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**TITLE:**

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**Publisher citation:**

**OpenAIR citation:**

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# Virtual embedded librarianship for information literacy teaching

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**Abstract.** This paper, reports on the planning and preliminary results of an action research project undertaken for the redesign of an online distance learning information literacy (IL) module on the basis of virtual ‘embedded librarianship’. The research project, which followed an action research design, brought together the IL module coordinator and an Academic Liaison Librarian, working at different institutions to collaboratively redesign the assessment and teaching of the module. Data were collected via a qualitative analysis of students’ work and a series of open-ended questions addressed to students on the value of the approach followed. Students reacted positively to the embedded librarianship design and engaged constructively in situated learning. Challenges included time-zones differences, the contribution level of students and lack of confidence. The paper puts emphasis on educating future information professionals as embedded information literacy partners, promoting the development of transferable skills and a collaborative/sharing online working ethos.

**Keywords:** blended librarianship, embedded librarianship, information literacy, university, collaboration, online learning, teamwork, sharing, confidence.

## 1 Introduction

The concept of both embedded and blended academic librarianship is founded on the premise of a purposeful interaction and partnership between academics and librarians who operate at the centre of the teaching and learning process, participating actively and holistically in the design and delivery of learning [1] [2]. The blended librarian participates actively and holistically in the design, delivery and assessment of learning developing an essential skill set which blurs the boundaries between traditional library competencies, information technology and instructional/educational design skills. A number of fundamental qualities empower this role: leadership, commitment, collaboration, communication and engagement, which are fundamental for creating partnerships between librarian and faculty [3]. Although reaching beyond the academic context to address the wider organisational environment, the model of ‘embedded librarianship’ carrying similar connotations with blended librarianship, is described as the physical movement of the work of librarians from a central library close to the customer groups of an organisation. Embedded librarians offer “a variety of service innovations in a variety of organizational settings” including “training, relevant research, information resource development, current awareness and alerting

services, assessing literature and managing web, intranet and wiki content” which require the development of information technology skills [4]. Within the context of academic library work specifically, this may involve participating in academic courses and teaching IL on a regular basis.

Dene described the embedded librarian “as an integral part to the whole, based on the geological definition of an embedded element” [5]. This model of librarianship deliberately divorces librarians from the physical space of the library, creating new and less predictable working situations which offer opportunities for extending library and information practices beyond standard expectations. If we embrace a definition of context as “something you swim in like a fish. You are in it. It is in you” [6], then this altered setting/situation can become the catalyst for creating novel working paradigms, as librarians become both products and producers of context via enriched experiences taking place in their embedded working environments. Schumacher, offers a number of case studies which present the extent to which physical collocation can influence the nature and complexity of activities of embedded librarians within a number of different corporate and academic environments, demonstrating the higher level of engagement and contribution possible when librarians work as part of a unit, a community/group, as part of the whole. This systemic contribution creates new avenues for customised, value-added contributions and the power of their transformational influence is demonstrated as librarians’ engagement in the team grows moving from simple information collection responsibilities to more team-based expert roles within the organisation (e.g. of a primary research partner and information curator) [7].

## 1.1 Research Rationale

There is a body of theoretical studies which examine the significance and positive impact of embedded librarianship in higher education and provide evidence that this type of partnership is effective for creating a more involved community of learners. These position academic librarians at the core of the learning process, and the mission of the academic library as predominantly educational, aligned with the broader mission statement and goals of the academic institution they serve. However, this vision spans beyond the direct beneficial impact to learning for students to further support the changing roles of academic librarians themselves as the library becomes less important as physical space and more “an extension of the classroom” that “needs to embody new pedagogies, including collaborative and interactive learning modalities” [8]. Sinclair [9] envisages a library which although “ceases to be the *de facto* center of information”, in view of the plethora and popularity of online commercial information services, offers librarians new opportunities to reassert and empower their existing educational roles, working together with academics to advance academic missions and taking librarians outside of the library challenging traditional expectations of the librarian *in situ*.

Furthermore, the increasing demand on academic libraries to formally demonstrate the value and quality of their services to key partners and external stakeholders using systematic social and economic impact indicators requires a more proactive and rigorous analysis as evidence of their value not simply in terms of output data but on

the level of the wider goals of the institution and the community of learners they serve in terms of positive impact on learning teaching and research: the “much harder issues relating to impact and value” [10]. There has never been more meaningful time to move these paradigms to the online environment as academic library users’ expectations of access to information and their overall information seeking patterns increasingly involve less engagement with the physical space of the library and more independent and dynamic information exchanges and discovery in modern online information environments. With the rise of online education and more blended learning approaches followed in education, there is a need to understand whether this type of partnership could be equally effective online. Recent research is starting to provide evidence that librarians can become virtual instructional partners with academics, emerged in online learning management systems and effectively achieving virtual embedding into courses, adopting the role of online instructors [11][12][13]. Although virtual embedding appears to be equally effective via the use of online digital technologies[7], there is still a significant gap in terms of real practical examples of online courses which have implemented a holistic integration of a librarian in the pedagogical process.

## **1.2 Aims and Objectives**

This article discusses the planning phase, design and preliminary evaluation outcomes of an online distance learning information literacy (IL) module which resulted from a creative collaboration and ongoing dialogic relationship of a subject librarian and an academic working in the area of IL, following a novel *virtual embedded librarian* model. This term will be used in this project to describe a librarian who takes an active role in the preparation, teaching and the reflective evaluation of an online class, and who is immersed together with the academic in shared pedagogical goals. A negotiated common ground is accomplished which is the outcome of merging the two perspectives to facilitate a collective effort, utilizing a shared repertoire of expertise. Values, beliefs and goals become shared entities in a mutually agreed teaching and learning approach. This broadens IL instruction to a novel collaboration, extending IL teaching to incorporate the professional context. The particular objectives of the project included: a) to follow a virtual embedded collaboration model with the purpose of collaboratively redesigning the teaching approach and assessment procedures of an existing IL module; b) to provide students with an enhanced quality of teaching and learning experience that is meaningful and applicable to the real working library context; c) to add practical value to the students’ learning experience by offering them the opportunity to share their work with the wider IL community of practitioners and academics; d) to evaluate the outcome of the programme from the perspective of the students, focusing on issues such as direct involvement, development of team-work skills, and the connection to the real context of work.

## **2 Research Design**

For the realisation of this project the skills of an IL academic and those of an IL practitioner were brought together with the aim to help students understand some of the requirements of the professional environment, putting together a real life project scenario. At the same time it was an opportunity to extend and test the embedded librarian idea in an academic programme which prepares future librarians, not restricting it to the research skills skin-deep approach. The idea was to offer students the opportunity to be creative and help them build subject-specific and transferable skills. The practitioner worked as an Academic Liaison Librarian, with responsibilities for the Faculty of Engineering and Physical Sciences of an English university library. The academic had experience of running the IL module for a number of years and a good understanding of the background and theoretical principles of IL. For the librarian there was a twofold benefit. Initially it was the idea of giving something back to the community of librarians, helping new professionals to develop an understanding of the requirements for running a practical IL instructional activity in context. However, what also emerged was that there would be an opportunity to also introduce students to the value of sharing knowledge and working with collaborative communities which characterises the working ethos of modern librarianship. Finally, as the librarian and the academic worked in different institutions, this approach offered a novel model of virtual embedded librarianship beyond institutional and geographical restrictions, which naturally extends this partnership to embrace the dynamic character of information creation, exchange and learning taking place in the online environment.

### **2.1 Description of the IL Module**

The IL module forms part of a Graduate Certificate course, a distance-learning access programme, which prepares students for a number of Master's level courses within the area of library and information management. The distance-learning mode of study is delivered entirely online via Moodle, the university's online learning environment. The module provides students with a broad understanding of IL as it relates to the contemporary library, information and knowledge work environment, and enables them to identify ways in which the information professional can support others in becoming information literate.

### **2.2 The Design of the Project**

The design of the project followed an action research framework which has been described as a systematic enquiry, a form of investigation into existing professional activities. Data are then employed in reflection, decision-making and the development of improved practice [14].

The first phase of the project involved identifying key roles and collectively redesigning the assessment instruments of the module. This required an initial understanding of the learning outcomes of the IL sessions organised by the librarian and how this context could be incorporated into the student assignment. The design

of the module was developed using aspects of Kolb's experiential learning model, which describes higher education teachers as "curators" of "social knowledge". They prepare students to reach "integration", a higher stage of development that includes "capabilities of the whole person towards creating wisdom and integrity" [15]. This higher level integration can be achieved via a number of different learning environments: the "affectively complex", where students are offered the experience to live the life of the professional in their subject; the "perceptually complex", where students understand and relate to concepts by combining sources of information and concentrating more on the processes; the "symbolically complex", where students are asked to solve problems by using the information acquired; and the "behavioural complex", which presents a real case scenario focusing on describing and completing a task based on specific criteria [15]. It was therefore important to offer students opportunities, which involved a rich learning environment that offered problem-solving opportunities within a professional context.

The initial intention was to solely include a single librarian and scenario; however after consultation with the Course Leader, it was made clear that students had an interest in both academic librarianship and the business information management context. For this reason, a second Academic Liaison Librarian working at the academic's parent institution within the area of business information was called to offer an additional scenario. The first scenario addressed year 1 undergraduate mechanical engineering students based on an IL training programme designed by the Librarian. The second scenario was set in the content of business information users in the oil and gas industry and was informed by a guide that the second librarian had put together for postgraduate students studying oil and gas management. The objectives of the assignment were aligned with the learning objectives of the IL training programme designed by the first librarian and the teaching material of the second librarian although the latter was not embedded in the collaborative planning of the module. The learning objectives of the IL sessions prepared by the librarians addressed a number of IL objectives, spanning from understanding different types of publications to searching on different information sources and referencing. However, to achieve a required level of depth for their assignment, the students were asked to make a choice between one of the following paired areas: a) understanding the characteristics of different types of publications and using phrase and proximity searching; b) searching for and critically evaluating web information; and c) using Boolean operators and truncation and applying the Harvard referencing style.

To help the students immerse themselves into the scenario more effectively, an online recorded lecture with each one of the librarians which addressed the objectives of the assignment and the opportunity to apply students' work in the real context as teaching materials was organised. Although the lecture was originally offered as a synchronous event, the different time-zones and other commitments of students did not allow this direct communication and thus they were encouraged to ask follow up questions in a chat session organised by the academic at a later time. After the completion of the module, a questionnaire, including open-ended questions was distributed to the students via email via which they were asked to evaluate the involvement of the librarian, the teamwork activity, the online lectures offered by the librarians and the assignment scenarios. The data collected were analysed qualitatively using aspects of Grounded Theory [16]. This involved coding,

categorizing and creating theory from a constant comparative analysis of the themes which emerged from the raw data: collaboration, involvement, sharing, building contextual/community knowledge, confidence, critical reflection, teamwork and real-life practical application of knowledge.

### **3 Discussion of Results**

#### **3.1 Team Activity Outcomes**

A total of thirteen students participated in the module divided into two teams. Team A examined the ISB of undergraduate engineering students and Team B focused on the ISB and needs of business information users working in the oil & gas industry. However, only 11 students took an active part in the teamwork activity. Two of the students (one in each team) failed to contribute to any of the discussions and also achieve an overall successful outcome in the module.

An analysis of the history of the interaction which took place in Team A revealed that the team created thirty versions of the wiki document. Six out of the total eight group members actively contributed to the learning activity, while one of the two non-contributors took an active part in the discussion forum and shared resources (A4). Team B was slower to start the wiki activity and out of the five students only three were active contributors with a total number of sixteen alterations to the wiki document.

The analysis of the students' interactions in the online forum and their reflective reports demonstrated that overall they engaged constructively in situated learning and practiced team-working skills via different negotiated roles. Team A explored the strengths, skills, knowledge and preferences of the team members so that these qualities could also be developed in others through the task (A2). Another student was eager to "break this activity down into individual tasks and assign dates to them" but expressed less confidence with the technical aspects of the wiki: "I nearly always manage to delete posts I've uploaded! Wikis don't like me much" (A1). Similarly another student described themselves as "not the biggest fan of wikis" for collaborative work (A3) but took a direct role in terms of how the process was going to be completed emphasizing the need for a methodical approach (Student A3). The team exchanged interesting critical reflections of the content interactivity, recall, visual impact, ease of navigation (A2), format (A6) fun, clarity, comprehensiveness and value (A5) of the resources they had identified, which would address the "student's learning experience from thinking and reflecting" to "professional development" (A5) and "assist the life-long development of these skills; rather than just dictating these skills" (Student A2). The students considered the intended audience critically: "This type of guide would be good for students at my college, as they are mostly non-native English speakers, so the visuals and interactivity would be interesting for them" (A3). They also reflected upon the value of this learning in their own working contexts: "I liked it so much I am now looking to create something along a similar line for my work place... more ideas for me and my colleagues to "repurpose"! (A6).

Team B initially arranged to meet up in the online chat area but this approach was not successful in the end as the team was not only “split over several time zones and we are logging on at different times” (B1) but had other “working, parenting and travelling” commitments (B2). On the whole Team B preferred the use of the wiki and the notes pages and was less concerned about editing the other students’ work.

Despite that both teams found the teamwork a positive addition to the module. It was an “engaging” learning activity (A6) which allowed them “to prepare for the assignment collaboratively and find a good base of information” (A3) that contributed to the outcomes of the final assignment (B1). Students enjoyed working together in the group (A5;B1) which “provided an opportunity for stimulating conversation and idea sharing”, emphasizing the value of teamwork in supporting each other and learning from the combined knowledge of the team members (A6;B1;B2). The teamwork activity also helped students work with each other, “making new connections and interacting with different cultures and opinions” (A2). However, they also acknowledged that in distance-learning it is not always possible to engage every student at the same level. There was only one student who did not understand the Wiki task, although they felt that the organisation of the module was good and easy to navigate (B2). The only difficulties the students encountered related to the difference in time-zones which allowed fewer opportunities for synchronous interaction (A2;A5), the lack of a more coordinated plan in terms of taking charge of activities and the contribution level of each member of the team (B1). As one student put it “some people took a more proactive role in organising us, no one took charge which meant at times we seemed to be going round in circles trying to reach a decision” (A5).

### **3.2 The Presence of the librarian**

Overall, students found the input of the librarians particularly useful (A6; B1;A2) as they offered them the opportunity to not only understand the assignment but also “hear first-hand experience” (B1), “a professional perspective” (A5) which helped them emerge themselves into a “realistic scenario...like it was part of my job rather than just a textbook assignment” (A2). However, there were mixed responses in relation to the recorded lectures particularly. While some students found them “very helpful” - especially because they could be accessed at any time (A6) and they contributed towards alleviating the feeling of working in isolation (B1), others encountered technical difficulties, created by the accessibility of the video (A3), its playback navigation speed (A2) or its sound quality (A5). Another student felt that the librarian lectures were useful, however, they felt they did not “grasp everything” (B2), while others suggested enhancing the interaction between the invited librarians and the students, via a Q & A, session (A3) and offering “more guidance in terms of the scenarios” (A5). Interestingly, a student recognised that their assignment “had a practical application and was not just an academic exercise - but a real world activity” (A1) but they could not comment on the value of the approach due to increased levels of anxiety and lack of confidence which made them distance themselves from the online learning environment: “I had no expectation that anything I produced would be near the standard expected” (A1). However, this was quite surprising as the same student produced one of the strongest IL guides. Only one student, did not see the

value of the librarian lecture because they would have liked to interact with professionals within different industries (e.g. related to IT) (B3).

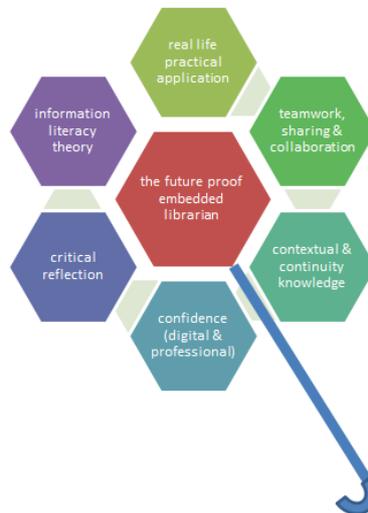
## 4 Conclusion

The results of this study demonstrate that students reacted positively to the embedded librarian design and embraced the presence of the librarians, the meaning of the practical task and how the scaffolding content contributed to their final assignment. They also offered suggestions for the further enhancement of this collaboration, extending it to other contexts. In some cases technical barriers were presented but it was also found that lack of confidence played a more important role in students' motivation to engage and interact. Finally, a more systematic allocation of team roles and responsibilities might have improved their contribution and group dynamics.

From the analysis of the data, a number of important issues for educating the IL professionals of the future have emerged. The role of the embedded librarian in this context is to help students develop not only an understanding of IL theory but also higher level transferable skills and a collaborative, sharing and team working ethic which epitomises the professional practice of modern information professionals. These transcend the development of the vital IL related skills of knowing how to find, understand and use information, addressed in most IL definitions to also incorporate critical reflection, team-working, confidence (both digital and professional), contextual/community understanding and the practical application of theory. The following model provides a novel framework for achieving the objectives of the embedded librarian mindset (Fig. 1.). These core areas are not exhaustive but developmental and can be used in the context of additional research to further expand the vision of virtual embedded librarianship.

Research on embedded librarianship agrees on the fundamental principle of the librarian becoming an integral part of a group. Embedded librarians should act as team players, develop an "entrepreneurial mindset" outside of the traditional boundaries of the library, accept risks, have the ability to explain their knowledge, skills, and expertise to others, build trusted relationships, act outside of comfort zones and think creatively [17]. Creaser and Spezi note that "the acquisition of new skills and knowledge – beyond the traditional librarianship skills – is essential for librarians", emphasising teaching skills, proactively engaging with users, creating personal relationships with academic staff and clearly demonstrating the impact of library interventions [18]. IL education for the development of the future LIS professionals should therefore aim towards pushing the traditional boundaries towards an embedded librarian frame of mind which embraces new challenging roles and competencies. According to Kaplowitz, educators should follow a learner centered approach, which offers students opportunities for collaboration, active participation and critical responsibility for their learning. They should also inspire them to be passionate about their subject, confident and develop as lifelong learners. To achieve this they should listen to students, engage them by encouraging them to use what they have learnt in an effective way and inspire them by showing them passion for the

subject [19]. These are core values which will provide a stepping stone for the education of future information professionals as embedded IL partners.



**Fig. 1.** Umbrella model of IL teaching for the future proof information professional

The evaluation of the involvement of the librarian as an embedded information professional in the IL module provided an initial framework for an on-going partnership project which will involve a second level of collaboration and embedding with the evaluation of students' work for inclusion to a real IL session and the submission of their work to an online repository, JORUM (<http://www.jorum.ac.uk/>), as open educational material. The future plan for this work involves the development of a more on-going sustained collaboration with the embedded librarian and the involvement of the second librarian as a more embedded partner. In the next phase of the project, the academic and the two librarians will review the students' assignments collaboratively following a set of criteria that will address: the quality of content (e.g. subject/theory correct material, relevant to the objectives given in the scenario; reusability, originality, richness), the suitability of the material for use in different teaching situations (e.g. online tutorial, workshop, tutorial, group seminar, demonstration) and the inclusion of interesting and engaging activities. There is already indication that the students' work includes a few examples of high quality submissions which could be applicable in context and would be of value for sharing with the wider LIS community. The aim will also be to increase the level of involvement of other practitioners in different sectors and start a new tradition of online collaboration of library professionals working in the area of IL. This work offers a real practical example of a virtual embedding model which breaks away from the traditional perspective of the librarian as a service provider situated within a given context and offers future directions for new creative collaborative partnerships and enhanced working relationships beyond the restrictions of physical space or traditionally expected roles.

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