. Moreover, it is interesting how the leadership group connect the discussion about IL to strategic thinking which brings IL onto a platform for whole school thinking which will be revisited in the Discussion of Findings in Chapter 6.

4.7.2.4 IL is a situated learning practice

The focus of this conception is on IL being sensitive to the changing nature of the information experience and teachers' and students' teaching and learning experiences. Teachers and students are perceived as learners in a more partnership style of relationship which requires a change of teaching practices that is supported by professional development as well as through more informal situated practice as these quotations reveals:

> ***SSL29*** *"And a good example I was sitting in a 5th grade same IT class and there were 3 10-year old boys - little bitty wee lads discussing the pros and cons of different simulation games and the teacher was listening in on the conversation and said oh, I don't know that game can you tell me about it. And, true she could not have contributed to that part of the discussion*

but there was no fear involved with oh I don't know what we are talking about here - fill me in. And, for educators to admit that you don't know something, lets down the facade that you are the expert at things; and you can tell there are still teachers who are still 'sage on the stage' kind of folks, and they are the ones that tend to have the toughest time I think, admitting that they don't know something. But, there are a lot of other folks out there who just need more professional development and haven't had the time or the opportunity but we provide a lot of time and plenty of opportunity - funding for that so".
SSL29 *"Oh yea I mean I will sit next to somebody and see them doing something on their lap top and I will say can you teach me how to do that or I will sit in on professional development workshops led by a teacher and realise that they are doing something totally different than the other 15/20 other people in the room and that they are all learning from each other around that and that's invaluable".*

This conception moves the thinking about IL as a set of skills or a fixed framework or model towards a more responsive conception of IL that is open to change as the context changes and that must be supported by relevant ongoing professional development and an openness by teachers to enter the learner role in partnership with their students.

4.7.2.5 IL is cognitive agility – the Matrix Metaphor

The focus of this conception of IL as cognitive agility is on students becoming agile in the ways they approach their information experiences and it relates to students at the individual level and is applicable to immediate curriculum based learning. The conception relates to the perception of the dynamic and fluid nature of the IC which is perceived to be external or out there as regards the WWW specifically. Simultaneously the IC is also perceived to be internal and subjective once students engage with that external world as they navigate through their IC deciding which information is useful and applicable to their immediate needs. A metaphor was introduced to communicate this agility concept:

SSL29 *"I am having a little epiphany as we are speaking…and it's sort of like - have you both seen the movie the Matrix? Where the fellow whatever his name is the lead fellow is able to bend and be so flexible that he can actually go past the bullets that go past him and yet when he wants information he is able to go right at it and sort of meld his mind with it. I am having a Matrix moment... That there are going to be things that we are going to have to dodge and duck and we are going to make mistakes along the way but what {name of colleague} said is absolutely true if this isn't promoting deeper thinking and greater understanding based on being able to cast your net more widely, then I am not sure why we are doing it and that is my hope that all of this technology that we have adopted all of the PD that we are doing, is going to help kids think in a more deep but yet higher level way and to be able to become able to discern what is useful information and what is not particularly useful."*

Recognising the limitations inherent in singling out the Matrix (1999) metaphor it is felt to be a highly powerful one to capture the sense of agility required for engagement in the fluid IC characterised by dynamic information selection and evaluation processes. The skill of being able to meld one's mind

with the IC is an interesting one and when combined with the idea of discernment there is a sense emerging of IL being the ability to achieve this kind of agile critical engagement within the IC.

4.7.3 Exploring dimensions of variation in conceptions of IL

There is extensive variation present in the leaderships' conceptualisation of IL which is related to the application of the conception and its relationship to their perceptions of the IC as shown in the outcome space in Table 4.7. IL as a process of using IT tools has immediate application at the individual student in terms of their need to access and retrieve information for their school based learning needs. The IC is perceived to be experienced at the environmental level as an external objective context with the emphasis being on the WWW. However, IL as a process of using IT tools is experienced not only as an individual pursuit but also as a mediated experience as teachers, the librarian and parents mediate this search and retrieval experience and using the IT tools enables collaboration and connectivity around the experience. Furthermore, IL as a process of using IT tools is recognised by leadership to be experienced by teachers in both positive and negative ways whereby teachers may be both excited about the potential of using IT tools but overwhelmed by the overload and unsure about the impact of using such tools on children's academic and their social and personal development in the long run. Leading and managing change for authentic learning is perceived by leadership to be the ultimate goal in terms of using IT tools. The conception of IL as a situated learning practice places the emphasis on people in situ as sources and resources for information gathering and evaluation in a dynamic responsive fluid way as opposed to a mechanistic modular information experience.

The conception of IL as an information skill to search knowledgably for information is also applicable to the individual student level in terms of their immediate need to search for and find relevant information relative to learning across the curriculum.

The IC is perceived to be external and primarily web centric. However, it also perceived to be a mediated learning experience whereby teacher, librarians and parents support the process to guide students. At the affective level there is a scepticism about the quantities of information and their quality and reliability therefore students need to learn to search the context knowing the questionable nature of information.

Table 4.7 Outcome Space: Dimensions of Variation of Leaderships' conceptions of IL

Referential Aspect Description of Conception	Focus RE Application of Conception	Relationship of conception to perceptions of information context		
		Environmental	Social Human	Affective
IL is a process of using IT tools.	Applies to the individual student and their immediate information and learning needs across the curriculum.	The IC is perceived as a vast external objective environment with a diversity of applications, software and hardware.	The IC is perceived to be mediated by librarians, teachers and IT teachers who support students' development of their use of IT tools for learning.	The IC felt to have changed dramatically requiring students to be able to use IT tools to access online sources relevant to their studies across the curriculum.
IL is a set of information skills.	Applies to the individual student and their immediate information and learning needs across the curriculum.	The IC is perceived as external and objective.	The IC is perceived to be mediated be teachers and the Librarian to support student learning to search knowledgeably for evaluate information.	The IC is perceived to have vast quantities of information of varying quality therefore IL is a skill of being able to search that context from a position of knowledge about the nature of the context.
IL is critical inquiry for action embedded in the curriculum.	Applies to the individual student's immediate information learning needs across the curriculum and has a broader application at the social impact level.	The IC is perceived to exist externally and objectively with an emphasis on the WWW.	Responsibility for the development of a critical inquiry approach rests with all teachers across the curriculum including collaboration with IT teachers and Librarian	The IC is felt to offer opportunities for learning not only in terms of the immediate product of the learning but also to inform action about topics and subjects covered in the curriculum with potential for sharing information on a more global level.
IL is a cognitive agility The Matrix Metaphor.	Applies to the individual student and their immediate information and learning experiences.	The IC is perceived to exist externally and objectively with an emphasis on the WWW.	The IC is perceived to be both objective and external and subjective internal experience.	The IC is dynamic and IL in this context is about being cognitively agile to effectively navigate the diversity of information and making decisions about selection of relevant information in a dynamic way.
IL is a situated learning practice.	Applies to the individual student and their immediate learning experiences in collaboration with class mate's teachers and parents.	The WWW offers opportunities for greater student and teacher collaboration around information use for learning.	The IC is a social human information context- information is subjective. People are key sources of information and students and teachers learn together in situ shaping the information experience.	The IC is perceived to have great potential for students and teachers to learn together as partners.

The third conception, IL is critical inquiry for action embedded in the curriculum, applies not only to the individual student's immediate school-place learning but suggests a more social impact idea in terms of taking action pursuant to gaining new understanding and as such is a beyond school and life-long learning focus. There is also an aspirational dimension to this conception in terms of a need going forward to create more connected global sharing of information and learning experiences. The concept of critical inquiry is a pedagogical concept that emphasises learning that takes place from a questioning approach as opposed to the traditional more rote style learning of the last century. The IC in regard to this conception is perceived as a socially mediated context involving the environmental dimension and is guided by teachers, librarians and parents. In regard to the affective dimension of the IC as it relates to the conception IL as critical inquiry for action the focus is on both cognitive and dispositional aspects of information use for learning whereby the learning objective is not only about a product of learning it is about the process and the approach where new understanding can potentially contribute to further learning and action around an issue or topic being studied.

Moving to the fourth conception which is that IL is a cognitive agility which is described by using the matrix metaphor this conception is focused on the individual and their immediate information retrieval processes. The IC is not only perceived to exist as an external objective domain with specific focus on the WWW it is also a subjective 'inside the mind' focus. The IC is perceived to be dynamic and to be IL in this dynamic IC one must be able to take decisions regarding information selection in an equally dynamic way.

Finally, the conception of IL as a situated learning practice applies to both the individual student experience of information use for learning but also to the collective level as it involves collaborative and situated practices. The IC is perceived as both objective in terms of print and the WWW but is always a subjective and social human experience mediated by teachers, librarians, family and friends. The conception has application also to the more global level of sharing learning beyond the school classroom. In regard to the affective dimension of the IC the conception of IL as a situated learning practice captures the perception of the IC in positive ways with a focus on potential for information use for learning and sharing more globally.

4.7.4 Comparison with AASL (2007) and Big6™ model (1990)

The AASL (American Association of School Librarians 2007) Standards for 21st Century Learner and the Big6™ IL model (Eisenberg and Berkowitz 1990) have been selected to conduct the comparative analysis of findings regarding the conceptions of IL arising from the leadership stakeholder group as illustrated in Table 4.31.

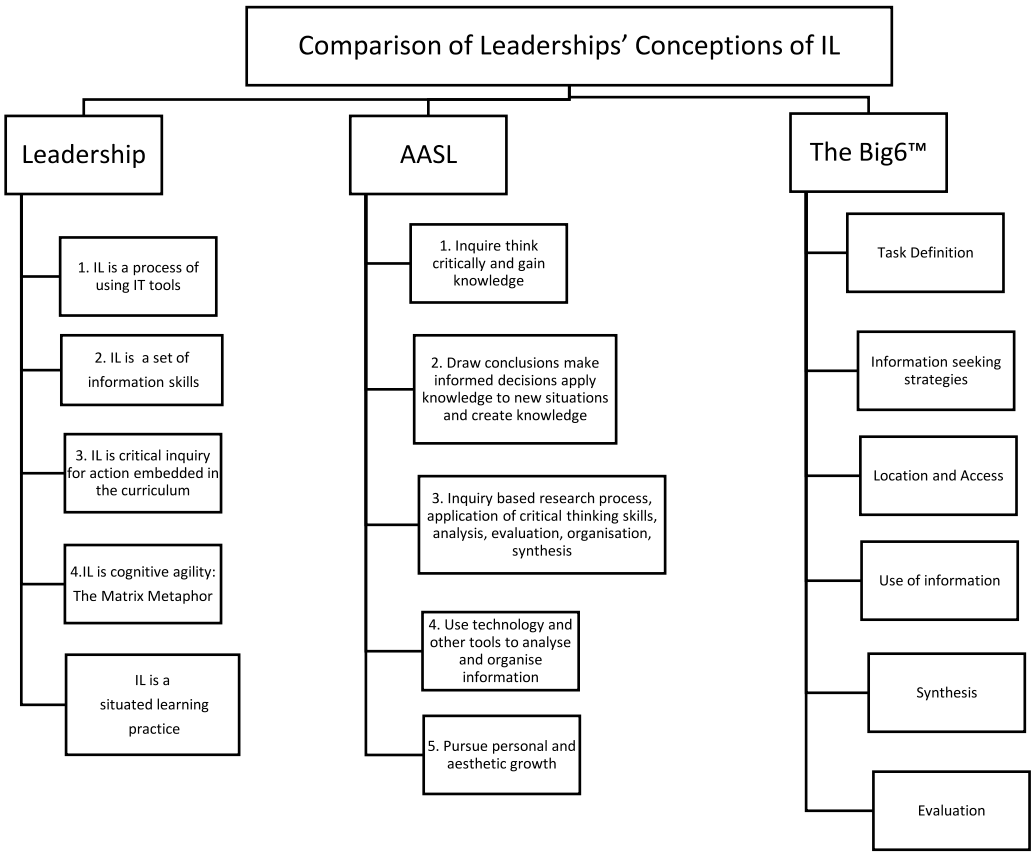

Figure 4.31 Comparison of Leaderships' conceptions of IL with AASL Standards and the Big6™ model

When comparing the conceptions of IL held by the leadership stakeholder group to the AASL standards it is possible to see a high degree of alignment: IL as a process of using IT tools aligns with the AASL standard 4, IL is critical inquiry for action is aligned with AASL standards 1 and 3. Searching knowledgeably for information is similar to AASL standard 1 and 3 (American Association of School Librarians 2007).

The conceptions of IL as cognitive agility and as a situated learning practice is however different to AASL standards suggesting a way of managing and engaging in the dynamic IC with expansive information sources to select from (American Association of School Librarians 200). AASL category 5 regarding the pursuit of personal and aesthetic growth is different to the leadership conceptions placing more emphasis on personal growth and development (American Association of School Librarians 2007). In comparison the Big6™ model for IL which presents a sequential step stage approach to IL, the conceptions arising from the leadership have a degree of similarity regarding conception 1 and 2 regarding information location and access which are step stages 1 and 2 (Eisenberg and Berkowitz 1990). However, that is basically the only similarity between them as leaderships' conceptions regarding information use being focused both on the immediate school

information use and learning need but it also on the idea of sharing information on a more global level.

4.7.5 Conclusion

From the leadership perspective the IC is a highly fluid and complex context that creates and informs the learning experience and which itself is shaped by people's engagement and participation within it (4.7.1.1). Leadership express a need for reflection about the whole phenomena and to consider how best to use the opportunities offered to optimise learning (4.7.1.1). The dialogue process to a certain extent provided a platform for that reflective thinking and talking together and revealed extensive variation in the conceptualisation of IL by the leadership group.

This multi- dimensional conceptualisation of IL by leadership mirrors their perceptions of their IC. The inter-relatedness IT and IL skills is in turn is perceived by leadership as causing a melding of teacher, librarian and IT roles and a realisation that it is no longer meaningful that any one librarian or IT teacher can teach all the students. Implicit in this thinking is the idea that every teacher is an IL teacher. Furthermore, leadership propose the need for parents also to receive IL training. The idea of distributing the ownership for IL learning across the various stakeholder groups has significant implications for the future articulation of job descriptions for IT teachers, librarians, and subject teachers alike.

In this context the question to what extent is there a common ground conceptualisation of IL prevalent in the PS comes to the fore and it is to this comparative analysis that the following Chapter 5 will now turn exploring the nature of variation in the ways IL is conceptualised across the seven stakeholder groups.

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CHAPTER 5 Comparative Analysis of Findings of Conceptions of Information Literacy

Introduction

The purpose of Chapter 5 is to present the findings from the comparative analysis of the conceptions arising from the seven stakeholder groups as which are captured in Table 5.1.

Table 5.1 Conceptions of IL

No	Outcome Space Conceptions of IL	Student	Parent	Teacher	Library	IT	Administration	Leadership
1 - 7	IL is a process of using IT tools.	x	x	x	x	x	x	x
8	IL is a set of information skills.[Finding, evaluating, managing, making sense of and communicating learning]	x						
9	IL is a set of information skills.[Understanding information need, information gathering, evaluation, making sense of information, organising and communicating information, and soft skills that are cross curricular]		x					
10	IL is a set of information skills.[Finding and evaluating information]			x				
11	IL is a set of information skills.[Information locating, evaluating, sifting and sorting skills, reading and note taking, citation skills and soft skills including coping and being open minded]				x			
12	IL is a set of information skills.[Critical thinking about information finding, evaluating, synthesising, and applying information]					x		
13	IL is a set of information skills.[Information creation, dissemination communication and management skills]						x	
14	IL is a set of information skills.[Searching knowledgably for and evaluating information]							x
15	IL is a way of learning.[Context sensitive]		x					
16	IL is a way of learning.[Context sensitive, cross curricular]				x			
17	IL is a situated learning practice.							x
18	IL is infomation context agility.						x	
19	IL is cognitive agility - the Matrix Metaphor.							x
20	IL is critical thinking about information.				x			
21	IL is critical inquiry for action embedded in the curriculum.							x
22	IL is understanding the nature of information.			x				
23	IL is content reading to extract relevant information.			x				
24	IL in combination with IT literacy skills is a way of learning how to learn.					x		
25	IL is a participative practice.	x						
26	IL is about fair and ethical use of information.	x						
27	IL is knowing how to stay safe online.		x					
	Total Conceptions = 27	4	4	4	4	3	3	5

Seven outcome spaces capturing the conceptions of IL surfacing from each of the seven stakeholder group's as presented in Chapter 4 collectively generate twenty-seven conceptions of IL with four stakeholder groups holding four conceptions of IL, two stakeholder groups holding three conceptions whilst five conceptions surfaced from the leadership stakeholder group as presented in Table 5.1. However as will be demonstrated in the following analysis some of these twenty-seven conceptions are similar in ways and shared by all stakeholder groups whilst other conceptions are shared across some but not all of the groups and others still are very much standalone and specific to a given stakeholder perspective, as captured in Figure 5.1.

5.1 Revealing the common ground in the conceptualisation of IL

Figure 5.1 offers a way of visualising the extent of variation in the conceptualisation of IL. Moving clockwise around the diagram the red area captures the overall sense of common ground conceptualisation of IL as a process of using IT tools and as a set of information skills, however as the comparative analysis will show there is considerable variation in what is meant by these two conceptions across the stakeholder groups. A set of abbreviations have been used to indicate the stakeholder groups as follows; Student (S), Parent (P), Teacher (T), Library personnel (LB), IT personnel (IT), Administration (ADM), Leadership (LE).

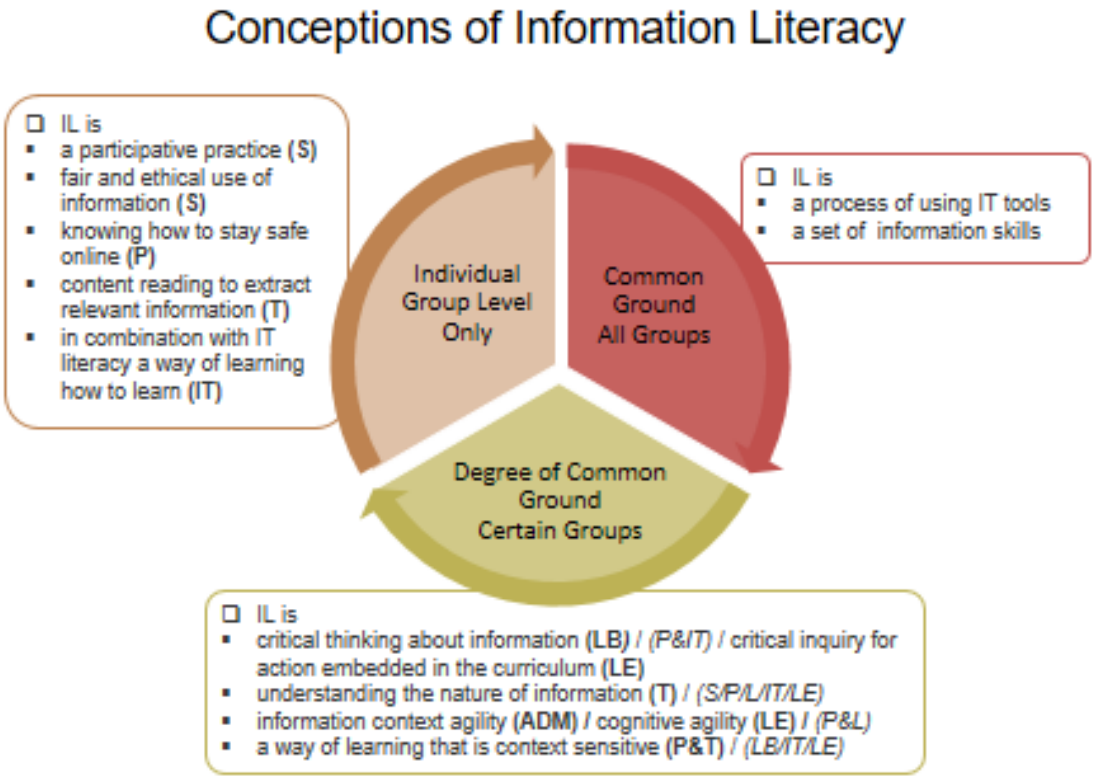

Figure 5.1 Comparative Analysis of Conceptions of IL – Levels of Common Ground

Moving to the green area of the visual it is possible to see where two or more groups share similar additional conceptions to the common ground conceptions to a certain degree, to include IL is understanding the nature of information (**T**-*S/P/LB/IT/LE*), IL is information context (**ADM**) or cognitive agility (**LE**-*P/LB*), that IL is a way of learning that is context sensitive (**P**/**LB-***T/IT/LE*). The final conception of IL sharing a degree of common ground is that IL critical thinking (**LB**- *P/IT*) or critical inquiry for action (**LE**). The letter designation for the stakeholder group from which the conception arises appears in bold and the stakeholder groups that share the conception to varying degree appear in italics.

Finally, the brown area indicates there are five additional conceptions held at the individual stakeholder group level only, including the conceptions of IL as a participative practice, as fair and ethical use of information (**S**), as knowing how to stay safe online (**P**), as content reading to extract relevant information (**T**) and lastly IL is in combination with IT Literacy a way of learning how to learn (**IT**).

The prevalence of some common ground conceptual thinking about what IL is, in tandem with the extensive variation, is testament to a reality that IL is experienced in a diversity of ways by the different stakeholder groups.

Ultimately Table 5.1 and Figure 5.1 reveal there is no singular comprehensive overall conceptualisation of IL apparent in the PS but that there is a common ground area of conceptions around IL as a process of using IT tools and a set of information skills. It would appear that IL is conceptualised in multiple ways as stakeholders experience a multitude of diverse information needs and experiences based on school being a place of work and a place of learning and community.

The variation in the conceptualisation of IL is also connected to the perceptions of the IC that are held by stakeholder groups in the PS context which as demonstrated in Chapter 4 is perceived as dynamic and complex comprising of various interdependent elements including the environmental, social human and affective dimensions. The chapter now moves to present the meta-analysis of the common ground conceptions of IL.

5.1.1 Comparative meta-analysis of common ground conception of IL as a process of using IT tools

This study has at its core the intention to gather an understanding of how IL is conceptualised in the context of the PS and the findings presented in Chapter 4 regarding stakeholders perceptions of their IC comprehensively demonstrate that the IC has changed and continues to change at a rapid pace, continuously shaping and reshaping stakeholders' information use experience whether that be for a

work or school place need or beyond the school walls at home which involves parents, friends and the wider school community. As shown in Chapter 4, stakeholders particularly identify the integration of new information technologies, the evolution of online information and a transitioning in the use of hard print media to online web based information that offers opportunities for interactive, participative and collaborative working and learning opportunities as instrumental in shaping the information use experience. It is therefore natural that such perceptions lead to stakeholders conceptualising IL as a process of using IT tools. It should however be noted that the student stakeholder group perceive using IT tools as a given in their lives as they, unlike the other stakeholder groups including parents, have been born into a world where the internet has always existed and being part of their information experience in their living memory. Parents (4.1.2) are particularly aware of this gap in their information experience relative to their children and also teachers comment that they also sense this gap between themselves and students. Equally for some teachers (4.1.3.3) there is a feeling that newly graduated teachers are better prepared to engage with the changing information and technologically driven information experience in terms of meeting both workplace and learning based responsibilities.

From the student (4.1.2) perspective the conception of IL as a process of using IT tools basically means being able to use their lap tops to access information, resources such as the Library's Moodle pages and databases and access their grades via Power School. They also need to know how to use various software to record their learning for example making a power point presentation or using word to write notes or homework, to be able to log on to first class e mail to submit homework or talk to friends about projects or tasks and connect locally and globally using social media for learning purposes.

For the other six stakeholder groups IL as a process of using IT tools is more complex in terms of reach, purpose and the emphasis placed on using IT tools in working and or learning experiences. In this sense the parent (4.2.2), teacher (4.3.2) and administration (4.6.2) understand IL as being about using IT tools not only for students but more importantly for themselves also. Teachers particularly highlight their training needs in this regard particularly with the introduction of new information technologies in the classroom such as lap tops and interactive white boards. IL as a process of using IT tools is seen by teachers not only to be of relevance to them but also to parents as they need to be able to support student learning which occurs across home school boundaries. Similarly, when parents (4.2.1) conceptualise IL as a process of using IT tools they too are referring to themselves and their need for know how to use IT tools when supporting their children's learning in a changed information environment relative to their own information experience as children.

The administration (4.6.2) group's conception of IL as a process of using IT tools encompasses not only a focus on student, faculty, staff and parent information experiences but is also very much related to their own workplace information creation, communication and dissemination responsibilities, both internally within school community information pathways and externally in terms of promoting and marketing the school on a global level. The leadership (4.7.2) stakeholder group have another variation on this conception of IL as a process of using IT tools whereby their focus is on using IT tools for learning from a faculty and student focus but also in terms of the idea of transferability of these processes of using IT tools across the curriculum and beyond school life. Whilst the library (4.4.2) and IT groups (4.5.2) share a conception of IL as being about a process of using IT tools the IT personnel place an emphasis on the greater potential for students to connect and collaborate around information and learning as discussed in Chapter 4 Section 4.5.3. IT personnel also perceive the librarian's role as being to help teachers and students refine and scope out the IC to support learning across the curriculum and perceive their own role as helping teachers around the integration of technology in learning and to teach students IT skills that enable them to access and use various IT hardware and software in a curriculum context.

The origin of the different emphasis may be attributable to the reality that IL and IT are separate areas of attention in the curriculum: The library's programme (4.4.2) is grounded in the AASL standards (2007) and delivered via librarian led or collaborative initiatives with teachers, particularly social studies and language arts while the IT curriculum originates in the ISTE Standards (2008) (4.5.2), being delivered by IT teachers as part of the formal scheduled classes. This variation in this conception has implications on two levels firstly in terms of perceptions of the status or value of IL in comparison to IT and secondly for the ways the PS approaches building an IL learning strategy in a context where all stakeholder groups conceptualise IL as a process of using IT tools. The library stakeholder group perceives IT teachers to have expertise to teach students skills to know how to use different hardware and software programmes and also internet safety (4.4.2) and also to be IL teachers (4.4.2.1) That said however they also perceive that it is important and necessary for librarians to be IT savvy and value collaborative working opportunities with IT teachers as a platform to teach IL to faculty.

In this sense the narrative around IL as a process of using IT tools reveals the perception that using IT tools is integral to teaching, learning and work place practices. The dilemma arises however that leadership (4.7.1 /2) particularly perceive the roles of the IT teachers and librarians as melding to become one team while teachers (4.3.2) perceive their role as becoming more librarian like or information mediator/guide like and librarians (4.3.1) see IL training as every teacher's responsibility.

Parents perceive that the librarians and IT teachers are both responsible but also that all teachers need to be teaching IL. In this scenario there needs to be some critical consideration given to understanding how these expectations around the conception of IL as a process of using IT tools can potentially be aligned in practice to foster a holistic approach to IL.

Before leaving this conception it is important to highlight a related concern around IL as a process of using IT tools which is raised particularly by the parent (4.2.2.1) and teacher (4.3.2.1) stakeholder groups and that relates to the issue of balance in focus on using IT tools. It is evident from the feedback from these two stakeholder groups that there needs to be a balanced approach to the integration and use of IT tools in workplace and learning practices. Chapter 4 clearly highlights in perceptions of the IC that there is a shared sense of overwhelm regarding the quantity, quality and nature of change in the IC is the source of anxiety, stress and overwhelm. This is a strong message that has significant implications for the ways the PS lead and manage the development of the changing information and learning context to ensure all stakeholder groups receive the IL training necessary to meeting their changing work place and learning needs.

The conception of IL as process of using IT tools has multiple implications for work place and student IL learning strategy in terms of curriculum and professional development and for parent IL training strategy which will be addressed in detail in Chapter 6. Now this section moves to consider the second major common ground conception of IL which is IL is a set of information skills.

5.1.2 Comparative meta-analysis of IL as a set of information skills

In Chapter 4 it was revealed that each stakeholder group conceptualised IL as a set of information skills and in Table 5.1 it is possible to identify that conceptions 2 to 8 point towards the finding that this conception of IL is very much a common ground conception of IL in the PS. However, on closer examination of these seven conceptions of IL as a set of information skills it is possible to identify variation in what is meant by information skills. Table 5.2 profiles the variation by grouping together skills of a similar nature but simultaneously retaining the words used by stakeholder groups to describe particular skills. Across the seven stakeholder group's information retrieval, evaluation and communication skills are commonly identified as specific information skills forming the information skill set conception but how each group understands and describes the skill differs to some extent across the groups.

Table 5.2 Comparative Analysis of Conception of IL as set of information skills

Information Skills	Student	Parent	Teacher	Library	IT	Administration	Leadership
Information Retrieval - Searching/Gathering/Finding/Locating/Seeking/ Knowledgeable Searching/Navigation skills	x	x	x	x	x		x
Information Evaluation	x	x	x	x	x		
Information **C**ommunication /**D**issemination	x	x			x	x	x
Note Taking	x	x		x			
Citation Skills	x	x		x			
Reading Skills	x		x	x			
Making Sense of Information	x	x					
Internet Safety	x	x					
Information Creation	x					x	
Understanding Information Need	x	x					
Information Sifting and Sorting				x			
Information Synthesis					x		
Information Management	x					x	
Soft Skills*							
Adaptability		x	x				
Open Minded				x			
Coping skills				x			
Distraction Management		x					
Creativity		x			x		
Innovation					x		

**See also IL is a context or cognitive agility conceptions.*

5.1.2.1 Information retrieval

Within the skill area of information retrieval there are variations in how this is described across the groups. Students experience this as finding information (4.1.2.2), the parent group use the term gathering information (4.2.2.2), the teacher (4.3.3.2) and library groups refer to locating information (4.4.2.2). Teachers (4.3.3.2) also use the term navigation along with the IT (4.5.2.2) whereas leadership (4.7.2.2) use the term searching knowledgably for information. The administration group does not explicitly identify this skill as part of their conception of IL as a skill set, rather their focus is on information management, organisation, communication and dissemination (4.6.2.2).

For students finding information means finding good information or information relevant to the topic or question as discussed in Section 4.1.2.2. It is also apparent from the student feedback that they anticipate that the information is to be found especially in the context of WWW sources. It is important to consider whether such high levels of anticipation regarding the capacity of the WWW to deliver up the required information is reasonable given the reality of students recording their frustration at not finding "good" information (4.2.2.2). From the library (4.4.2.2) and teacher (4.3.2.2) perspectives the term locating information offers another sense of this dimension of the information experience and suggests there are multiple locations to source information.

From the teacher perspective the concept of information navigation in addition to information location is used. This suggests several possible channels or pathways prevail that one must learn to navigate to different sources to locate the required information and reflects the prevalent use of online information sources.

The IT group (4.5.2.2) also share this concept of navigation which reflects the web based searching experience and additionally use the term searching for information. Searching is different to finding as it suggests again searching in different places or ways in order to obtain the required information. Parents use the term gathering information skills which embraces the idea of gathering in information from perhaps different sources. Finally, from the leadership (4.7.2.2) perspective they use the terms knowledgeable searching for information which suggests perhaps the need for drawing on prior knowledge or some pre search strategy to inform the search process. Interestingly the main focus in terms of the retrieval process would appear to the WWW or online information sources such as Moodle pages and online library data base subscriptions despite the fact that books were identified by five stakeholder groups as forming part of the physical structural dimension of the information landscape. Administration and leadership did not refer to books when sharing their perception of the IC.

It is therefore clear that even when the seven stakeholder groups are referring to one information skill within the set of skills there are variations in their ways of describing, understanding and conceptualising this dimension of IL. Stakeholder groups use different words to describe the information retrieval process or action and the different nuances of each of these terms are important to acknowledge in terms of the value of stakeholder groups having a common language to articulate their meaning(s) in regard to IL as a skill set but equally in regard to IL more globally which will be further explored in Chapter 6.

5.1.2.2 Information evaluation

Students (4.1.2.2), parents (4.2.2.2), teachers (4.3.2.2), library (4.4.2.2), IT (4.5.2.2) and the leadership (4.7.2.2) stakeholder groups identify information evaluation as one of the skills that constitutes the information skill set whereas this skill does not surface from the administration's group conceptualisation of IL as a skill set. Stakeholder groups share a perception of the IC as being a place of great potential in terms of the diversity of resources to be found specifically in terms of the WWW. However, the potential is also perceived in negative ways specifically from the student, parent, teacher, library IT and leadership groups perspectives insofar as there may be inappropriate and unreliable information prevalent in the online IC.

One aspect of evaluation from the student stakeholder groups' perspective involves identifying if there is an opinion or bias in the information (4.1.2.2). This shows students are critically aware of the potential of the WWW where anybody can upload information and there is a need to be able to work out what is and isn't opinion. Parents see evaluation as involving knowing the right way to approach information that requires a more questioning attitude (4.2.2.2). From the library perspective evaluation is understood as knowing how to discriminate between sources to decide their validity (4.4.2.2). The IT perspective on evaluation is also about the idea of relevance and determining if the information is fit for purpose (4.5.2.2). The teacher group also understand evaluation about being able to determine the validity of sources (4.3.2.2). From the leadership perspective information evaluation has to do with questioning the origin or authority of the information source (4.7.2.2).

Similar to the skill of information retrieval the skill of evaluating information has somewhat different meaning across the stakeholder groups however it is clear that for all groups information evaluation is very much conceptualised as a dynamic decision making process to determine bias, relevance, authority, origin and ownership of information found. Similar to the ways that different terms are used by different stakeholder groups to describe information retrieval the language used to describe information evaluation is also different to a degree in regard to information evaluation skills. Going forward in terms of achieving a common IL learning strategy the choice of terms used to describe skills needs careful and systematic attention and must also reflect the diversity of Stakeholder information experiences in the school as a place of work, learning and community. The significance of a commonly shared language around IL will be revisited in Chapter 6.

5.1.2.3 Information communication and dissemination skills

Information communication surfaces as a key information skill in the conception of IL as a set of skills from five of the stakeholder groups including the student, IT, parent and leadership groups with

information dissemination being identified by only the administration group. Once again however there is variation across the groups as to what is meant by information communication.

For the student (4.1.2.2), parent (4.2.2.2) and IT (4.5.2.2) groups the conception of information communication centres on communication of learning in regard to a learning task, question or project within the immediate context of the classroom or internally within the school context. In contrast the conception of information communication that surfaces from the leadership (4.7.2.2) group is more expansive in terms of the idea of sharing information about or using communication platforms to build understanding on a wider more global platform externally not only within the local confines of the school.

The administration group (4.6.2.2) conceptualise the skill of information communication also tending towards a focus on the evolution of internal and external communication demands from a work based perspective. This way of conceptualising information communication skills is very different to the focus of student, parent and IT stakeholder groups who understand information communication skills in a sense that has a more immediate focus at school level. However, as the findings from the perceptions of the IC indicate the context is perceived as a rapidly changing one with increasingly more opportunities for connectivity and therefore it is relevant to consider this different dimension of the information skills conception.

A further difference arises also in regard to not only the focus of the communication but also the methods of communication. For example, the process of communicating learning for assessment purposes received particular attention from the parent stakeholder group (4.2.2.2) where they identify a significant disconnect that is prevalent between everyday practice of using word processing programmes for writing to communicate learning whereas in an exam situation in formal assessment the exams are hand written. This inconsistency in expectations in terms of student preparedness to engage in handwriting when it comes to formal assessment whereas in everyday learning they may use word processors deserves critical consideration in the broader context of IL skills and communication skills bother oral visual and written.

Equally the idea of the potential offered via many new IT tools and programmes that surface from the IT stakeholder group is another variation on what information communication skills entail. In this sense the ideas of a more globalised focus for information communication from the leadership and administration groups share some common threads. The task is to weave the different strands and patterns of thinking about information communication to generate a more consolidated and aligned understanding around this one dimension of the conception of IL as a set of information skills.

In this respect it is important to reflect on the reasons that information communication did not surface from the teacher and library stakeholder groups where the emphases was more on information evaluation skills as part of the information skill set conception of IL. In terms of the library stakeholder group perspective perhaps this might be explained in so far as the practice around formative and or summative assessment of student project work may be the teacher's responsibility and the librarian may not always have an opportunity to see the final outcome of a collaborative project. In regard to the teacher stakeholder group it is possible that information communication skills did not come to the fore because there was a more compelling issue for them in their experience of IL with students that explains the surfacing of information finding and evaluation skills as been key skills of the information skill set conception.

5.1.2.4 Other skills

Whilst information retrieval, evaluation and communication skills emerge as three common ground skills within the IL as set of information skills there are a whole series of other skills which are shared to a certain extent by some but not all of the seven stakeholder groups. Returning to Table 5.3 it is evident that parent (4.2.2.2) and student (4.1.2.2) stakeholder groups identify note taking and making sense of information as key information skills with note taking also surfacing from the library (4.4.2.2) and reading skills emerging specifically from the teacher stakeholder group (4.3.3.). Making sense of information for students (4.1.2.2) is connected to reading and note making skills. Citation skills also emerged as a key skill from the library, student and parent feedback. It is important however to emphasise the inter-relatedness of skills so, for example, note taking skills are perceived by students as a dimension of the making sense of information experience. Therefore, it is important to acknowledge that in practice this layering of skills is not always conducive to separating out such skills for individual development. Rather such skills need to be understood as a combined experience. For example, when a student makes notes this involves reading in different ways for different purposes and for some students the process of making notes helps them to make sense of information they are reading for themselves in an ongoing cycle of experiencing information in terms of information retrieval, evaluation and interpretation at the student learning level. In contrast the skills of reading, note making and citation do not surface from the administration, leadership or IT stakeholder group's conceptualisation of IL as a set of information skills. Administration and particularly appear to focus on information skills in terms of a workplace focus with feedback from the IT stakeholder group very much grounded in the web based information and the social human dimension of the information experience.

Information management is a key skill arising from the administration stakeholder group (4.6.2.2) where they are heavily focused on the context as a work place. Information management also surfaces from the student feedback (4.1.2.2) but the focus is different in that for students managing information relates to their conception of IL as a process of using IT tools reflecting students' information experience across different home and school information platforms and their experience of storing, organising and sharing information resources and their learning (4.1.2.1)

5.1.2.5 Understanding information need

The skill of being able to unpack what the actual information need prior to searching for information is a skill parents (4.2.2.2) single out as an important one within the information skill set conception. Students also emphasise this skill within their information skill set conception however it is in the context of the finding information skill and understanding what a question is asking before looking for information (4.1.2.2).

The fact that learning the skill of understanding the information need before embarking on the information quest emerges from feedback in the parent and student stakeholder groups only is interesting. Perhaps for other stakeholder groups this skill is thought to be implicit or self-evident or perhaps covert expectations that such processes ought to occur prevail.

5.1.2.6 Soft skills

The findings from the analysis of perceptions of the IC show that the rapidly growing quantities of information and information communication interfaces is impacting how stakeholders experience information use. Parents, IT, library stakeholder groups identify specific soft skills as part of their information skill set conception. Parents emphasise the need for adaptability, distraction management and creativity. Distraction management skills are understood to be necessary by parents as they perceive their children are constantly being distracted not only by various social media but also by the vast quantities of information links that present themselves during the information search process. The library stakeholder group focus on coping skills and the ability to be open minded in a dynamic tech rich information environment. Creativity also surfaces as a key skill from the feedback from the parent (4.2.2.2) and IT (4.5.2.2) stakeholder groups with the IT group also including innovative skills which are believed to be necessary to ensure children are not only consumers of information but are creative and can contribute to the IC.

These soft skills are also connected to the conceptions of IL as a context and cognitive agility that surfaces from the administration and leadership stakeholder groups which are compared in Section 5.3.3.

5.1.2.7 Sifting and sorting information and Information synthesis skills

In addition to the aforementioned skills the skills of sifting and sorting information library (4.4.2.2), parents (4.2.2.2), and information synthesis (IT 4.5.2.2) emerge from the library, parent and IT stakeholder groups. It is possible to infer that the skill of sifting and sorting is connected to information retrieval, evaluation and making sense of information. Information synthesis emerges as part of the set of information skills description used by the IT group (4.5.2.2) and is spoken about in connection with information seeking, evaluating and communication skills.

5.1.2.8. Summary of comparative analysis of IL as a set of information skills

The comparative analysis of the variation in the conception of IL as a set of information skills reveals that there is some common ground thinking in regard to information retrieval communication and evaluation across stakeholder groups albeit that the focus in terms of applying such skills can be on work or school place and or home. The administration group particularly focus more on IL as a set of information skills that have application both internally on a local school level in regard to disseminating different kinds of information such as assessment or curriculum related information and externally on a more global level in regard to marketing the school. The comparative analysis of information skill set conception also indicates variation in the language used to describe different skills as evidenced in for example information retrieval skills language and emphasis.

Conceptualising IL as a set of information skills is a commonly held conception and it is important to reiterate that the skills presented are not conceived as some linear set of skills but rather this set of skills is understood as relational. Stakeholder groups with the exception of students perceive the ability to learn and know how to apply these information skills is relevant to all stakeholder groups and not just to students. The student stakeholder group see these skills as relevant to other students and to themselves. The implications and significance of conceptualising IL as a set of information skills will be examined in detail in Chapter 6 but first it is necessary to continue the comparative analysis of the remaining conceptions of IL where is a degree of common ground before finally considering the five stand- alone conceptions surfacing form individual stakeholder groups.

5.1.3 A degree of common ground in conceptions of IL

Whilst the conception of IL as a set of information skills and as a process of using IT tools are commonly held across all stakeholder groups there are also conceptions which certain groups share to a certain degree which are not shared across all seven stakeholder groups, some of which are to varying degrees similar to other discrete conceptions of IL. This section will present an analysis of the common ground being primarily focused on the following discrete conceptions of IL and will identify the connection to other conceptions IL where relevant:

- IL is critical thinking about information (**LB**) (*P & IT);*
- IL is critical inquiry for action embedded in the curriculum (**LE**);
- IL is understanding the nature of information (**T**) (*S/P/LB/IT/LE*);
- IL is information context agility (**ADM**) IL is cognitive agility (LE) (P & LB);
- IL is a way of of learning that is context sensitive (**P & LB**) (T*/IT/LE*).

Drawing from this degree of common ground of IL conceptions it is possible to compare the conceptions of critical thinking and critical inquiry that surface from the library and leadership stakeholder groups but which also have resonance in other conceptions of IL arising in the parent and IT stakeholder groups. Similarly, the conceptions of context agility and cognitive agility arising from the administration and leadership stakeholder groups have resonance with the conception of IL as a set of information skills including soft skills which surfaced from the library, parent and IT stakeholder groups. The cluster of conceptions capturing the context sensitive conceptualisation of IL in tandem with other elements such as it being cross curricular (LB/IT/LE/ADM) involving situated practice (LB/ADM/LE), demonstrate the extent of common ground notwithstanding the variation inherent in the conceptions from each stakeholder group. Finally, the conception of IL as understanding the nature of information emerging from the teacher stakeholder group is similar to the conception of IL as critical thinking arising from the library stakeholder group.

5.1.3.1 IL is critical thinking & IL is critical Inquiry for action

The conceptions of IL as critical thinking and critical inquiry for action combine to reflect another dimension of variation in how IL is conceptualised in the PS context particularly in regard to student IL. The emphasis now moves towards higher order cognitive skills originating in pedagogical frameworks. The concept of critical thinking is used by the library stakeholder group and is connected to pedagogical thinking about the nature of learning. The concept is tied to the skills, knowledge, understanding and dispositions framework utilised by the librarian in conjunction with

the AASL (2007) to create and implement an IL curriculum. In practice critical thinking manifests itself in requiring students to continually ask questions about the information they encounter such as where does the information come from? What was it written for, who it was written by so there is always this spontaneous critical approach to information. (4.4.2.3). Similarly, leaderships' conception of IL as critical inquiry for action (4.7.2.3) represents a pedagogical framework for learning that has been identified in the PS strategic plan as the educational ethos underlying the school's learning philosophy. The emphasis here is placed on critical inquiry not just to understand information and make connections across subject areas but also to be able to use this form of critical inquiry within the information and learning experience to inform action around the topics, issues, concepts being studied. The language used in regard to these two conceptions of IL is more formal, reflecting educational philosophy. However, by couching the conceptualisation of IL within this terminology and pedagogy it is possible to conceptualise IL not as an additional curriculum but as a central dimension of curriculum.

Furthermore, the conception of IL as critical inquiry for action suggests a more social impact model (Bruce, Edward Lupton 2006) of IL incorporating the idea that the outcome of the critical use and thinking and inquiry based learning in the IC should enable the development of knowledge but also be a grounding to inform action as relevant.

5.1.3.2 IL is understanding the nature of information

The conception of IL as understanding the nature of information which surfaced from the teacher stakeholder group (4.3.2.4) is similar to the conceptions held by the library stakeholder group that IL is critical thinking (4.4.2.3) and the leadership's conception of IL as critical inquiry for action (4.7.2.3). There is a degree of similarity between these conceptions and the conception of IL as a set of information skills arising from the student (4.1.2.2), parent (4.2.2.2) and IT stakeholder groups (4.5.2.2) and the conception of IL as a way of learning that is context sensitive which also emerges from the parent stakeholder group (4.2.2.4).

From the teacher perspective their emphasis on IL as understanding the nature of information particularly originates in concerns held about the potential for unreliable or vast quantities of information available on the web (4.3.1). It also originates in their perception of students at this age level as having no boundaries when it comes to the online IC (4.3.1). Thus being information literate is about understanding the nature of information. Similarly, the library stakeholder groups' conception of IL as critical thinking connects with this conceptions of IL as understanding of the nature of information (4.4.2.3 & 4.3.2.3). However, the library feedback shows IL is conceptualised as

critical thinking which offers the vehicle by which students can develop a critical knowledge and understanding about information sources both online and contained in diverse media. Both these conceptions in turn are similar to critical inquiry for action conception held by the leadership group (4.7.2.3) except that this conception opens up a further dimension of the conceptualisation of IL including critical thinking, understanding the nature of information and also going beyond to an action or impact model of IL (Bruce, Edwards and Lupton 2006).

The analysis finds there is varying degrees of similarity across the conceptions of IL as understanding the nature of information, critical thinking or critical inquiry for action and that these connections also prevail in the student (4.1.2), parent (4.2.2) and IT (4.5.2) conceptions of IL as a set of information skills. Implicit in the students' information finding, evaluating and sense making skills is the idea of critically thinking and questioning information sources. Equally the information skill set conception arising from the parent stakeholder group including information gathering, evaluation and making sense of information also embraces the critical analysis of information. This also applies to the IT stakeholder group who emphasise the ability to be able to use information for critical thought.

Overall then it can be seen that the conceptualisation of IL as understanding the nature of information is very much continuous with the conceptions of IL as critical thinking, critical inquiry for action and dimensions of the information skill set conception for all stakeholder groups with the exception of the administration stakeholder group. This may be due to their focus on the IC in terms of work place IL as opposed to student IL resulting in the emergence of the conception of IL as context agility, knowing how to adapt, cope, be flexible and to have good people skills (4.6.2.3). It could be argued that this conception does in fact reflect their own critical thinking about the nature of their IC (4.6.2) as a complex context. Whilst this conception of IL derives from within the administration stakeholder group and could be perceived as a more work place connected conception it is important to consider its relevance in terms of a much more holistic conception of IL applicable across stakeholder groups given stakeholders shared perception of the social human dimension of their information context.

5.1.3.3 IL is information context agility and IL as cognitive agility

IL as context agility and IL as cognitive agility are discrete conceptions of IL emerging from the administration (4.6.2.3) and leadership (4.7.2.4) stakeholder groups. This concept of agility captures the idea of the need for people to be agile in their ways of working and learning with information whatever, whomever, wherever, whenever the source of that information lies or emerges.

Conceptualising IL as context or cognitive agility is a very interesting finding as it encompasses the experiential dimension of IL in a way that thinking about IL only as a set of skills, processes or practices does not. It moves the conceptualisation of IL away from standalone models of IL towards another way of thinking about IL that reflects the social human interactive nature of IL as experienced across the stakeholder groups. There is also a sense of immediacy about agility which reflects the kind of ongoing dynamic decision making processes inherent in information source selection, evaluation and use whether for a work and or learning related task. The agility concept inherent in the conceptions of IL as a context or a cognitive agility can in turn be connected back to the main perceptions of their IC held by stakeholder groups, namely that IC is not necessarily a place with defined boundaries but rather is connected and "never ending", alongside the perception of the social human dimension of the IC. Given these commonly shared perceptions of the IC it is possible to see why stakeholder groups conceptualise that to be information literate requires a context or cognitively agility when approaching information use whether for work or learning or, in the case of parent stakeholders, an information need around understanding their children's learning, progress, school related activities or the school's information resources to support their children's learning.

The soft skills arising in the conception of IL as an information skill set from the parent, library, IT stakeholder groups included adaptability, flexibility, distraction management, creativity innovation and being open minded all of which align with this sense of context or cognitive agility. The difference is when parents, IT and library are referring to these soft skills they do so in the context of the immediate information use experience. This contrasts with the focus of the administration and leadership: whilst also focused on the immediate information use experience and need, for administration the focus is a work place one and for leadership it spans a work place faculty focus alongside a student focus.

The implications and significance of conceptualising IL as a context or a cognitive agility in terms of workplace, pedagogical and wider school community IL training needs will be examined in Chapter 6.

5.1.3.4 IL is a way of learning

The comparative analysis of discrete conceptions of IL reveals the variation in the ways IL is conceptualised across stakeholder groups indicating some shared common threads of thought and meaning but simultaneously characterised by differences in meaning. The parent and library stakeholder groups share a similar conception around IL as a way of learning. This way of learning is context sensitive and in the light of the perceptions of the IC that have emerged in the feedback it is clear that IL is a way of learning will need to reflect this dynamic and connected context. The

conceptions of IL as an IC agility involving situated practice (ADM) and as a situated learning practice (LE) further illuminates the social human and affective dimension of the IC. There is therefore a shared idea around IL as being a context responsive way of learning as opposed to a more static prescriptive skill set conception. Specifically, there is a shared sense that through collaborative learning and working experiences that arise in situated practice that the tacit knowledge or information contained in the context is surfaced and shared creating positive information relationships and outcomes for working and learning. Key examples of this in practice in the PS were shared by the library (4.4.2.4) and administration (4.6.2.3) stakeholder groups indicating very different kinds of scenarios illustrating IL as a situated practice, context sensitive and cross curricular in nature.

It should also be noted that there are times when "in situ" information experiences are not always positive and productive and stakeholders have equally revealed that they encounter negative information use experiences. The causes of this negative experience are diverse but gravitate around a perceived knowing-doing gap in terms of information source selection patterns among students in particular as perceived by teachers and documented in Section 4.3.1/2. This perceived gap by the teacher (4.3.2) and librarian (4.4.2) stakeholder groups manifests itself in the practice whereby students, although they know through experience that using pre-selected information resources is more reliable, tend to prefer to go straight to Google even though they have experienced that online WWW information use can be more time consuming and less reliable. These related conceptions of IL provide a way to extend the ways IL is thought of and potentially taught to learners and will be revisited in Chapter 6 the discussion of findings.

5.1.4 Least degree of common ground and stand-alone conceptions of IL

The comparative analysis has revealed the extent of common ground in terms of how IL is conceptualised across the seven stakeholder groups and to complete the analysis attention is now given to the five remaining conceptions where there is the lowest degree of common ground which include:

I. IL is fair and ethical use of information (**S** – 4.1.2)

II. IL is a participative practice (**S** - 4.1.2)

III. IL is knowing how to stay safe online (**P**- 4.2.2)

IV. IL is content reading to extract relevant information (**T** – 4.3.2)

V. IL in combination with IT literacy skills is a way of learning how to learn (**IT** – 4.5.2).

Each of these conceptions have been explained at the level of the stakeholder group however it is important to consider how these conceptions differ to the other more commonly shared conceptions and to offer insight as to the nature and or potential origins of that difference.

5.1.4.1 IL is fair and ethical use of information

The student stakeholder group conceptualise IL as the fair and ethical use of information (4.1.2.4) being the only stakeholder group from which this conception of IL arose. As they perceive the IC to have a major social human dimension and conceptualise IL as participative practice they are aware that there are many people contributing to the context, themselves included. As such issues of ownership and fair use of information come to the fore of their considerations. At this grade level students encounter challenges to understanding the nature of copyright and at the same time have definite sense of the consequences of plagiarism. The feedback indicates there is a struggle to understand or identify when information found and reworded or reframed in some way actually moves from being owned by the author or source to becoming the student's ideas or intellectual property. Parent and library stakeholder groups include citation skills in their conception of IL as a set of information skills however the context in which they do so is more about knowing how to do citations in practice as opposed to the concept of fair use which students identify in this discrete conception of IL. Whilst the emphasis is different between the groups it is important that these variations be recognised and shared at a multi-stakeholder so as a common ground of understanding that knits together these strands of variation could be achieved. As the web environment appears to be the dominant information source and as students clearly embrace and use it and contribute to it the whole area of what is fair use will become increasingly more relevant to them and as such demands consideration in the creation of a holistic conception of IL to inform IL strategy.

5.1.4.2 IL is a participative practice

Students conceptualise IL as a participative practice which is an active process whereby there is a real sense of agency within the IC and a potential to contribute to its growth. This variation may be related to the method used to enable students to reflect and draw on their information experience in the FGD whereby they were invited to imagine they were coaches to the grade 5 students which is the grade level below them and to draw on their experience as to how and what kinds of skills, abilities or know how they felt would be necessary for these younger students so they could learn in the IC (Chapter 3, Section 3.4.2). The implications inherent in this observation will be further considered in Chapter 6.

5.1.4.3 IL is knowing how to stay safe online

The conception of IL as knowing how to stay safe online is a conception that surfaces only from the parent stakeholder group which reflects their unique situation as parents in terms of trying to protect their children in their online information and communication experiences but at the same time trying to support their children's IL learning in an IC vastly different to their own information experience as children. This conception of IL as knowing how to stay safe online alongside the perceptions that all teachers are IL teachers and the expectation both parents and leadership hold about the merging of library and IT roles into a single team has important implications for the potential development of an IL learning framework that encompasses IL as knowing how to stay safe online. It raises questions around responsibilities especially across home school domains and required carefully articulated learning outcomes that are curriculum embedded and reflect the PS values. These considerations will be discussed further in Chapter 6.

5.1.4.4 IL is content reading to extract relevant information

The library stakeholder conception of IL as a set of skills including includes reading as well as skills such as note taking and citation. However, the librarians' focus on reading is very different to that of the teachers' conception of IL as content reading to extract relevant information. The rationale for assigning this conception as a stand-alone conception is that the feedback from the teacher group which was very much grounded in their experience as subject teachers was particularly focused on the challenges teachers find that their students are encountering when it comes to using non-fiction information resources. This conception is highly specific to classroom information experience but there is value in considering its relevance in terms of other information use contexts such as the library where the librarians offer collaborative project based research IL sessions at different points through the middle school cycle.

It is also important to consider this conception in terms of students' reading experience at home where parents encounter similar challenges which may be further compounded when English may not be the language spoken at home. The library conception of IL as a set of information skills that includes reading is more practical in orientation in the sense that the emphasis is on the ways students can develop their ability to extract information via note taking for example (4.4.2). These strategies are learned in the context of library IL sessions which the librarian reports do not necessarily happen as often as they would like and also it is documented in Section 4.4.2 that it is not feasible to reach all subject areas to teach these strategies. In contrast the teachers' discrete conception of IL as content reading to extract information is a conception that places a focus on this

competency as central to everyday information use for learning at school in the classroom, in the library and at home. Librarians and teachers are both dedicated to the reading experience however there is need to have once again a clearly articulated learning outcome around reading embedded in the curriculum which is in turn utilised by both teachers and librarians so there is consistency in practice and opportunities for consolidation in reading practices in more systematic ways. By sharing the discrete conception that has emerged around reading in this study there is a potential for the development of a holistic conceptualisation of IL a consideration which will be explored more fully in the following chapter.

5.1.4.5 IL in combination with IT literacy skills is a way of learning how to learn

This final stand- alone conception is a wide ranging conception of IL that surfaces from the IT voice (4.5.2.3) This conception is different to the other conceptions of IL as it places the spotlight on IL and IT literacy in a way that the other conceptions do not. The conceptions of IL as a process of using IT tools has a technical skill emphasis and in contrast this IL combination with IT literacy conception is in essence capturing a more holistic way of conceptualising IL and IT literacies. Historically in school contexts it could be argued that the separation of IL and IT literacies has created its own legacy but the reality in practice, based on the findings from stakeholders' perceptions of the IC presented in Chapter 4, shows that this context is a technologically driven one that shapes the information and communication experience enabling continuous local and global connectivity. Equally whilst the IC is technologically driven its dynamic nature is secured by people's engagement with it thereby creating impacting and shaping its evolution and growth.

The perceptions of the IC held by the stakeholder groups in this study indicate that it is perceived as being characterised by environmental, social human and affective dimensions. Accordingly, people are perceived as information resources in terms of being experts, mediators, collaborators or facilitators as they play out their roles as parents, teachers, administrators, librarians, leaders and learners of all ages rendering IL a social human experience. More importantly however the conception is the most emphatic and explicit recognition of the centrality of IL in people's lives not only to student lives but to life indicating IL as a life-long learning process. The conceptions of IL as context and cognitive agility and as a way of learning that is context sensitive confirms the centrality of IL throughout life whether that is a school, home or work related context IL is relevant and necessary.

The conception of IL in combination with IT literacy as a way of learning how to learn also has resonance with several elements of the other discrete conceptions of IL particularly the student

stakeholder group conception of IL as a participative practice. In this sense this conception of IL brings these different elements together taking the meaning further which in turn has significant implications for the conceptualisation of IL at both knowledge and a practice level which will be examined in chapter 6 which follows.

5.2 Patterns of variation in the conceptualisation of IL: Introducing the IL continuums

The variation in the ways IL was conceptualised relates to the application of the conception, the language or pedagogical articulation inherent in the conception and its relationship to perceptions of and mind-set towards the IC as being characterised by environmental, social human and affective dimensions. Looking across the twenty-seven conceptions it is possible to discern variation along a series of three continuums that relate to the individual-collective, affective-cognitive and competency-personal mastery dimensions of IL as illustrated in Figure 5.2.

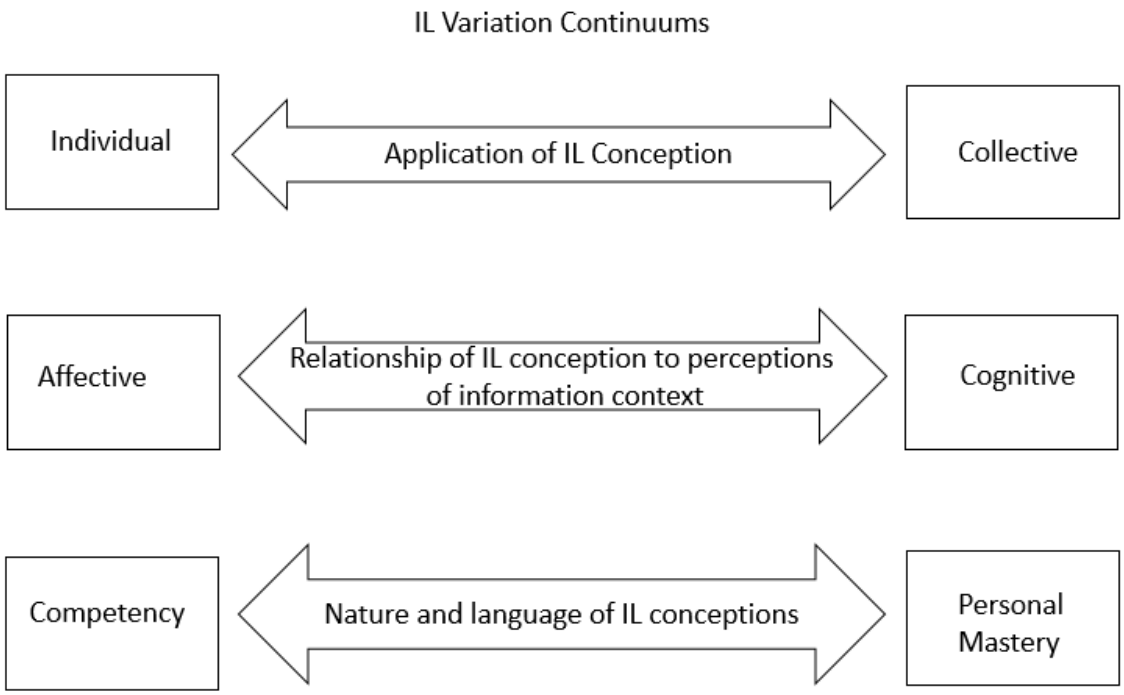

Figure 5.2 IL Variation Continuums

The individual-collective continuum refers to the focus of application of the conception for example a conception may be focused more on the immediate individual information need and experience, on independent learning and on formal pre-selected information pathways offered via the PS Library Moodle platform or school databases and Library print and media resources. Looking further along the continuum the focus of conception may be more at the collective level with an emphasis on collaborative, situated and sometimes more informal information pathways with an emphasis on the

social human dimension and mediated nature of the information experience. The conception of IL as a context or cognitive agility would perhaps be found to lie more at the collective end of this continuum of variation and includes ideas about the nature workplace and home- place IL experiences.

The conception of critical inquiry for action encompasses a focus on the individual learner but also on the global learning community, on sharing information in a way that recognises the interdependence of learners to effect a more internationally connected information and learning experience.

This continuum particularly captures the social human nature of IL in all its diversity. On another level the variation in the conceptualisation of IL from individual to collective could be interpreted from a learning organisation perspective whereby IL would be conceptualised as central to the school in the sense of becoming a school that learns by attending to IL along the individual collective continuum when it comes to developing a strategic focus on the development of IL learning (Senge et al 2000).

The affective-cognitive continuum captures the relationship between conceptions of IL with the perceptions of the IC that manifests in the environmental, social human and affective dimensions. In reality for example this sees the student stakeholder group conceptualising IL as a participative practice because they see themselves as contributors alongside other people to the IC. Thus in practice students see their engagement with the IC as shaping the IC and in turn being shaped by the IC. They report this experience to be potentially frustrating but also enabling as they can initiate and contribute to the IC. Equally the conceptions of IL as understanding the nature of information and as critical thinking about information fall along this continuum. The IC is seen through sceptical lens which requires the ability to critique and evaluate information found impacting the information users experience and the outcome of those experiences. The affective end of the continuum captures the mind-set towards the IC which in turn can be simultaneously both positive and negative as the metaphor of 'the double edged sword' and imagery of 'jewels and garbage' used by the parent and library stakeholder groups respectively. The mind-set towards the IC is a central dimension of understanding the ways IL is conceptualised. As Senge (2006 pp. 8-9) argues:

> "The discipline of working with mental models starts with turning the mirror inward; learning to unearth our internal pictures of the world, to bring them to the surface and hold them rigorously to scrutiny. It also includes the ability to carry on "learningful" conversations that balance inquiry and advocacy where people expose their own thinking effectively and make that thinking open to the influence of others."

In terms of the cognitive end of the continuum there is evidence of the use of more formal language to describe these cognitive aspects such as critical thinking that stems from the pedagogical concept of critical inquiry.

The third and final continuum the competency-personal mastery continuum refers to a focus on the nature and language of IL along the continuum of more classic information skills whereby emphasis is on the development of information skills such as finding, evaluating, organising, making sense of, communicating information and the use of IT tools to support these skills in action. These skills are very much representative of IL frameworks, standards and models which are attributional and measurement oriented. The conception of IL as a process of using IT tools and as a set of information skills clearly fit at the competency end of this continuum whereby a person's IL competence can be measured against sets of standards or the ability to apply a model such as the Big6™ (Eisenberg and Berkowitz 1990) or Big Blue (Markless and Streatfield 2007) to the completion of a research project or task. The ISTE standards, the AASL Standards for 21st Learner and the UNESCO Media Information Literacy (MIL) competency matrix are examples of this emphasis of the development and measurement of IL competency and personal mastery based on an ethos of progressive and lifelong IL learning (International Society for Technology Education 2008; American Association of School Librarians 2007; United Nations Educational, Scientific and Cultural Organisation 2013).

Moving along this continuum to personal mastery the focus shifts towards encompassing ideas of IL around people becoming knowledge creators contributing the IC as opposed to information gatherers or consumers. The concept of personal mastery as developed by Senge is about a continual process and a life-long discipline or to quote Senge (2006 p. 132.) directly:

> "Sometimes language such as the term personal mastery creates a misleading sense of definiteness, of black and white. But personal mastery is not something you possess. It is a process. It is a lifelong discipline."

It is in this sense of the concept of IL as a life- long learning endeavour as opposed to competence that the term personal mastery is invoked in this continuum. The conception of IL as a participative practice would sit more towards this end of the competency personal mastery continuum. At the competency end of the continuum the language used to describe these information skills may at times tend to be more prescriptive, procedural that frame IL as a more linear step stage or sequential experience whereas the language used around mastery of skills and know how may lean towards empowerment and learner autonomy. Language is a most powerful conveyor of meaning and the feedback from this study confirms that the language used to communicate conceptions of IL differs

across stakeholder groups which presents a situation requiring careful consideration when pursuing the design development and implementation of IL strategy.

All the conceptions of IL arising from this study express elements of the characteristics of these three continuums to one degree or another. Approached collectively these three continuums of variation in the conceptualisation of IL provide a holistic way of conceptualising IL without comprising the variation inherent in the ways IL is conceptualised across a school community. The terms used in the creation of the continuums are derived from both the management, education and library information sciences reflecting the researchers' interpretation of the feedback, subject knowledge development, professional knowledge and practice.

5.3 Summary of findings from the comparative analysis of conceptions of IL

The principal findings from the comparative analysis show:

1. Extensive variation in the conceptualisation of IL both at the stakeholder group level and across the seven stakeholder groups suggesting there is no collective awareness of a singular formal centralised conception of IL emanating from the feedback in the PS context. The diversity of and within conceptions may originate in the ways that stakeholder groups perceive their IC based on their role and expectations in that context.

2. That there is common ground in the conceptions of IL as a process of using IT tools and as a set of information skills that is shared across all seven stakeholder groups albeit that there is variation present in the meanings, language and applications of these two conceptions.

3. There is a significant degree of common ground at the parent and library stakeholder levels that IL is a way of learning that is context sensitive and cross curricular.

4. There is a degree of common ground at the teacher, library and leadership stakeholder group levels around the conceptions of IL as understanding the nature of information (teachers), IL as critical thinking (library) and IL as critical inquiry for action (leadership).

5. There is a degree of common ground at the administration, leadership stakeholder group levels around the conceptions of IL as context agility and cognitive agility and that these two conceptions in turn connect with the soft skills dimension of IL as a set of information skills surfacing from the parent, library and IT stakeholder groups.

6. There are conceptions of IL which prevail as stand-alone conceptions of IL specific to individual stakeholder groups including IL as a participative practice, as fair and ethical use of

information which, that surface from the student stakeholder group, IL as content reading to extract information arising from the teacher stakeholder group, IL as knowing how to stay safe online from the parent group and finally the conception of IL in combination with IT literacy as way of learning how to learn.

7. The conceptualisation of IL that surfaces is inclusive in nature in so far as these conceptions are applicable in practice to one degree or another to the seven stakeholder groups. It is clear that the parent stakeholder group for example believe that the conceptions of IL they articulate in terms of their children's IL learning needs are equally relevant to them and to teachers. Furthermore, the administration group identify that the information skills and practices they conceptualise as IL are relevant and necessary for the staff and faculty to develop in terms of workplace IL. Moreover, teachers themselves perceive their roles as becoming more librarian like. The expectation that every teacher is an IL teacher emerging from the library feedback and the merging of library and IT roles identified by the leadership stakeholder group further reinforces this idea of IL being conceptualised as an inclusive phenomenon within the PS.

8. That the patterns of variation in the ways IL is conceptualised can be understood through the three IL continuums including the individual-collective, affective- cognitive and competency mastery continuums providing a holistic way of understanding the nature of variation in the conceptualisation of IL.

5.4 Conclusion

The comparative analysis of conceptions of IL clearly point to variation in the ways IL is conceptualised identifying a range of common to uncommon ground. This variation in turn suggests the IL is a socio-contextual and cognitive phenomenon that manifests itself in both positive and negative information experiences which mirrors the inherent complexity of the dynamic, connected and social human IC. The question arises however as to what extent are the findings from this study similar or different to previous phenomenographic studies of IL and what is their significance in terms of contributing to the consolidation or extension of IL knowledge and practice? The following Discussion of Findings chapter will address these questions connecting back to the literature review and to the findings arising from this study identifying its strengths and limitations before considering the implications of these insights for the development of professional practice.

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CHAPTER 6 Discussion of Findings

Introduction

The purpose of this chapter is to discuss the emergent findings and their contributions to, and implications for, a deeper understanding of the research problem which as discussed in Chapter 1 centres on the dilemma faced by stakeholders concerned to develop IL against a backdrop of a lack of shared understanding of IL. (Bønløkke, Kobow and Kristensen 2015; Cope and Sanabria 2014; Andretta, Pope and Walton 2008; Williams and Wavell 2006; Levy and Roberts 2005; Henri and Asselin 2005; Henri, Oberg and Hay 2002). Specifically, this chapter will:

- Consider the significance of the variation of conceptions in terms of the extent to which the findings confirm, enrich or extend the existing IL knowledge base when compared to the literature (Section 6.1);
- Explore the potential contribution the insights from this study offer to inform and enhance professional practice on three levels to include the immediate impact at the PS level, secondly, the impact on the researchers' professional practice and learning points from this experience for other professionals and thirdly, the early indications for potential impact on professional practice in diverse national and international education and work place contexts (Section 6.2);
- Consider how the comparative analysis of variation undertaken in this study through the adaptation of the phenomenographic approach may potentially influence future multiple stakeholder studies of IL in diverse contexts (Section 6.3).

6.1 The IL common ground comparative

In comparing the conceptions of IL arising from this study to the conceptions of IL that have populated the IL literature in recent decades it is evident that the two common ground conceptions of IL as a process of using IT tools and as a set of information skills form part of the narrative of IL in the PS context across all stakeholder groups and are consistent with conceptions of IL arising in other studies (Yates, Partridge and Bruce 2012; Gross and Latham 2011; Bruce 2008; Edwards and Bruce 2002; Bruce 1997a and b; Williams and Wavell 2007; Williams 2006; Williams and Wavell 2006a and b; Williams 2005; Boon, Johnston and Webber 2007; Limberg 1999). The presence of these two conceptions of IL in an international education setting suggests that these conceptions of IL have become somewhat fossilised in the ways IL is thought and spoken about by differing stakeholder groups in different contexts over time. In practice these two conceptions exert a powerful influence on the instructional strategies and learning objectives in regard to both education and to some extent work place conceptions of IL.

The implications of the persistence of these two conceptions of IL from Bruce's (1997b) phenomenographic study of conceptions of IL to the more recent studies (Gross and Latham 2011; Probert 2009; Williams and Wavell 2007 and Boon, Johnston and Webber 2007), for the development of IL learning strategy are significant because the ways IL is conceptualised potentially informs and is informed by IL frameworks, models and standards and therefore ultimately impact student IL learning (Folk 2016, Whitworth 2014). It is timely therefore to consider the relevance of both these conceptions of IL for the development of IL teaching and learning, particularly the degree to which they are fully sensitive to the nature of the dynamic IC and their level of transferability across different levels of education, work place and life related information needs and experiences.

In this regard Bruce (2008 p. 5) identifies the limitations of seeing IL as the acquisition of a set of information technology, library and information skills noting that:

> "...confining information literacy to such skills denies learners the rich potential that may be gained from broader attention to the different ways of experiencing information use in the disciplines, professions and community".

More recently as discussed in Chapter 2 Section 2.5.1 IL as a metaliteracy has emerged as a way of conceptualising IL which reinforces Bruce's (2008) argument for the need to expand our ways of understanding IL to reflect the changing IC. In a social media based information environment Mackey and Jacobson (2014 p. 23) argue that:

> "Metaliteracy expands the scope of how to use these spaces as individuals and requires a critical perspective that reflects on the networked environment itself and how knowledge is produced and shared".

In her review of Mackey and Jacobson's book Saunders (2014) notes how the concept of IL as metaliteracy as proposed by Mackey and Jacobson attends to this need to extend the focus of IL away from the individual level as a set of information skills, processes and tasks to be undertaken independently to conceptualising IL in a way that reflects participatory, collaborative and collective information experiences.

The conceptions of IL as a participatory practice (S) and as the fair and ethical use of information(S) alongside the conceptions of IL as a way of learning (P and LB), as understanding the nature of information (T), and in combination with IT literacy, as a way of learning how to learn (IT) are similar to this metaliteracy conception of IL. The metaliteracy conception focuses on metacognition and Mackey and Jacobson (2014 p. 10) argue that such:

> "...an approach to IL prepares learners to gain new insights about their own learning and shifts the focus from skill development to knowledge acquisition through deep reflection on the learning process itself".

Moreover, the conceptions arising from this study of IL as a way of learning (P and LB) and in combination with IT literacy as a way of learning how to learn (IT) arising in this middle school project context are continuous with this stream of thinking about IL as a metaliteracy. Equally Bruce Edward and Lupton's (2006 p. 4) learning to learn frame for ILE is somewhat similar to the conception of IL as metaliteracy whereby:

> "Users of the learning-to-learn frame usually adopt a constructivist orientation.... They are also interested in what will help learners construct knowledge appropriately, and develop learning processes that foster the development of professional thinking patterns".

Whereas the focus of the conceptions of IL in this study are more towards the K-12 as opposed to the professional context it is interesting to see there is alignment across conceptions of IL between a middle school K-12 setting and third level education setting. This implies there is value to open up the dialogue across K-16 professional stakeholder groups so as to connect this thinking to inform the development of progressive aligned IL learning strategy that places a focus on the transferability of IL across these educational contexts.

The experience of the relationship between IL and learning receives critical focus by Bruce (2008) in her conceptualisation of IL as 'Informed Learning'. Bruce (2008 pp. 64-65) highlights Lupton's work in regard to the relationship between students' experience of IL and of learning which Lupton identifies as being experienced as sequential, cyclic or simultaneous. Similarly, in this study when presenting the categories of description of IL arising from each stakeholder group these were represented in a circular format as this was felt to better represent the interconnected nature of conceptions of IL. Stakeholder groups were found to hold varying conceptions of IL and for example the conception of IL as a set of information skills was very much understood as skills that did not manifest as linear but more interwoven and recursive. A good example of this pattern of thinking appears in the parents' conception of IL as a set of information skills in Chapter 4 Section 4.2.2.2.

Whilst not a study of conceptions of IL Gordon (1999), as discussed in Chapter 2 Section 2.4.3 identifies study skills and learning to learn as one category of information skills that form an integrated library/information technology programme in the International school context. In regard to primary school context it would appear that this type of conception is not as explicit in the literature as reported in Chapter 2 Section 2.4.3 where the emphasis would appear to rest more on information and library skills (Streatfield et al. 2011; Markless and Streatfield 2007; Moore 2000; Moore 1999).

Thus with the exception of primary school level of education it appears that the findings from this study in regard to the two common ground conceptions confirm a pattern of thinking around IL as a

metacognitive practice similar to elements of metaliteracy as proposed by Mackey and Jacobson (2010). In her review of Mackey's and Jacobson's book concerning metaliteracy Saunders (2014 p. 234) highlights the four outcomes of metaliteracy as presented in Table 6.1 and by bringing into focus insights from the area of educational leadership specifically the work of Wagner (2014) it is possible to see there is a strong sense of alignment between many of the conceptions of IL arising from this study, with UNESCO's MIL competency framework strands (United Nations Educational Scientific and Cultural Organisation 2013), and Wagner's (2014) Seven survival skills of the 21st Century.

Table 6.1 Summary Overview of IL – Wide Angle Lens

UNESCO MIL Competency Framework 2013	Mackey and Jacobson 2014 Metaliteracy Four Outcomes:	Wagner 2015 The 7 Survival Skills of the 21st Century	Cunningham 2016 Conceptions of IL International Middle School Community
Information access using appropriate technologies Information Evaluation	Evaluate content critically, including dynamic, online content that changes and evolves, such as article preprints, blogs, and wikis	Accessing and Analysing Information Critical thinking and problem solving Effective oral and written communication Curiosity & Imagination	IL as a set of information skills IL is a process of using IT tools IL is critical thinking about information IL as understanding the nature of information IL is content reading to extract relevant information
	Understand personal privacy, information ethics, and intellectual property issues in changing technology environments		IL as the fair and ethical use of information IL is knowing how to stay safe online
Information Creation Communication Participation	Share information and collaborate in a variety of participatory environments	Collaboration Across Networks & Leading by Influence Agility and Adaptability	IL is a participative practice IL is a situated learning practice IL is context agility IL is cognitive agility
	Demonstrate ability to connect learning and research strategies with lifelong learning processes and personal, academic, and professional goals.	Initiative and entrepreneurialism	IL in combination with IT literacy is a way of learning how to learn IL is a way of learning IL is critical inquiry for action embedded in the curriculum

Of particular significance is the similar focus of the 21st Century survival skills concerning adaptability and agility which Wagner (2014; 2008) identifies and which similarly have surfaced from this study of conceptions of IL in a middle school context. The conceptions of IL as an information context agility

and as a cognitive agility and the soft skills of adaptability and coping that arise in IL as a set of information skills are connected to stakeholder groups' perceptions of the IC and particularly adult stakeholder groups.

In contrast the student stakeholder group did not hold such 'agility' ideas around IL which is interesting of itself they instead place an emphasis on IL as a participative practice. Whilst the UNESCO MIL competency framework strands also have a focus on information access, using appropriate technologies and information evaluation which would embrace the conceptions of IL as a set of information skills and as a process of using IT tools in addition to information creation, communication and participation there is not a similar strand focusing on agility as such (United Nations Educational Scientific and Cultural Organisation 2013).

The rationale behind introducing Wagner's (2014) seven survival skills for the 21st century is to demonstrate the common ground understanding of the centrality of such skills for 21st century learning despite the fact that the narrative does not originate from the IL field.

The conceptions of IL as cognitive agility (ADM) and information context agility (LE) therefore have validity across different disciplines extending and enriching the ways of thinking about IL. These conceptions of IL demand new ways of approaching the development of IL learning strategy that ultimately is more responsive and relevant to the changing IC and reflective of multiple stakeholder group's perspectives of IL in the 21st Century.

Initiative and entrepreneurialism represent one of Wagner's (2014) seven survival skills and it is interesting to note that innovation and creativity do arise as forming the soft skills element of the conception IL as a set of information skills and in the context of the conception of IL in combination with IT as a way of learning how to learn whereby the IT stakeholder group spoke about a unit they cover as part of IT literacy curriculum called 'Start your own business' (discussed in Chapter 4 Section 4.5.2.3). So whilst Wagner (2014) identifies the seven survival skills as key to learning it is equally important to see those skills in terms of their transferability to other contexts and experiences throughout life just as is the case with conceptions of IL. There is a definite rationale upon which to embrace the conceptions of IL arising from the feedback in this study as a basis for multi stakeholder dialogue to inform the development of IL teaching and learning strategy that recognises the need for IL to equip learners with ways of learning that are transferable and that value both personal and shared knowledge and understanding of the IC and its environmental, social human and affective dimensions.

It is also possible to see that Mackey's and Jacobson's (2014; 2010) four outcomes of metaliteracy share a level of common ground thinking with UNESCO MIL competency strands, Wagner's survival skills (2014; 2008) and the series of conceptions of IL that arise in this study (United Nations Educational Scientific and Cultural Organisation 2013). Specifically, the focus on critical thinking, collaboration, communication and participation are present across these sets of perspectives. Accordingly, these conceptions of IL arising from this study would appear to be similar in ways to the conception of IL as metaliteracy as articulated in the ACRL IL framework which was created to inform tertiary level education more particularly but would seem also to have resonance in a middle school K-12 context suggesting the potential for alignment across k-16 contexts in regard to IL learning (Association of College and Research Libraries 2016).

In contrast, the conception of IL as knowing how to stay safe online arising from the parent stakeholder group does not seem to appear in the various findings from previous studies of IL. This maybe because this is a particular concern for parents of middle school age children who as discussed in Chapter 4 Section 4.2.1.3, find themselves caught up in the protection vs potential dilemma arising in the connected information and communication context. The findings from Leung and Lee's (2012) study examining "how demographics, addiction symptoms, information literacy, parenting styles and internet activities can predict 'internet risks' involving 718 adolescents and teenagers, aged 9–19 in Hong Kong are particularly relevant in this regard. The study found:

> "...that adolescents who are often targets of harassment tend to be older boys with a high family income. They are targets probably because they spend a lot of time on social networking sites (SNSs) and prefer the online setting. Adolescents who encounter a lot of unwelcome solicitation of personal or private information online tend to be older girls. In information literacy, they are generally very competent with publishing tools but are not structurally literate, especially in understanding how information is socially situated and produced" (Leung and Lee 2012 p. 1).

Understanding how information is socially situated and produced is also reflected in the teacher stakeholder groups' conception of IL as understanding the nature of information, the leaderships' conception of IL as a situated learning practice and the library personnel and parent conceptions of IL as a way of learning that is context sensitive arising in this study.

This challenge regarding getting the balance right between protecting young people from risk and allowing them to benefit from the diverse learning, information and participatory dimensions of the WWW and social media is equally of central concern at global policy level (O'Neill 2012). The EU Kids Online, survey which as described by O'Neill (2012 p. 1) "is a pan-European survey of children's use of the internet and provides the first fully comparable data on issues of risk and safety gathered directly from children themselves in 25 European countries". In concluding his review of the study

O'Neill (2012) identifies the number one key recommendation in regard to children's engagement in the online context as requiring:

> "...a focus on empowerment rather than restriction of children's usage, emphasising responsible behaviour and digital citizenship, treating children as a competent, participatory group encouraging self-governing behaviour. Children, young people and their parents, in other words, should not always be seen as the target of awareness-raising but also as active agents with a central role in promoting and supporting safer internet practices (O'Neill 2012 p. 8).

The findings from this study indicate that young middle school students do feel empowered and as active agents in the IC whereby they conceptualise IL as a participative practice and as the fair and ethical use of information, whilst the parent stakeholder group are the only group to hold a conception of IL as knowing how to stay safe online. The need for a shared conceptual understanding of IL that is inclusive of the aforementioned student and parent conceptions of IL is deserving of immediate prioritisation in the development of a future focused IL teaching and learning strategy.

Staying with a focus on IL as a participative practice this conception serves to enhance and extend our ways of understanding IL. This conception mirrors the students' perception of the IC as something they themselves can co-create and have authorship and voice. Considered in combination with teachers' conception of IL as understanding the nature of information, and the library and leadership conceptions of critical thinking about information and critical inquiry for action, these cluster of conceptions of IL provoke a way of understanding IL that is somewhat reflected in Whitworth's (2006) conception of radical IL. Whitworth argues that:

> "Producing information turns the student from a mere listener to a communicative actor... The creation and shaping of information is central to the new information economy, yet poor practice in information production just adds to the glut..." (2006 p. 9).

Indeed, the feedback from library personnel refers directly to this "glut" of information (Chapter 4 Section 4.4.1.1) as hugely problematic for young students when searching for information although students see themselves as information producers in the online information environment embracing all the implications of this as reflected in their conceptions of IL as fair and ethical use if information. In the context of this 'glut' of information the teachers' conception of IL as understanding the nature of information is particularly relevant as it embraces the need to understand the complexity of the IC. When considered in connection with the perceptions of information overload and the related stress of this never ending growth in information it is vital to embrace the affective dimension of the way information is not only produced but also experienced in mediated ways as reported in this study and studies examining IL behaviour (Beheshti et al. 2015; Bawden and Robinson 2009; Kuhlthau, Heinstrøm and Todd 2008; Limberg 1999; Kuhlthau 1991).

In terms of the future advancement of IL the conceptions of IL as critical inquiry for action embedded in the curriculum and IL as a set of information skills that are cross curricular demand an extension of thought processes by practitioners as to the question of accountability, responsibility and assessment in regard to IL learning. Considered in conjunction with the perceptions of the merging of teacher, parent, librarian and IT roles in response to the evolution of the dynamic IC as discussed in Chapters 4 and 5 there is an urgent need to proactively address this dilemma around accountability for IL. Based on the understandings gained through this research and the researcher's practical experience in the field of education it is suggested that the platform for such policy development is necessarily at the strategic planning level to ensure a clearly articulated curriculum strategy for IL teaching and learning that is curriculum embedded and supported through a carefully planned cooperative approach based on a shared IL vision and IL language. A shared IL vision and language is central to effective community wide IL learning as previous studies of IL have identified the negative impact of a lack of shared language on student learning (Cope and Sanabria 2014, Bønløkke, Kobow and Kristensen 2015; Virkus 2013; Hayden 2010; Andretta, Pope and Walton 2008; Williams and Wavell 2007; Nichols, Spang and Padron 2005).

Anchoring the development of IL teaching and learning strategy in the schools' mission, vision and values connects IL to the philosophical foundation for learning that is sensitive to the evolving IC. Anchoring IL in the curriculum connects IL to the pedagogical foundations of teaching and curriculum providing the common language around learning objectives and outcomes and an infrastructure for the assessment of IL. The realisation of the strategy in turn rests on a collective ownership through a planned and distributed responsibility across stakeholders in the school community. This study's findings therefore serve to further affirm Bønløkke, Kobow and Kristensen's (2015 p. 2) perspective based on their research on IL that "that IL is not a one man show".

On another level when considering the conceptions of IL as critical inquiry for action embedded in the curriculum in the context of international schools where there is an ever growing international community of learners to connect with through online networks and social media it is clear that such connected learning is particularly aligned with the ideological underpinnings of diverse curricula arising from within international education as discussed in Chapter 2. For example, the IBO vision as discussed in Chapter 2 Section 2.3 is:

> "…to develop inquiring knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect…" (International Baccalaureate Organisation 2014).

To achieve their vision, the IBO have developed their Approaches to Teaching and Learning (ATL) which they describe as "...deliberate strategies, skills and attitudes that permeate the IB teaching and

learning environment" (International Baccalaureate Organisation 2014b). The IBO approaches to learning skills are identified by the IBO as a series of skills including:

1. Thinking skills
2. Communication skills
3. Social skills
4. Self- management skills and
5. Research skills.

It is clear that the language in which ATL skills are couched is reflected in the narrative around the ways IL is conceptualised in the findings in this study particularly thinking, communication and research skills. The IBO's ATL frame is a very powerful starting point for the development of IL learning in schools offering the whole IB programme or part of it such as the Primary Year Programme (PYP) Middle Years Programme (MYP) or IB Diploma Programme (DP) as it offers an infrastructure upon which the variation in ways IL is conceptualised can be further developed through a dialogue process with relevant stakeholder groups (International Baccalaureate Organisation 2014bb; 2015). Indeed, this is also the case in respect of other curricula including the International Primary Curriculum (Fieldwork Education 2016) alongside multiple national state curricula more globally.

That said it is clear that the findings as to conceptions of IL as discussed in Chapter 5 Section 5.3 confirm the ongoing presence of variation in the ways IL is conceptualised and spoken about and the lack of a singular unifying conception of IL across stakeholder groups and a presence of varying levels of common ground conceptions of IL. Whilst this variation enriches and extends our understanding of IL there remains the task to involve all stakeholder groups to personally identifying and calibrating their own conceptions of IL before sharing this understanding to build a collective shared vision and praxis for IL learning. The ultimate risk of failing to engage in such contemplation and refection to inform action is to deny learners their basic human right to become information literate so they can be best prepared for their present and future experience and roles in their educational, economic and citizenship roles and for positive contribution and engagement in the IC.

Comparing the conceptions of IL arising from this study to the literature on work place IL it is clear that the leaderships' conceptions of IL as a situated learning practice and the administrations' conception of IL as information context agility has resonance with conceptions arising in workplace studies of IL (Lundh, Limberg and Lloyd 2013; Toledano O'Farrill 2010; Toledano O'Farrill 2008; Lloyd 2010; Lloyd 2005; Bruce 2008, Bruce 1999). In Chapter 4 Section 2.4.4 O'Farrills' (2010) findings about conceptions of information use in the workplace indicate the importance of the social human

nature of information pointing to people as sources of information in an organisational context. O'Farrills' (2010) findings therefore highlight the context specific nature of IL and information behaviour.

What is different in this study's findings regarding IL as a situated learning practice (LE) and as a way of learning that is context sensitive (LB and P) and as information context agility (ADM) is that these conceptions, whilst equally placing the focus on IL as a mediated and social human experience surfaces in a school place context that straddles work place experience. There are evidently key insights gained by this study from looking across the boundaries of IL conception studies to grow an interdisciplinary awareness of conceptions of IL to inform IL teaching and learning. Workplace conceptions of IL are apparently equally relevant to school place IL and by extending our ways of understanding IL across different contexts and within contexts it is possible to better understand how best to craft k-20 IL teaching and learning strategy. Moreover, Lloyd's (2010) work on IL in different landscapes as discussed in Chapter 4 Section 4.6.4 conceptualises IL as a socio cultural practice, that is both situational and transformative similar to the conceptions of IL as a situated learning practice, as information context agility and as a way of learning that is context sensitive arising in this study.

Whilst the findings from this study confirm the presence of similar conceptions of IL as those that arise in the workplace this study's findings connect to how multiple stakeholder groups actually perceive their IC thereby enhancing the IL knowledge base because it enables us to better understand the perceptual mindscape towards the IC that informs conceptions of IL. This additional insight has served to enrich our ways of understanding of IL from a contextual perspective.

A final key area for comparison of this study's findings with the literature on IL centres on understanding the nature of the variation prevalent in conceptions of IL. According to Bruce Edwards and Lupton (2006) people see IL differently and to capture this variation in approaches to teaching and learning they developed the six frames of ILE which have been referred in Chapters 2, 4 and 5 and in this Chapter when comparing the findings of conceptions of IL. The six frames of IL include the

(1) The Content Frame
(2) The Competency Frame
(3) The Learning to Learn Frame
(4) The Personal Relevance Frame
(5) The Social Impact Frame and
(6) The Relational Frame.

Whitworth (2014) in his more recent publication recommends the need to add the philosophy and practice frames to this list to fully capture the evolution of thinking around IL. Comparing these ways of seeing teaching and learning of IL to the ways IL is conceptualised across stakeholder groups including young middle school students, parents, teachers, library and IT personnel, administration and leadership it is clear that certain conceptions of IL surfacing from this study are similar to elements of thinking in all eight frames. For example, the learning to learn frame has already been discussed in the previous section as being similar to the conceptions of IL as a way of learning or in combination with IT literacy as a way of learning how to learn. Moreover, as has been discussed in Chapter 4 Section 4.7.3 the conception of IL as critical inquiry for action embedded in the curriculum has some similarity to the social impact frame of ILE. The entire constellation of conceptions of IL from this study share elements of the ideas contained in some or all of these frames for ILE to a certain degree. Whitworth's practice frame would also be similar to the conception of IL as a participative practice (S) and as a situated learning practice (LE).

This study however has found variation in the ways IL is conceptualised to prevail across a series of three continuums as explained in Chapter 5 Section 5.2 enhancing and extending our ways to understand IL from multiple stakeholder group perspectives. The continuums including the individual-collective, affective-cognitive and competency-personal mastery offer a way of understanding variation in a more fluid way reflecting that IL involves learning and learning is experienced across these dimensions. Moreover, the continuums are connected to and reflect the perceptions held by stakeholders of their IC having environmental, social human and affective dimensions providing a contextual sensitivity to the ways IL is conceptualised. The culmination of findings regarding perceptions of the IC and their connection to conceptions of IL alongside the continuums connect to offer a more holistic way of approaching the ways we understand IL as captured in Figure 6.1.

The implications for practice of this way of understanding IL is that it enables practitioners for the first time to unpack the layers of ideas that proliferate across multiple stakeholder groups that represent a diversity of cultures, ages, disciplines, roles and expectations around IL. The process of including participants from educational, managerial and administrative positions together with young middle school children, parents, IT and library personnel has delivered a richness of understanding and fresh insights into conceptions of IL.

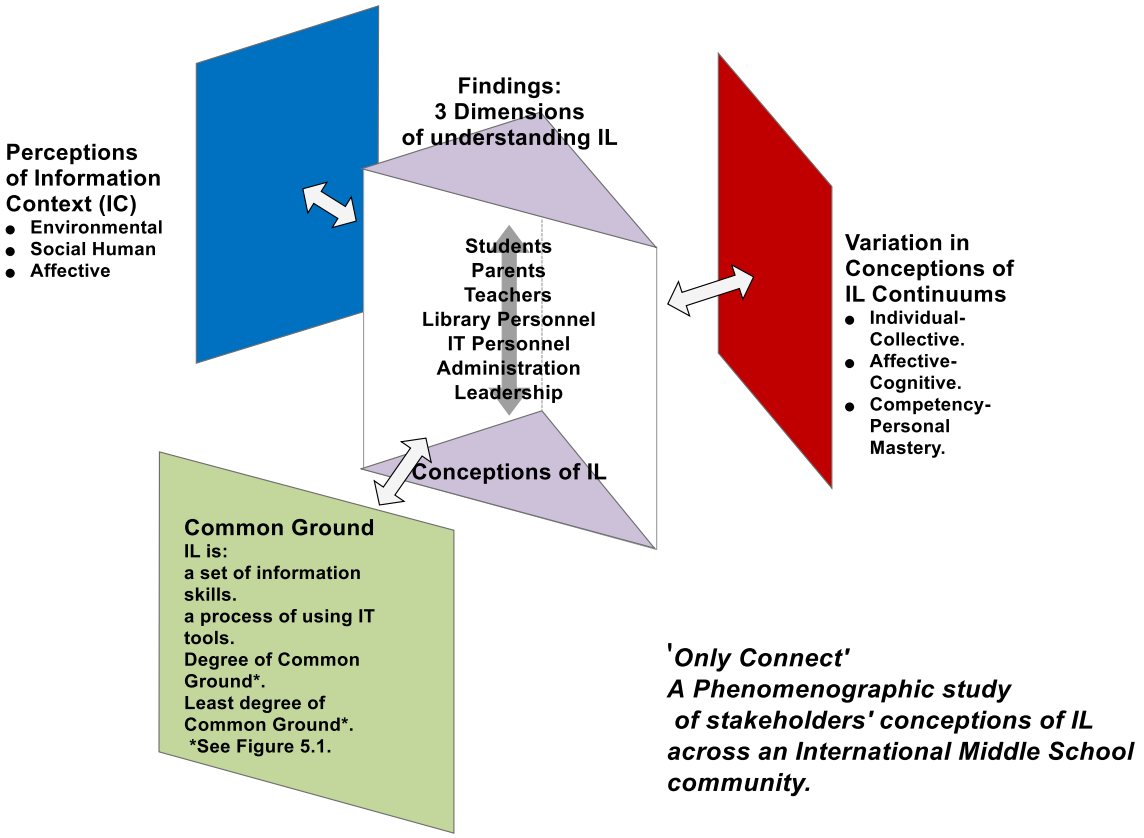

Figure 6.1 Findings: 3 dimensions to understanding conceptualisation of IL in PS context

By placing a focus on the school as a work and learning environment that traverses into the home and family life has served to broaden the insights gleaned in this study. The multi-disciplinary background both professionally and knowledge development wise has facilitated a wider more expansive lens to the research design, data collection and analysis processes. Finally, the review of literature, by exploring the conceptions of IL from a k-20 perspective offered an in-depth account of the spectrum of conceptions of IL that permeate education and workplace contexts providing a backdrop against which to calibrate the ways IL is conceptualised across multiple stakeholder groups in the context of an international private middle school community.

The three dimensional approach has surfaced the nature of variation of conceptions of IL through the phenomenographic process providing a baseline for stakeholders to critically consider the relevance of this rich diversity of ideas that are at play and consider the extent to which embracing the variation of IL as conceptualised across multiple stakeholder groups enables the development of more relevant, rigorous and robust IL teaching and learning strategy. This study potentially places stakeholders in a much stronger position to move forward and create a more bespoke IL teaching and learning strategy that best meets the needs of their organisation. The availability for the first

time of a baseline of conceptions arising from across the stakeholder groups in an international school context paves the way for multi stakeholder group dialogue to explore how the strategic plan, curriculum and professional development might be designed so that IL learning for all constituent groups is experienced in a more holistic way. The discussion now moves to the section entitled 'from insight to action' exploring the immediate and longer term routes to impact of the finding from the study.

6.2 From insight to action

This section will explore the impact of the study on the PS, the researchers' professional practice and the learning points of relevance to practitioners in this regard in addition to exploring potential routes to impact in both international private and national education and library contexts as illustrated in Figure 6.2.

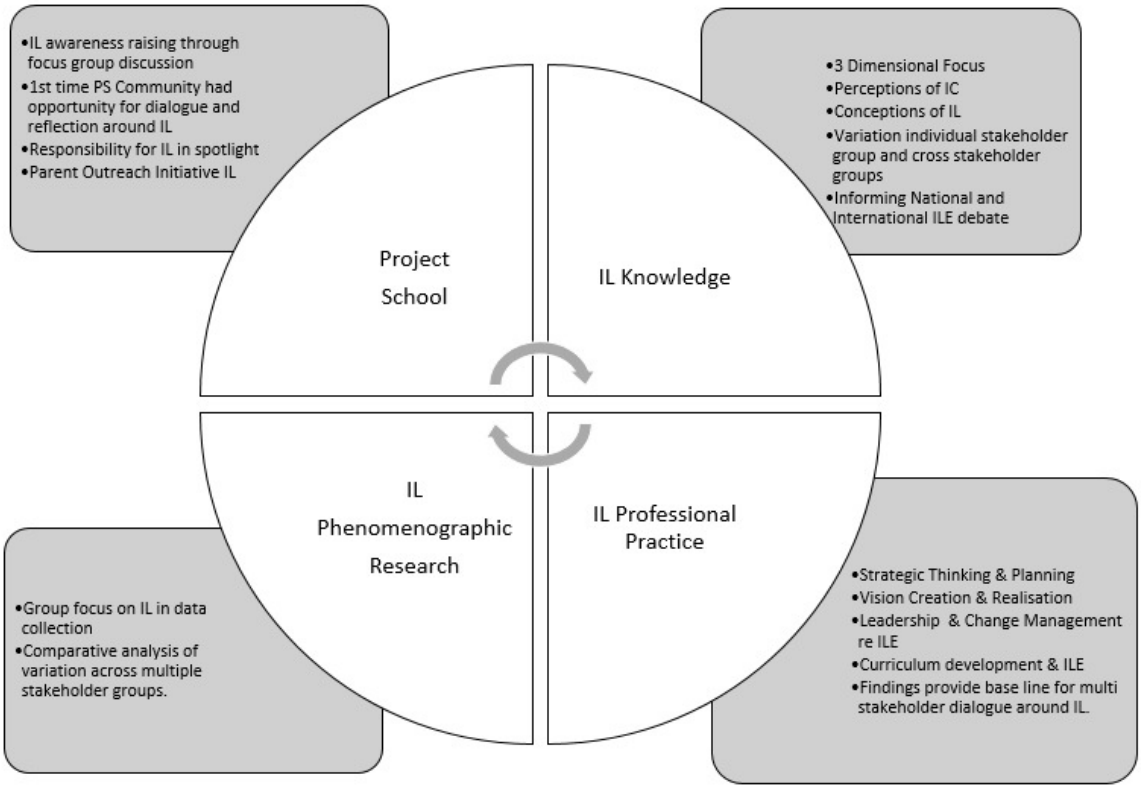

Figure 6.2 From insight to action overview

The most immediate impact of this research study was within the PS itself. The design of the study enabled a sustained and systematic dialogue around IL in the PS creating a collective sensitivity and raising awareness of IL within the community. The opportunity to think, talk and share together their perceptions of their IC and their conceptions of IL was of itself a very constructive awareness raising

experience for stakeholder groups. Furthermore, the ongoing cycle of communication about the purpose, process and preliminary insights at various meetings and with the heterogeneous groups as described in Section 3.7 served to place a spotlight on IL in a comprehensive manner.

This dialogue process served to bring into focus key questions around the responsibility for ILE and the exploration of the introduction of a parent IL outreach initiative by library personnel. Most importantly of all the need for a rigorous systematic evaluation of the feedback was identified as a priority to inform IL is the PS community as noted in Chapter 3 Section 3.7.

At the end of the data collection period at the PS the researcher was successfully recruited to take up a new appointment as Head of the Middle and High School Library and Information Services in another international school with the commitment that on the successful completion of the thesis a full and detailed report would be presented to the PS.

The impact of taking the professional doctorate route has been pervasive on many levels of the researcher's professional practice as the research process evolved and as the findings from the study became clear. Designing and conducting the research study to address a gap in the understanding of how IL was conceptualised in an international private education setting has been influenced by the theories and concepts from the management, organisational learning and education sciences in addition to the library and information sciences and expertise of the researcher.

The most significant impact of this study on the researcher's own professional practice has been to place the researcher in a far stronger position to understand how to envision, strategize, lead, manage and communicate in regard to IL learning in a way that is school community sensitive and IC responsive. It has been hugely informative on a number of levels including not only pedagogical, ideological and policy formation but also in terms of project management, curriculum design and the honing of a pragmatic approach to creating, sharing and realising a vision around IL learning. Moreover, the realisation of the integral nature of IL for working and learning for learners of all ages has become the founding principle upon which the researcher has framed her professional approach in her pursuit of enabling IL teaching and learning to take its place at the heart of the educational project in its broadest sense. It is these kinds of new learnings that can potentially be harnessed by professionals in similar scenarios to inform their ways of approaching the development of IL specific to their own contexts.

A key insight of relevance to professionals in the field of IL is that to truly take on the integration of IL it is paramount to work from an organisational learning perspective and adopt a systemic approach to IL (Senge et al 2000). In practice this involved occupying and exerting influence on a series of levels

to include strategic thinking and planning levels, curriculum development and alignment, ensuring to align with school overall vision, mission and values, the formation of school policies covering professional development, academic honesty and assessment and vision documents for the future of the school library and for IT and the school facilities master plan.

In practice the researcher on taking up the new appointment as head of the Middle and High School Library and Information services and subsequently taking on the role of High school curriculum coordinator was fortunate to occupy a strong position from which to influence the school community's IC and IL teaching and learning in ways that reflected the conceptions of IL and perceptions of IL as discovered by this study. As established in the previous discussion of findings the development of IL requires a shared vision and when the researcher was delegated to develop a vision document as to the future of the Middle & High School Library a great window of opportunity was opened up.

To that end in collaboration and dialogue with colleagues and key stakeholders across the school community the vision document for the Library and Learning Commons was developed to accommodate a step staged process of implementation over a four-year period. The strapline for this vision document was 'Only Connect' (a quote as mentioned in Chapter 1 that originates in Forster's Book Howard's End 1985 p. 188) which was proposed by a colleague from the high school English department and which has since resonated with the researcher as evidenced in the short title of this thesis. This vision document proposed the building of a new facility however this objective was revised to accommodate the redesign and extension of the existing facility. The subsequent remodelling and renovation reflected the findings regarding perceptions of the IC and conceptions of IL in addition to insights gained through the literature review process and dialogue with stakeholder groups in the PS including particularly, the ideas shared by the PS library stakeholder group regarding the concept of the Learning Commons (Ontario School Libraries Association 2010). A clear message for practitioners based on this experience is not to wait to be asked but to take the initiative oneself and seek to develop such a vision document in cooperation with all stakeholder groups. Furthermore, whether the vision incorporates ideas to build or remodel existing library facilities that accommodate the dynamic IC and evolving conceptualisation of IL the realisation of the vision rests upon consultation and consensus at the collective level.

The redesign and expansion of the Library Learning Commons reflected conceptions of IL as a participative practice, as a way of learning and as a situated learning practice. It also reflected the perception of the IC as a social human context whereby people are sources of information, mediators of the information experience and information guides. Accordingly, spaces were designed in for

collaborative working around information, individual spaces, quiet zones, instructional spaces that could be reconfigured for large seminar style workshops with break out areas and a traditional reading room where students could go to enjoy a quiet time to read write or reflect in silence. It is this type of intentional evidence based approach that helps secure backing for the development of libraries as a pedagogical tool and as a learning resource within the school community.

The vision was to not only to create the space but also to create the IL experience whereby people from all stakeholder groups within the community and alumni could contribute to IL learning. As funding and planning for the reconfiguration was underway the researcher together with her colleagues moved forward to develop the library's IL programme developing and implementing new initiatives that secured the participation of faculty alongside the library personnel. Planning, cooperation and anchoring of the library (Ingvaldsen 2014) is critical for practitioner's intent on securing a relevant and sustainable IL programme.

One of the more comprehensive and progressive initiatives around the development of High school students IL learning was developed and implemented for the IB grade 11 Extended Essay (EE) which forms part of the core of the IB Diploma programme. The EE is a 4000-word essay related to one if not two of the IB core subject areas similar in academic level to an undergraduate level research paper. Over the course of the data analysis process of the doctorate research and as the researcher consolidated her understanding of the conceptions of IL arising from the study so too did the learning objectives of the EE seminar evolve. Initially there was a strong focus on the development of searching, selection, evaluative and citation skills however as the conceptions of IL as a participative practice, as learning how to learn and as a situated learning practice became more solidified in the researcher's understanding of IL the seminar was adapted from a two hour half day annual seminar to eventually having a full day workshop involving as many as possible of the extended essay supervisors, participation by the graduating class to share their insights and by Alumni who had the benefit of seeing the kinds of IL required at undergraduate level.

The ideas of connecting learning more as a social human experience within and outside the school walls was also at the heart of the intentions to build a more collaborative and participative IL and learning experience. With the support of fellow library colleagues, faculty and leadership through the years the seminar evolved as a major dimension of the IB student's preparation to meet the IL demands of the IB curriculum and beyond in terms of being ready for the expectations of third level academic work. It is this style of grounding IL initiatives in relevant conceptions of IL as surfaced in this study and finding ways to dovetail with curriculum learning objectives and assessment criteria that can be used to inspire similar kinds of learning experiences in schools and school library contexts

in national and international education contexts. During a subsequent presentation about this initiative at the ECIS 7th Triennial Librarian's Conference in Brussels (Rutland 2014), which was attended by over fifty library and/or teaching professionals from around the world there was extensive interest by participants to learn more about this initiative.

To secure a progressive learning approach to IL the researcher developed a one year Pre IB research methods module to help pre IB grade 10 students to meet the demands of the IB Diploma Programme in regard to their IL. The focus was on students choosing a global issue for investigation with a guided approach through that journey that embraced conceptions of IL as critical thinking, participative practice, as a process of using IT tools and as set of information skills. Students produced a physical poster outlining their global issue, research methods, sources and findings and a global issues poster display was created to share their learning with the community.

Furthermore, in collaboration with her library colleague and the social studies teachers who had a mini extended essay component to their curriculum the researcher integrated a series of research sessions to focus in supporting students in Grade 10 with their mini extended essay. The seminar style workshops for Grade 11 were adapted for Grade 10 introducing mini extended essay guiding sessions. This two tiered approach involving grade 10 students in researching their global issue and working on their mini extended essay helped to consolidate the development of students IL and created opportunities for critical thinking about information, for learning how to learn and about fair and ethical use of information.

Turning attention to IL and middle school students similarly the researcher became involved in a Curriculum Think Tank for middle school and was able to bring forward the centrality of IL as integral to the curriculum. On a practical level the researcher collaborated with the social studies, language arts, religious studies and science teachers to create opportunities for developing middle school students' IL and this work was subsequently further advanced and consolidated by the researcher's library colleague.

Based on the findings from the research regarding parents' perceptions of their IC and conceptions of IL, the researcher felt it was important to create an IL outreach initiative for parents of IB students and made a presentation to parents of the conceptions of IL arising from this study during a regular parent IB Coffee morning. Parents were invited to join mini IL workshops to learn about the nature of the information resources their children had available to them and about the kinds of academic research work expected of them. Workshops were organised whereby parents were invited to the school library to step into the shoes of their children and experience what it is like to take on an IB research paper such as the IB Extended Essay. The parents participated in the various activity based

IL learning experiences reporting it was an eye opening experience for them to understand the kinds of information sourcing, selection, evaluation and critical thinking challenges faced in the IL experience.

Taking on the role of high school curriculum coordinator and having responsibility to collaborate with faculty to develop the Assessment Policy and with the IB Diploma Coordinator to develop learning outcome documentation for each course taught in the high school provided the researcher with critical insight as to the place of IL in curriculum. This was a golden moment to understand the learning objectives across the curriculum and as part of that process to begin to understand the degree to which IL was articulated within learning objectives and the language and terminology present in the documentation.

This process really drove home how IL is an integral dimension of curriculum whereby learning objectives and outcomes clearly contain many of the conceptions of IL surfaced in this study such as critical thinking, critical inquiry and as content reading to extract relevant information. In this sense teachers are in a powerful position as front line IL educators to influence the development of IL providing their ongoing professional development prepares them for this role. This is where library personnel might well need to consider their focus regarding where the balance should lie between investing time and resources in student IL collaborative initiatives and teacher IL development. The first step is to achieve a common ground understanding of the conceptions of IL relevant to the curriculum and to life and to establish a common narrative and language around IL. A way forward for practitioners is to connect with colleagues by creating a platform for multi-stakeholder dialogue using the conceptions that have surfaced from this study as a baseline and start the conversation to map out the IL strategy to encompass a focus on the school community's IL development as opposed to a compartmentalised student or library IL focus.

From a systemic perspective (Smith 2009, Senge 2006; Senge et al. 2000) the IL competence expected of stakeholder groups whether that be a learning or work related information task hinges on the design, delivery, implementation and on-going evaluation of an IL strategy that embraces a collective as opposed to partisan focus. Such an inclusive approach mitigates against the risk of staff, faculty and parents not having adequate IL competence to support student learning that prepares them for their next transition point be that to another country, another level of education, workplace or life experience more generally.

Opportunities have also been sought throughout the years of the study to share the research with academic and practitioner communities including making presentations about the study at various iDocQ conferences in Aberdeen (iDocQ Information Science Doctoral Colloquium 2011) and

Edinburgh (iDocQ Information Science Doctoral Colloquium 2012), at the EMMILE Conference in Milan where she was awarded Best Poster Award in the MIL Lab for both the "content and presentation" (Marquardt 2012 p. 14) and at the ECIS 7th Triennial Librarians Conference in Brussels (Rutland 2014). The research has therefore begun to stimulate interest at both the national and international K-12 education contexts.

In the past year (2016) a series of meetings to explore routes to impact of the study's findings were held in Aberdeen with teachers and librarians at private, state and international schools. It was clear from these exploratory discussions that the findings from the study are significant in terms of stimulating a more holistic focus on IL and on the value of dialogue between stakeholder groups to design an IL strategy that meets their organisation's IL teaching and learning needs. Moreover, the discussion held with representative from the Aberdeen city school libraries was hugely positive leading to the exploration of the possibility to run an INSET service day in the future using the findings from this study to serve as bench mark from which to build out a discussion of the role of school libraries in ILE. A further presentation made at the Making Connections Seminar Series (Cunningham 2016) in Aberdeen Business School was attended by members of the academic leadership of the business school, the business school faculty liaison librarian and a member of staff working on a major local building project. As part of this seminar participants were invited to reflect their thoughts in an exit pass as to the potential routes to impact from the study. The feedback conclusively pointed to the potential of the study to highlight the importance of multi stakeholder dialogue in school contexts and a need to take up this discussion in the context of teaching and learning strategy across education and work place contexts. This suggests a wider potential interest and value in the research findings. Finally, more recently the researcher has been contracted by an international private school in Norway to research and prepare a Report for the senior leadership team regarding the development of the library and media centre. The work on this Report is drawing directly from the findings and insights arising from this study (See Appendix 18 for copies of the status updates to the school community).

The collective feedback from these exploratory discussions in tandem with the researcher's own reflection, conversations with colleagues and her recent aforementioned contract work points to the significant relevance of this study on a number of levels including:

1. Extending stakeholder groups understanding of IL to generate a more holistic approach to ILE;

2. Offering a baseline or case study for multi stakeholder dialogue across stakeholder groups in the various levels of k-20 education, the library and information profession and stakeholders occupying leadership roles in curriculum development at graduate and post graduate levels;
3. Calibrating stakeholder groups' understandings of IL to inform interim and long term IL strategy;
4. Raising awareness and generating dialogue with professional organisations such as Chartered Institute of Library and Information Professionals, (CILIP), the School libraries and Information Council (SLIC) in Scotland and School Libraries Association (SLA) in the UK using their annual conferences as a key platform;
5. Stimulating debate around the conceptualisation of IL across key stakeholder groups in the international private education context to inform the development IL learning strategy in diverse learning organisation contexts;
6. Raising awareness and generating dialogue with international library and information community, curriculum developers and school leadership via such organisations as ECIS, the US MSA, ENIL, IFLA, IBO and UNESCO organisations;
7. Contributing to the ongoing global debate around the ways IL is conceptualised raising awareness of the need for IL researcher to remain sensitive to the IC when designing their research via the network of contacts made during the life time of this study;
8. Reaching out to school parents through their committees and organisations to stimulate awareness raising and dialogue around IL and develop training workshops to support the development of parent IL;
9. Positively impacting the IL learning opportunities of learners of all ages preparing diverse stakeholder groups to meet the changing demands of a fluid uncertain information eco system and an unknown world.

6.3 Contribution to extending approaches to phenomenographic study of IL

A third and final contribution this study has made to extending IL knowledge relates to the research methodology utilised in this study. Specifically, the inclusion of multiple stakeholder groups in a FGD process as opposed to the more one to one interview style approach has opened up an opportunity for participants not only to share from their own personal experience but also offered the opportunity to stimulate a shared understanding of the different ways IL is conceptualised at stakeholder group level. This data collection process was subsequently followed with a data analysis process that sought to establish variation at the individual stakeholder group level and then at a second level to compare conceptions across stakeholder groups. The outcome of this has been to capture a more comprehensive understanding of the nature of variation prevailing in a school

context in a way that has not been possible heretofore. The process of working with seven data sets whilst challenging was illuminating in terms of the findings which confirm the relevance of the phenomenographic approach to surface variation within and across stakeholder group perspectives.

6.4 Conclusion

This study through its methodological process and findings has built on the understanding of previous phenomenographic research on conceptions of IL contributing to a potential shift in our thinking as to the ways IL is conceptualised on a series of levels revealing a breadth and depth of understanding of IL unlike any previous studies of IL have achieved heretofore.

The cumulative impact of the pursuit of this study involving the subject knowledge development and multiple group dialogue experience has expanded our understanding of the richly complex nature of variation in the ways IL is conceptualised. Furthermore, it has led to a critical awareness of the need for practitioners to hone their strategic thinking and planning expertise in order to realise a vision for IL learning and to have that vision become part of an organisations' narrative to achieve its realisation. IL is core to learning for learners of all ages throughout life and any continuation of a partisan or 'disconnected' approach to its development at the conceptual, strategic or applied levels risks the potential for its systematic, progressive and consistent development in schools and diverse learning organisations.

The reader is now invited to consider the concluding Chapter, documenting the strengths and limitations of this study, identifying further questions and research required, concluding with an indicative outline of the post -doctoral phase of the researchers' anticipated journey along the road from insight to action in regard to IL learning in the international education arena and beyond.

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CHAPTER 7 Conclusion

Introduction

The purpose of this chapter is to draw together the main conclusions of the study in terms of the extent to which it has met its original research aim and objectives, the relevance and rigor of the chosen methodology, the principal findings and their contribution to IL knowledge and professional practice. In so doing it will document the main strengths and limitations of the study before identifying further areas of research. Finally looking to the future the thesis concludes by outlining the next steps envisioned in the post-doctoral phase to progress the application and integration of the insights gathered through this study to IL knowledge and practice in the international private education arena and beyond

Learning is the central focus of international private education and it is an interdependent interactive experience that is connected at every level, to the ways people perceive and experience their information context and conceptualise IL. Together students, parents, teachers, librarians, IT teachers, administrators and leaders connect to learn, to question and develop new ways of thinking and approaching issues of local and global significance which demands an integrated IL learning strategy. However, as learner development at all ages becomes increasing more complex in the transitioning information context IC, stakeholders are challenged to calibrate their ways of understanding information literacy within their organisations. In this context, as documented in this thesis, there has been a lack of "joined up thinking" about what information literacy is which negatively impacts the potential for learners in diverse roles and contexts to become information literate, something which has been recognised as a basic human right (Bønløkke, Kobow and Kristensen 2015, Andretta, Pope and Walton 2008, Williams and Wavell 2006b). The way forward to negate this risk was identified to lie within greater levels of dialogue amongst and across stakeholder groups in diverse contexts to develop and work towards a shared understanding of information literacy to inform information literacy education (Andretta, Pope and Walton 2008; Williams and Wavell 2006b).

This thesis documents the journey of discovery as to the ways stakeholder groups across a school community in an international private education setting conceptualise information literacy serving to bridge the gaps in the literature as outlined in Chapter 2. Through a systematic and comprehensive literature review process the gaps in our understanding of IL and rationale for this study have been clearly delineated. The literature review process by taking a K -20 perspective created a sound foundation from which to build understanding of IL. The consistent and rigorous application of the qualitative phenomenographic methodology as detailed in Chapter 3, whilst highly immersive and

iterative in nature, proved to be a most robust and relevant methodology to surface the variation in ways stakeholder groups across the PS community conceptualised IL and in so doing enabled the realisation of the research aim and objectives.

7.1 Principle findings

The principle findings documented in Chapters 4 and 5 of this study show that:

1. Stakeholder groups in an international school setting perceive their information context to be characterised by environmental, social human and affective dimensions, and that
2. Stakeholder groups do not share one singular conception of IL but rather a series of twenty-seven conceptions of IL prevail, with IL as a process of using IT tools and IL as a set of information skills forming the common ground understanding of IL across the middle school community. Additionally, there are a series of further conceptions that are to some degree shared by some stakeholder groups but not all, and finally there are five stand alone or least common ground conceptions of IL prevailing at the student, parent, teacher and IT personnel stakeholder group levels.

These findings demonstrate that the original aim of the research to identify, compare and contrast conceptions of IL from multiple stakeholder perspectives in a private international middle school community has been achieved to a great extent making an original contribution to IL knowledge and professional practice as documented in Chapter 6 and Sections 7.2/3/4 of this Chapter.

In respect to the communicative and pragmatic validity of the findings, this can be defended on the grounds that when shared at national and international education and ILE forums they generated a greater awareness and understanding of the complex nature of variation in the ways IL is conceptualised across stakeholder groups. In terms of professional practice as has been documented in Chapter 6 the researcher has already begun to integrate the understandings of IL as discovered in this study on a number of levels including strategic planning, curriculum development and delivery and facilities design. Furthermore, such integration in curriculum programmes around IL when shared at the international and national level has begun to impact other professionals' awareness of variation and their work on school library IL initiatives.

7.2 Original contribution to IL knowledge

The study makes an original contribution to IL knowledge through:

1. Identifying the environmental, social human and affective dimensions of stakeholder groups' perception of their information context.

2. The creation of seven outcome spaces representing conceptions of IL held by students, parents, teachers, library personnel, IT personnel, administration and leadership groups.
3. The development of a model of the common ground conceptualisation of IL revealing common ground, a degree of common ground and standalone conceptions of IL prevailing in the PS community.
4. The development of variation continuums including the individual-collective, affective-cognitive and competency- personal mastery as a tool for understanding the complex nature of the variation present when one compares conceptions of IL across multiple stakeholder groups.
5. The creation of a model based on a synthesis of these aforementioned elements representing a three dimensional understanding of the conceptualisation of IL arising from phenomenographic research to include perceptions of the information context, conceptions of IL and the variation in IL continuums.

The conceptions of IL discovered were found to be both similar and different to previous findings of conceptions of IL in the literature as detailed in Chapters 4, 5 and 6. Specifically the common ground conceptions of IL as a process of using IT tools and IL as a set of information skills were most similar to conceptions of IL present in the literature. However even though there were broad similarities the comparative meta-analysis of these conceptions showed variation in the nature of language used, the application of the conception in practice and the pedagogical underpinnings of conceptions.

The main difference between the findings from this study and past studies of conceptions of IL centres on the insights gained through adopting a multiple stakeholder group perspective, the attendance to understanding perceptions of the information context and the conducting of a meta-comparative analysis of variation in conceptions of IL surfacing from the feedback. These findings extend our ways of understanding IL in terms of the conceptions of IL as a context or cognitive agility, as critical inquiry for action and as a participative practice. Building out from the phenomenographic work of previous studies the findings confirm the complexity of the variation present in the ways IL is conceptualised within and across stakeholder groups extending our understanding through in-depth analysis of the nature of variation as captured in the continuums of variation of IL.

Considered collectively the most significant contribution of this study to IL knowledge is that it has demonstrated that when we extend the pool of ideas as to what IL is by engaging in dialogue involving multiple stakeholder groups we achieve a much greater depth and breadth of understanding of IL than is otherwise achievable. By adopting a focus group discussion data collection process, we enter a place of awareness of one's own personal conceptions and of 'other'

peoples' conceptions. In this way through dialogue, stakeholder participants come to be mindful of their own ways of perceiving their information context and their conceptions of IL which creates a collective sensitivity to IL. The dialogue experience itself becomes 'learningful', connecting people who share their ideas and who are in turn are exposed to other people's ideas of IL and perceptions of their information context.

7.3 Original contribution to IL practice

It is exactly this mindfulness at both stakeholder and across stakeholder groups in a learning organisation that needs to be sought and harnessed in order to work towards a common ground conceptualisation of IL. It is also a route to impact IL professional practice to inform the creation of a common language through which stakeholders can share and work towards the development of IL learning strategy best suited to their organisations' IL learning needs, in ways that align with the principles underlying their vision, mission and values.

Furthermore, the development of the common ground model of conceptions of IL provides a powerful baseline for future multi stakeholder dialogue internally within a given organisation and also externally with state national and international organisations tasked to develop IL on a global scale. In this way the study delivers fresh insights offering a constructive and inclusive baseline of conceptions of IL which can progressively contribute to IL practice in international private education and beyond.

By exploring stakeholders' perceptions of their information context in connection with their conceptions of IL it has been possible not only to understand more fully the nature of this connection and the inherent complex variation, it has also helped to broaden our understanding of the changing expectations, roles, values and responsibilities around ILE that are emerging in response to the dynamic and rapidly altering information context with far reaching implications for professional and parental practices.

Specifically, the conceptions of IL as a way of learning, as information context agility, as critical inquiry for action embedded in the curriculum, as in combination with IT literacy as a way of learning how to learn, demonstrates IL is not only connected to the curriculum but also to the nature of the context within which it is been considered. This implies that IL therefore is not only about student IL but also about parent, teacher, library, IT administration and leadership, in terms of requiring both a curriculum and a professional development focus in addition to parent IL learning needs. The implications of such conceptions of IL in connection with perceptions of the information context are significant, demanding a recalibration of the concept of ILE or IL learning to encompass a more inclusive and holistic approach to its development at the national and international levels.

Furthermore, this study has shown that what may normally be categorised as work place conceptions such as IL as situated or collaborative practices (Lundh, Limberg and Lloyd 2013; Lloyd 2010; Lloyd and Williamson 2008; Bruce 2008; Lloyd 2006; Lloyd 2005a and b) actually apply to school and home based IL experiences. Moreover, the perception of the information context as social human in nature whereby people are sources, mediators, guides and information quality controller's points to the idea of knowledge as being not only explicit but also as tacit. People including children possess tacit knowledge and information just as their parents, peers and all the other stakeholder groups that constitute the information context. This reality needs to be further embraced when considering the information context and the nature of IL learning required to harness this way of seeing the information context and experiencing IL. Through this more context sensitive approach it has been feasible to connect conceptual understandings of IL delivering a more holistic standpoint from which to inform the development of ILE. In so doing it is also possible to ensure a greater alignment of expectations and preparedness of learners and workers as they transition through education, work and life stages. To embrace a multiple stakeholder perspective and a sensitivity to understanding perceptions of IC and its connection to conceptions of IL opens up new opportunities to see and prepare for the bigger picture that is IL, as demonstrated by the findings from this study.

In this regard it is also important for those charged with the design of work and learning spaces to be sensitive to the centrality of these dimensions of the information context and build in opportunities that enable the enactment of the conceptions of IL in ways that are sensitive to the fluid information context. For example, the students' conception of IL as a participative practice in combination with leaderships' conception of IL as critical inquiry for action and IT conception of IL literacy in combination with IT literacy skills as a way of learning how to learn requires the work and learning spaces to accommodate such interaction and connectivity on a more global level. The more traditional IL sequential skills models whilst partially reflected in aspects of the two common ground conceptions of IL as a set of information skills and as a process of using IT tools do not appear to accommodate the more expansive variation in conceptions of IL as discovered in this study. Therefore, one can conclude that the extension of the focus on perceptions of the information context and its connection to the conceptions of IL has provided an authentic base to discover the important role context plays in the variation of ways IL is conceptualised, contributing to the richness of this study's findings regarding conceptions of IL.

7.4 Strengths of study

The professional doctorate journey is a hybrid process combining subject knowledge development with undertaking research relative to a problem encountered in professional practice. The understanding gained through the study of various postgraduate modules of relevance to both

professional practice and the research problem represents a key strength of the study as it has enabled an original multi-disciplinary approach to the research design, analysis and interpretation of feedback. This approach contributed to the interpretative process by offering a much wider lens than a library or education or management only perspective would have offered. Furthermore, it has better prepared the researcher on the road from insight to action in shaping her systemic approach to change management and curriculum development around IL.

A second major strength of the study relates to approaching the PS context as a place of work and learning that extends into the home and family. In so doing the opportunity arose to embrace ideas of work and home place IL alongside school based IL and thereby facilitated a more encompassing way to understand IL. The review of literature and analysis of variation at the individual stakeholder level and at the comparative level has shown that whilst the common ground conceptions of IL as a process of using IT tools and as a set of information skills are similar to conceptions of IL arising in certain IL models and frameworks and conceptions studies there are equally many conceptions of IL that are not reflected in these models and frameworks. This leads to the conclusion that there is a definite need to open up the dialogue around the ways IL is conceptualised to benefit from a fuller understanding of its complexity.

A further strength of this study in terms of its original contribution to IL knowledge relates to it being the first study of its kind to explore conceptions of IL in a private international education context. In documenting the ideological underpinnings of international curricula in Chapter 2 (Bunnell 2010; Hayden and Thompson 2008) and delineating a fuller picture of the project school curriculum in particular the adoption of the American School Library Association (AASL) Standards for the 21st Learner (2007) and the International Society for Technology Education (ISTE) (2008) in Chapter 3 it has been possible to compare the degree of alignment of the conceptions of IL arising in this study with the explicit vison and pedagogical ethos of such organisations as the International Baccalaureate Organisation (IBO), the Council of International School (CIS), and the Middle States Association (MSA) (International Baccalaureate Organisation 2016a, 2015, 2014a and b; Council of International Schools 2015; Middle States Association 2011). The study finds that conceptions of IL as critical inquiry for action surfacing from the leadership stakeholder group is very much aligned with for example the IBO vision

> "to offer an education that develops inquiring minds, knowledgeable and caring young people who help to create a better and more caring world through intercultural understanding and respect..." (International Baccalaureate Organisation 2016a).

Equally the skills focus of the IBO Approaches to Teaching and Learning (ATL) as discussed 6.1.2 maps to the IL as a set of information skills which is one of the common ground conceptions of IL (International Baccalaureate Organisation 2014b). As schools and school librarians seek to understand ways forward to develop IL amongst students, part of the solution is to ensure, whatever strategy is developed, that its guiding principles must be grounded in the school's curriculum, vision mission and values and thereby enable a more sustainable and less library centric and more learner oriented holistic approach to IL learning (Hayden 2010).

Furthermore, the adoption of the widely known AASL 2007 Standards for 21st Learners and the ISTE Standards by the library and IT personnel in the PS context respectively, have been shown to influence their ways of conceptualising IL (American Association of School Librarians 2007; International Society for Technology Education 2008). Again the value of listening across stakeholder groups to understand variation in conceptions of IL cannot be overstated. School communities may benefit on a number of levels to begin to share across disciplines the kinds of standards, models and frameworks in use so as to inform more systematic and consistent opportunities to realise these standards through the adaptation of learning objectives, outcomes and assessment.

Considered in combination with the focus on the project school as a place of work and learning that crosses over into the home domain and the insights gained through subject knowledge development which has underpinned the design, data collection and analysis processes, the ultimate strength of this study in terms of its contribution to IL knowledge and practice is that it has sought "to connect" thinking about IL amongst stakeholder groups drawing from a multidisciplinary knowledge base including a literature review process spanning conceptions of IL from a K-20 focus. The discussion of the actual and potential impact of the doctorate journey (Chapter 6), the research process (Chapter 3) and its findings (Chapters 4 and 5) clearly point to it having changed the researcher's conceptual understanding of IL, the information context and the value of dialogue to support vision making and realisation around IL learning particularly.

Specifically, the researcher's conception of IL has transitioned from the more classic conception of IL as a set of information skills, including critical thinking about information, to a more complex and nuanced conception of IL as a way of learning to learn. This evolution of understanding reflects the pervasive nature of IL in terms of its reach and application beyond the immediate school or work place contexts to encompass ideas of personal mastery over a lifetime of information experience and in this sense IL is a lifelong learning endeavour. Moreover, the conception of IL as a way of learning to learn is understood by the researcher to reflect the complexity of the perceptions of the fluid information context as revealed in the environmental, social human and affective dimensions.

Therefore, the conceptions of IL as a context and/or cognitive agility, critical inquiry for action and a participative practice are understood to be of central relevance to the development of IL for learners of all ages and are highly transferable to diverse information contexts and experiences. Furthermore, in terms of informing the development of a sustainable and progressive ILE policy the researcher recommends that the ownership of, and accountability for, IL development be explicitly articulated in the school's strategic plan reflecting the ideological, philosophical and pedagogical underpinnings of the school's vision, mission and values. In practice the creation of this type of holistic ILE policy hinges on a planned, systematic and sustained process of dialogue within and across stakeholder groups to generate and articulate a contextually responsive ILE policy founded on a shared vision for and shared conceptions of IL that are couched in a common language around IL.

This shift in thinking has in turn impacted the researcher's professional practice around IL learning particularly in regard to leading and managing change in collaboration and consultation with relevant stakeholder groups. There are also early indications of the relevance of this study in terms of a case study to raise awareness in school and learning organisation contexts at national and international levels regarding the complex variation in the conceptualisation of IL and the invaluable insights gained through adopting a multiple stakeholder approach to understanding IL.

7.5 Limitations of study

The study however is not without its limitations as noted in Chapter 1 Section 1.5 the Research Approach. The study is limited in that its focus is on one private international middle school community and whilst its findings may be of relevance to similar contexts further similar multi-stakeholder research in other contexts would help build a picture of variation in conceptualisation of IL in those contexts. A further limitation is that the sample necessarily had to be a self- selected sample and therefore it raises the question regarding the reasons as to why these participants came forward and not others and how different the feedback may have been with a random sample selection. A more expansively funded and resourced study may be able to use a random sampling method and attract a more diverse set of participants and control for gender representation in the study.

It would also be worthwhile to conduct a study across K-20 stakeholder groups in multiple school and HE settings to deliver a more complete K-20 picture of the conceptualisation of IL. The literature review in adopting a K-20 focus on conceptions of IL and through analysis at stakeholder group and comparative analysis across stakeholder groups was able to ameliorate the lack of stakeholder representation in elementary and high School. That said the researcher in her professional experience has found the conceptions of IL that have arisen in the context of a middle school are

equally as relevant to elementary and high school students and beyond to support for IL learning at home, in third level and workplace contexts. In fact, the variation in the nature of conceptions of IL across the three continuums potentially offers a way to calibrate the nature of variation in conceptions of IL prevalent in a K-20 study of IL.

Furthermore, in the context of the growth in the internationalisation of third level education there is much to be gained from referring to the findings from this study as a baseline to stimulate dialogue across stakeholder groups involved in curriculum development for the international education market.

7.6 Future research

It has been documented in Chapter 2 (the literature review) that IL is core to life-long learning and to successfully navigate life's transition points. In a globalised mobile connected and knowledge based economy being information literate is a non-negotiable. Further research is required on a much larger international scale to gather an understanding of the conceptions of IL from kindergarten through to the workplace to better map out and align national and international educational curricula. The stakeholder groups involved in this study came from all over the world and as such the conceptions of IL that have surfaced are representative of a more global perspective towards IL. Going forward it would be interesting in the light of a more globalised economy to understand what IL for effective participation in such an economy would actually look like and to audit for example current third level business graduate programmes to determine their alignment with the IL expectations of multinational corporations. The conceptions of IL as a context and cognitive agility may well feature in such a conceptualisation.

Studies are also required to actually observe IL practices in action more systematically providing a connection that compliments conceptual studies. Attempting a study to compare conceptions of IL with IL behaviours whilst difficult methodologically could provide progressive understanding of IL in action to inform ILE in more pragmatic ways.

Studies are also required to gather an understanding not only of the prevailing conceptions of IL but more proactive studies aimed at discovering how IL is envisioned for children currently in kindergarten level who potentially graduate in 2035 and beyond. The children entering pre-school today will potentially experience a learning and information context that is very different to those of the teachers, parents and librarians responsible for guiding them through that learning experience. Such studies need to adopt a similar conception in context approach and appeal to the imagination as one of our keys ways of knowing and understanding what IL is in a progressive way.

This study by engaging with parents has helped open up our understanding of IL across these interdependent contexts in regard to the development of a holistic school community focused IL learning strategy. However further studies are required to better understand IL across home- school borders.

7.7 Closing statement

The story of IL as contained in the feedback from this study is a story of reflections on a past information context relative to information encounters in more recent times particularly by adult stakeholder groups. It is also a story of reflection on the present day information context revealing excitement for the future potential of greater global connectivity around information sharing and creation. Equally, it is a story that reveals the concerns of particularly the adult stakeholder groups regarding the unknown impact and future manifestation of information, of learning and of living in a dynamic omnipresent information context.

The expansive findings from the research process reflect the value of connecting stakeholders in a dialogue process that offered a collective sensitivity to IL. The outcome of reflecting, talking and listening to personal experiences of the information context and ideas about IL has enabled a sharing of understandings of IL from multiple stakeholder groups' perspectives in an international middle school context in a way that has not been reported heretofore.

The use of metaphor by stakeholders to convey their experience and understanding of IL in context such as describing the information context as a "double edged sword" (SSP40 Parent), as "a place of "jewels" amidst the "garbage" (SSLB21 Library personnel) and IL as a "matrix" like phenomenon (SSL29 Leadership) serves to indicate the inherent challenge of describing the complexity in the ways the information context and IL are perceived and understood. The phenomenographic method whilst interpretative and inductive in nature has successfully surfaced the variation in the ways IL is understood with the result of enabling a richer but not reductive way of understanding IL.

Looking to the future...

The confluence of ideas that have surfaced through opening the dialogue process around conceptions of IL to multiple stakeholder groups has not only enabled the treading of new water in terms of understanding IL, it has also stimulated a questioning of accountability, roles, expectations and values of stakeholders in the evolving information context, highlighting the reality that to act upon these new understandings requires pushing the boundaries of our IL conceptual mindscape and our conception of ILE. Moreover, the work of pushing the boundaries around IL thinking and practice

must be accompanied by a collective commitment to anchor ILE in the philosophical, pedagogical and strategic thinking of schools and organisations through a process of multi stakeholder dialogue. Connecting across these levels of thought and action around IL creates the common ground of conceptual understanding of IL needed to secure relevant, robust and future focused ILE.

To this end the researcher has recently set up a consultancy practice to work with different stakeholder groups in education, curriculum development, leadership, strategic planning, and facilities master planning including school, university and public libraries and has as noted in Chapter 6 Section 6.2 taken on her first contract to research and develop a proposal for the development of the school library and media centre to meet the changing learning and information context needs at an international private school in Norway. The long term professional goal is to share and build upon the insights gained through the research process and the findings, to enable authentic and relevant IL learning that is future focused. In so doing the intent is to further foster connected and "joined up thinking" around IL to positively impact learning for all ages in diverse contexts. In this sense it is appropriate to end with a quotation from the student stakeholder group related to their conception of IL as a participative practice:

"Every day more people are born and more people get more ideas so it (WWW) keeps growing and growing..." SSS7.

It has never been more possible and potentially more enlightening for stakeholders charged with leading and managing ILE in their organisations to:

"Only Connect" (Forster 1985 p. 188).

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APPENDICES

Appendix 1: Excerpts from PS Documentation at time of study*

<table>
<tr><td>PS 3 Year Technology Plan
Note: This plan was in final year of implementation at time of research at PS.</td><td>The Need for a Technology Plan
With the ever-changing nature of technology, it is imperative that we keep abreast of the developments and make use of them where appropriate. It is important that we provide the best for our students and ensure that they are not left behind in the acquisition of knowledge via the use of new technologies. PS will utilize all elements of technology to provide a rich learning environment, such as video, voice and multimedia across the whole school. Increased bandwidth provides for implementing such features. The following 3-year technology plan outlines a coordinated and planned development of technology in the following major areas:
1. Technology Curriculum, Integration of Technology and IT Standards
2. Infrastructure - Network and wireless connectivity.
3. Hardware, Software and Best Practices
4. Professional development.
5. Technology support
6. New developments (to include: Investigate, Plan and Implement a student laptop program establishing a 1:1 program in MS & HS. This would help develop their technology skills and move into a technology enriched curricula.</td></tr>
<tr><td>PS Middle School Library IL Curriculum</td><td>Excerpt from Curriculum Map PS Library 6 / Grade 6 (Middle School)
<table><tr><th></th><th>Essential Questions</th><th>Content</th><th>Instructional Strategies/Activities</th></tr><tr><td>Information Literacy Skills

(Week 1, 38 Weeks)</td><td>UNDERSTANDING THE CONTEXT

Why does context matter?
How much do I need to know before I understand?

BROWSING AND GRAZING
How do I choose what to examine and what to ignore?
DEFINING A NEED, STATING A GOAL, FORMING A FOCUS, ASKING A QUESTION</td><td>Collaborative content-literacy, research, and literacy units

Language Arts/Science/Social Studies

IT integration

Navigating the Web</td><td>Differentiation-based instructional strategies

Short lectures

Class discussions

Debates

Pair/small group discussions

Games</td></tr></table></td></tr>
</table>

PS Middle School Library Annual Goals	In house document developed by PS Librarian: ***GOAL 6) Tracking Info Lit Skills*** ***Goal:*** *Track information literacy skills introduced, reviewed, and assessed during instruction in library; Online tracking sheet to replace Info Lit Skills folders in order to reduce paper usage* ***Data that exists:*** *5th & 6th Info Lit folders from 2008-2009 school year, main folder of 5th & 6th grade info lit skills taught last year currently on Google Docs; info lit skills 5th survey in May, 2008 showed positive results* ***Data to develop:*** *Have an info lit skills tracking list for all grade levels on Moodle (done); pre-assess info lit skills during first research unit at all grade levels (ongoing); conduct info lit surveys at end of year* ***Evidence to show progress/success:*** *scope-and-sequencing as students' progress to next grade; increased student awareness of skills acquired/reviewed; info lit survey at end of year for all grades; automatic application of information skills acquired in all subject areas*
PS IT Grade 6 Curriculum Project	In house Source developed by PS IT Teachers: PS IT Extension Grade 6 / Grade 6 (Middle School) Curriculum Map Essential Questions/Content/Instructional Strategies/Activities: Create, Remix, and Share (CR...) (Week 10, 10 Weeks) How can we use technology to explore and share information about our school experience? • The student will create, edit, save, and share photograph image files/The student will create, edit, save, and share graphics. • The student will create, edit, save, and share video clips/The student will create, edit, save, and share audio clips. The student will create, edit, and share web content for Color House websites.
PS Information supplied by Director External Relations. Edited to remove the school name which is replaced by letters PS to indicate Project School.	*The PS… offers a learner-centered, American curriculum modified for the needs of an international student and parent population…. The PS has a student population of over 1000 students. Our school is actually three schools in one, The Elementary School (from Pre-Kindergarten through Grade 4), Middle School (Grades 5-8), and High School (Grades 9-12). The PS believes in self-renewal and searching out best practices so that our students may participate in a rich, educational experience. Our students, in turn, are active, intelligent and creative learners. These positive attitudes unite us across all levels at the PS…. Our student body is 40% U.S. and 10% host nation, with the remaining 50% representing over 50 other nationalities…. Although our instructional approach focuses on the close but respectful student-teacher relationships that characterize American education, our curriculum is broad enough—including Advanced Placement courses and the International Baccalaureate Diploma—to suit the needs of our diverse population. Our students come from the international business and diplomatic community for the most part, but our many (host nation) families add a host country flavor to our multicultural mix. …. Graduates of The PS gain admission to top universities in the United States and Canada and in their home countries….. A majority of the 150 teachers come from the United States. Others come from Canada, Great Britain, Australia, and New Zealand. … More than 80% percent of our teachers have Master's degrees and many teachers have been at this school in excess of fifteen years.*

*(Permission sought from PS and granted by PS to include excerpts from original in-house documentation in Thesis Appendices).

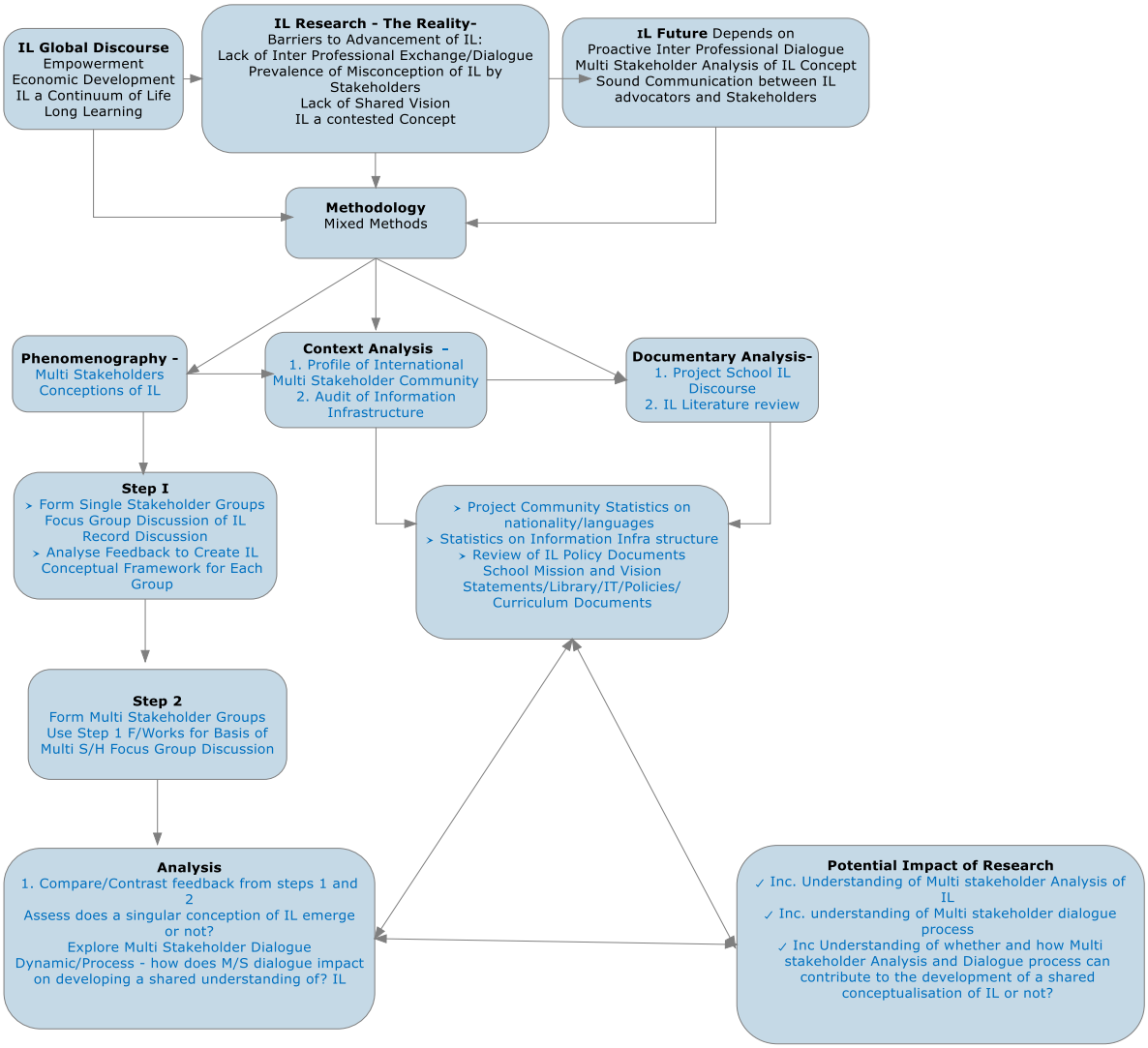
Appendix 2: Abilock, D. 2005 Information Literacy Essential Questions

Information Literacy Essential Questions

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Understanding the Context	Why does context matter? How much do I need to know before I understand?											
Browsing and Grazing Grazing	How do I choose what to examine and what to ignore?											
Defining a Need Stating a Goal Forming a Focus Asking a Question	What is the information problem I am trying to solve? What do I need to know? What are the characteristics of a focus? What is the purpose of a question?											
Identifying Likely Sources Designing a Search Strategy	Why plan before I search? Why are some sources more likely to be useful for this need? What would the very best results look like? How is a strategy different than a rule?											
Locating Resources	How is my access to information affected by its arrangement or organization?											
Assessing Suitability to Task Identifying Missing Information	How do I determine what is appropriate to my need? What are my "blind spots" in searching? Why are some "voices" missing?											
Revising Search Strategy	How do I know when to stop searching?											
Comprehending the Information	How do I know I understand what I am reading? What do I do when I don't understand the information?											
Recording Information	What is the value of attributing the ideas and words of others?											
Organizing Information	What patterns do I see in the information?											
Interpreting Information Comparing, Judging, Analyzing	How can I explain contradictions? From whose perspective is this information, and how does that affect my evaluation? What is valid evidence?											
Synthesizing a Position Developing a Point of View Forming a Conclusion	What common misconceptions might my audience have? What biases and assumptions do I have? Can I imagine variables – what if...? What part of my position or conclusion is a theory? Opinion? Fact? How does this relate to me? So what – why does this matter?											
Communicating the Information	How are my views about this shaped by the form of communication I use?											
Self-evaluating Process	What are my strengths and weaknesses in information literacy? What do I do when I don't know what to do? How is an information literate person like a poet? Like a scientist?											
Self-evaluating Product	How can I best show this information? What does my audience fail to learn from this format?											

Appendix 3: Original Flowchart of the Background and Proposed Methodology of the Research

Fig. 1. Information Literacy in Transition - Background and Proposed Methodology.



Appendix 4: Student Poster

Information Literacy Research at PS Student Voice

Information Landscape	Information Literacy Concepts
Where do you find information? "You use webs"/ "You use books"/ "You can ask other people"/ " you can use search engines like Google and Fact on File"/" You can use custom searches". "You could ask your dad or parents whether they have any information because they might have studied it before maybe". **Is the Information world fixed or changing?** "It's non- stop, it's never going to stop it's with us forever". **How would you describe the information world?** "There is a lot of responsibility you need to take care about what you use" "There is a lot of false information". "You can't always **trust** the web" "I have something to say about the information world. People post anything. If you know what you are looking for then look for it **specifically**. You can get all sorts of stuff that **you don't need, you don't want and shouldn't have".**	"I think the hardest part is actually trying to get a good website to **find good information**" "...you have to **make sense** of all this information and like most of it is all jumbled up..." "You have to **specify** what you want to find out about that subject" "I **skim** looking for the words I want like the information I want and then I **write notes** on sticky notes". "Sometimes I use **bullet points** for facts or I make paragraphs" "I like to **write** because it is better when you write because you learn it" "I find I-WORD helpful – it's like your own **virtual notebook** so you can just put your notes in there". Re Presentations... "Well like **sharing** is a good thing cause like then you can **teach** other people". "Make sure it (the presentation) is good and that it is something that they will find interesting so then **people can learn** from it".

Learning **Can you give me an example of something you found hard to find out about?** "Like when we were studying ancient China There is a lot of different information on things and like a lot of different people **think differently** about things and put a lot of different things on there and **you don't know** which one **is right".** **Tell me about the Library where does that fit into the information world...?** "Well the librarian can help you find the right book for your topic" Well the library is big and it's all set out into different sources like there is one about humour books and information books and in the internet when you look at it it's not very well displayed - like everything is all mushed up but in the Library everything is there so you can find it really easily". "In the library they taught us how to skim and scan" "So it's like better to go to the Library...you might not know exactly what you are looking for but you can tell her (the librarian) you can tell her what you mean and she can help you..." "The Library website is on Euro Moodle and Euro Moodle is basically like a link to all the websites you need". **What about the IT - what do you learn there that helps you to work with Information?** "In IT they teach you how to use the internet safely." "The IT talk to us about cyber bullying and..." "You also get to make your own website." "They show you like about copyrighting." **How would you explain copyright to a grade 5 student?** "Well it's like its people who take other videos that people have made like they have **created** and they kind of just **take the idea** maybe they say they like this is my video". "You could like go to prison **its illegal**".	**Vision/Future** **Tell me a little about using Euro Moodle** "We all know it is safe like and we don't have to be **all over the place**..." **Using Brain Pop...** "For example we had to do a report for Social Studies and I got Cleopatra and I was **all over** the internet trying to find information and it was all mixed up and I **couldn't understand** it and I went on brain pop and there it all was in a really short video all the **information was laid out**. They have really **funny** videos and kids like to watch them. Then there are little **quizzes** to make sure you **understand**. You can also try the **activity boxes** where you can do the activity and it tells you if you may want to watch the video again just to **make sure you understand** and then it will tell you that you really understand the subject". **Home/School – Euro Moodle/Google/Wiki.** **"**Well if I am at school or doing research I will use Euro Moodle and one of their websites...but if I am at home I will go on Wikipedia and Google". "...well **Wikipedia is not** that good". "Yes you can get **complicated words** but it's quite helpful" **Books/Internet** "Well I would use the **computer** sometimes or I would also use **books**" "Books like cause they have **better information** and lots of times the whole entire book is on that thing". Re **Books** - "Not **very much anymore** I mostly use only computers it is much quicker for me". "I normally just surf the web" " I use Google a lot".

Appendix 5: Copy of Minutes of Exploratory Meeting with Project School Principal

Information Literacy in Transition: An International School Perspective

5/2/09 Present: V. Cunningham, Researcher and school Principal

Agenda – Exploratory Meeting with Middle School Principal, Project School…

1. Outline of rational, process and potential impact of study;
2. Exchange understanding on acceptance process at Project school;
3. Review of time scale;
4. AOB

Outcomes

1/2. Focus on Research process –

Identifying sample - the principal advised the following:

Re parents – permission to address the Parents Advisory Group is granted to address parents, inform of the research and request their participation. Distribute information leaflets with scope of research and researchers contact email and additional contact information. Circulate a request for signatures of those interested in taking part at the end of the meeting –circular to request parent name and email details.

Re Students – parental permission to allow children participate in the project would have to be obtained via a letter home to parents with a tear off slip to return to researcher if in agreement. The researcher has permission to address student assembly and explain to students what the research is about and how they can participate. Students would have to participate after school hours.

Re Management – It was agreed that management would include the Principal, the Curriculum Development Co-ordinator and the IT Co-ordinator. The Principal would assist in scheduling the date for the focus group recording and interview guides were requested in advance.

Re Teachers – Time limitations and scheduling demands necessitate conducting the focus group session(s) outside school time. Principal offered the researcher the opportunity to communicate with the teachers via an Information Flyer with researchers contact details to be posted (hard copy) into the teachers mail boxes in the staff room. In the interests of saving paper – scrap paper from the school photocopying recycling resource could be availed of by the researcher. In terms of supporting teachers to participate the Principal recommended that the recording time of focus groups should be 35 minutes maximum and that it would help as an incentive for the researcher to supply some light refreshments in advance of the recordings as sessions would be at the end of the school day and would take place in the school building.

Re Library Staff

There is no difficulty here – the Library staff are very interested in this research and can make the required time available.

Sample size – Initially the target would be to attract the greatest amount of interest and then consider how best to select from those interested based on certain criteria given the international community within the school it would be interesting to have a spread of nationalities, grade levels and subject teachers. There are five types of single stakeholder groups so if 6/8 participated in a focus group discussion that would be manageable for the researcher in terms of tracking the discussions

and transcribing the recording. Once there is feedback on levels of interest this issue will be revisited. A target of 35/40 participants would be preferable.

Nature and Content of Focus group discussions

Nature/Content of Single Focus Group Discussion
We discussed the need to balance the approach to attain as much free response as possible - (Post Meeting my thinking was...all groups would brainstorm a series of questions - What is information literacy? Who is involved/responsible? Where does it take place? When does it take place? How does it take place? Why is it needed or not needed?

Nature and Content of Multi Stakeholder Group Discussion
Based on the feedback from first stage the frameworks of IL would be developed for stage 2. (Post Meeting thinking was...Feedback would be presented to the multi stakeholder groups of the findings of stage 1 and presented as a series of statements of IL - each M/S group would be tasked to discuss their level of agreement/disagreement with the statements of perception of IL and generate a collective response - is there convergence of ideas or not?

Profiling International Community
We discussed the need to understand that whilst data indicates that approx. 40% of the Middle School Population hold USA passports that I need to understand /reflect that a percentage of that 45% have never lived in the e USA and are what is known as third culture kids - The Principal suggested that I would need to schedule a meeting with two of the administrative staff who have a strong knowledge of the background of the children. Equally the 55% of the school population who are non- American will have lived in many countries...profiling staff will also need to go beyond the country of birth.

Profiling the Technological Infrastructure
We discussed that this would be a relatively easy task as information could be obtained from the IT co-ordinator however in terms of infusion of technology in learning this may be more complicated - the web site is a key focus also in terms of how students connect up to their homework and learning - A key element is also to understand the launch of the 1 to 1 laptop programme for Grade 7 students which has placed the issue of infusing technology into learning right at the heart of student's learning methods both in the school and home environment as Lap tops come home with the children each evening.

The IL Discourse Analysis
The Principal noted much of the documentation in this regard is available on the web and she suggested I make a list of the documentation I need and collate what is available on the School Web and then single out a list of what is not and she will get help to locate what I need.

3. Timescale

It is hoped to carry out some piloting work of the interview guides in April/May 09. The Principal raised the issue of timing as this period not being particularly the optimum and to give the timing further consideration

4. AOB – In order to obtain sanction for the research it was felt necessary to first appraise the Principal of what the research and process entailed for the school community. Formal sanction has yet to be undertaken.

Next meeting to follow up on process scheduled for 12/2/09. 8.40am – 45 Minutes.

Appendix 6: Copy of Formal Proposal to Project School Director

Request to Project School Director to conduct Research.

From: Veronica Cunningham

Sent: 26 February 2009 14:22

To:
Cc:
Subject: Doctoral Research at ... - Veronica Cunningham
Attachments: PGCINTX.doc; RES Time Frame Feb 2 2009.doc; RESBGDMETHODS FLOW CHART.doc.docx

Dear,
_____) and I have had initial exploratory discussions concerning my proposed doctoral research on Information Literacy(IL), which I would like to undertake at ... in the Middle School. The purpose of this communication is twofold:-
(1) To outline the rational, process and potential benefit to ... of the research project and
(2) To seek formal approval from you to carry out the research at....

Title of Doctoral Thesis: – Information Literacy in Transition – An International School Community Perspective.

Rationale – (Please read attached Introduction to the Formal Research Proposal submitted to Robert Gordon University, Aberdeen Business School, Department of Information Management, and Jan 30, 2009).

Process – (Please refer to Fig. 1. Information Literacy in Transition – Background and proposed methodology).

- Basically the main research will be undertaken through single and multi-stakeholder recorded (voice only) focus group discussions.
- The stakeholder groups are teachers, students, management, parents and Library and Information staff.
- In stage 1 of the research process each single stakeholder group will participate in a recorded focus group discussion exploring their understanding of Information Literacy.
- The feedback from these recorded discussions will be coded and analysed to create statements of understanding of Information Literacy which will then be used in stage 2 of the process where a multi- stakeholder group will explore the feedback from stage 1 and determine if a singular profile of Information Literacy can be developed or is it necessary to create a profile of Information Literacy which accommodates a more diverse understanding.
- Time commitment 90 Minutes in total by each stakeholder – 45 minute in Stage 1 and 45 Minutes in Stage 2. (Depending on response to participate I envisage 5 x Single Stakeholder Recorded Discussions + 2 x Multi Stakeholder Recorded Discussions = 7 Recordings for Coding and Analysis)
- Time Line for proposed Research attached.
- Permissions and guarantees of anonymity of participants and school's identity will be attended to in line with national law and local school practice.

Benefits to ... community:

1. This research is continuous with the strongly held ... belief that "education creates global citizens prepared to succeed in a complex and changing world," (Source: PS website) Supporting this research would further endorse the ... commitment to develop an information literate citizenry appropriately educated to confidently and competently navigate the ever changing technologically driven information age.
2. Organisational level – IL (Information Literacy) receives explicit attention conferring community ownership and status on IL as being at the centre of the learning agenda.
3. Opportunity for Reflective Learning in terms of the conceptualisation of IL by the ... community.
4. Development and advancement of IL in a holistic way including the voice of all key stakeholders in the school community.
5. Students will be ultimate beneficiaries as the research process and outcomes will influence their opportunities for the consolidation and progression of IL practice in their school.
6. Study will contribute to IL knowledge and practice in the international arena.

.... I hope this gives you a flavour of what the research will entail and that it provides a basis for you to consider my request to undertake the research at (PS) Perhaps you may need additional clarification please know that I would be very happy to meet with you to address any questions you may have. (PS PRINCIPAL) has been a tremendous help to me and it is my sincere wish that you will see this research project as a progressive opportunity for organisational learning at (PS).

Thank you for taking the time to read and consider this proposal,

Looking forward to hearing from you,

Veronica Cunningham.

Appendix 7: Official Permission/Ethical Issues Project School May 2009

May 25, 2009

Veronica Cunningham

Dear Veronica,

We established in that the ----Middle School would gladly collaborate with you on your doctoral thesis research project in Information Literacy.

_____, Middle School Principal, is your contact person, and I know you and she have worked out preliminary if not final procedures on how to get the needed volunteer participants for each specific group.

I have re-read the Ethical Issues information, and

1. I would ask that you give out your email address to parents and ask them to please just send you an initial contact email - a simple "I will participate," "This is my email address," or make sure they sign up on a sign-up sheet with name, telephone number and email address at the PAG meeting for you to email them rather than allow it to appear to set a precedent for others to solicit project participants via the Family Directory, etc. I know you will set the best of examples, but people unintentionally assume or misunderstand how things are happening.

2. I have spoken with our Director for confirmation, and informed the school Principal and our Leadership Team this morning that we have no objection to the name of the (school name) being identified as the school you are working with to gather data as you progress through your research project, have professional discussions, and connect with colleagues.
3. Obviously anonymity of students, staff and parents needs to be maintained,
4. Our School Administration is not aware of any local or national laws that would apply to or affect your work with our students.

Good luck and I look forward to a successful Cunningham/... working relationship.

Sincerely,

Director of External Relations.

Appendix 8: Appeal to Parents at Parent Teacher Association Board Meeting

(Purpose/Process/Participation)

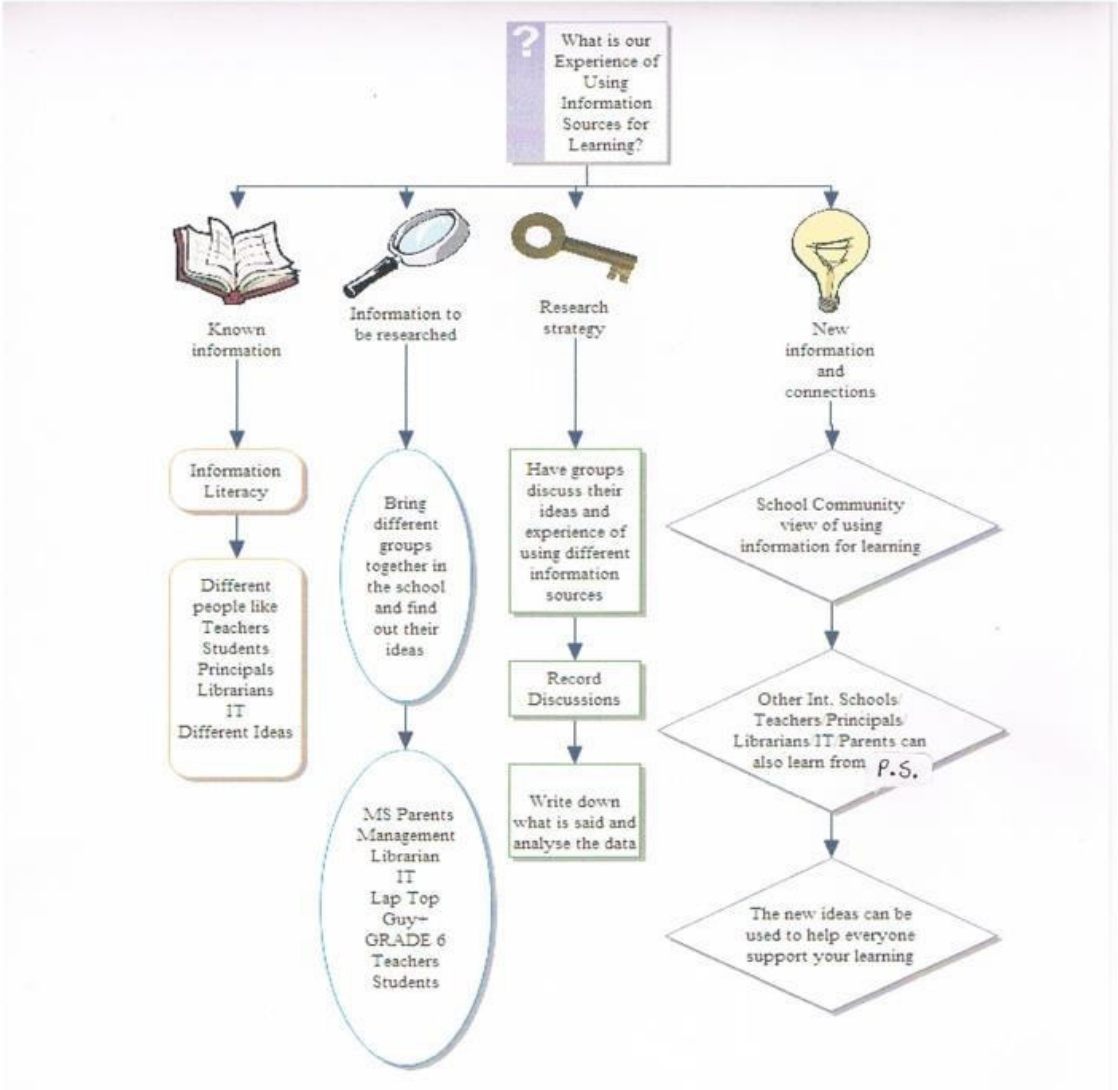
- **Intro –** Education/Lib Info Background/Parent/
- **Change i**n Learning Environment – Technology/Communication/Information
- **Examples** of change –
- Nearly **80% of 10 – 14** years old in UK study 2006 have a **TV** in their bedroom. Times Ed Supply 2006
- In USA research on extent of instant messaging found that in 12 – 17 year old group on average **3 Million hours** per day is spent instant messaging. Teenage Life on Line 2001
- 2008 – Post Obama election **380 million pieces of digital** coverage to be sifted and sorted for archiving in the political history section American Lib of Congress...
- **Personal Experience** that whilst our children's learning environment is changing rapidly and now the range and extent of information available for learning is massive – the challenge is to learn how to seek, locate and effectively use info. Sources for learning – what is termed information literacy. Inc. Students find it stressful to locate the right info to answer the Q's asked. Time to Gather/Locate//Ethic/Evaluation/Selection/ from the enormous range of Information Sources / How do I know it is current/plagiarism and TURNITIN tools...are all the issues we see our children struggle with..
- **Research** has been completed to gather teachers, librarians, IT professional and school manager's perceptions of IL and how we should be supporting students to become effective and efficient users of information but the problem has been the focus has tended to focus on a specific profession or group. In recent times there has been an increasing **realisation for the need for dialogue** in education communities between the various groups to move towards a fuller understanding of the issues and better inform practice.
- **Purpose** My research will **address this gap** in our understanding through a two stage process which offers a platform for dialogue between the various segments of the MS school community. **Process** -In the first stage small groups of parents/students/lib/management/ teachers will have the opportunity to discuss their understanding from their perspective. These discussion will be recorded and analysed to determine how each group defines IL. Then post-Christmas we will form small discussion groups which will have a mix of the various interested parties – teacher/student/parent/school management/Lib/IT to discuss the findings from phase one.
- The **BENEFITS** of this research to the PS school community are positive in terms of generating a shared understanding of the issues around this core aspect of our children's education helping to inform practice. On a more global level the process and findings of this study will form an important contribution to the whole area of IL education for all the professional concerned and perhaps ultimately be used as a model for other Int. Schools who are committed to best practice in this area.
- **Participation -** So I have spoken briefly about the purpose, process and potential benefits of this research and I would now like to ask you for your participation. The commitment would entail 35-40 minutes of your time once before Christmas and again a second 35-40 minutes in the New Year. It will involve talking and sharing with fellow parents in the first instance

and later with other members of the school community. Your discussion are anonymous and confidential and will take place here at PS. We are all aware as parents that only a part of our child's learning takes place in the classroom and that this learning continues in connection with other activities, friends, the media, information through the inter net ...As parents your insights into this key area of our children's education is vital and has not been attempted before in the manner proposed by this study so please take an opportunity to inform and shape the future of your child's learning and sign up. Our world's future is its children. Your presence here today confirms your belief in the need for partnership in supporting our children's education through the PTA activities so although I appreciate this is another demand on your time – it is I believe time well worth investing.

- Offer any advice/support/encouragement to any parents here today considering going back to school – or taking on new studies – the experience has been so far for me a tremendous learning journey for me and my family –

- Thank you for listening and to the chairperson of the PTA____ for allowing me this time today.

Appendix 9: Grade 6 Student Appeal Visual



Appendix 10: Report on Feedback from Grade 6 Student Appeal

PROJECT SCHOOL Meetings Oct 12 – 16, 2009.

Student Appeal

Following Consultation via e mail to the Grade 6 team permission was granted to appeal to Grade 6 students for their participation in the research during the Science lesson programme. Students were informed about the purpose and process of the research via a slide using an Inspiration template of the research project and asked if they had ever asked for help with something – how did they feel – Researcher confirmed that she also was feeling a little nervous and hopeful that the students would say yes.

Students were asked why would they feel it would be important for students of their age to get involved in this research and the feedback from the children was along the lines of the importance of the fact that they were young and saw and experienced things differently to adults/teachers and they had different ideas and experience to share that would be important for the study. One student also pointed out that by teachers and students listening to each other maybe we could find out about the way we i.e. students are being taught to use information needs to be changed and by talking we will know how to have new better ways of learning.

Feedback gathered momentum with each sessions and the researcher adapted her approach based on the response to the first appeal – shifting emphasis more on the value of the student's input and noting that when working in Libraries teachers and students often ask for help and how important it is when we can help someone to offer that help – the emphasis was moved to the importance of the student's being able to help the research and the researcher appreciating and emphasising the value of the student's input. It is also noted that first block at 8.30 the students are just settling into their day at school and perhaps this is not the optimum time to appeal for help – all later appeals generated a much higher response rate to participate. This is also of interest to reflect upon when planning FGD times.

Children were concerned about the Parent Permission and Child Consent Form and sought more clarity about what to do with it. The Researcher left a clearly identified bright coloured box in the Science classroom where children could return their forms. The Researcher explained that all their parents had already received an e mail about the research and that she had spoken about it to parents at the 6th Grade Open House/PTA and PAG Meetings as well as it being in the PROJECT SCHOOL electronic newsletter.

Children were concerned about when the discussion groups would be scheduled and they were informed that it would be outside class time and more than likely during their lunch hour but that this would be discussed with their parents who would be contacted again by e mail to set things up.

In general the students demonstrated much enthusiasm about getting involved in the research and judging by the discussion that took place during the appeal time – it is clear that these students are competent and confident about sharing their ideas and experience.

Emphasis was placed on the collaborative nature of this research where every group teachers/parents/students/management/IT/Library in the school community would have the chance to share their experience about the effective use of information for learning. When the research was completed this new understanding could be shared with other school communities, librarians, teachers, school principals and so on helping to build wider understanding of IL. This mattered to the students.

Date/Time	Block	No. of students opting to take part	Parent Permission and Child Consent form Distributed	Follow Up e mail
12/10/09 10am – 10.25am	B	3	Yes	TBD
12/10/09 12.45 – 11.10	C	7	Yes	TBD
12/10/09 2.15 – 2.30	D	8	Yes	TBD
13/10/09 8.30 – 8.50	E	9	Yes	TBD
13/10/09 2.05pm – 2.25	H	8	Yes	TBD

Appendix 11: Review of Ethical Issues/Permissions/Consent

Follow Up Process -Ethical Issues and Procedures Overview April 2009.

Issues	Procedures for dealing with issues.	Owners	Status
Permissions Parents	1.At Parent Advisory Group(PAG) Address PAG meeting re Research aims and objectives and distribute handout to include +photo (of researcher) +Email +contact details + outline of research aims and methods + reply slip with space for parent consent to participate and contact details +notice that request for parents' consent for children to participate will be circulated via ... advisory programme. 2.At first Middle School Open House Address parents in the Assembly Theatre re scope of research and appeal for participation + distribute same leaflet as above. (To be finalised with School Principal)	R/P/ERD/ MSC R/P/MSC R/P/MSC	Mid-August 09 1st week Sept 09 May 09 Mid Aug/Sept 09
Children 10year+	1. Via Advisory programme distribute information leaflets including parent consent slip for children to be allowed to participate in research. Slips to be returned via advisory teachers. 2. Inform children re the scope and purpose of the research via leaflet and if feasible present a mini overview of the research and how the children can get involved via colour house assemblies. 3. For pilot and main research all activities including children will take place at the school and additional parent/member of school staff will be present. Details to be finalised with Principal in conjunction with Middle school Counsellor–May 09)	R/ERD/P R/ERD	22/4/ 09 22/4/09
Host country law re participation by children	As per email 21/2/09 project school administration is not aware of any Host Country law governing this matter. Will seek additional clarification from External Relations Director.		
Staff Consent	1. To be further clarified with school Ext. Relations officer. 2. Has been agreed with the Principal that information leaflet covering scope and methods of study to be circulated to all Middle School staff through their physical mail boxes in staff room. Researchers contact details will be supplied and staff interested in participating will receive follow up contact to include written consent slip if school so requires.	R/P/ ERD	22/4/09 Early August 09

Anonymity in Reporting 1. School Identity. 2. Parents/ Staff/students	1. Request made to ERD to consider with school administration their wishes in regard to the project school remaining anonymous. 2. Anonymity of all participants is guaranteed by researcher through the use of codes for each group of stakeholders.	R/P/ERD R	22/4/09 April 09 Through out process
Confidentiality of Information	Researcher undertakes to ensure confidentiality of information through due diligence in the recording, coding, analysis, document storage and write up stages of research process and will abide by any additional requirements as stipulated by the Project school and RGU Ethics Committee.	R/ERD/P	Through out process

Code: R=Researcher; P = School Principal; ERD=External Relations Director; AC =Academic Counsellor.

Appendix 12: Parent Permission and Child Informed Consent Form

Grade 6 Parents -Parent Permission and Child Consent to Participate in Research Project.

As you may know I am carrying out research this year in the Middle School to gather information from the school community concerning the effective use of information for learning (Information Literacy). I am conducting this research for my doctorate in Information Science. I have given a presentation to the Grade 6 children about my research and I have asked every child who indicated they would like to participate in the discussion groups to take this permission/consent slip home for signing. The recorded discussions are private and confidential; children's voices will be given a code for transcription and analysis purposes.

The recorded discussion groups will take place at PS and a member of PS staff will be present during the sessions. Basically children will be invited to share their ideas and experience of using different information sources for learning such as online sources, books, or digital media. The students will be asked to take part in two discussion group sessions; one with fellow grade 6 students (30 minutes) and a second time in March 2010 where they may join a group made up of a parent(s), teacher, librarian, representative from MS management and IT.

I will be asking students to share their experience, thoughts and ideas about:

1. School homework/project work. Where they go for information? What resources they find useful? How do they decide if information is true? Do they find it takes a lot of time to find the right information? How do they select what they use? Do they try to find out whose information or ideas they are learning or using? Is it necessary to keep a note of where you find information? Why? Do they enjoy putting their new information and ideas together into presentations? What kinds of ways have they presented information – posters, maybe using computer applications – e.g., Inspiration/Mind maps? How do they find putting the information they find into their own words to show the teacher what they have learnt?

2. Whether or not they think that there are particular skills they need to help them learn from all the resources and if so what are these skills? Who do they think can help them to learn these skills? Do they learn from each other? What would be helpful? What has been helpful? When do they find they need guidance or advice?

3. Finally we will finish our discussion by noting if there are any common or shared ideas/thoughts about how we use different information resources and do we need to have certain skills to help us to that well – is this something we need to learn about for all subjects – science, social studies, maths, language arts, music...

At the outset the purpose and process of the research will be explained to the children. I will also make sure that the children understand how valuable their input is to this research as they are actually helping us to understand how children use information sources for learning.

On the reverse you will find a parent permission section and a student consent section which you both need to sign. Please return to _____ by Thursday November 5th, 2009.

Thank you to you and your child for your support with this school community research process.

Parent Permission and Child Consent Slips.

Parent's Name_____ **Child's Name _____**

Parent Contact e mail_____ **Parent GSM _____**

I _____ hereby give permission for my child _____ to participate in the research project concerning information literacy being conducted at PS by Veronica Cunningham, Doctorate Student of Information Science, Aberdeen Business School, Robert Gordon University, Scotland.

I have read and understood the information regarding the research process.

I understand that the data and names will be kept confidential for the purposes of the research and will be reported anonymously when written up for the doctorate and that a member of PS staff will be present during the Focus Group Discussions.

Parent Signature_____ Child's Signature _____ today's Date

_____

Appendix 13: Child Consent Slip

CHILD CONSENT SLIP

Name _____ Age _____ Nationality _____ Languages _____

I agree to take part in the research project about using different information sources for learning which Mrs. V. Cunningham is doing in PS Middle School. I understand that I may take part in two discussion sessions. One with other Grade 6 students and later in one where there will be a parent, teacher, librarian and someone from the Middle School Management team. I understand that what we discuss will be recorded and that I must respect that what we discuss in our group is private and that our names and what we say will be kept confidential. I understand that taking part in the study is voluntary and I can withdraw at any time. Mrs. Cunningham has explained to me what the research is about and has offered to answer any questions I may have about her study and what I am expected to do.

I have understood this information and I agree to take part in the research study.

Your Signature_____ Today's Date_____

IF YOU OR YOUR CHILD HAS ANY OTHER CONCERNS OR QUESTIONS ABOUT THIS RESEARCH PLEASE CONTACT:

Veronica Cunningham, EMAIL____

Please return this Permission Form to _____ by Thursday November 5th, 2009.

Thank you for your support.

Appendix 14: Adult Participant Informed Consent Form

Information Literacy Study: Statement of Informed Consent

I, _____ agree to participate in this research project on Information Literacy being conducted by Veronica Cunningham, Doctoral student of Information Science registered at the Robert Gordon University Business School, Aberdeen, Scotland. I understand the purpose of this study is to hold focus discussion groups with members of the Middle School community including other PS parents, grade 6 students, teachers and representatives of the Middle School management team to gather ideas and understanding of the effective use of information for learning, (Information Literacy). I understand that my participation is entirely voluntary, and that I may withdraw from the study at any time. If I do withdraw from the study, I understand that this will have no effect on my relationship with the University or PS. I understand that I have an obligation to respect the privacy of the opinions expressed by the group. I understand that the data and names will be kept confidential for the purposes of the research and will be reported anonymously when written up for the doctorate. I understand that I may not receive any direct benefit from participating in this study but my participation may help others in the future. The researcher Mrs. Cunningham has offered to answer any questions I may have about the study and what I am expected to do.

I have read and understood this information and I agree to take part in the study.

_____ _____ _____

Today's date Signature Nationality

If you have concerns or questions about this study, you are welcome to contact: Veronica Cunningham, or e mail _____

Appendix 15: Pilot Student Interview Guide

Children Grade 6 Age 10+

House rules will be stated at the beginning before the recording commences.

- Reminder about what the research is about and what we will discuss/confidentiality.
- Reminder about recording in progress – quietness/entering – leaving room during recording (need to use the toilet...)
- Importance of turn taking/listening and speaking clearly as possible
- Any questions before we begin

The interview process will start with a recent learning experience that will offer the children a focus on using information for learning which will naturally lead into the discussion of that IL experience.

Prompt 1 For the past few weeks you have been learning about earth science with your teacher Mrs. G. Tell me about what information sources for example web sites, books, magazines...you may have used to learn about_____? May I ask the group to share how you go about finding information for your homework/project assignment _____?

Once the group members have engaged with the process element of IL – the focus will transition to the children's experience of information literacy and the interviewer will prompt children with questions that require more reflective thinking.

Prompt 2 Okay so you have been telling me about the places you go to find out information to learn about the earth, now I would like to hear a little about how you as 6th grade students feel about using the internet, books, wikis, and Moodle? Is it a good experience? What do you like most about using these sources when you are learning about new things? What do you like least? Thinking about doing homework and school work which experience do you think children of your age enjoy most – asking people, reading from books or going on the internet – tell me a little about why you feel this is so. In your experience would you say the way information is written up on web sites is in a style that you can understand and that you can make sense of for yourself? How have you decided what information is the right information for your question? How can you work out if the information is true? (Note sources?) The actual experience of reading information on the screen do you find that comfortable or do you find there is a difference when reading a book from the Library? What happens if you are trying to find information for your assignment and you can't find what you are looking for? Does that happen? How does that make you feel? Who might you ask for help?

Prompt 3 From what we have talked about so far I can see that as 6th graders you have a lot of experience of using the internet and many different sources while learning. Because you have all this experience may I ask you to share with me what has worked well for you? What kinds of approaches have you used or found helpful? Are there skills you can learn to do that well? Thinking back on your school work so far this year or last year in grade 5– is there one piece of work/project/assignment that you particularly feel went well for you and that you enjoyed very much – can you say a little bit about why you felt it went well? Who was involved in helping and supporting you with the work?

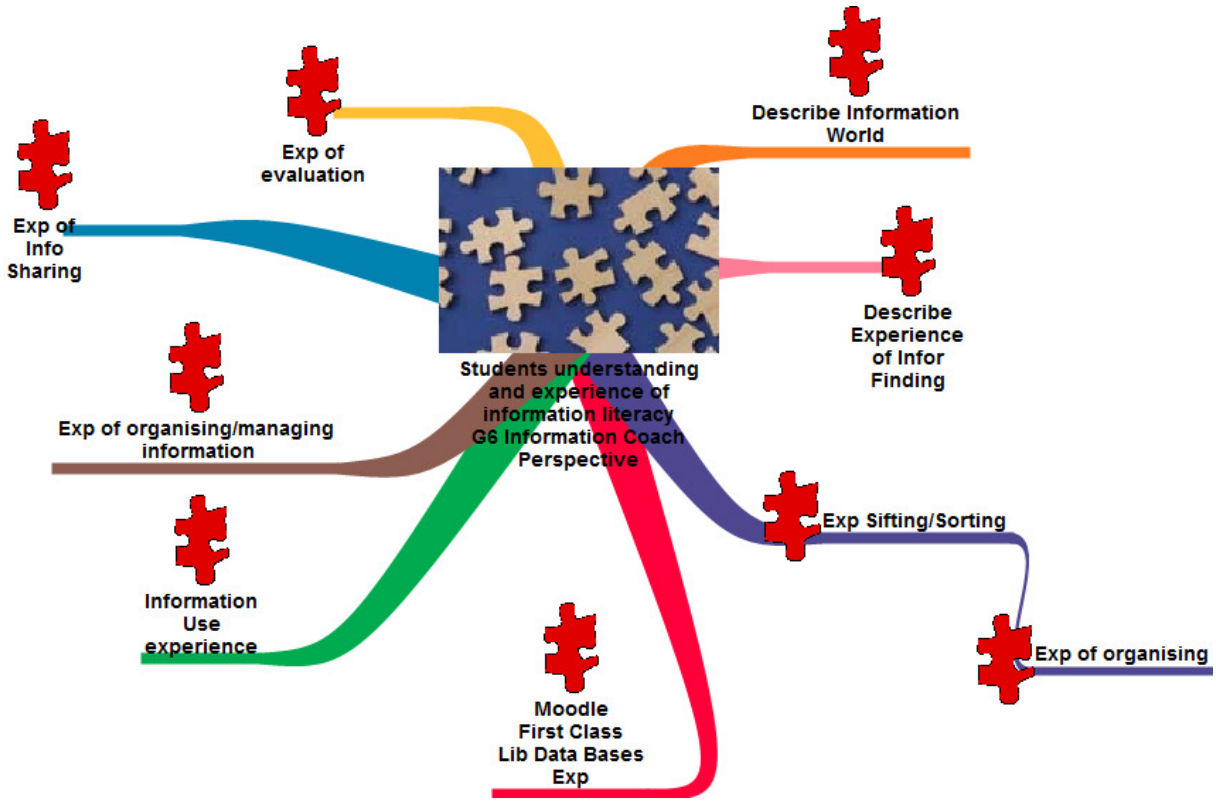
Prompt 4 Thinking about who helps you with your learning for example your mum, dad, teachers, the Librarian or IT teacher – what kinds of activities have you perhaps done that you feel helped you to get on well and learn when using different internet sources and resources in the library?

Prompt 5 (May be invoked if the experience of using the lap door as a door into the information world is not referenced in previous discussion) Last year the 7th graders were the first group at PS to get a lap top and now you have been given one too – were you happy about having your own lap

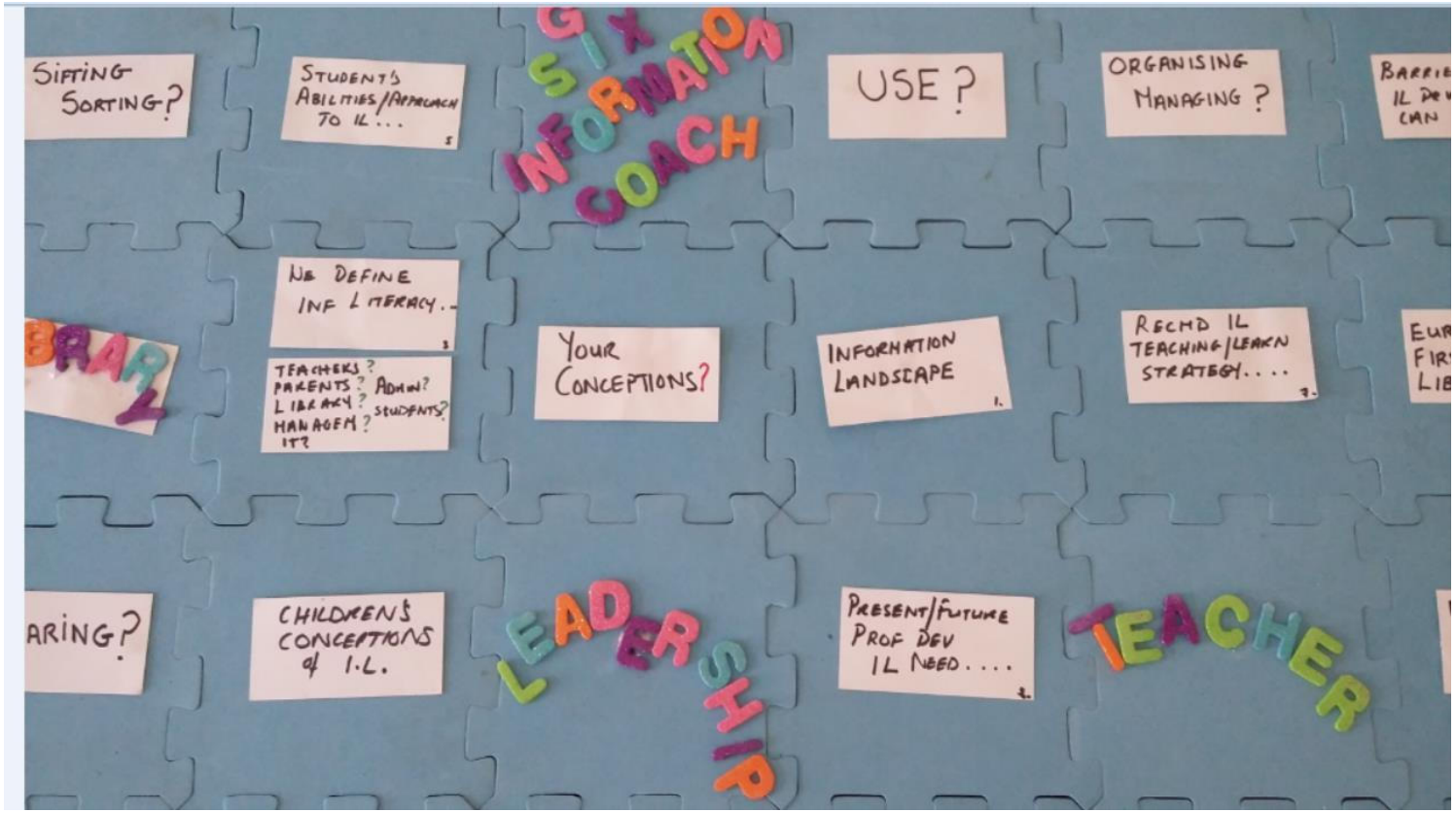
top? Do you feel that the experience of having your own lap top has meant you are now developing other skills and ways of finding and using information for learning? – by having the lap top do you feel there is anything different about how you find information now compared to when you didn't have one or is it mostly the same experience? You are all in Grade 6 now - by the time you are in Grade 12 do you think the way you will use different sources to learn will change or stay the same as it is now? How do you think people of your age could prepare for that change?

Conclude the discussion by thanking the children for their brilliant participation and how important and valuable their input has been for the research. Feedback will be given to them about what has been learnt. Note – Next session in Feb/Mar 2010.

Appendix 16: Student Mind Map Interview Guide



Appendix 17: Jig Saw Puzzle Pieces used in Focus Group Discussions



Photograph by V. Cunningham. 2016.

Appendix 18: Oslo International School (OIS) Bekkestua, Norway, Library and Media Centre Development Project Updates to School Community: OIS Communicator Newsletter Entries November 11 and December 12, 2016*

OIS LIBRARY DEVELOPMENT PROJECT - UPDATE

Further to the OIS Library facilities and programme development project, research is well underway to gather the ideas of the school community. To date meetings have been held with members of OISPA, IT and library personnel, Learning Technology Integrator, IB Coordinator, CFO, Principal and Deputy Principals of Primary School and Secondary School Team Leaders.

Further meetings are in the pipeline with the Primary School Team Leaders, the Pre-School Leader and teachers, the Secondary School Principal and Deputy Principal, the HoS, students, library parent volunteers and staff. Both Primary and Secondary School Team Leaders in collaboration with the project consultant will gather ideas from teachers across the community thereby generating a whole school profile of the ideas to inform the Report on the development of the OIS library facility and programme.

The Library Evaluation and Development Users' Committee Report equally forms part of the data under review in this process. On completion of the data collection phase, the analysis and writing up of the Report and recommendations is scheduled for December and January 2017 with the final report to OIS Leadership Team to be completed early February 2017. Thank you to everyone for their enthusiastic contribution in this initial discussion phase.

Should you have any questions or wish to contribute your ideas to the process please contact me at: Veronica.Cunningham@oslois.no

OIS LIBRARY DEVELOPMENT PROJECT – FURTHER UPDATE

This past month the OIS school community has demonstrated through a process of positive and constructive participation the value placed by the community in regard to learning from one another and the centrality of people sharing, thinking, talking and listening to one another, in order to piece together a full picture of the ways the Library and Media Centre can be developed to meet the changing information and learning needs of learners of all ages. To complete this phase of the process there remains two meetings with Alumni and Library which will be scheduled in the coming weeks.

Looking ahead the month of December will see the focus shift to theming the data to reveal the needs and subsequently in January 2017 to develop a Report for Senior Leadership recommending the way forward.

Thank you to everyone for contributing to the data gathering process which has yielded both a comprehensive and representative profile of the needs of the community in terms of the future role, service, facility and programme of the Library and Media Centre.

If you have any additional comments and suggestion please e mail Veronica Cunningham at the following e-mail: veronica.cunningham@oslois.no

Thank you,
Veronica Cunningham.

*(Permission granted 9/1/2017 by OIS Head of School to include copies of these notices in the thesis).