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Tracking Digital Impact (TDI) Tool

Version 1.4

http://emps.exeter.ac.uk/impact

This is a draft of the TDI tool. If you have any questions or comments please send them to Kent McClymont at k.mcclymont@exeter.ac.uk.

Tracking Digital Impact (TDI) Tool

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What is the Tracking Digital Impact (TDI) Tool?

The Tracking Digital Impact (TDI) tool is designed to help researchers, research groups, projects and institutions assess their current and future digital engagement strategies in an objective and informed way to support the development of new and improved strategies that more effectively enable good engagement with businesses, communities, the public, governing bodies and other researchers to facilitate better engagement and greater impact.

The TDI tool was developed as part of a JISC funded project which focused on identifying, synthesising and embedding business, community and public (BCE) engagement best practices. The TDI tool examined the best practices at the *dot.rural* Digital Economies hub at the University of Aberdeen and translated those (accompanied by new guidance) into the TDI tool. Parts of this document were sourced from "*Brief Notes on Social Media for Research*" by Jennifer Holden (University of Aberdeen, October, 2012). This document describes the TDI tool and its use.

The tool is designed to enable researchers to identify knowledge gaps and areas of their engagement strategies that need to be developed. It is not designed to provide information on different online communities nor is it designed to list all current technologies. Effective use of the tool will encourage users to think about their strategies, policies and resulting needs which should be accompanied by further investigation into issues that arise from this assessment.

Instructions

The TDI tool is split into four categories of information: questions, links, definitions and guidance. The links (numbered [L1], [L2], …) are provided as a coversheet to the TDI tool and provide links to related and useful resources.

The questions (numbered [Q1], [Q2], …) are given in the first few pages of the tool and are intended to provide the key questions that should be asked at each point in the later definitions and guidance. The remainder of the TDI tool is organised using nested definitions (numbered [D1], [D1.1], [D2], …) and provide plain English explanations of important technologies and their general uses. The definitions provide the structure of the TDI tool. Each definition is accompanied by guidance notes and questions (numbered [D1][G1], [D1.1][G1], [D2][G1], [D2][G2], …) which are intended to provoke self-assessment and offer some guidance on how to proceed based on the responses to the questions.

When using the TDI tool it is advised that the user records their responses to each of the definitions and guidance notes for future use. The self-assessment should be completed periodically throughout and after any project to ensure the current digital engagement strategy reflects recent changes and/or developments in the project.

Acknowledgements

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Glossary

TDI – *Tracking Digital Engagement*
BCE – *Business, Community and Public Engagement*
JISC – *Joint Information Systems Council*
NCCPE – *National Coordinating Centre for Public Engagement*

Links

A set of slides associated for using this tool will be available on the project website (http://emps.exeter.ac.uk/impact) which can be used with project teams as part of training and/or planning workshops to give guidance on using this tool.

Resources

- Netskills (https://www.netskills.ac.uk/)
- JISC Legal (http://www.jisclegal.ac.uk/)
- NCCPE (http://www.publicengagement.ac.uk)
- JISC (http://www.jisc.ac.uk/)
- AURIL (http://www.auril.org.uk/)
- Research Impact Studies, University of Exeter (http://emps.exeter.ac.uk/impact)
- Gateways: International Journal of Community Research and Engagement (http://epress.lib.uts.edu.au/journals/index.php/ijcre)
- (Detailed) US Government Guidance on Digital Engagement (http://newmedia.hhs.gov/resources/) (http://1.usa.gov/UG5lMe)

Related Tools

- IRIS (http://bit.ly/SwV9kB)
- PERO (http://bit.ly/TbPm24)
- Auditing, Benchmarking and Evaluating Public Engagement (http://bit.ly/ThspyL)
- Netskill's BCE professional development tool (https://www.netskills.ac.uk/bcecpd2/)

Contribute

If you have comments, amendments or contributions to make to the TDI tool please contact Kent McClymont at k.mcclymont@exeter.ac.uk. The TDI tool will undergo regular reviews and the team welcome any advice or comments you may have.

Note: comments on monitoring, tracking and assessment tools are given in highlighted purple boxes (like this) throughout the document.

Case Study: Natural Connections Demonstration Project (NCDP)

The Natural Connections Demonstration Project (NCDP) will be used throughout this document (shown in these green boxes) to illustrate how the tool can be applied.

Context:
The DEFRA White Paper *The Natural Choice: securing the value of nature* (2011) pledges to 'remove barriers to learning outdoors and increase schools' ability to teach outdoors when they wish to do so' (p.4). The NCDP, which is located in the west country and managed by Plymouth University, is the model for testing how this can be done. The overarching aim of the project is to support schools in embedding LINE into their planning and practices in a way that is sustainable over the long-term. The immediate objectives are to engage 200 schools (primary, secondary and special) in LINE and to involve between 200-500 volunteers in supporting LINE activities in these schools.

The project will be delivered through the four elements of:

- independent brokerage that links schools and LINE providers, and facilitates continuing professional development for both
- a volunteer development programme that supports schools in recruiting and retaining volunteers
- a participatory web service that provides a wide range of information and encourages the exchange of ideas and information
- robust evaluation of the project processes and outcomes, with the information collected at each stage of the project used to inform its future development.

Digital engagement will be a critical element of the project's strategy, and tracking digital engagement will be a fundamental part of the evaluation. This is partly because of the central role of the web service in promoting LINE in schools, and partly because of the different methods the project will use to reach as wide a range of education communities as possible.

First Steps

Who is this for?

The TDI tool is designed to be used by researchers, project teams, research groups or departments and institutions. When developing a digital engagement strategy it is advisable to consider any of these as a single entity which should have a coherent branding and consistent message. For example, each member of a research team should approach digital engagement in the same manner across a particular project; the project should have a clear identity of its own which is reflected by each of the team members. If the project has been started without a clear digital engagement strategy, remember that it's never too late to develop one!

The tool was used by the NCDP team to develop an engagement strategy with a focus on digital media. At the time of use, the University had recently been awarded the project and were recruiting staff to the project. Engagement activities had not yet been started, and the tool was immensely helpful in demonstrating the need for a clear, well thought-out strategy that will enable the project to employ and track digital engagement in a way that is manageable for the team as a whole and for individual team members.

Read this Document!

Ideally, before setting up your digital services, you should read this document. However, the tool can be applied at any stage of a project and used to assess current, existing activities. It will provide a wider perspective on the potential tools and approaches that can be taken to engaging through digital means. Complete the following first steps **AFTER** reading through the document and completing the TDI self-assessment.

Auditing Skills, Resources and Staff Development Needs

It is useful at this point to undertake a digital media audit of all the people who are working on the project / in the group; what kind of media are they comfortable with? If gaps are found in people's knowledge and confidence, find out where they can receive training and support. Online resources include Netskill's BCE professional development tool (https://www.netskills.ac.uk/bcecpd2/). Engagement (and for many social media engagement) is now an important part of any researcher's job and so staff development in these areas are strongly advised.

In addition to identifying the skills (and lack thereof) available, an audit of available resources should be undertaken. The following are common resources needed for many digital activities.

- Technological resources – i.e., servers, internet connections, computers, online storage facilities, and so on.
- Time and personnel – i.e., research assistants, IT specialists, BCE practitioners, etc.
- Money – i.e., funding to implement plans, cover staff training costs, etc.

Each of these resources will have its own limitations and these should be acknowledged and built into any plan, including mitigating measures. Consider also what each of the possible solutions outlined in the definitions below costs in terms of the above resources – some may cost money while others require significant staff time.

There are eight team members, some full-time and others part-time. All bring different levels and areas of experience to the project with regard to education, learning outdoors, volunteering and research, and all have plenty of experience in using computers in a number of different ways. None has experience in tracking digital impact, although the researchers understand the nature of evaluating project impact in a general sense. One team member has experience in using social media, and another has experience in public and community engagement.

The first task was to conduct a skills / competencies audit within the team, which we used as the basis for deciding which team member will be able to take responsibility for which area. So that all have an understanding of the different types of media the project was going to use, each team member used the Netskills BCE CPD2 system to identify basic training needs; as a consequence, some also took advantage of university training in social networking and public engagement (separate training programmes).

As there were limited web design / technology knowledge and skills in the team, we developed a partnership with an established web service to provide the web service. We employed a consultant to help find the partner and to develop the web service proposal for the project commissioners. The consultant will oversee the web service development for a finite length of time, after which the project team will have developed sufficient knowledge / skills to take this role over.

Starting Out – Things like 'Usernames' and 'Profiles'

A key component of any digital engagement is establishing a clear and uniform profile for the researchers, project(s), group(s) and institution. Before engaging ensure all the profiles are established on all the different websites and services that are going to be used. Most websites and online services provide profiles. Some key considerations when establishing these profiles are given below.

- **Small & Perfectly Formed** – naming profiles and usernames is an important part of a digital profile and should be carefully considered. It is important to use short, simple and related usernames to ensure others understand, through the name alone, what the profile is dedicated to. Usernames define the online identity. Spend time considering a range of alternatives and test names with others to get honest feedback.
  For example: "EngageOnline" is a good name for a project focused on online digital engagement activities. Similarly, "NewDevonArmy" is a distinctive name for a Devon based group promoting music and culture in the county.
- **Consistent** – maintain consistent usernames and naming conventions across all the different websites and services, including profile pictures and avatars.
- **Relevant & Appropriate** – ensure the username and profile is relevant to the needs of the project. Do the target audience care about the researcher's favourite book or destination of their last holiday? Is the username appropriate, i.e., does it contain potentially offensive words?
  For example: "JohnsBikes" is a great name for a bike blogger, while "JohnFromCornwall" is less useful if the primary topic of discussion is bicycles and not Cornwall; even if John is from Cornwall..

- **Tone** – think carefully about the tone of the engagement and how it links to the "brand" of the project or institution. Is a formal or informal / chatty approach most relevant to the target audience?
- **Reciprocity** – engagement is a two way process. Follow, link to, friend and engage with the key players in the field to encourage others to reciprocate. This builds an online network and increases the reach of online activities.
- **Links and Tagging** – identify the links, terms and tags (such as "Hashtags") that will be used in the project or by researchers to clearly identify the project and themes across the different services. Tagging provide easy to follow links to the online profile and encourages users to engage and access project materials. Tags are different depending on the technologies being used. For example, "hashtags" on twitter are used to identify themes in messages, whereas tags are used in photo services like Flickr to "describe" images. Tags are usually indexed and used in searches.

Under this guidance, the NCDP are currently developing a profile for Twitter, Facebook and LinkedIn that will be consistent with the project branding that will be used on the web service. A professional persona was identified as being the most appropriate because of the need to reach a wide range of audiences, some of whom will be under the age of 18. When the profile has been developed in conjunction with the web service, we will form guidance to team members to advise on how to engage using the above social media accounts.

Tools, Technologies and Services

Identify which tools and services the project will use. Set up all the tools before starting so that you can use the same username across the whole project. In addition, many tools can be linked (like Facebook and Twitter) which can be beneficial to providing a "uniform" profile across multiple services.

Internal Management of Plans & Policies

When developing plans of any kind, and especially those which involve teams of people, it is important to remember to document, share and review the plans regularly. This principle also holds for engagement and digital engagement strategies, where the technologies and communities change very rapidly. A good strategy will do the following:

- **Record plans** – when developing a digital engagement strategy it is important to record the plans for reference and to guide the project team. Documenting the project strategy allows the team to review current activities in the context of the original plans and aims and evaluate effectively. Amendments to plans should similarly be recorded.
- **Share plans** – strategies need to be clear, concise and distributed to all team members involved in the strategy. Sharing these plans effectively (i.e., ensuring they have been read and understood by all the team members) is more likely to see that the plans are executed and that the intended outcomes are obtained.
- **Review plans** – strategies are rarely perfect and need to adapt to changes in the project and the communities being engaged with, more so with digital engagement. The strategy should also outline a timeline and process of review which reflects, adapts and benchmarks not only

the performance of the engagement but also the efficacy of the strategy for the project goals. Engagement is a two-way process and feedback should be acted upon.

A strategy is now being formulated by the NCDP that is based on the use of this tool. The team now recognise the importance of a coherent, shared and embedded strategy that is put into a formal document for guidance and reference. The NCDP also plan to review this plan on a regular basis.

Check out the NCCPE project management guide:

http://www.publicengagement.ac.uk/how/guides/project-management

Legal Issues

This document does not provide any specific legal advice. There are a number of legal issues that should be considered, such as copyright, data protection and privacy laws. Consult your legal team and ethics committees who will be able to provide advice on each of the issues you need to consider.

JISC Legal (http://www.jisclegal.ac.uk/) is an online service which provides legal guidance for ICT use in education, research and external engagement. The site provides a range of advice, links and guidance and readers are advised to consult this service as well as contacting the local institution's legal and ethics departments.

Key Questions

[Q1] (**Why?**) What is the purpose of the engagement?

Before deciding which form of digital engagement to use, consider what the ultimate goal of the engagement is. Some forms of dissemination and communication are better suited to specific end goals. For example, social media is an ideal forum to establishing a community discussion whereas websites are more suited distributing new documents and materials.

The purposes of the engagement in the NCDP are to:

1. raise awareness of and create 'buzz' around the project
2. build an online community of practice where views and ideas are shared
3. provide a 'one-stop shop' for practical information on LINE
4. market resources and continuing professional development for teachers and LINE practitioners
5. generate income from the web service to cover maintenance costs once it is established.

[Q2] (**Who?**) Who are the target participants and/or audience?

Before embarking on establishing an online forum, social media presence or website it is important to establish whether the target user is likely to engage with that type of communication. Some communities are more likely to use social media than others. In addition, it is important to establish whether the type of engagement is appropriate for the target user group – social media may not be appropriate for patient groups in drug trials, for example.

The target audiences for the NCDP are schools and teachers, sponsors, local authorities, volunteers, LINE providers, CPD providers and the research community.

This wide range of audiences mean that the project needs different media and different types of approach to reach the maximum number of people possible. The types of media that the project will use are:

1. a web service, which is currently being developed with a partner who is already established in the areas of education and outdoor learning. There will be a static landing page for the project, which will link to databases and other sources of information together with LINE resources, some of which will require payment and others will be issued without charge. We will also test a number of ways of generating income for the web service e.g. paypal donations, devising challenges that require a small fee, sponsorship, etc.
2. an established discussion forum to encourage a range of participants, but particularly teachers, to exchange views, information and ideas on LINE
3. twitter, facebook and LinkedIn
4. email

[Q3] (**What?**) What change is the engagement designed to support?
The type of desired change is important in shaping how the engagement is organised. For example, if the aim is to establish new connections between previously distinct communities, social media may be the best method for breaking down those barriers while a static website is unlikely to have a large impact.

The NCD project is designed to encourage and support greater numbers of primary, secondary and special schools to use LINE as a means of delivering the curriculum. The different digital media described in the previous section will be used to maximise the project's promotion and encourage participation from a wide range of audiences.

[Q4] (**Where?**) Where does the engagement involve digital media or communications?
Digital engagement occurs in many forms, including interacting through digital media like YouTube and more traditional forms of communication like e-mail. However, not all forms of communication are digital and so are not covered by this tool. It is important to establish the bounds of the communication network and map how different researchers and users are interacting to be best able to determine how, where and when to monitor the engagement.

Monitoring engagement with all these media is essential for the evaluation of the NCDP to inform on which types of communication are reaching which audiences and to what effect. We also need to know the most effective ways of generating income, both for the project and the web service.

[Q5] (**How?**) What kinds of engagement is the project using and what ways are they relevant to the project aims?
Before deciding how to monitor and evaluate any engagement, it is important to identify how the engagement will take place and what approaches are best suited to achieving the aims laid out in the project plan. To do this, it is necessary to answer the question: how can the

project engage with the target audience and is this the most apposite approach given the aims of the project?

In the NCDP, the media will be used in for specific purposes that are illustrated below, but we also expect to disseminate the **same** messages in **different forms** according to the medium used:

1. The web service will be used to *offer* practical information and *promote* the value of LINE
2. the discussion forum will be used to *exchange* ideas and information, *disseminate* research findings and *promote* conferences / events
3. social media will be used to *establish new connections*, *publicise* successes and *promote* events
4. email will be used to *make personal contact* where appropriate

[Q6] (**Resources!**) Who should be undertaking which particular tasks and what skills do they need?
It is important to identify who should be responsible for each aspect of the strategy to ensure they take ownership of their own activities. Also, identify the skills available and where there are gaps in skills and knowledge – formulate skills development plans accordingly to ensure the strategy can be implemented successfully.

The central team of the NCDP lacks the knowledge and skills to oversee the development of the web service, and the project has employed a consultant to undertake this area of work. This means that the project team's responsibilities will be focused on contributing to the discussion forums and the social media accounts in terms of content rather than function. We are in the process of deciding specific tasks, which will be allocated according to role, time available and personal interest. The length of the project will allow staff development in the use of a broader range of appropriate media but the coordination of messages and purpose will remain a strategic priority to ensure coherence.

[Q7] (**Track!**) Can the digital media or communication be tracked?
Not all digital media or communications can be easily tracked. For example, once a software application has been distributed it may not be possible to monitor where it is installed and how it is used. Identifying which aspects of the digital engagement can be monitored is an important step in developing effective tracking strategies to follow user engagement.

The web service of the NCDP will be tracked using Google analytics to ascertain the volume of website traffic, areas of use, keywords used and number of free resource downloads. In addition the number of project resource purchases will be logged, and different revenue-generating mechanisms to support the web service will be tracked according to sums raised. These data will be collected by the web service partner to feed information needed for the project monitoring and evaluation.

HootSuite will be used to track and manage social media engagement. The 90:10 rule – that for every ten people that respond, comment or retweet, 90 others read the content but do not comment – will be used to estimate levels of engagement.

[Q8] (**So?**) What evidence will support a case for successful engagement or impact?

A vast amount of data can be collected on many forms of digital engagement. However, not all the data is useful. A good digital engagement strategy will identify which parts of the engagement process is important, what information needs to be recorded. Remember to ask whether the data really could be used to evidence and support a case for good engagement and impact.

A robust evaluation of the contribution digital media make to the NCD project will include the following:

1. **Numbers** of visits to the web service; how many, how often, which pages, which resources are downloaded etc
2. **Levels of engagement** – which forms of media generate the most interest? Can the web service generate sufficient income to become self-sustaining? Is the web service an effective method of marketing resources?
3. **Quality of engagement** – to be measured through:

   (a) survey / 'likes' to monitor levels of satisfaction with the web service

   (b) detailed case studies with 30 schools across the project to yield richer information on the types of engagement with, challenges and successes of the web service

   (c) random sampling of discussion forum, twitter and facebook data to evaluate the areas of conversation and depth of engagement.

[Q9] (**Quantitative vs. Qualitative**) How best can you support and evidence your case for engagement or impact?

When building a case study and/or planning your monitoring and evidence gathering strategy it is important to collect both data (numbers) and contextual information. Quantitative data, such as "number of site visitors," is especially useful for identifying the 'reach' of the engagement – i.e., what percentage of the target audience were involved in the engagement. However, numbers alone do not necessary give useful contextual feedback – i.e., how did the target audience feel about the engagement, were there any special cases of interest, etc. A good monitoring and evaluation strategy will contain both quantitative and qualitative data in a way that supports one another and provides both context and useful factual information to back up a case study. Remember: a case study is an argument for impact, not a fact-sheet. Also consider both the positive and potentially negative processes and impact of a strategy.

***SMART:** A good baseline for any evaluation activity is to use objective benchmarking (see SMART for more details - http://bit.ly/Ws9Efs) which can provide clear goals which when achieved indicate successful engagement and impact*

The NCDP needs both qualitative and quantitative data to provide context and to demonstrate ways in which different groups of people may be engaging with the project through digital media. We will use the information gathered to steer the project direction. Therefore, we need to be responsive to both positive and negative comments related to the web service and to any wider aspects of the

project made in the discussion forum or on the social media accounts. The whole body of evidence from our digital engagement monitoring will play a significant role in evaluating the project's processes and impact.

[Q10] (**Interested?**) How should I present the data to best support the case for engagement / impact?

Data is often very difficult to understand in its original, "raw" form. It is important to understand how the data can be interpreted and presented – some data is better suited to different forms of presentation than others. Trending data, such as website hits for example, are naturally presented as line plots while user segmentation often works better in pie charts. The presentation of the data is important when attempting to make a strong case for good engagement and impact.

The NCDP will report the numbers as suggested in the section above, reviewing our reporting methods as the project progresses. The detailed case studies will be reported in a variety of ways according to the audience. Project sponsors, for example, will require a detailed assessment of the ways in which digital media have contributed to the project, while teachers may be interested in a brief assessment of the ways in which discussion forums have been used.

[Q11] (**Can you say that again?**) What data should be stored and/or made available to others?

It is now expected that research, research data and research outputs are made available in an open and permanent way for all to access. Consider how the data being collected can be stored and the "size" and cost of storage. Do you need to store every record for each individual webpage hit or will summary information suffice?

This is an aspect of the strategy that the NCDP have yet to consider in depth. At the moment we expect that storing summary numerical information, that has been interpreted and presented in an easily-accessible form, will be sufficient. We anticipate storing the qualitative data in its entirety, so that it can be used to examine different aspects of the project in depth and over time. Our research ethics guidelines will limit the retention of any data gathered for research purposes to 10 years.

Tracking Digital Impact

This section describes a range of digital technologies that are relevant to digital engagement activities. Each technology is briefly described and commented with some associated guidance – usually in the form of questions or points that should be considered when using the technologies.

Definitions & Guidance

[D1.1] "Push" Media

Despite common conceptions, many forms of engagement start as a result of users consuming some form of static media, such as digital documents, static web pages or downloadable media. These forms of digital artefacts act as catalysts to start user initiated engagements, where the user actively chooses to interact with the researcher or project as a result of their own interest in the media. These forms of engagement can often be the most effective as users feel engaged with the project early in the discourse.

Use: sharing static information and data.

[G1] Is the information likely to change?

"Push" media is similar traditional publishing. Once published, the static digital media will remain available an accessible to users indefinitely beyond control. If the information is likely to change ensure that steps are taken to alert users to this and provide a place which they can check for new editions, updates and amendments.

[G2] Is this engagement?

Push media alone does not constitute engagement. When publishing digital materials consider whether it is important to gather feedback or information on usage to develop a case study for the project. Push media is now more commonly used as an "appendix" or "associated resource" to other digital engagement activities. When communicating on social media, push media can be used to disseminate ideas and knowledge in a more detailed manner.

[D1.2] Software

Computer software refers to installable programs which can perform specific tasks. For example, word processors are software applications designed to allow users to type and store text. Similarly, computer games are software designed to entertain users. Software is a general term for all computer programs but is often colloquially used to refer to software applications which are developed for specific purposes. Software provides a means of sharing data and tools and allowing users to perform new tasks and can have a very large impact on communities and companies, especially when providing new tools for previously difficult or impossible tasks. Software is written in a programming language and requires specialists to develop to a high standard and to ensure few "bugs" (errors) occur.

Use: providing tools to users to embed, change and improve user practices.

In order to keep costs down and to avoid 'reinventing the wheel', the NCDP web service partners will develop the existing functionality of their web service rather than introducing new software.

Tracking: there are two points at which software can be tracked: (1) point of download; (2) from network communications sent from the software itself when being used. Consider how you want to monitor the software use and whether internet access is likely to be available when it's being used. These considerations should be included in the system design.

[G3] Knowledge or Action?

Software is designed to create new, or enhance existing capabilities through new or improved functionality. Software is expensive and time consuming to create and so should be carefully considered before embarking on a development project. Consider, for example, whether the new or enhanced capabilities are more appropriately delivered by changes in practice or policy rather than by creating or changing an existing software tool. Adding functionality to software doesn't guarantee it will be used or adopted.

[G4] Usage Statistics

It is possible to monitor and remotely report the usage of software to allow for analysis of how well the software is being used and what impact it may be having on workflows and/or behaviour. Remember to ask permission from the users before reporting usage data.

[G5] Lifespan

Is the software designed to have a lasting impact or usage? If the software is only designed to be used for a short period before it is changed or revoked consider using web applications which can be more easily disabled, updated and controlled.

[G6] Internet Access

With the increasing capabilities of web applications, the primary driver for traditional software is lack of permanent internet connection and/or data transfer limits. Software should be used when users are expected to use the tool in an offline environment or when large quantities of data is being processed.

[D1.3] Static Webpages

The most traditional form of digital web presence is provided through static websites and webpages. A webpage provides a fixed media rich document which can be accessed through the internet. Static webpages are designed to provide (relatively) long term information to users without the need to interact with the page to access the information. Webpages can be linked to other webpages through "hyperlinks" which allows users to navigate from one page to other related pages. Webpages can be thought of as online, digital alternatives to traditional printed media.

Use: disseminating long term information to wide users.

The NCDP plan to use a static landing page for the project, with links to other areas of the web service. Although the information contained in the linked pages may change regularly, we expect the landing page to remain more or less the same throughout the duration of the project. It will be serving the functions of *promoting* and *publicising* the project.

Tracking: web analytics, like Google Analytics, should be used to monitor how users access the static webpages.

[G7] Update Frequency

How frequently is the information going to be updated? If the information is going to be updated on an hourly or daily basis consider whether static webpages are the most appropriate form for disseminating the information. Blogs can provide a better "timeline" for new information releases.

[G8] Analytics

Web analytics, like Google Analytics, provide information on how users access a website, what pages they look at, what search terms they used to get there. It is always a good idea to implement at least basic web analytics to check whether the website is being accessed by users, how many, how frequently and where in the world the users are based. Analytics can also provide information on the user demographics, how frequently they access the site, their behaviour and how they navigate the site and provides vital information on the reach of impact of the website.

Examples: Google Analytics, Adobe Marketing Cloud, Yahoo! Web Analytics.

[G9] Sensitivity

Is the information sensitive or confidential? If releasing sensitive or confidential information ensure that access to the website can be controlled through "private" links or account registration and required login over secure connections.

[D1.4] Downloadable Media

Unlike webpages, which are conceptually accessed on a server, downloadable media refers to videos, music, documents and files which can be downloaded from a network or internet server and stored on a local computer indefinitely without the need for further access to the original server or internet. A good example of downloadable media is music files which can then be transferred to other "offline" devices and played back to the user. Once downloaded, this form of media is very difficult to track as it contains no program or active element which can communicate access and/or usage to a monitoring service.

Use: disseminating information, materials and resources.

The NCDP will be *offering* downloadable resources, some of which will be free and others paid for.

Tracking: using web analytics or download management sites (like the CNET download service – http://download.cnet.com/) allow the number of downloads to be monitored.

[G10] Protection

Once downloaded, most forms of downloadable media have no usage protection. Before releasing media for download ensure that the media is suitable for users to share and store indefinitely. If media is intended for short term or limited release consider using streamed media through online media services like YouTube.

[G11] Usage

In addition to limitations on licencing and copy protection, it is very difficult to track and record usage statistics on downloaded media. Consider asking for users to register their details before downloading the media to allow for follow up surveys and interviews to establish the resulting impact of the published media.

[D1.5] Digital Documents

Digital documents are one type of downloadable media and refer to information documents like PDFs and word processing documents. Digital documents are one of the most common form of research related digital documents and hence deserve special mention. In addition to being downloadable, digital document readers, such as Microsoft Word, allow documents to be embedded with forms and active "macros" which can perform additional tasks and used to collect data from users (such as a survey) which can then, if the user chooses, be returned to the issuer (researcher) to gather information from specific user groups. In many cases digital documents are excellent means of recording and distributing new knowledge and information however, in many cases, when using digital documents as forms for collecting data it is important to determine whether this information cannot be more easily gathered using interactive websites, for example.

Use: disseminating new knowledge and/or gathering information.

The NCDP will also be using interactive websites, with 'likes' and trip advisor-style ratings rather than collecting data through digital documents. This function will be *gathering* and *disseminating* user ratings to inform others about the value of the resources.

Tracking: web analytics and download management sites allow you to monitor how many people download online documents. Alternatively, use web forms to collect basic information (like names and email addresses) before allowing users to access the document.

[G12] Published?

Digital documents are "published" when released. That is to say, their content is published as a snapshot which cannot change. Future editions, edits and amendments will not guarantee that users will replace earlier versions. Consider releasing the information as a static website if the content is likely to change or be updated.

[G13] Accessible Offline

Digital documents are useful for sharing information which can be stored offline and accessed at the user's convenience whereas this is more difficult and less common with static websites.

Furthermore, digital documents are commonly designed to be easy to print and can contain suitable layout and styling for print.

[D2] Digital Services

Digital services refer to technical resources made available to others for their use which are not necessarily available through software and/or websites. This includes specialist resources like open databases, Webservices, archives, cloud storage and processing facilities and information portals and dictionaries.

Use: providing computing resources and facilities to users remotely through the internet.

This will not apply to the NCD project.

Tracking: digital services can be monitored using access logs or alternatively be requiring users to register to gain access to the services. As with software, the tracking of user access should be considered in the design phase of the development.

[G14] Usage

When releasing digital services it is still important to record usage data to monitor how the services are being accessed. Digital services should be implemented with data logging enabled or coded in to allow for access statistics to be recorded.

[G15] User Management

Unlike most static websites, access to digital services are often designed for specific user groups. Assigning accounts to users can be an effective way of managing access to the service and provide additional usage statistics.

[G16] Resource Management

Are the digital services accessing limited or expensive resources? If so, issue licences or tokens to users to prevent abuse of the services which could harm or accrue unexpected expenses.

[D2.1] Cloud Services

Large organisations, from Google to universities, are capable of making their large scale computing resources available to others through "cloud computing" technologies. Cloud computing is used to refer to applications that utilise the computing resources available online but that do not care which specific computer is being used. The primary principle behind cloud services is that the data and computing resources should be available online 24/7 with the user not having to care where the actual data or computing resources are physically located. The Amazon EC2 compute service is an excellent example of this - users can log on to the EC2 cluster and open a remote terminal (desktop window to a computer in another location) to a computer or virtual computer (a simulated computer, often run in conjunction with a number of other virtual computers actually located on one very powerful computer) and start a program running, store some data or other activity. The EC2 computer could be in any of their computer warehouses, in the US, EU or South America, but

the user neither knows or is concerned with its physical location. A key benefits to cloud computing is the ease with which large resources can be accessed ad hoc and that the data and sessions can be suspended in a persistent manner, allowing a user to "continue where they left off".

Use: providing ad-hoc, large scale computing resources or applications to users.

The NCDP will be storing project information on password-protected cloud computing so that each member of the team can access documents quickly and easily without compromising the confidentiality of the project. We will develop a protocol to ensure that one person has 'ownership' of each area of documentation. This cloud storage of information will be for the project team not the general public.

Tracking: cloud services are often designed to include extensive user analytics. In many cases, web analytics services, like Google Analytics, can be incorporated in the cloud facilities.

[G17] Usage Frequency

Are the cloud facilities going to be used regularly and consistently? If so, it is often cheaper to hire a fixed set of resources permanently rather than purchasing cloud computing resources ad-hoc for each user request.

[D2.2] Web or Information Portals

Information portals are commonly websites which bring together a disparate collection of diverse resources in a unified way, such as indexing services like CiteSeerX, Google Scholar. When developing a project it is often important for researchers to gather different forms of information, from academic papers, website links, data resources and so on. Information portals can be used to collate these links and information and make them more easily accessible to other researchers and target user groups. Information portals can also be much more sophisticated and user designed, such as Yahoo!'s user homepage which uses "widgets" to display information such as headlines, the weather, new emails and so on.

Use: collating and sharing links, resources and information on specific topics.

We do not anticipate developing a portal as the combination of the public web service and the project team-based cloud computing should meet all or most of the NCD project needs.

Tracking: web portals are served like web pages and viewed in web browsers. Web analytics can be used to track user access.

[G18] Tiny Link Services

Services like "bitly" and "tinyurl" provide short links alternatives to long internet links which are shorter and so easier to copy and type. For webportals with lots of links this can save a lot of screen space and make the page more appealing. In addition, these link services provide monitoring facilities to see how many users click the link to access the linked resources outside of the web portal.

[G19] Trackbacks

Trackbacks are records of way of tracking when other sites link to specific parts of a portal. If an article or information page is published it can be linked to by other portal sites and monitoring these links through "trackbacks" can be a useful way of determining when other users and the community engage with the portal.

[G20] Likes, Sharing and Bookmarks

To encourage links to the portal remember to add like/sharing/bookmark tool bars to each page which provide quick links to social media sharing services. Add these toolbars can increase the exposure and traffic on the portal.

[D2.3] Wiki Sites and Online Encyclopaedias

An online encyclopaedia is a website which provides a large body of connected information about a specific topic or in many cases everything. Online encyclopaedia's are reference materials which are used to check and verify information. Good examples of this include Wolfram Mathworld and Wikipedia. Online Encyclopaedias expensive both in terms of time and resources to develop, but a comprehensive encyclopaedia developed for a specific project or subject can provide a useful resource for others and encourage uptake and engagement with the project.

Wikipedia is specifically of interest as it is a collaborative effort which uses "wiki site" technologies to allow anyone to contribute to the encyclopaedia and so distributes the work of documenting anything and everything to anyone in the world. A wiki site (or 'wiki' for short) is a website which allows its users to add, modify, or delete its content via a web browser. This is either through a visual editor or using a mark-up language. Wiki's are perfect collaborative environments as many users can contribute to the site simultaneously. However, for wiki's to be effective the project needs to either ensure it is capable of contributing the bulk of the material to the site or that there is a suitably active community which can do the same (or both).

The NCDP do not intend to use a wiki site as it is expensive to develop and would not necessarily meet the project needs for on-the-ground, practical collaboration between the project team, schools and practitioners. Furthermore, we have some duties in terms of quality assurance and 'badging' of Natural Connections which the open system of a wiki collaborative environment might jeopardise.

Tracking: wiki sites are served like web pages and viewed in web browsers. Web analytics can be used to track user access. Also note, many wiki services require users to register and provide statistics on how much each user contributes to the wiki – compare the user stats facilities of different open source wiki solutions before selecting which one you will use.

[G21] New or Old?

There are a wide range of wiki based encyclopaedias and information portals that already exist on the internet. Consider whether the project is large enough to sustain an independent wiki or online encyclopaedia or whether the project will reach a larger audience by contributing to an existing

resource. Often, it is cheaper and obtains higher readership if the project engages with existing sites and through that accesses their existing user base.

[G22] Topic

When developing a wiki or encyclopaedia it is important to identify and make clear the topic and scope of the site. An unfinished or seemingly empty resource on "Healthcare" will be less well viewed or trusted by readers than a small but well defined and filled site on "Healthcare for Elbow Fractures." The latter indicating a limited scope but also an expectation of expertise and therefore trust and higher likelihood of adoption.

[G23] Collaborators

There are different levels of access that can be granted to any website, especially those with user driven content. Do you want anyone to access or contribute to the site or should only specific groups be given viewing permissions. Should authors be identified and verified before being able to add to a wiki or change information on the website. Generally, it is a good idea to insist users register before contributing to the site and include quality control measures like approvals and reviews.

[D2.4] Archives

Online archives are becoming increasingly common. The recent open access agenda has seen many institutions establish digital archives for research outputs and data. Archives provide a central repository for long term, often open access storage of important data and resources. Projects that produce, analyse and report data use archives to store and reference their data and make those resources available to the public and/or specific user groups.

Use: long term storage of data and documents for public or restricted access.

The NCDP project policy needs to be developed in this area for the substantive resources and interactive forums, but as noted above, research and evaluation data will be subject to ethical limitations on retention of data.

Tracking: when using 3rd party or institution archives remember to ask about their monitoring processes and reporting. Many archiving services provide access reports.

[G24] Institution, Funding Body, Publisher or Subject Specific?

When uploading content to archives it is important to identify where the information should be stored. Most universities now provide open access archives for research outputs. However, funding bodies, publishers and even some academic communities provide open access archives for the same purpose. Check with the publisher what their requirements are if uploading a paper. Similarly, check with the funding body what their requirements are for projects regarding open access and archival.

Subject specific archives can be a great way of disseminating information to both academic and external audiences interested in your topic of researcher.

[G25] When and What to Archive?

Don't archive everything – be selective about what will be useful to others. Specifically, don't archive all data, as usually there can be a lot. Data, like publications, should be carefully checked and selected before making available on an online, open access archive. Well curated data is more useful and more likely to be adopted by others.

Archives are permanent and cannot (in most cases) be modified once stored. Information, such as papers and data, should be archived once completed – not during the development of the underlying information. Once made available, it is very difficult to rescind open access materials.

[D2.5] Webservices

Webservices are machine accessible services available over network connections and commonly online which allow for programmatic (I.e., software driven) access to specific facilities. These often provide public or licensed access to databases, cloud storage and server based applications which provide specific processing facilities. Good examples of Webservices can be found in the field of biology where large genomics databases and data processing applications are made available to companies and other researchers via a webservice.)

Use: providing remote access to applications, databases and resources programmatically for advanced users to incorporate and utilise in their own applications.

The NCD project does not generate this type of data.

[G26] Consider the audience.

Web services require specific technical skills to access the information. Consider who the service is being aimed at. General users will not likely know how to access and use a web service and so a web application with a user interface will be more appropriate in these circumstances. However, if the tool is specific to users which are expected to have a reasonable working understanding of web services then they can be very powerful tools for making research and research outputs (i.e., programs and models) available to a wider audience.

[D3] Social Media

Social media refers to the collection of websites and web applications focused on establishing connections and means of communication between different people through the internet. It is a way to have two-way communications with other people, track conversations about your work and engage with people without geographical boundaries. However, it can take a lot of time and without a strategy can be without focus.

Popular examples of social media include Facebook, Google+, Twitter and LinkedIn. Social media is used both personally and professionally and aims to make the process of connecting, communicating and sharing information easy between large groups of people. Different social media are designed to perform slightly different functions.

Use: connecting and communicating with individual users and groups in a less formal manner.

The NCD project intends to make maximum possible use of social media, but as described above will have a clear strategy to ensure consistent and appropriate messages via the different media.

Tracking: many social media service provides their own monitoring facilities.

Facebook provides Facebook Insights (https://www.facebook.com/insights/)

Google+ provides Google+ Measure tools (http://www.google.com/intl/en/+/business/measure.html)

HootSuite provides some analytics for Twitter (http://www.hootsuite.com/Twitter-Management)

Links can be tracked with Bit.Ly (http://bitly.com).

Some common words

Hashtag: *A way of linking things together, used to show something is relevant to a research project or conference. Good way of seeing what is being said about you (if people use it) e.g. #de2012, #phdchat*

Follow: *Someone or organization on blog or twitter that you choose to follow and receive updates from*

RT: *Or "Retweet" - to repost someone else's tweet verbatim*

MT: *Or "Modified tweet" - you repost someone elses's tweet but modify it*

HT: *Or "Hat tip" - used to acknowledge where you saw something first, i.e. who referred you to something.*

[G27] Public or Private

Social media doesn't have to be completely public. Private groups and careful control over privacy options can ensure that engagement through social media occurs "behind closed doors" in a safe and private environment. Consider the nature of the engagement and the individuals involved when establishing a social media presence. If the project plans to engage with specific demographics, children or vulnerable individuals it is probably important to conduct the engagement in a private manner to prevent abuse.

Similarly, if the engagement is designed to be wide reaching and superficial in most cases then public communications are more appropriate as it will help to demonstrate and active and engaged profile which will encourage others to also engage.

[G28] Personal or Professional

Depending on the context of the research and the researcher involved, the connection between the researcher's personal social media profile and the professional project profile will vary. For example, if the researcher is personally involved in the community (see, the Big Paddle Project), a personal

social media profile is suitable and potentially beneficial to the project's engagement. However, if the project is involved with businesses or specific user groups where a professional distinction is required (such as Doctor-Patient engagements), it is important to separate and not connect the two professional and personal profiles. Careful consideration is needed as once connected, it is hard to separate social media profiles.

[G29] Temporary or Lifelong

Consider the timeline of the project. Is it on-going? Will the group be created and hopefully left to run for all eternity or is there a specific deadline after which the team, project and associated social media will be "shut down" and cease to be supported. Determining the timeline is important as users will want to know if the project page will have a limited existence. Manage expectations.

[G30] Managing Time Effectively

When establishing a strategy and working processes it is important to identify how much time each of the activities will take and whether they provide suitable returns for this investment. Social media, in particular, can be a very time consuming activity which needs to be "kept in check" as it can easily extend beyond its useful purpose. However, also recognise when time needs to be reorganised based on the success and or failure of each activity. Consider moving time from failed efforts to more fruitful activities.

[G31] Individual, Team or Project

When creating a social media presence it is important to decide how it will be used to engage. Will an individual researcher provide the public face to the project and act as the channel for communication or will this be conducted by a variety of people in a team which will communicate with one another and the target audience through the social media. Similarly, is a more professional "face" required where information is disseminated by "the project" rather than an individual? To determine which is most appropriate, first determine what "character" the project will take in terms of an online profile. This will often guide the approach taken and tone set in the communications.

[D3.1] Social Media Websites

Social media is often used to refer to all forms of online communication which connect users through a "friend" or "follower" system. However, social media can also more specifically refer to websites that are designed to provide an area where users can establish a personal or organisation profile which can be linked to others and allow for sharing of links, media and messages. Traditional social media sites like Facebook, MySpace, Google+ and FriendsReunited are most commonly used as personal social exchanges where friends and family communicate. Many of these sites, such as Facebook, also provide community and corporate facilities which allow organisations to develop a social media presence and a means of communicating with target user groups. Social media sites can provide a power means of connecting and communicating with a geographically disparate user group.

Use: connecting and communicating with individual users and groups in a persistent, socially connected manner.

The NCDP is intending to use facebook as part of our social media strategy. Many teachers already use facebook and we think this will provide another productive communication and engagement route for the project's *promotion*, *contacts* and *dissemination*.

[G32] Linking in or herding the flock?

When engaging with social media it is important to identify if any groups exist and which sites they are on. Which social media site is most used by the community of interest? It is usually easier and more effective to identify the current place of activity and create a presence there than try to "herd" the community to a new social media site of choice. Social media is about making communication easy and users will not likely move or join new sites without strong encouragement.

[D3.2] Expert Query Sites

Expert query sites, such as Yahoo! Answers, provide a web application for asking and getting answers to questions on any topic. Users post questions which other users can then answer. Answers are then rated by the original user asking the question and other users who may find the answer useful. Sites like Yahoo! Answers are very general and not suitable for all projects however developing a presence on these sites, answering questions which fall in the researcher's or project's area of expertise, can help to establish a public expert profile. If the project is focused on a specific topic and/or aimed at a specific user group, bespoke expert query sites can provide a useful forum for allowing participants to freely ask questions and develop a knowledgebase for other users to access.

Use: provide a central location for users to ask and answer questions, potentially around a specific topic or project.

NCDP may will include a query facility as part of the web service once it is established. However, questions and answers will be posed and answered by people with varying degrees of expertise and experience. Moderation will be handled by the host site.

[G33] Who's the expert?

If you or the team are joining an existing expert query site it is probably to provide answers and fulfil the role of the "expert." However, when establishing a new expert query site, consider whether only the team are suitable to act as the answering experts or whether, like the more general sites, it should be an open response system. The latter is more likely to encourage engagement but it is important to prevent inaccurate information being adopted by the community or seemingly endorsed by the project. Moderation is an important part of any community led activity.

[D3.3] Forums

Forums are an early form of social media which provide a structured, persistent "message board" system for "posting" information and exchanging messages with other registered users. Despite the rise of more modern social media and "groups", many well established forums are still very active. Forums provide a general and widely accessible environment for publicising and connecting with

users which all share a common interest. However, establishing new forums is difficult as people are now more commonly used to communicating through social media groups.

Use: posting public messages, sharing information and holding long term discussions on themes or specific topics.

The NCDP intend to make full use of discussion forums throughout the project lifetime. The interactivity of the web service is the *sine qua non* of its functionality and the aim is to create a thriving community of practice of teachers, outdoor activity providers, volunteers and academics to move thinking and practice on in learning in the natural environment.

[G34] Out of date?

Forums, if simple and accessible, can be very useful resources – especially when embedded within a larger project site. However, be aware that forums can be seen as an outmoded form of communication when the community already connect through other facilities like social media groups. The benefit of a forum is that it can run independently of any social media site and be managed completely by the team.

[G35] Maintenance

Using specifically hosted and managed forums can be a great way to customise the forum to specific needs of the project. This will incur costs, either through time or personnel, and should be carefully considered before deciding to accept the expense. Can the same effect be achieved through social media groups?

[D3.4] Groups

Social media groups are the modern alternative to traditional forums. "Group" features exist in nearly all social media applications and provide a forum like discussion board for users to communicate at a group level. Unlike forums, which can be open to unregistered users, groups usually require users to be registered on the social media site before they can join and/or post to the group. Facebook, for example, allows for "open groups" but to view them the user must have a Facebook account.

Use: posting closed group messages, sharing information and holding long term discussions on themes or specific topics.

The NCDP will monitor the sorts of enquiries and interests expressed on the web and consider using 'groups' if we have a strong response to our presence in discussion forums or discover a need for more managed access to certain topics

[G36] Open Discussion

Groups provide an ideal environment for connecting the various members of the community with one another and allowing them to communicate publicly without the need to facilitate too strongly. Open discussion can be very informative but also very difficult to manage and potentially device.

Consider carefully whether the communication between members of the engagement should be more closely managed before establishing an area for open discussion.

[D3.5] Blogs

Blogs (a.k.a. Weblogs), like forums, are an early form of online (usually public) social media. Blogs are authored "diaries" which allow researchers and/or organisations to post public messages on a specific theme and receive reader's comments. Blogs are more similar to newspaper columns than forum or group messages and provide a great method for announcing news and sharing current learning and developments. A well established, widely read blog can have a wide impact and provide a great "portal" for directing potential users to other digital activities.

Many blogging sites provide free services, including at **www.blogger.com** and **www.wordpress.com**. A guide to blogging can be found here. Multi-author blogs can be useful for projects as everyone can contribute.

Use: publicising thoughts, opinions and information in a diary or newspaper format.

Blogs are good for: getting writing started; more in-depth things than you would put on a website news or highlights item; visual information

The NCDP will consider using blogs, depending on the response to the other media. However we are conscious that the team has limited time and resources, and that we need to target our efforts carefully. It is likely that blogging will develop as it is a powerful communication tool but it will probably be managed through coordination and guest blogging to reduce the burden on individual staff.

[G37] Too little time, too much to say…

Problems with blogs include the need for regular posting, getting a community going, moderating comments, getting relevant comments. It is important to identify how best to utilise staff time to obtain the best possible quality engagement. As noted above, social media can be very time consuming with little reward if not carefully thought through.

[D3.6] Microblogging

Social media such as Twitter are known as microblogging tools. Microblogging sites provide a highly connected blogging service where a user's blog post size is limited to only a small number of words or characters. Microblogging services are designed to provide bulletin like information and "status updates" and can be efficient and effective means of attracting users to a project. The "power" of microblogging services like Twitter come from the subscription or "following" scheme, where users subscribe to other user's posts which they then receive automatically. This allows a user to post updates to potentially very large groups of people with minimal effort. Furthermore, microblogs often add flagging or message passing features that allow other users to direct their followers to posts made by people they follow – this provides an extended form of dissemination of posts that allows users to reach other users beyond their immediate network.

Use: sharing links and thoughts with larger user groups -- "To broadcast messages for anything you might need a mini press release for."

Example: Twitter

Twitter is a social networking and micro-blogging site, where members broadcast short messages of up to 140 characters. You can post links and pictures on Twitter and re-broadcast ("re-tweet") interesting "tweets" from others. Hashtags (a topic preceded by a "#", e.g. #de2012) are used to categorise conversations. Twitter is useful when you use it regularly (which can be an issue in generating useful content) but a good way with engaging with a variety of people by who follows you and who you follow. Journalists are increasingly using twitter. Twitter can be both very formal e.g. government departments and informal so the most challenging thing (more so for twitter than other social media) is deciding on your tone, what will you tweet, will you livetweet things (tweeting updates during an event). Twitter is the best social media method to reach a variety of people and you have some idea of who is deliberately seeing your content (via who follows you).

[G38] Too little to say, too much to read…

The NCDP will use twitter as a primary means of communicating on social media. It offers the opportunity to retweet and link up with existing activity in learning in the natural environment. It also offers a quicker mechanism to raise consciousness of the on-going project and maintain partner commitment.

Unlike blogs which are largely push media with limited and longer term interactions, Twitter and other microblogs require significantly more activity with a higher frequency. A good Twitter user, for example, will post a message at least once each day. The text may be shorter but content will need to be valuable. Be wary of creating the appearance of "spamming" information which contains little useful information.

[D3.7] Online Media Services

Online media services provide a social media like environment for sharing and publishing media like pictures (Flikr), videos (YouTube/Vimeo), music (Grooveshark), presentations (Slideshare) and documents. Good examples include Flickr and YouTube which not only provide a means of sharing media through specific "channels" or user profiles but also provide commenting and promoting features ("rate this", "like", "star rating") which allow the site users to promote popular media to other connected users. In addition, online media services are often connected to a range of more traditional social media sites, like Facebook, and have specific sharing and announcement services that allow users to share links to media to a wide audience.

The European Commission thinks that videos are the best way of engaging the public with research. Note that, in general, people are finding that 3 minute videos are more watched than 50 minute lectures.

These are good for sharing information you've produced, especially short research videos, have a search on YouTube for things related to your subject and the numbers of views and likes will indicate

what works and what doesn't. You don't need sophisticated equipment, an iPhone or regular digital camera will suffice but you may want to consider adding a microphone to your equipment budget.

Use: sharing digital media for public access, comment and sharing.

The NCDP consider that video is an ideal media for capturing the physical, embodied and experiential nature of learning in natural environment and will be a central tool for the project to promote, disseminate and encourage others to participate. We intend to provide links to YouTube videos through the web service, social media and discussion forums.

Tracking: social media services, like YouTube or Vimeo, provide access analytics to users who register and setup their own "Channels". Compare the stats provided by the different media services before selecting your service.

[G39] Connected Communities

When creating shared media, such as videos, it is important to connect those materials into any other online presence the project may have. Do not rely on the media service's website for disseminating the new materials. Use the media to show productivity and increase interest in social media profiles by publishing links to the media through those outlets. Many social media sites, like Facebook, will have specialised facilities to make this publishing easier.

[G40] Production Quality

The quality of media production is a key element to successful engagement and achieving a wide audience reach. When creating media consider using professional services to provide a high quality finish to the different media – this can be money well spent and considerable time saved! Remember that the quality of the production reflects on the profile and/or brand of the team or project and can "spoil" the external's perception of the quality of research.

[D3.8] Social Media Management Service ("Decks")

Programmes such as HootSuite and TweetDeck (both free, paid for ones are available) allow you to manage social media. They can be run from a web browser (such as Chrome or Firefox) or from your computer desktop. The paid for applications often have more functionality than the original social media applications about how and when people read/use your content. You can schedule posts in advance (as you can do with most blogging platforms), but you can also track mentions of your username and hashtags. You can then see who is responding to your information and re-posting so see who your engaged network is. However, the rule 90:10 generally is applied to social media that for every 10 people who respond, comment or retweet, 90 others read your content but don't respond.

The NCDP intends to manage our social media through HootSuite.

Tracking: management services or decks are designed to track and manage social media activitiy. HootSuite provides one of the most comprehensive tracking and reporting services and offers a range of quantitative and qualitative monitoring tools.

[G41] Work and (what) personal life?

Using social media for research can seriously effect the work/life balance. In a social media policy consider when and how frequently you're going to post, by using social media management software you can reduce the time commitment.

[D4] Interactive Media

Interactive media refers to digital applications which provide an interactive user interface and respond to user inputs. Unlike traditional media, like videos, interactive media responds to the users input and provides feedback on their actions. An excellent example of interactive media are computer games which provide a media rich environment which users interact with for entertainment. Interactive media can be used in a number of ways, from providing more entertaining ways of disseminating information, teaching and learning, and intelligent and intuitive ways of displaying data.

Use: providing a user driven experience.

The NCDP is unlikely to use visual interactive media because of the development costs, and the interactivity will probably be managed through textual response to visual and other media.

Tracking: both web analytics and requiring user registration are good ways of tracking user access and usage of interactive media. Also consider including automated logging in the service during development for more specialised tracking.

[G42] Expertise at the outset

Too many researchers believe developing interactive media is much the same as building a website. It's not. Developing interactive media is an expensive and time consuming process that will require substantial input and a number of development iterations to get correct. Consider that the video games industry is now one of the world's largest revenue generating media industries and that most games cost millions of pounds to create. Before designing or even establishing ideas on interactive media, it is important to bring in an expert to consult on the potentials and expectations of these kinds of technologies before committing to using them.

[D4.1] Widgets, apps and mobile software

Many mobile devices, such as mobile phones and tablet computes, allow users to install software in the form of "widgets" which provide configurable tools as part of a user interface (such as weather prediction or news feeds) or "apps" which are lightweight applications. Apps can often access information from the mobile device, such as location, and need to provide useful functions for the user. Apps are a good way of communicating information to users or offering useful tools while also

allowing for data to be collected about how the user engages with the application which can provide useful insights into user adoption of new knowledge or tools.

Use: lightweight applications which provide useful knowledge or tools to users through mobile devices.

The NCDP web service will be accessible by mobile devices. This is particularly important for the project which is to support learning in the natural environment and therefore mobile devices will be helpful to enable immediate grounded responses and to draw down information 'on the hoof'.

Tracking: user access to widgets, apps and light software are often managed through centralised services, like Google Play and Apple Store. These portals provide purchase and download statistics and reporting services to enable developers to track how well their apps are being adopted by the market. More detail on these reporting facilities can be found on the specific distribution service's developer websites.

[G43] Lightweight and simple

The key to a good "app" is the ease of use, specificity and simplicity in function, and a lightweight implementation. Apps should be functional and fast and solve one or maybe two problems but solve them well and intuitively. Keep it simple!

[D4.2] Computer Games

Computer games are media rich environments designed to entertain users, often through virtual environments which respond to a user's input in the form of controls or "avatars". While the majority of the computer games sector is focused on entertainment, "serious games" is a growing area of interest where games are used to inform and teach users about specific subjects in an engaging and entertaining manner. Serious games are also useful for training and can allow users to gain experience in a safe environment.

Use: provide entertainment or teaching and training environments.

The NCDP are unlikely to use computer games because of cost - although we would not discount the possibility if additional funds could be attracted to develop these.

Tracking: as with apps, many games are now delivered over the internet through portal services like Valve's Steam. These providers offer stats reporting for developers – check each service's developer/publisher webpages for more detail on each service. Also consider writing reporting and tracking features into the game code to give more detailed tracking.

[G44] Hollywood Finish

Games are all about aesthetics and entertainment. Users will want to enjoy the look and feel of the game so ensure the developers have a good handle on the design at the outset. Similarly, games are only games if they're fun. Serious games can be a great way of educating people but remember the

learning should be a by-product of playing the game. Subtlety will go a long way to achieving the goals.

[D4.3] Interactive Websites / Web Applications

In this context, interactive websites or "web applications" is used to describe websites which gather information from a user to provide specific facilities. For example, Google Maps allows a user to view and explore a map of Earth and search for transportation routes, view satellite photos and tag specific locations with useful information. Web applications often provide a specialised function and allow users to perform certain tasks, such as route planning.

Use: an online, often persistent, application alternative to downloadable software which does not require software installation or updates.

The NCD project team will be using mapping sites such as Google Maps to locate green spaces near schools. The web service will support mapping of places to visit that may be of interest to schools and teachers.

Tracking: the first and essential tracking tool is web analytics, like Google Analytics. Further, tailored analytics can be added by including it into the development of the website/application.

[G45] Offline or Online?

Websites and web technologies can do almost anything that a traditional computer program can do. However, there are wider technical concerns that need to be considered. Seek advice from an expert before deciding which is appropriate for the project.

[G46] All-in-one

One of the greatest benefits to interactive web applications is that they can be embedded as part of the larger project website and web-presence. A well designed web application will fit seamless into the online web presence of the project and users will not consider their engagement with the application as just that, but rather a light touch browsing experience. This can be very beneficial as it removes many of the barriers associated with downloading and install standard offline applications.