

DialogPLUS Final Report

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January 2007

Table of Contents

Executive Summary.....	3
Background.....	4
Aims and Objectives.....	4
Methodology.....	4
Implementation.....	5
Curriculum Review.....	5
Learning Activities (Nuggets).....	5
Staff Development and the D+ Toolkit.....	5
Working practices.....	6
Rolling out Nuggets.....	6
Evaluation.....	6
Outputs and Results.....	6
Geography Learning Activities.....	7
Technical Issues.....	9
Embedding within Institutions.....	13
Conclusions: outcomes, implications and recommendations.....	14
References.....	17
Appendix A: Developed Resources.....	18
Appendix B: Student focused evaluation.....	20
Appendix C: Staff focused evaluation report.....	28
Appendix D: Publications Online.....	42

Acknowledgements

The project was funded by JISC and NSF under the auspices of the 'Digital Libraries in the Classroom' Programme. We are grateful for the firm but thoughtful approach of Susan Eales, now at the Open University, who was the JISC Programme Manager for most of the project. She enabled us to be open about issues as they arose and to be flexible about how they were resolved.

The project partner institutions were the University of Leeds, the University of Southampton, Pennsylvania State University (PSU) and the University of California Santa Barbara (UCSB). We acknowledge in particular the sterling efforts of David DiBiase, Director of the John A. Dutton e-Education Institute at PSU to maintain and manage the US involvement in the project, the quality of his contributions to the innovations in geography and his reflections on the impact of the project on learners.

We recognise the unique contributions of Professor Gráinne Conole, now at the Open University, and Dr Christopher Bailey, now at the ILRT, University of Bristol and Karen Fill, University of Southampton, to the design and development of the DialogPLUS Toolkit.

This report has drawn on some of the findings from the external evaluation conducted by Pete Dalton and Sarah McNicol of Evidence Base. They noted that DialogPLUS was a complex and exceptionally collaborative project. We were incredibly fortunate to have so many team members who contributed enthusiastically, openly, responsibly and creatively to the project processes and outputs.

Executive Summary

DialogPLUS was a collaborative project exploring the concepts of digital libraries and resource sharing to support innovative approaches to learning and teaching in Geography. Although one original objective was to use and develop further the Alexandria Digital Library at the University of California Santa Barbara (UCSB) as a common infrastructure for all four institutions to share resources, it soon became apparent that this was not going to be viable for technical, organisational and subject specific reasons. The primary focus shifted towards the other primary objective, the enrichment of the curricula for geography students with online learning activities taking advantage of publicly available digital resources. The developed activities were undertaken either at a distance or in a 'blended' mode, that is combining elearning with traditional face-to-face approaches on campus.

The collaborative development and evaluation of teaching and learning approaches, activities, tools and resources has had a significant impact on partners at the universities of Southampton, Leeds and Pennsylvania State (PSU) resulting in changed practice locally and ongoing efforts to share Masters units and students.

Internal evaluation of the innovations has revealed more impact on staff than students to date, but the growing confidence and expertise of the teachers in the use of high quality online learning activities and resources is likely to have an ongoing trickle down effect. For example, it has been reported by tutors that students who used the resources in their second year at Southampton have a better grasp of certain concepts and a good understanding of how to apply what they learnt about interpreting real data in different contexts. A slightly surprising finding from the evaluation has been that both staff and students find online learning more time consuming than traditional approaches.

The project also involved educationalists, learning technologists and computer scientists. An online toolkit to support learning activity design was developed and is freely available. Its usefulness to support staff development is being evaluated under the JISC funded Design for Learning programme. Much experience was gained in the technical areas of collaborative learning design, use and re-use of learning objects, repositories, metadata, interoperability and standards. In particular we have investigated a number of models of re-use. Project resources are being deposited in JORUM, the JISC funded learning object repository.

Team members have disseminated the project processes and outcomes widely. As well as a large number of journal and conference papers, workshops and presentations, an edited book distilling the experiences and lessons learned will be published by Idea Group, Inc in 2008.

Background

In the decade prior to this project proposal in 2002 a considerable wealth of digital resources and ICT tools had been developed to support learning and teaching. These had been funded from a variety of sources such as the National Science Foundation (NSF) and the Sloane Foundation in the State, and the Joint Information Systems Committee (JISC) and the New Opportunities Fund (NOF) in the UK. However, there had been little research into, or experience of applying the range of ICT resources and tools across one subject area in multiple institutions. This project applied a range of ICT resources and tools developed in the US and the UK in four different sub-areas of Geography across multiple institutions. Geography as a subject area was chosen because it provided a rich test bed for exploring the use of digital resources within diverse curricula and because it was a recognised subject of teaching and research excellence in the four participating institutions.

This project set out to allow academics to experiment with the use of new technologies and integrate digital resources with more traditional teaching methods. The team were concerned with a host of pedagogical and technical issues, such as ‘How effective are these new approaches?’, ‘What are the underpinning technical, managerial and infrastructural requirements?’, ‘What protocols and standards are needed to ensure interoperability?’, ‘How do we deal with copyright issues and the rise in the amount of plagiarism?’ It was also clear that the “ICT-debate” could not be addressed in isolation from institutional strategies and policies.

Aims and Objectives

The two primary aims of the DialogPLUS project were to develop:

- a distributed enabling information infrastructure for the support of learning and teaching in Geography; and
- innovative approaches to teaching and learning, based on this infrastructure.

Specific objectives were to:

- show how the undergraduate and postgraduate programmes of study in Geography in the consortium universities could be enriched and developed through cross-national collaboration and on-line delivery;
- show how major geospatial resources relevant for the study of the environment and landscape and for the study of human populations in cities and the countryside could be used in student programmes of study;
- show how important skills in the analysis of spatial information through use of Geographical Information Science and Earth Observation software and functions could be taught on-line and made available in undergraduate programmes; and
- develop on-line learning and teaching resources for use on campus so that relevant Geographical courses could be delivered to students in other disciplines, overcoming timetabling problems.

As the project progressed it became apparent that the barriers to uptake of the innovative approaches that we aimed to develop had little to do with technical infrastructural issues, and were much more to do with encouraging institutional adaptivity. At the same time the wind-down of the Alexandria Digital Library Project, which had initially been seen as a central resource, reduced our options on the infrastructural front and the focus of the project moved increasingly towards the innovative learning and teaching aims.

Methodology

The overall approach has been for the geographers to identify common areas for co-development and/or sharing of online teaching and learning resources with learning technologist support as necessary. Resources were then developed and mounted in the different institutional VLEs, and used by students. A mixed-modal evaluation methodology was adopted, based on the principles of

utilization-focused evaluation (Patton, 1997). The approach involves identifying key stakeholders and working with them to understand how they intend to use the outcomes of evaluation and which major questions are useful to answer. This information then informs the design of evaluation approaches and instruments.

The difficulties of working across institutional VLEs was recognised at the outset and a range of effective solutions were developed in terms of hosting materials externally and accessing them from multiple VLEs, repackaging materials using Reload and authoring content using VLE-independent standards such as QTI for questionnaires and quizzes.

There is more detail in the Implementation, Outputs and Results sections below.

Implementation

The DialogPLUS project developed in a number of phases, described below. The first phase began even before the project bid was written, when the potential partners got together to agree an overall approach. The first stage involved agreeing the Geographical topics which would be included in the project.

Curriculum Review

The Geographers involved in the project identified four areas of the curriculum, in which they had a desire to develop new resource based teaching:

- Human Geography and Census Analysis.
- Geomorphology
- Geographical Information Science
- Earth observation.

At the next meeting, shortly after the project was funded, geographers from the different institutions compared curricula and identified common themes which they could develop together or which one partner could develop for sharing with the others. As part of this process they also identified a large quantity of relevant tools, resources and references which could be used in teaching, particularly those that were on line.

Learning Activities (Nuggets)

The next phase of the project development was to identify the discrete “unit of sharing”. This was achieved by examining exemplars (“show and tell”) and by discussion of the pedagogical requirements of the geographers. At no stage did the learning technologists involved in the project feed into the discussion the idea of “learning objects” or any the current specifications such as SCORM which might steer the teachers in a specific direction. Instead they were left to derive their own definition of a learning activity, which throughout the projects was referred to as a “nugget” – the geographers own choice of terminology. A nugget was defined as a self contained activity including the resource(s) to be used, the task(s) to be performed, and where appropriate the assessment(s). It would be designed so that it could be included in either face-to-face or distance learning. No size for a nugget was fixed; in some cases the nugget might be the equivalent of a sub-section of a lecture, but in other cases large percentages of a module were treated as one nugget. This indeterminate granularity had predictable knock-on effects on the facility to share nuggets, and this is discussed later.

Staff Development and the D+ Toolkit

In order to capture and support the processes involved in nugget design the educational research team collaborated with learning technologists to develop and implement the DialogPLUS toolkit (DPT). This was based on the original ideas and requirements analysis undertaken by Professor Gràinne Conole, working with experienced Geography teachers. The underlying taxonomies are based on substantial research and creative thought, augmented by lengthy and deep discussions with others involved in this area of research (including Bill Olivier, Helen Beetham, Diana Laurillard, Rob Koper and the IMS-LD community, Dai Griffiths and the UNFOLD and CETIS communities, Charles

Duncan and Intralibrary). Our work on DPT in turn has influenced them, their projects and networks over the period 2003-2006.

The main development work involved programming the database and web interface, testing it, and making iterative improvements. The first working version was presented to the project team, and the Educational Researcher conducted group or one-to-one training sessions and collected feedback which led to further improvements. The collaboration of educationalists with learning technologists was particularly effective in terms of collating user requirements, translating them into a design specification, and the iterative improvement processes. It was important to have people who understood the academic perspective and could also speak the technical language.

Working practices

A strength of this project has been the excellent communications between all the active partners. This has been achieved by regular (6-12 monthly) face to face meetings, and frequent (monthly) team conferences using Access Grid or Internet conferencing tools such as Horizon Wimba. These tools, although still 'clunky', are now usable, and were valuable in building and maintaining the cordial professional relationships upon which project outcomes depended essential. They helped to reinforce the non-hierarchical nature of the project management as there was no barrier to any member of the team attending and participating in any meeting. In general, the personnel who kept in touch were the most productive.

Rolling out Nuggets

The project plan intended that nuggets would be designed and built in one year, piloted with a class the following year, and after evaluation and improvement they would be rolled out, and shared where appropriate. Learning technologists were employed to assist teachers in producing their nuggets and Geography teaching assistants to either produce nuggets themselves or cover the teaching duties of others who were released to work on nugget production. Two batches of nugget production were undertaken in three year development phase of the project and this is now being followed by a two year embedding phase, in which the activities which were developed continue to be used and evaluated.

Evaluation

When it became clear that JISC appointed evaluators would cover the external stakeholder aspects, we focused our project evaluation on the internal stakeholders, i.e. students and project staff. Evaluation of the impact on students involved a mix of quantitative and qualitative methods. Questionnaires, using generic quality criteria derived from a previous project, were completed by students at Leeds and Southampton. Analysis of this data, supplemented with observation, interviews and focus group sessions was reported initially to each tutor who had made innovative changes in their units. Where necessary and appropriate further investigations were undertaken, e.g. year on year comparison of summative results. An agreed summary of the findings was then posted on the project wiki and appended to the interim project reports.

Evaluation of the impact on, and outcomes for, staff was based on sixteen in depth interviews conducted on a one-to-one basis, either face-to-face (13 UK members) or by telephone (3 US members). These were then transcribed and partial transcripts were approved by the interviewees. The approved transcripts were then analysed using QSR NVivo. The findings from the analysis were circulated to all project members and the JISC programme manager. The results are discussed in Appendix C.

Outputs and Results

Explain the end result of the project work in an objective way. Depending on the project, it might include research results, findings, evaluation results, data, etc. If the project created something tangible like content, a portal, or software, describe it. Engage the reader, and avoid a long list of deliverables.

The project has outputs in three distinct areas:

- we have produced and evaluated a number of very high quality on-line learning activities using a variety of rich digital resources, created both by official agencies and universities, to enhance learning, knowledge, and skills for Geography undergraduates and postgraduates;
- we have addressed a number of technical issues to do with the design, access to, and re-use of such learning activities;
- we have accumulated valuable experience, that we wish share with the community, about the barriers and critical success factors for embedding such innovations within institutions such as ours.

Geography Learning Activities

Human Geography

To encourage students to use UK and US census materials, learning resources were developed and embedded into the curriculum at Masters and Undergraduate levels on both sides of the Atlantic. In the UK, the dissemination of resources developed for the Collection of Historical and Contemporary Census Data (CHCC) project also continues. At Southampton, some CHCC resources have been repurposed and new ones developed for a newly created unit, Census and Neighbourhood Analysis which is now taken by approximately 60 level 2 and 3 students each year.

The Online Census Atlas, developed at Leeds, has made census lab practicals in a first year module, a scene of quiet and concentrated effort by students with virtually no questions raised. Students have also demonstrated that they can actually do the practical on their own laptops using the campus wireless network. All this means that the module, taken by approximately 170 students each year, can focus on the geographic learning objectives (e.g. investigating the processes transforming the UK population rather than worrying about how to get the software to run on a PC).

Integration of elearning materials into a Masters Module, Census Analysis and GIS, has enabled the Leeds lecturer to deliver the materials for four consecutive quarters in the past year to two small face-to-face and two small distance learning classes. The face-to-face students work through the materials in their own time and meet the lecturer once a week for a tutorial to discuss issues and ideas. The distance students work through the materials online and interact with the lecturer via email and telephone. Under normal models of course delivery the module would have been declared not viable as there would be too few students.

Physical Geography

Here the focus was mainly on the teaching of fluvial environments. Materials were developed for new courses in Catchment Management and Drainage Basin Geomorphology. In addition, resources were introduced into existing River Channel Dynamics, Environmental Management and River Basin Management courses at Southampton (See for example, Priest and Fill, 2006). These included data and online modelling tools, concept mapping and the provision of catchment specific data, imagery and information within a local digital library for the contrast of global river catchments. Approximately, 250 level 2 plus some level 3 students, access these resources each year.

Geographic Information Systems (GIS)

The Interactive Album of Map Projections (<http://projections.mgis.psu.edu/>) now attracts over 15,000 hits per month from a variety of educational institutions and individuals worldwide.

The geo-registration skill builder enables learners to experiment with registering maps of different projections. Learners can dynamically generate their work on the computer screen and get instant feedback on their progress. The Global Positioning System (GPS) tutorial covers the principles, applications and training of satellite positioning. It was designed and developed collaboratively by Leeds and Penn State (Durham and Arrell, 2006). At Masters level, the partners have used their

collaborative GIS teaching to explore a range of models for remote access to learning resources, transfer of materials between VLEs and sharing of students between courses and institutions.

Earth Observation (EO)

The Internet makes it possible to convert many DOS-based EO programs and their associated learning resources more accessible and user-friendly. For example, the soil reflectance modelling activity shows how theories and formulae can be packaged in a series of webpages with the results of one chosen modelling method interactively demonstrated. The correction form provides a step-by-step guidance to learners when they prepare parameter files for the classical DOS-based 6S atmospheric correction program.

Generic

A generic activity to promote academic integrity that was developed originally at PSU is now used widely at Southampton and Leeds (Fill et al, 2006). Since 2004/05, all Geography undergraduates at Southampton (about 150 every year) are now required to pass the quiz. In 2006/07 this has been extended to new MSc students taking Geo-Information for Environmental Monitoring and Management (32 this year).

An online reflective diary was developed and trialled at Southampton. It has an easy-to-use interface enabling a student to create text and image entries and the tutor to view and comment on them.

Evaluation

JISC commissioned an external evaluation of the four projects in the DLIC programme from Evidence Base. At the time of writing their report is expected to be published soon. Receiving and responding to draft sections of that report was helpful to the DialogPLUS team.

Using the techniques described in the Methodology section above, our internal evaluation activities have produced a number of reports, examples of which can be seen in detail in Appendices B and C. Qualitative evaluation revealed that both teaching staff and students believe that engaging with well designed learning activities that integrated authentic resources deepened their conceptual understanding and improved skills that become increasingly important as they progress with their studies and into employment. However, one of the other notable findings from the evaluation was that both students and staff find these activities to be more time-consuming to develop/deliver and use than conventional, offline sessions.

The majority of our evaluations were of deployments of learning activities blended within the traditional curriculum and the responses were generally positive (Fill, 2005). By contrast, an early experience where a project team member had created the learning activities and then tutored, **from a distance**, a young, homogenous, undergraduate class, resident at their university, produced noticeably negative feedback. The students expressed problems with respect to their own motivation when working asynchronously on-line, and there was evidence that female students felt this particularly strongly.

Further work at PSU (Dibiase and Kidwai, forthcoming) on retention in on-line courses has studied the difference between mature professional learners and campus based undergraduate students, and has demonstrated a much greater success rate among the mature learners. With few exceptions, undergraduates were enrolled full-time and resided on or near campus, while older professionals studied part-time, and were dispersed around the U.S. Empirical evidence reveals that although younger and older students performed equally well on identical project assignments, students in the undergraduate cohort devoted about one-half less time to their studies overall, and participated in voluntary class discussions only half as frequently as their older counterparts. Undergraduates withdrew from the online class at a much higher rate, and those who completed the class reported significantly lower levels of satisfaction with the experience. Findings suggest that geographers who serve as instructors of distance education classes should be proactive in stimulating younger students' participation in class discussions, and should evaluate explicitly the tacit learning that discussion fosters.

These evaluation findings indicate that although we can report that blended learning approaches have a positive impact on the student learning experience we have not yet demonstrated that campus based undergraduates value, or are motivated by, complete on-line modules. Indeed, we have evidence to the contrary.

A further outstanding issue is how to measure or demonstrate any real improvement in student outcomes. This is particularly difficult in UK Higher Education, where it is not possible to do pre and post testing, and normative marking pertains.

Technical Issues

The DialogPLUS Toolkit

When we started the DialogPLUS project most of the Geography teachers had little or no experience of designing on-line activities. In order to support them in creating such activities, we set about designing a toolkit (which might now be referred to as a “pedagogical planner”). Underlying the toolkit is a set of pedagogical taxonomies for tasks, tools, resources etc. (see Figure 1).

The toolkit can be used as:

1. a step-by-step guide to help practitioners make theoretically informed decisions about the development of learning activities and choice of appropriate tools and resources;
2. a database of existing learning activities and examples of good practice which can then be adapted and reused for different purposes;
3. a mechanism for abstracting good practice and metamodels for e-learning.

At the heart of the DialogPLUS toolkit (DPT) is the notion of a learning activity, consisting of three elements:

1. the context within which the activity occurs, including the subject, level of difficulty, the intended learning outcomes and the learning environment;
2. the learning and teaching approaches adopted, including the theories and models;
3. the tasks undertaken, which specifies the type of task, the techniques used, associated tools and resources, the interaction and roles of those involved and the assessments associated with the learning activity.

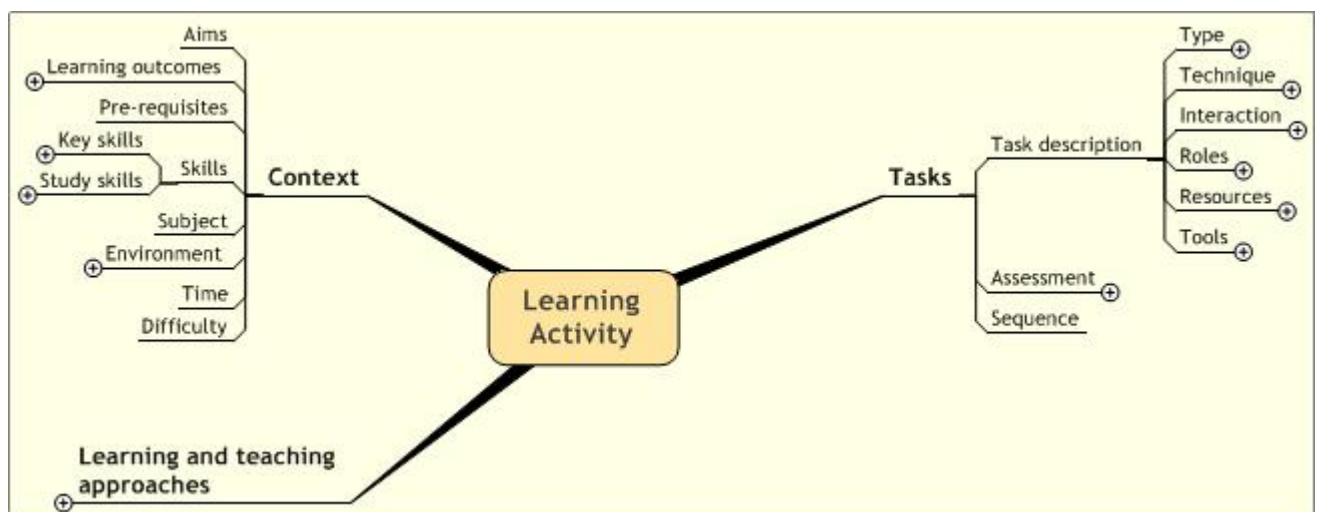


Figure 1 – taxonomies within the DialogPLUS Toolkit

The toolkit, as it stands, stores learning activity designs for sharing, re-use and re-purposing by other teachers. The focus of this work has been providing tools to aid teachers in the design of on-line activities, rather than on instantiating or “playing” the activity (as an IMS Learning Design Player can do). However, early work has been carried out on exporting a Toolkit Design as an IMS Learning Design manifest.

DPT is publicly available at <http://www.nettle.soton.ac.uk/toolkit/Default.aspx> and has 188 registered users to date. It can also be used by ‘Guests’ without registering. It has been presented in educational and technical workshops and at conferences and excited much interest and discussion. The majority of those who have investigated it suggest that its main value could be in teacher training contexts in FE and HE. The Education Research Assistant is part of a team that has been funded under the JISC ‘Design for Learning’ Programme to evaluate the use of DPT in this context.

Learning Activities

Despite the efforts of standards organizations like the Learning Technology Standards Committee (LTSC) of the Institute of Electrical and Electronics Engineers (IEEE), and the Instructional Management Systems (IMS) project, the concept of a “learning object” remains ambiguous. It was to avoid the intellectual baggage associated with the term, in fact, that the DialogPLUS project team purposely substituted the idiosyncratic jargon “learning nugget” in its successful proposal.

After considerable research, discussion and experimentation, the DialogPLUS project came to adopt a conception of “learning nugget” that includes three elements: A **learning activity** (e.g., guided exploration of a Web site or other widely-accessible resource, using a Web-based or desktop software application, a paper-and-pencil exercise downloaded as a PDF file, etc.), **supporting material** (e.g., text and graphics and/or digital video) needed to situate the activity within a knowledge domain and a set of educational objectives, and some form of **assessment or self-assessment** (e.g., an automated quiz that provides immediate feedback) by which students can gauge the extent to which they have achieved the objectives.

The nature of most of these Learning Activities was of the form that required the students to engage with information and data, obtained from diverse authentic sources, to a depth that would be difficult to achieve in a classroom learning situation. As such they were not usually seen particularly as distance learning resources (although sometimes they may have been used with distant students) but rather they were intended as an improvement in the learning experience for campus based students.

Co-operative Design

The concept mapping approach (described in DiBiase, 2005) also appeared to foster communication among authors more effectively than the textual outlines upon which authors relied earlier in the project.

Earlier Learning Activities were designed “face-to-face”. In most cases we organised this by dividing the appropriate syllabi into chunks, and allocating these chunks to teams who would implement appropriate learning activities. Typically, to ease communication problems, these teams were all from one institution, but that approach tends to constrain the design to local requirements so the outputs are less shareable. After we had gained some confidence in creating good learning activities we decided to attempt to design some collaboratively. The topic chosen was learning to use “GPS”; the different partners all had different learning outcomes they needed to cover. After a brief face-to-face meeting the team returned to their home universities and continued the design remotely using virtual communication tools (Horizon Wimba). The process involved concept mapping the domain, then identifying that part of the domain required by each partner. The full process is shown in Figure 2 and the resulting concept map and nuggets are shown in Figure 3.

Concept mapping, the Toolkit and web conferencing tools have introduced a new culture in learning material design. The methodology of identifying personal and common teaching requirements, identifying learning objects and topics and the relationships both within and between the elements, parsing elements into units of learning and the iterative process of refining the overall concepts into

reusable learning activities can be applied to independent or collaborative learning material development in the future.

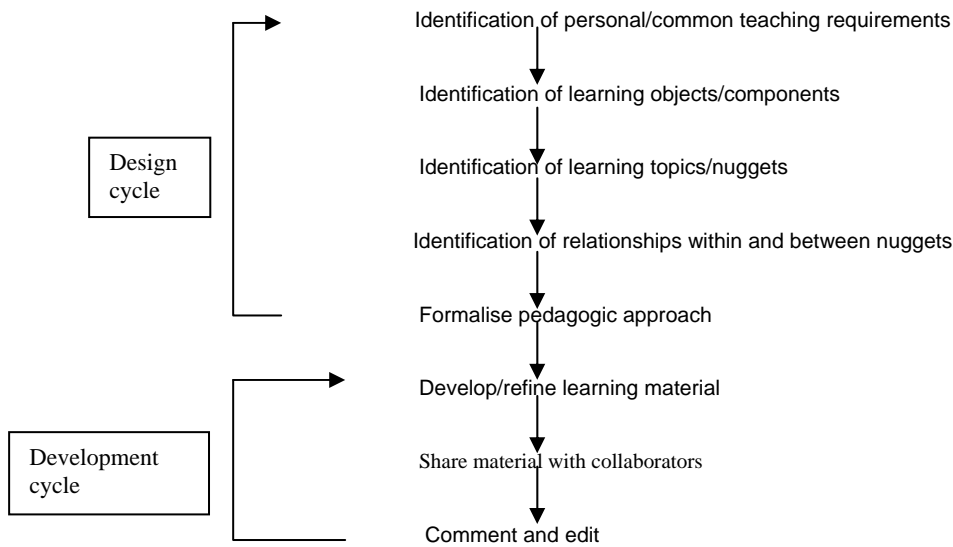


Figure 2 - Flowchart of CLAD process (Durham and Arrell, 2006)

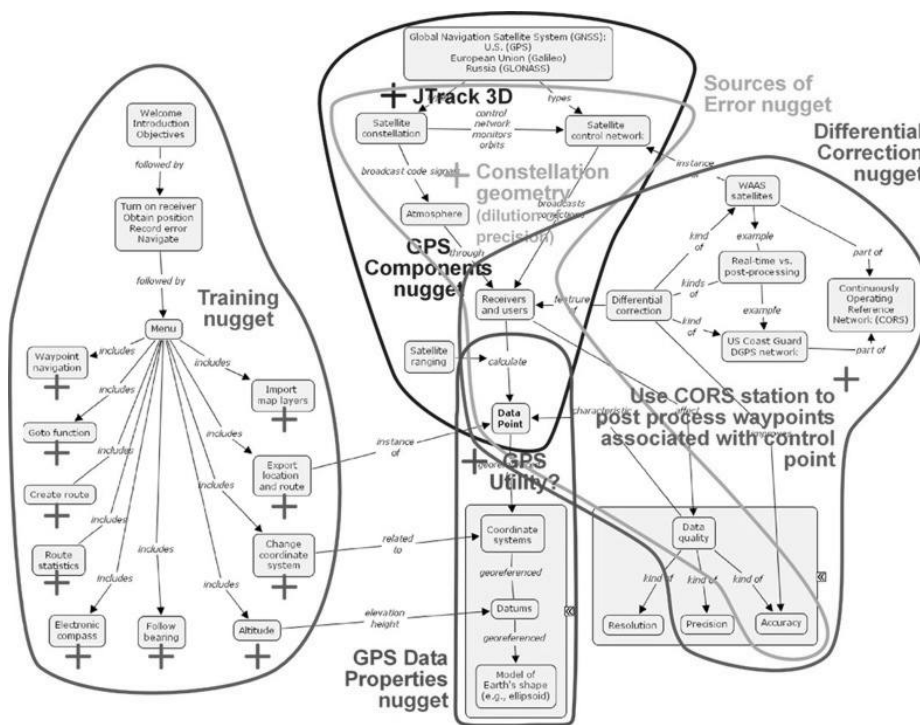


Figure 3 - Concept map of GPS elements and relationships, parsed into a series of nuggets (Durham and Arrell, 2006)

Collaboration in the development of learning material is not a new concept but working with international collaborators, with potentially different academic cultures and the barriers created by distance and time zones, can make the process more challenging. International or inter-institutional collaborative learning design introduces new teaching methods to teachers and allows valuable cross-

fertilisation of ideas and knowledge. In the context of this collaborative exercise, good communication and use of technology to facilitate the sharing experience were identified as critical success factors. The enthusiasm by members of the project to overcome all difficulties and produce a series of learning activities suitable for deployment in any of the member institutions was essential to successful collaboration. This enthusiasm was supported by the identification of a robust, iterative methodology to ensure the design and development of reusable resources for straightforward embedding in geography programmes in both the UK and USA.

VLEs and Shibboleth

The partners in the DialogPLUS project all use different VLEs. One of our research questions involved exploring ways of sharing our learning activities. Received wisdom in the Learning Technology community says that in order to share a learning object, the creator should “content-package” it and submit it to some repository such as JORUM. Assuming that all VLEs share an understanding of a common content packaging format, the package can then be downloaded by other users who unpack the resource to their own VLE. However, there are some problems with this approach:

1. Not all VLEs do share a common content packaging format, even if they state that they do.
2. It is neither practical nor feasible to package the entire contents of sources of data such as digital libraries – it is necessary to point the user to them.
3. Many of the sources of data used in our project had IPR issues that meant they were only licensed for use within UK academia. There are therefore legal issues to be considered in packaging such data.
4. Our experience of packaging and unpacking even fairly simple learning objects with negligible data content was that the process still required a significant amount of manual intervention.
5. The type of learning activities that we produced often required some degree of processing. Typically this was implemented using ASP. But processing engines are frequently dependent on the server operating system (Unix/Linux/Windows...), so, for example, ASP code will not work on a Unix server.

For all the above reasons we investigated alternative approaches to packaging. In both cases the solution was to have just one version of each on-line course and its activities (using third party data sources as appropriate).

In the simple case we create standard HTML files as the “contents” pages for the courses, providing instructions to students on what activities to carry out, and the sequence and timing of these activities. These HTML pages are completely standard, and can be simply copied from one VLE to another. They contain links to the activities themselves, each activity being situated on just one web server outside of the scope of the VLEs. Such servers were typically unrestricted (security by obscurity!) but could also have simple authentication allowing the webmaster to control the list of authenticated users, which can be from any of the partner Universities.

This approach is very easy to implement, and allows the activity web-server and any associated data servers to each be responsible for their own authentication policies. It puts the responsibility on each partner to ensure that their students will be authorised to use all the data sources involved, but also gives them control of the contents page so they can alter one activity for another where necessary.

It also means that all students will logon as usual through their own VLE and will use the activities and data, along with other students from their course, just as if the data was on their own VLE. This has obvious advantages, but does mean that students from one institution cannot interact with students and teachers from another, even if they are synchronously following the same course.

In the DialogPLUS project the partnerships between the teaching teams at three of the Universities developed so well that, having agreed a course covering some learning outcomes, they were often happy to leave the teaching of that course to the expert who had developed it. So now the problem became one of allowing students at one university to fully join in with students at another – which meant giving them access to the full shared environment (forums, email lists etc), which in practice

means allowing the students to register on course on the VLE that the teacher is using, wherever that is.

It would have been possible for the DialogPLUS project to mount its own VLE (e.g. Moodle) and to implement all courses on this shared VLE, but this would leave the project with on-going maintenance problems, and would cause lots of work in creating student records; besides an important feature of a VLE is the connection to the student record and information systems of the home institution.

A solution we have been investigating involves the use of “Shibboleth” middleware, enabling students at one institution to access nuggets, complete modules, and to interact with students at other institutions using local authentication and without creating redundant accounts or student records. Now, students pursuing professional masters degrees in geographic information systems at Penn State, Leeds, or Southampton are able to benefit from specialized modules previously available only to local students. Sharing students among federated institutions is now explicitly described and promoted in Penn State University policy (i.e., “Penn State Online Guidelines for Sharing Students and Courses, 2006). Shibboleth authentication is now built into ANGEL, Penn State’s learning management system, so that designated students registered at Leeds can access select Penn State modules using Leeds authentication. The articulation and revenue sharing agreements that made this technical federation possible is one of the project’s most important achievements, and was facilitated by the World wide Universities Network.

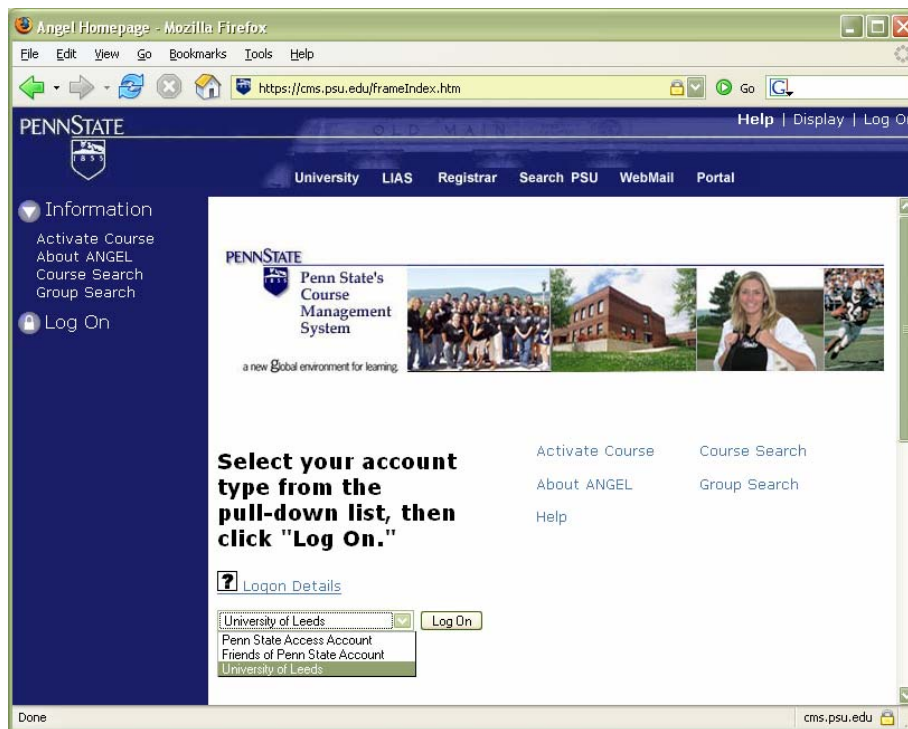


Figure 4 - The Front Page Login to Penn State’s Angel Course Management System.

Embedding within Institutions

At Southampton, the senior staff engaged with DialogPLUS came to be consulted within the university and co-opted onto working groups set up to tackle various aspects of the emerging elearning agenda. Although this role might have been expected of the Education and Electronics & Computer Science academics, the Geography staff were relatively new to these discussions and were welcomed as bringing a valuable user-discipline perspective. Most recently the lead DialogPLUS investigators in all three Schools have been involved in the development of a new institutional-level elearning strategy, which reflects some necessary aspects of the DialogPLUS experience, particularly the importance of embedding cultural change at the School level and of making learning technologist support available locally to academic staff.

In a university such as Southampton, individual schools have a high degree of independence and institutional change is brought about through innovation in schools. In a recent university-wide e-Learning audit Geography is recognized as one of the university's e-Learning innovators and is sharing experience with others, for example a group developing new generic research methods training modules. Our e-Learning agenda is explicitly articulated within the School strategic plan. Within the school, DialogPLUS has been strongly influential in bringing about a policy decision to move all teaching materials into the institutional Blackboard VLE for the 2005/6 academic year and the DialogPLUS team, together with permanently-funded school computing staff, ran two 2-hour workshops in July and September 2005 for academic staff to prepare for this transition. These have showcased DialogPLUS modules within Blackboard and initiated discussion of how similar developments might be introduced to other areas of teaching. The approach to student evaluation described above is being carried forward in the School of Geography with the generic quality criteria embedded in online questionnaires that supplement the standard student satisfaction surveys.

The requirement of the DialogPLUS project to deposit learning materials in the JISC repository has been the primary driver for the university to sign the Jorum deposition licence and this again has required the re-examination at institutional level of IPR in teaching materials and responsibilities for copyright clearance of online learning materials authored within the institution. As project staff have been involved in school and university committees, experience with the academic integrity nugget has been used to inform the development of a university academic integrity policy – an important shift from the previous plagiarism-oriented approach. As the project collaborations had originally been brokered through WUN, there was also a high level of interest from other WUN partners keen to learn lessons helpful to the establishment of other learning collaborations, which again led to the lead investigators being invited to present project experiences to international WUN audiences (e.g. Martin, 2005) and for the projects to have a profile in local and international WUN discussions. It is thus apparent that these projects have achieved visibility within several separate but important university-level initiatives and have been used as case studies to help inform new policy development.

In conjunction with the original JISC programme manager, we successfully submitted and ran a one day workshop on critical success factors for institutional change and embedding elearning under the auspices of the European Conference on Digital Libraries in Alicante on 22nd September 2006. Members of the DialogPLUS team presented three of the thirteen workshop papers and contributed to the round table discussion. Our papers described the Collaborative Learning Activity Design (CLAD) methodology developed during the project; the impact of the collaborative online Masters programme on the culture and curriculum in the School of Geography; and lessons learned about embedding blended learning in the institutional culture. The proceedings, papers and presentations are available online at <http://www.csfic.ecs.soton.ac.uk/> and a conference report has been published in D-Lib Magazine (see <http://www.dlib.org/dlib/october06/10fill.html>).

Conclusions: outcomes, implications and recommendations

The project achieved less than expected in terms of development of new Digital Library architectures, primarily due to the wind-down of the Alexandria Digital Library Project which had been seen as a central resource. However, the eventual use of the Jorum repository has probably been a more generally applicable outcome from the UK perspective. The extended project team produced and implemented a large volume of online learning material, re-using digital resources from multiple sources, as was envisaged, and the vast majority of this continues to be used. Evaluation activities indicate that high quality online learning activities, as part of a blended approach, do enrich programmes of study although designing, developing, implementing and learning with them can be time consuming for both teachers and students.

Team members now have a sound understanding of good practice in design for learning, elearning and blended learning and are able to make informed contributions to ongoing institutional, national and international work on digital repositories, sharing and reuse of resources, pedagogical planning, design and implementation tools. There remain technical and copyright barriers that impede the sharing of both resources and students.

Stakeholders in the wider community who will benefit from the work of DialogPLUS are summarised in Table 1.

The Evidence Base evaluators reported (In an email to the Education Research Assistant, 15/06/06) that the following factors were identified by projects in the DLIC programme as making a significant contribution to the success of their work to introduce and integrate new technologies into the classroom.

The development process

- Tools/resources which complement teaching, rather than interfering with the core activity
- Taking an iterative approach to the development of tools and resources
- Communication and discussion (within departments, within teams, between project partners and with the external world)
- Sufficient time to embed projects within the curriculum and working of the department
- An element of external funding

Institutional and departmental support

- Support and active involvement from senior staff in the department
- A high level of interest and involvement in e-learning in general within the department
- Approaches which take account of the structure and ethos of the institution
- Leads/champions in academic departments
- Support at a senior level within the institution

Stakeholders	Benefits
Teachers	1. Access to the resources deposited in JORUM. 2. Improved understanding of <ul style="list-style-type: none"> • access to digital library resources • barriers and enablers to online learning activity (OLA) development, usage and sharing • effectiveness of technology enhanced and blended learning • collaborative development projects • sharing students online.
Learners	Improved access to 'real world' data and other learning resources that can <ul style="list-style-type: none"> • enhance subject specific and generic skills • deepen conceptual understanding • foster online communities of enquiry.
Computer scientists and educational technologists	Improved understanding of <ul style="list-style-type: none"> • Barriers and enablers to the technical development of OLAs • Usability and effectiveness of the OLAs • Evolving standards and technical solutions in learning design, interoperability, resource discovery and re-use.
Educationalists	Improved understanding of <ul style="list-style-type: none"> • Barriers and enablers to changing practice • Pedagogic taxonomies and their application in learning design • Evaluation methodologies, issues and outcomes.
Institutional managers	Improved understanding of barriers and enablers for <ul style="list-style-type: none"> • Successful project completion • Critical success factors for embedding online and blended learning.
Funding bodies	<ul style="list-style-type: none"> • Value of the collaboration

Stakeholders	Benefits
	<ul style="list-style-type: none"> • Synergies between related JISC/NSF projects and programmes • Applicability and transferability of the outcomes to the wider community.

Table 1: benefits accruing to the wider community from the DialogPLUS project

Curriculum planning, development and delivery teams

- Joint input from learning technologists and academics
- In a number of cases, technical support embedded within the department, rather than based centrally, is seen as vital
- Learning technology and lecturing staff work closely together
- Learning technologists who have a basic understanding of the subject area (and of pedagogy)
- A member of the team with both a technology and pedagogy background who can ‘interpret’ between academics and IT specialists
- The involvement of individuals who really want to examine existing practices and introduce new ideas
- Opportunities for individuals to play to their strengths (i.e. a flexible approach to roles)
- Student input.

We endorse all of these points and, in addition, would like to offer these key findings and recommendations:



















- Inter-institutional collaboration on learning design and curriculum planning is hard. This is particularly true when collaborators are subject to the dissonant higher education policies and cultures of the U.S. and U.K.
- It is easier, and more beneficial, to share students than to share materials. Rather than emphasize the development and sharing of common learning objects to be deployed in redundant modules at multiple institutions, funders should encourage institutions to extend access to their most unique module offerings to students throughout Shibboleth-enabled federations.
- In general, older students thrive better in e-learning environments than younger students. Blended programs that combine online and face-to-face experiences seem to be best suited for undergraduate audiences.
- Try to work collaboratively with other teams whose work you respect. Foster trust and honesty and non-hierarchical project management. Regular (bi-annual or annual) face-to-face meetings, and frequent (monthly) team conferences using Access Grid or Internet conferencing tools such as Horizon Wimba can facilitate this.
- Try to have project team members with dual backgrounds, for example geographer/ technologist, computer scientist / educationalist. The ability of these people to bridge potential gaps and forge common understandings is very valuable.
- Try to have senior management actively involved if your project hopes to bring about institutional change.
- Whilst the technical aspects of online learning and teaching were not problematic for us, there are still legal barriers, including IPR and copyright, to sharing resources either directly or via repositories. Simple local, national and international guidelines and processes are needed otherwise the community will err on the side of caution.

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Appendix A: Developed Resources

The table below lists some exemplary learning resources developed by the project consortium between 2002-2006 and highlights the collaborative/repurposing elements of the DialogPLUS project.

	Leeds	Penn State	Southampton	UCSB	Exemplary Resources
Human Geography					Online Census Atlas; CHCC Quizzes
Physical Geography					Concept Mapping; Basin Geomorphology; Tyne DL
Geographic Information					Geo-registration Demo/ Live; GPS
Earth Observation					Surface Modelling; Atmospheric Correction Form
Study Skills					Academic Integrity (Leeds/Soton)
VLE & Platforms					IMS & SCORM objects (JORUM)

The following tools and resources developed by DialogPLUS are available on the web:

Academic Integrity Resources: <http://www.dialogplus.soton.ac.uk/aig/index.html>

DialogPLUS Toolkit for learning activity design: <http://www.nettle.soton.ac.uk/toolkit/>

Interactive Album of Map Projections: <http://projections.mgis.psu.edu/>

Online Census Atlas: <http://www.chcc.ac.uk/atlas/index.html> or <http://www.ccq.leeds.ac.uk/teaching/chcc/>

Our outwards facing site (www.dialogplus.soton.ac.uk) was launched in April 2006. Between then and mid-October 2006 it had nearly 15,000 hits. These can be broken down by the domain requesting the pages:

Hits (Requested site)

=====

9956 (soton.ac.uk)

705 (Other UK domains)

3953 (Worldwide domains)

[14614 Total number of hits Apr to mid Oct 2006]

Almost all the hits to the site are related to the Academic Integrity resources.

Since the academic term started, there has been a significant increase in traffic. Excluding those calls originated from the soton.ac.uk domain, the number of hits has been well above 300 per week.

The resources have been accessed by a number of UK institutions, (e.g. ed.ac.uk 39 hits; unl.ac.uk 40 hits; man.ac.uk 18 hits, ncl.ac.uk 6 hits; cam.ac.uk 18 hits; canterbury.ac.uk 34 hits; uclan.ac.uk 27 hits; dundee.ac.uk 35 hits; uwe.ac.uk 40 hits) as well as schools and research centres (liverpool.sch.uk 6 hits, ncess.ac.uk 7 hits). Worldwide education establishments and government agencies such as yale.edu (10); uow.edu.au (42); psu.edu (48 hits); utcru.sk (16); tekotago.ac.nz (7); stut.edu.tw (5); acn.waw.pl (51); ads.uwaterloo.ca (40); usyd.edu.au (17 hits); akdeniz.edu.tr (12); ucsb.edu (24); univie.ac.uk (40), etc.

The following DialogPLUS resources are, or soon will be, available from JORUM (www.jorum.ac.uk)

Academic Integrity Guidelines (Leeds / Southampton)

University of Southampton:

- Census and Neighbourhood Analysis (TBA)
- Earth Observation (6S Atmospheric Correction Form)
- Geomorphology (Basin Modelling Concept Map)
- The Tyne Digital Library

University of Leeds Census Analysis and GIS resources:

- The Census Data System: Procedures, Outputs and Geography.
- The Census Data Matrix: Distribution, Composition and Change Percentages, Location Quotients, Indicators of Change and Indicators of Diversity (Entropy Index).
- Mapping Census Data for Large Areas, Map Resources and Techniques.
- Understanding and using Output Areas.

University of Leeds Earth Observation Lectures:

- Introducing EO for physical Geography through a coverage of image acquisition / analysis & datasets.
- Summarising the lecture series & placing EO data & processing in the context of GIS / physical Geography applications.

University of Leeds Upland Catchment Management Lectures:

- Introducing Upland Catchment Management and the Leeds UCM Series
- The collection of topographic data
- Catchment precipitation, soil and geology
- Hydrometry
- Hill slope hydrology
- River flow modelling
- Channel management with reference to bank erosion
- Sediment delivery and transport
- Water quality
- Upland Catchment Management Review.

Appendix B: Student focused evaluation

The table below shows the generic quality criteria used in on and offline questionnaires.

For the Online Learning Activity, {title}, which you have just completed, please score each statement as	
0 – No 1 – Somewhat 2 – Yes N/A – not applicable	
1	There was a full description of the learning activity, including learning objectives.
2	The interface was easy to use.
3	Required tools were included (e.g. database, spreadsheet, note making, bulletin board).
4	The content met the needs of my preferred learning style.
5	The content was relevant, appropriate and clear.
6	All embedded materials were easily accessible.
7	Mechanisms were provided for information and support.
8	Maximum response times to learner queries were defined.
9	The assessed elements of the activity were appropriate for the learning objectives.
10	The activity improved my {subject} knowledge and skills.

Note: The generic quality criteria were usually supplemented with up to 10 more questions derived in conjunction with the teacher.

There is too much material to include all the detailed analyses of student feedback, both quantitative and qualitative, in this report. One example (anonymised) is given below, starting with the summary and followed by the detail.

Evaluation Feedback – Example of one agreed summary

The evaluation activities undertaken were a questionnaire and focus session for students, conducted within a timetabled lecture slot towards the end of the unit. At that point the {xxx} tutorial was the most recently used of the online activities in the unit. Virtual observation of discussion board threads was also conducted throughout the unit.

Student responses to questions about the {xxx} tutorial were mixed, but not overwhelmingly negative, despite some of the initial problems encountered. Indeed, 79% recognised that it had improved their geodemographic knowledge and skills, at least somewhat. In the focus group session, {xxx} issues were in the middle of the list of worst aspects, disliked most by level three female students. It was noticeable that working with real {xxx} data, a core tenet of the unit and highly valued by the tutor, was last on the students' list of best aspects derived from the focus group session.

Overall, views on all the online activities were also mixed, with students acknowledging that they learnt from them but did not particularly enjoy them. However, they were very positive about the impact on their learning of the tutor's¹ and other learners' contributions to the discussion boards. They were less positive about enjoying making such contributions themselves. Analysis of responses in the focus group session showed that female students, especially at level three, voted in large numbers for the discussion boards as the best aspect of the unit.

¹ The tutor submitted 30% of the 346 messages in the 10 discussion boards.

Although 65% responded that the blend of lectures and online activities is a good way to learn, only 19% positively enjoyed the online activities. Female students, especially those at level three, enjoyed them least. The worst aspect nominated by the focus group was lack of face to face support. This seemed to be felt most keenly by level two female students. Level three male students felt strongly that the worst aspect was that the activities were really time consuming. The tutor feels that the amount of effort required is in line with the credited hours for the unit. Further analysis of assessment scores for all components of the unit revealed no significant difference in results by student gender and/or level of study.

Overall, the resources and online activities on this unit appear to be well matched to the stated aims.

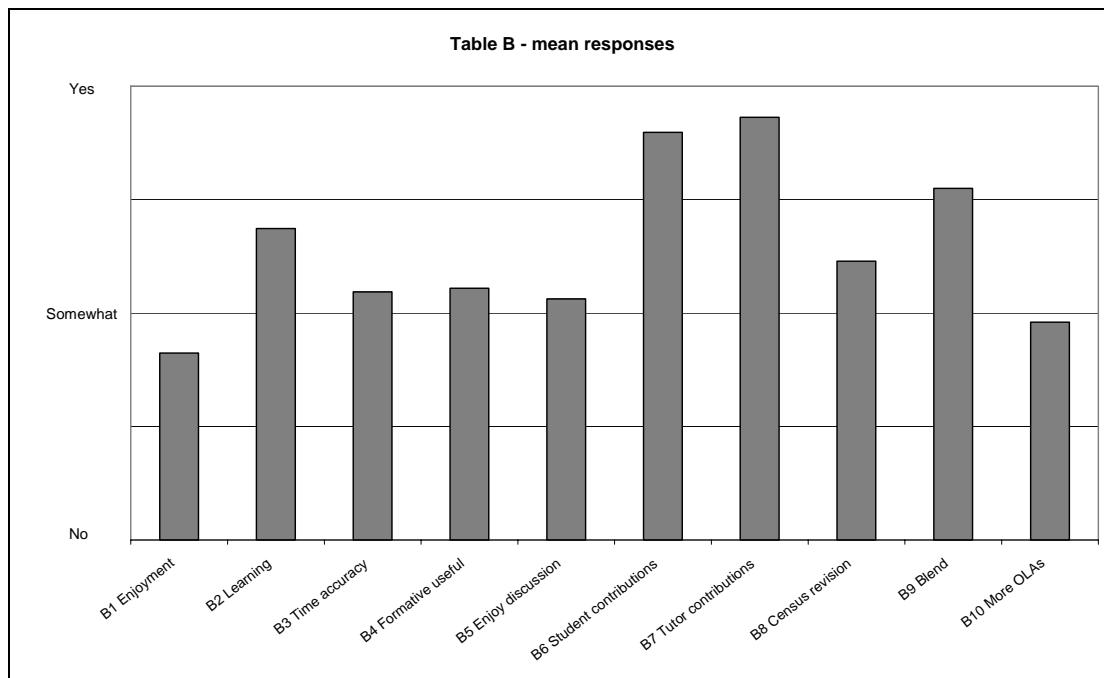
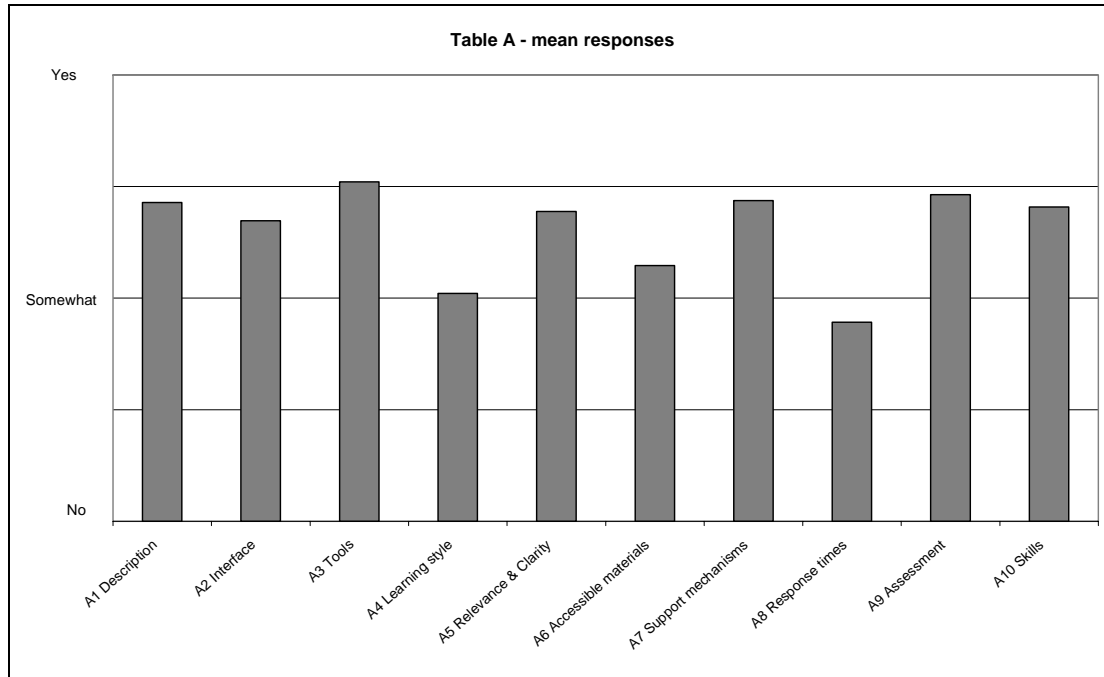
Evaluation Feedback – Example of one detailed analysis

Fifty-one (81%) of the sixty-three students taking the unit attended the lecture on {date}, completed the questionnaire and took part in a nominal focus group session. The tables and charts below show the results of quantitative analysis of the feedback. Student comments are then reported and finally the results of the focus group.

Table A For the online {xxx} tutorial		Number and percentage of the students present giving each score				Mean response
		0 – No	1 – Somewhat	2 – Yes	N/A	
1	There is a full description of the online activity, including learning objectives.	2 4%	24 47%	23 45%	2 4%	1.4
2	The interface is easy to use.	5 10%	22 43%	22 43%	2 4%	1.3
3	Required tools are included (e.g. database, spreadsheet, note making, bulletin board).	3 6%	17 33%	28 55%	3 6%	1.5
4	The content meets the needs of my preferred learning style.	13 25%	21 41%	14 27%	3 6%	1.0
5	The content is relevant, appropriate and clear.	4 8%	22 43%	23 45%	2 4%	1.4
6	All embedded materials are easily accessible.	6 12%	29 57%	13 25%	3 6%	1.1
7	Mechanisms are provided for information and support.	5 10%	17 33%	26 51%	3 6%	1.4
8	Maximum response times to learner queries are defined.	15 29%	11 22%	11 22%	14 27%	0.9

9	The assessed elements of the online activities seem appropriate for the learning objectives.	2 4%	18 35%	21 41%	10 20%	1.5
10	The online activity improved my geodemographic knowledge and skills.	9 18%	11 22%	29 57%	2 4%	1.4

Table B For all the {unit} online activities		Number and percentage of the students present giving each score				Mean response
		0 – No	1 – Somewhat	2 – Yes	N/A	
1	I have enjoyed doing all the online activities.	17 33%	26 51%	8 19%	0	0.8
2	I learnt a lot from doing the online activities.	5 10%	22 43%	24 47%	0	1.4
3	I found the time suggested for completing the online activities to be accurate.	11 2%	17 33%	15 29%	8 16%	1.1
4	I found the formative questions and quizzes useful.	7 14%	27 53%	12 24%	5 10%	1.1
5	I enjoyed contributing to the discussion boards.	11 22%	23 45%	14 27%	3 6%	1.1
6	I found the contributions that other students made online helped my learning.	0	10 20%	39 76%	2 4%	1.8
7	The tutor's contributions to the discussion boards were helpful to my learning.	0	7 14%	44 86%	0	1.9
8	I found the Census revision quiz useful.	6 12%	15 29%	14 27%	16 31%	1.2
9	The blend of online activities with traditional lectures is a good way to learn.	5 10%	13 25%	33 65%	0	1.5
10	I would like more online activities on other units.	18 35%	16 31%	16 31%	1 2%	1.0



By gender

Fourteen (27%) of the students who completed questionnaires were male, 36 (71%) were female and one student did not give gender information. The only question that drew a significantly different ($p < 0.01$) responses from male and female students was B1 where the mean response from female students was 0.6 (sd 0.5), compared with a mean of 1.2 (sd 0.8) for male students.

By level

Fourteen (27%) of the students who completed questionnaires were Level 2, 36 (71%) were Level 3 and one student did not give level information. There was no statistically significant difference in responses by level alone. However, looking at gender and level reveals that the significant gender

difference in responses to B1 occurs only within Level 3. It might be worth exploring why the Level 3 females did not enjoy the OLAs as much as other students.

Comments from questionnaires

There were two general comments about the {xxx} tutorial and online activity :

I found trying to find the links to (...) difficult as their whereabouts was not specified in the assignment. I find it frustrating when I cannot complete certain assignments due to technological problems. (Level 2, female student)

Not enough specific instructions as to how the program works. (Level 3, female student)

There were six general comments about all the online activities:

Excellent that all resources provided at beginning, rather than having to wait for teaching week. But difficult to remember / find which one is current week's topic in list. (Level 3, female student)

Feel that online learning sessions need to have formalised help session as often if you are unclear what to do you cannot progress as you need clarification. A computer help session would make online learning a lot more beneficial. (Level 3, female student) NB: this student did find the discussion boards helpful.

A computer practical session each week to work through problems as we have for other online-based courses would have helped a lot and enabled me to complete the coursework on time which is currently unlikely due to the lack of specific instruction. (Level 3, female student)

I found blackboard (esp. the discussion board) a lifeline when carrying out many of the online tasks. This may be good however I feel it shows the lecturer depended too much on it & therefore did not spend the time on explaining how to do the tasks. (Level 3, female student)

We should have computer workshops so we can actually ask the tutor if you have problems etc. Some problems could be easily sorted with just 5 minutes from someone who knows what they are doing. (Level 3, female student)

Computer practicals would be a far more effective teaching method (Level 3, female student)

Comments linked to specific survey statements are shown in the table below, together with a reminder of the mean scores from all student responses.

Statement	Comments	Student		Mean score
		Level	Gender	
For the online {xxx} tutorial				
A1. There is a full description of the online activity, including learning objectives.	<i>This particular tutorial was very cryptic.</i>	2	M	1.4
	<i>Despite all the information given when trying it myself found it v.v. difficult.</i>	3	F	
	<i>Found it hard to understand what was expected & what learning outcome was meant to be.</i>	3	F	
	<i>I'm sure there is but I didn't need to use it.</i>	3	M	
A3. Required tools are included (e.g. database, spreadsheet, note making, bulletin board).	<i>I found it difficult to find the spreadsheet.</i>	2	M	1.5
	<i>It is not always easy to find them.</i>	3	M	
A4. The content meets the needs of my preferred learning style.	<i>I prefer physical teaching to online instruction.</i>	2	M	1.0

Statement	Comments	Student		Mean score
		Level	Gender	
For the online {xxx} tutorial				
A6. All embedded materials are easily accessible.	<i>Not all links to websites available. References made but had to go back through other tutorials to find links & web addresses.</i>	3	F	1.1
A7. Mechanisms are provided for information and support.	<i>No opportunity to question the sometimes brief instructions. Via blackboard but not on website itself.</i>	2	M	1.4
		2	F	
A8. Maximum response times to learner queries are defined.	<i>I don't think there were any maximum response times.</i>	3	M	0.9
A9. The assessed elements of the online activities seem appropriate for the learning objectives.	<i>The learning objectives were at times unclear.</i>	3	M	1.5
A10. The online activity improved my geodemographic knowledge and skills.	<i>I certainly found assignment 2 more complicated to follow than assignment 1.</i>	2	F	1.4

Statement	Comments	Student		Mean score
		Level	Gender	
For all the {unit} online activities				
B1. I have enjoyed doing all the online activities.	<i>Too much faffase (sic) trying to find appropriate files & make them work. Not all of the activities as one was particularly tricky. Most yes, but latter parts v. complex & confusing. I find them confusing. The objectives are unclear.</i>	2	M	0.8
		2	F	
		2	F	
		3	M	
B2. I learnt a lot from doing the online activities.	<i>Had used before so perhaps I did not have as much to learn.</i>	3	M	1.4
B3. I found the time suggested for completing the online activities to be accurate.	<i>Not sure what the suggested time was but it took a long time to work out how to do some things. Course work on top of research project?! Not very fair.</i>	3	F	1.1
		3	M	
B5. I enjoyed contributing to the discussion boards.	<i>?enjoy? I find them v. useful b/c not all the instructions are clear. V. useful!!! Would have preferred to remain anonymous.</i>	3	F	1.1
		2	F	
		3	M	
		3	M	

Statement	Comments	Student		Mean score
		Level	Gender	
For all the {unit} online activities				
	<i>Did not use.</i>			
B6. I found the contributions that other students made online helped my learning.	<i>V. useful!!!</i>	2	F	1.8
B7. The tutor's contributions to the discussion boards were helpful to my learning.	<i>Very.</i>	3	M	1.9
	<i>V. useful!!!</i>	2	F	
	<i>Vague, not always clear what he wants – difficult as can't ask in person.</i>	2	F	
	<i>The tutor answered the questions & queries fairly rapidly.</i>	2	F	
B9. The blend of online activities with traditional lectures is a good way to learn.	<i>Agree with this especially.</i>	2	F	1.5
	<i>Yes but I would argue that could benefit from 1 contact comp. Practical session a wk/every other wk!</i>	2	F	
	<i>Sticking to traditional methods with a few online activities would be better.</i>	3	M	
B10. I would like more online activities on other units.	<i>If all units required this, I would really not like it. I would feel bogged down in the work.</i>	3	F	1.0
	<i>I think it depends on the subject and how well it is carried out.</i>	N/A	N/A	
	<i>Yes, they are helpful for following up on lecture material.</i>	3	M	

Focus group session

After the students had completed their responses in Tables A and B, they were asked to think about and write down, as individuals, the three best and three worst aspects of the unit. Once complete, they were asked to compare lists with one other student and agree on the three best and worst; then to repeat that process with another pair of students. Each group was then asked to volunteer one best and one worst aspect. These were listed and numbered on a PowerPoint slide. Once each group had spoken, any group items not already volunteered were solicited and added to the list. Finally, each student was asked to decide on one personal best and one worst aspect from the lists and to write the item numbers on the questionnaire before handing it in.

The best and worst aspects reported by the groups are listed in the table below, together with the number of individual votes for each item (in the final vote).

Best aspects	No. of votes (% of all students)
Discussion board – problems/solutions – speed of response	31 (61%)
Self paced tasks	9 (18%)
Variety – mix of lectures & OLAs	5 (10%)
Improving IT skills	4 (8%)
Using real data	2 (4%)
Worst aspects	No. of votes
Lack of face to face support	21 (41%)
Really time consuming	9 (18%)
Lack of instructions & support for {xxx}	6 (12%)
Navigation in {xxx}	4 (8%)
Forced to use ICT	3 (6%)
OLAs took time – not enough left for reading	3 (6%)
Release of materials/resources via Blackboard – overload/finding – not linked to unit timetable	2 (4%)
Reliance on www – availability/connections	2 (4%)
Loss of work	1 (2%)

Items receiving more than 50% of the vote in a gender/level sub-group have been highlighted in the table below.

Best aspects	No. of votes (% of sub-group)			
	Level 2, F 11 students	Level 2, M 3 students	Level 3, F 25 students	Level 3, M 11 students
Discussion board – problems / solutions – speed of response	6 (55%)	1 (33%)	19 (76%)	4 (36%)
Self paced tasks	3 (27%)	0	3 (12%)	3 (27%)
Variety – mix of lectures & OLAs	2 (18%)	0	2 (8%)	1 (9%)
Improving IT skills	0	1 (33%)	0	3 (27%)
Using real data	0	1 (33%)	1 (4%)	0
Worst aspects				
Lack of face to face support	10 (91%)	0	9 (36%)	2 (18%)
Really time consuming	0	1 (33%)	2 (8%)	6 (55%)
Lack of instructions & support for {xxx}	1 (9%)	0	5 (20%)	1 (9%)
Navigation in {xxx}	0	1 (33%)	2 (8%)	0
Forced to use ICT	0	0	1 (4%)	2 (18%)
OLAs took time – not enough left for reading	0	0	3 (12%)	0
Release of materials/resources via Blackboard – overload/finding – not linked to unit timetable	0	0	1 (4%)	1 (9%)
Reliance on www – availability/connections	0	1 (33%)	1 (4%)	0
Loss of work	0	0	1 (4%)	0

Appendix C: Staff focused evaluation report

1. Introduction

This report presents the findings from one-to-one, semi-structured interviews conducted by the author with sixteen key members of the DialogPLUS project team between November 2005 and January 2006. The guiding questions for the interviews are shown in Appendix B.1.

The eight interviews at Southampton and five at Leeds were done face-to-face, the two with Penn State staff and one with UCSB by telephone. All interviewees were asked, and gave permission, for the interviews to be recorded. Each interview was subsequently transcribed by the author of this report. A partial transcript² was emailed to the interviewee who was asked to confirm, or correct, it as a valid record and give permission for it to be used in the analysis that informs this report. Approved transcripts were then analysed using *QSR NVivo*, a qualitative data analysis package.

The findings are presented and discussed below and illustrated by anonymous quotations from the interviews.

2. Roles

Interviewees were asked to describe their roles on the project and with whom they had worked most closely. From their descriptions it was evident that every interviewee had played more than one role. These were coded as 'attributes' as part of the analysis. Interviewee roles are detailed in Appendix B.2 and summarised in Table 1. It is notable that nine interviewees had played some part in developing materials and eight had taught using project resources. The project manager/coordinator role includes people with overall responsibilities and those who played a pivotal role coordinating their local teams.

Role	Primary role	Secondary role	No. of interviewees in this role
Materials developer	3	6	9
Teacher	5	3	8
Project manager/ coordinator	4	2	6
Technical developer	4	1	5
Technical support	0	2	2
Evaluation support	0	1	1
Researcher	0	1	1

Table 1: Interviewee Roles

3. Findings

3.1 Successes

An *NVivo* model³, based on interviewees' responses to the question "What has gone well?" in the project, is shown in Figure 1. Collaboration, course innovations and quality of resources were mentioned most often.

² Passages where the interviewer spoke more than the interviewee, or the interviewee was obviously formulating thoughts that were then expressed clearly were not transcribed.

³ *NVivo* models are created by the analyst. The models shown in this report are based on the author's coding of responses to questions and interpretation of the relationships between coded elements. Within the *NVivo*

I think the collaborative nature of the development of nuggets has gone really well. The geographers have really engaged with the project, they haven't been peripheral which is often the case with elearning projects of this sort. They genuinely have been very much part of the core team, been genuinely looking at using the project as a way of improving their teaching and I think that's a real success measure.

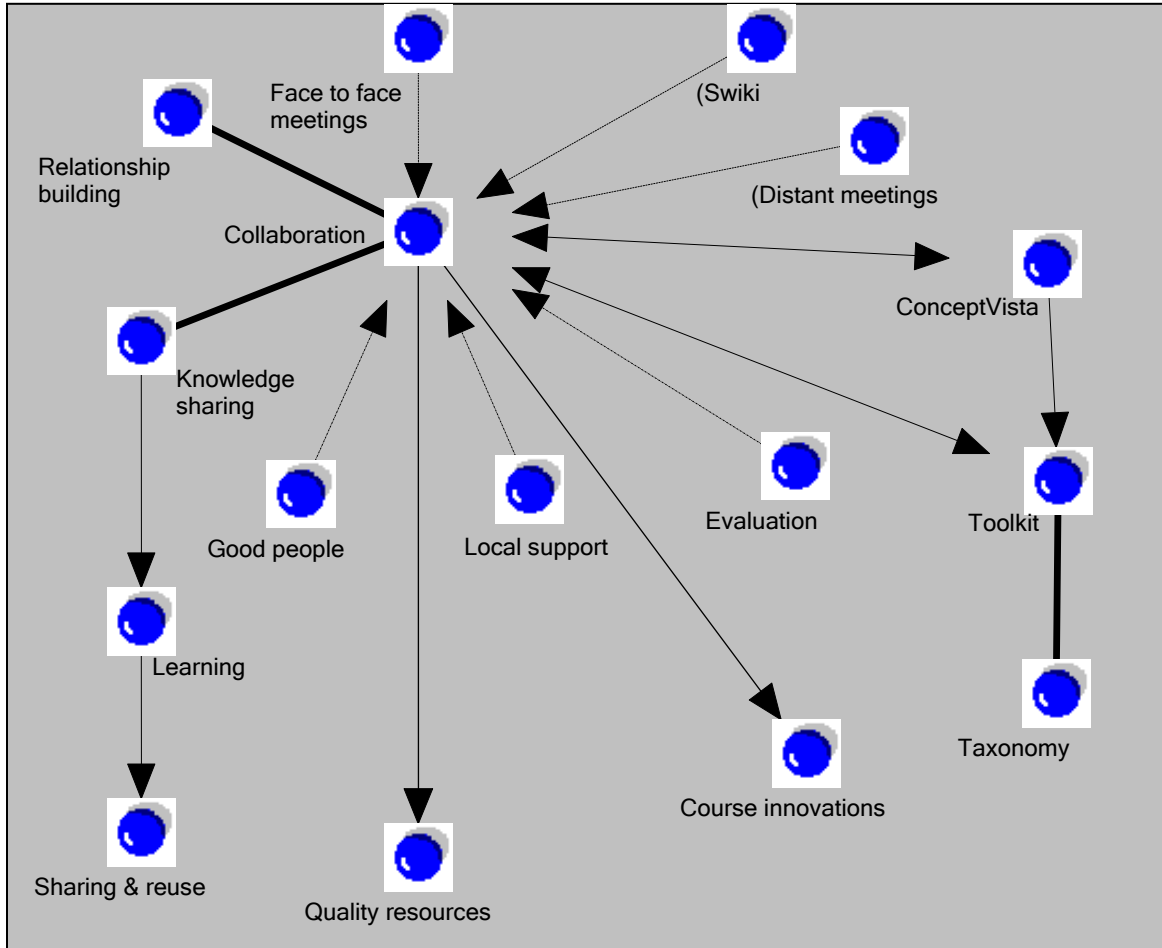


Figure 1: Successes

I actually think the production of materials has gone very well. That's possibly our proudest achievement in that the people here who have created nuggets and material, and have worked together to create nuggets and material, have actually created a very good resource.

What's gone well has been the actual teaching products that we've developed, the various online learning activities that are embedded within existing courses.

Table 2 shows the number of respondents from each institution nominating each of these aspects in response to this question. Table 3 shows the percentage of respondents by role who nominated these factors.

	PSU	Leeds	UCSB	Southampton	Total
	(2)	(5)	(1)	(8)	(16)

application, clicking on a 'button' in the model allows the analyst to review all the interviews 'coded' at that node.

Collaboration	0	5	1	8	14
Course innovations	2	0	0	7	9
Quality resources	2	3	0	2	7

Table 2: Nominated top three successes by institution

	Materials developer (9)	Teacher (8)	Technical Developer (5)	Project manager/ Coordinator (6)
Collaboration	100%	75%	80%	83%
Course innovations	78%	25%	60%	50%
Quality resources	44%	50%	40%	50%

Table 3: Nominated top three successes by role

Interviewees stated that the collaboration has been facilitated by

- Online and face-to-face meetings
- Use of email and the swiki
- Innovative tools (ConceptVista and the Learning Activity Toolkit)
- Good people
- Local technical support
- Evaluation activities.

The outcomes from the collaboration that were mentioned most often were

- Relationship building
- Knowledge sharing
- Personal learning
- Course innovations
- High quality learning and teaching resources
- Sharing of some resources
- Innovative tools (ConceptVista and the Learning Activity Toolkit).

In response to the question "Who have you worked closely with?", which preceded the questions about what had gone well and why, most interviewees nominated people in their own institutions. This seems at odds with the enthusiasm expressed for collaboration between all the partners and the communication tools nominated. However, taken at face value, there does seem to be a perception that both inter- and intra-institutional collaboration have resulted in the successful outcomes.

3.2 Failures

An *NVivo* model based on views about what has not gone well, is shown in Figure 2. Problems with UCSB's participation in the project were mentioned by most interviewees. Lack of management, technical support and UCSB geographers willing to collaborate are deemed to have had a significant negative impact on the team's ability to achieve the original aims, particularly the proof of concept of a digital library for sharing resources.

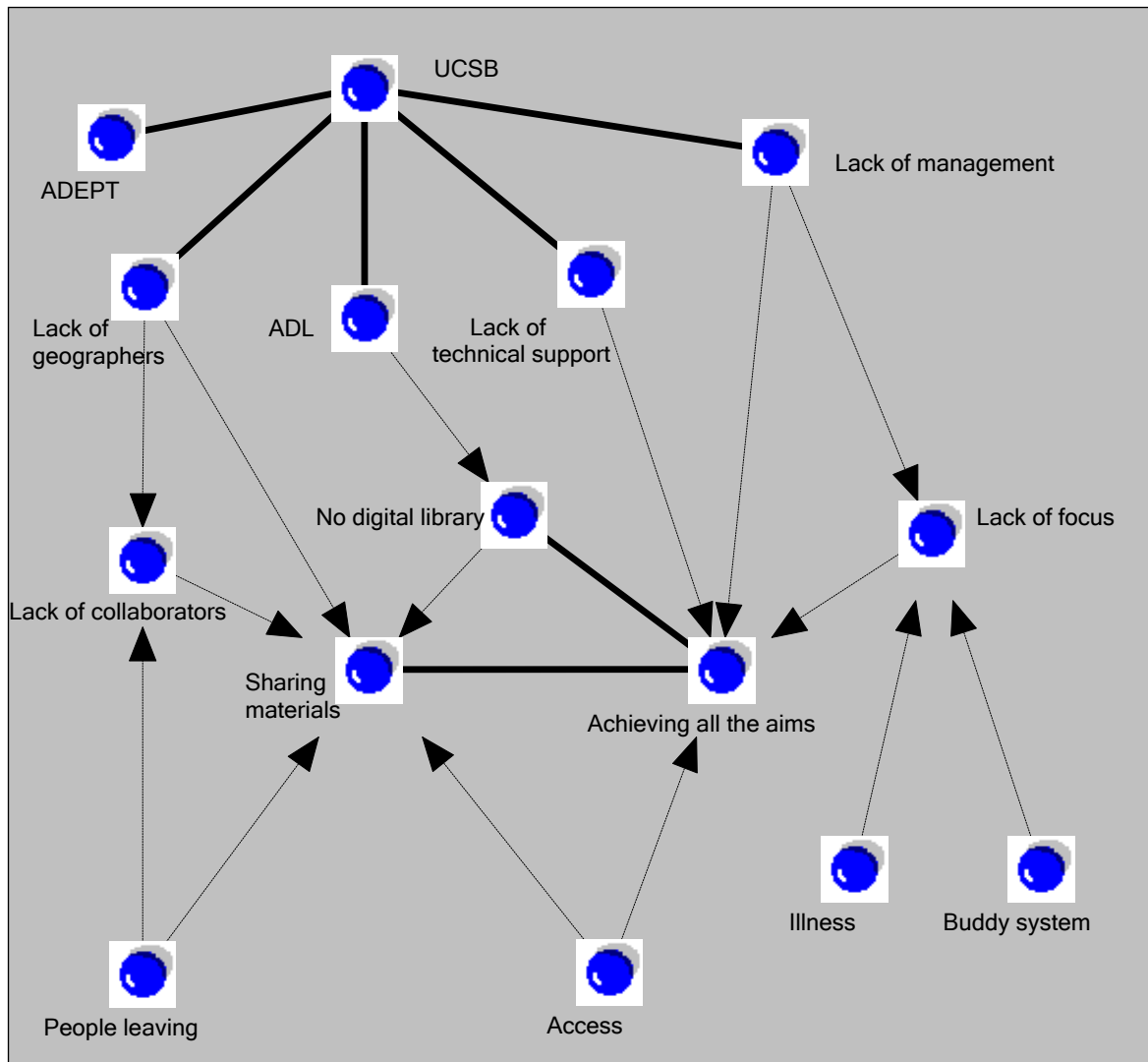


Figure 2: Failures

Santa Barbara were the odd people out in the collaboration. Where there had been a meeting of geographical minds and teaching approaches and research approaches around the rest of the collaboration, I did feel that just didn't click with UCSB.

Ironically it was [UCSB] who started us on all this and the concept was built around the idea that the Alexandria library would provide us with a repository and we would be working towards putting materials into the repository and looking at reusing and repurposing them. That simply hasn't happened.

I think the digital library infrastructure was the real weakness. It's disappointing to me because that was what the central thrust of the project was supposed to be, digital libraries in support of teaching and learning. I think the emphasis went much too much onto the development of new materials and, although that collaboration was very good, it really wasn't very innovative. The innovative side was doing it across the Atlantic, and that probably will have lots of useful spin off, but it didn't achieve on the digital library side what we hoped for.

We haven't significantly enough demonstrated reuse. I'm worried that we have produced learning materials, not reusable learning materials. I've always been slightly worried about that outcome. The answer the geographers give to that is we've taken reuse to the most serious level, we've actually got the teacher from School X teaching the subject, that's reuse rather than redoing it ourselves. In a way that's very impressive, it shows the depth of the partnership, the trust that's built up in the partnership,

but it doesn't show one of the outcomes that JISC wanted to see which is how do you build reusable activities from this digital library resource.

Several personnel issues at Southampton and Leeds, i.e. people leaving or being unwell, have also contributed to a perceived lack of focus at times and made it more difficult than originally anticipated to collaborate and share resources in some subject areas. The 'buddy' system did not, as might have been expected, sharpen the focus.

I don't think the buddy system that they came up with works for this kind of project at all well because the buddies are too distant from the actual people in the disciplines (...) They don't have the capacity to be sufficiently engaged with the project, to help steer it, it just introduces another loop for potential miscommunication and results in having to do things several times over in different ways, different things for different people.

Difficulties with access to data was mentioned by three interviewees, as a contributory factor to failures to achieve some of the aims, particularly sharing resources.

Right back at the start we said to [JISC], look we're trying to develop census materials with Penn State but they can't access CASWEB or any of our resources to help us look at it and use it. It's never been resolved. That's an issue.

Table 4 shows the number of respondents from each institution nominating each of the factors mentioned most often in response to this question. Table 5 shows the percentage of respondents by role who nominated these factors.

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
UCSB: digital library	1	1	1	5	8
Sharing materials	1	4	0	2	7
People leaving	1	2	1	3	7

Table 4: Nominated least successful aspects by institution

	Materials developer (9)	Teacher (8)	Technical Developer (5)	Project manager/ Coordinator (6)
UCSB: digital library	22%	38%	100%	67%
Sharing materials	33%	50%	20%	67%
People leaving	33%	50%	40%	67%

Table 5: Nominated least successful aspects by role

3.3 Hindsight

As shown in Table 6, there was no striking consensus in answer to the question about what might have been done differently.

	PSU	Leeds	UCSB	Southampton	Total
Better project management	0	2	0	2	4
Understand the bigger picture	0	1	0	1	2
Early mapping of curricula	1	0	0	1	2
More interaction	1	0	0	1	2
More people	0	0	0	2	2
More technical people	1	0	0	1	2
Re-purposing (rather than creating)	0	0	0	1	1
Smaller nuggets	0	0	0	2	2
Strengthen UCSB	0	0	0	2	2
Used ADEPT	1	0	1	0	2
Less ambition	0	0	0	1	1
More use of toolkit	0	0	0	1	1
Outreach (to user communities)	1	0	0	0	1
Simpler reporting	0	0	0	1	1
Tailoring (to other audiences)	0	0	0	1	1
Used other technical services	0	0	0	1	1

Table 6: Views on what might have been done differently

3.4 Significant outcomes

An NVivo model based on responses to the question about significant outcomes is shown in Figure 3. Staff development and increased knowledge were mentioned most often, followed by course innovations and the involvement of DialogPLUS educational and technical specialists with the IMS Learning Design community of practice (IMS-LD).

One of them is most definitely the development of the academic staff involved. That's the one most obviously visible to myself in that a group of the geographers here and elsewhere have been exposed to ideas they wouldn't otherwise have encountered and have implemented them into their teaching, have had the opportunity to experiment with support and evaluation in ways that for the most part have been definitely advantageous to them, their students and their colleagues. So the staff development component is obviously a significant one.

I think the resources themselves are useful but actually the bigger value is in changing practitioners' thinking and practice.

Personally it's enhanced my writing, teaching and development skills.

That implicit knowledge that we've gained really is useful, the experiences of the project rather than technical output or maybe even the collaboration.

There's the individual bits of teaching, which are either embedded in courses or are entire modules, courses, units - call them what you will. You only have to look at the student evaluations, and indeed talk to the staff involved, to know that they've made a huge positive impact on the staff members concerned. It has changed the way I teach, I enjoy it more and get more out of it and if you talk to

colleagues they will say similar things. And crucially the students get something out of it, something that's different in the programme. They value it, they enjoy it and they seem to get something out of it in terms of their learning.

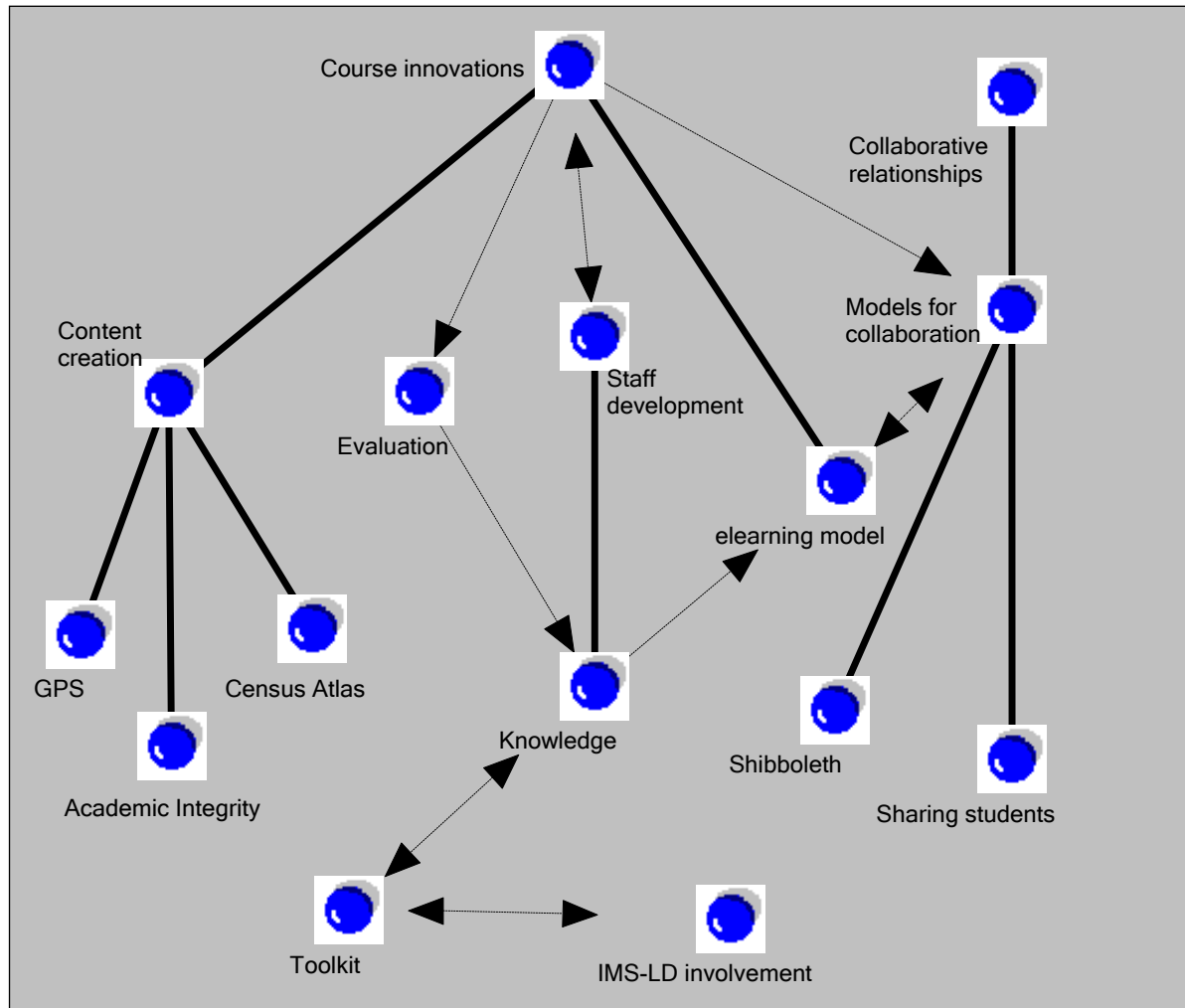


Figure 3: Significant Outcomes

I value the IMS Learning Design compatibility and our input into things like the UNFOLD community because it's quite an important time for the world to ask these questions of reuse and repurposing. Really what is useful? That key question that we've been tackling (...) what is really useful to practitioners? That ability to influence Learning Design. A very worthwhile and unforeseen outcome that we've managed to achieve, that wasn't at the beginning an obvious one.

I think we have come up with something very useful in terms of the taxonomy we developed which underpins the toolkit. It seems to be adding something new which complements a lot of the other work in learning design that's going on internationally particularly LD work from the Netherlands. Feedback from people at conferences and through organisations like UNFOLD in Europe suggest that we are adding something useful particularly in terms of articulating out what a task is, the nature of a task.

The most nominated significant outcomes are shown by university and by role in tables 7 and 8.

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Staff development / knowledge	1	2	1	4	8

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Course innovations	0	2	1	2	5
IMS-LD	1	0	0	4	5

Table 7: Top three significant outcomes by institution

	Materials developer (9)	Teacher (8)	Technical developer (5)	Project manager/ coordinator (6)
Staff development / knowledge	44%	88%	100%	50%
Course innovations	44%	40%	20%	17%
IMS-LD	11%	0%	80%	17%

Table 8: Top three significant outcomes by role

3.5 Dissemination

Interviewees were asked how they had disseminated the project locally, nationally and internationally. The responses are tabulated in Table 9, which shows the number of respondents by institution who mentioned each means of dissemination.

Locally, workshops for, and presentations to, colleagues were nominated most often.

We were able to use the DialogPlus courses as exemplars and expose them to the rest of the school and run two workshops for staff to come along, working with the computer officer and other people not directly in DialogPlus.

We have done presentations at the university level. Haven't really done many presentations, if any, at departmental level. We have one scheduled this term, showing our wares.

There was some overlap between national and international dissemination with respect to conferences and networks. Named conferences were ALT-C, ECDL, EdMedia, JCDL and Networked Learning. Three team members at Southampton had used the World Universities Network (WUN) and two had used the learning design network (UNFOLD) as a means of dissemination. Named journals were *Area*, *Journal of Geography in Higher Education* and *Journal of Interactive Media in Education*.

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Local					
Presentations	0	3	0	2	5
Workshops	0	0	0	5	5
Informal	0	2	1	1	4
University committees	0	0	0	3	3
Seminars	0	1	0	1	2
Demonstrations	1	0	0	0	1
Website	0	0	0	1	1
National					
Conferences	0	1	0	1	2

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Informal	0	0	0	1	1
Presentations	0	0	0	1	1
International					
Networks	0	0	0	5	5
Conferences	1	0	1	2	4
Journal papers	0	2	0	1	3
Chapter in edited book	0	0	0	1	1
Teaching abroad	1	0	0	0	1
Visit / presentation	0	1	0	0	1

Table 9: Methods of dissemination used to date

In response to this question, a few people mentioned reasons not to disseminate.

At the moment, because it's the development phase, we tend to just use the nuggets for teaching purposes, not for publicity or promotional purposes.

I don't feel there's much within Geography that takes it seriously. The educational aspects, it's not considered to be as important.

I haven't promoted it very much for two reasons. One is [the lack of a digital library] The other is that I'm not confident in promoting a methodology that apparently leads to high quality and low productivity.

Interviewees also spoke about future dissemination plans and opportunities. These are shown in Table 10 and should be considered in conjunction with responses in the next two sections.

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Publications	1	1	0	3	4
Workshops	0	0	0	1	1
JORUM	0	0	0	1	1
DLIC ⁴ programme dissemination	0	1	0	0	1
Presentations	0	0	0	1	1

Table 10: Methods of future dissemination

3.6 Embedding

Interviewees were asked about their expectations of the embedding phase of the project and their role in it, if any. An NVivo model of responses is shown in Figure 4. There was general consensus about the need for planning to remove confusion about who would be doing what in the embedding phase. Hopes were expressed that the collaborations would continue.

⁴ Digital Libraries in the Classroom

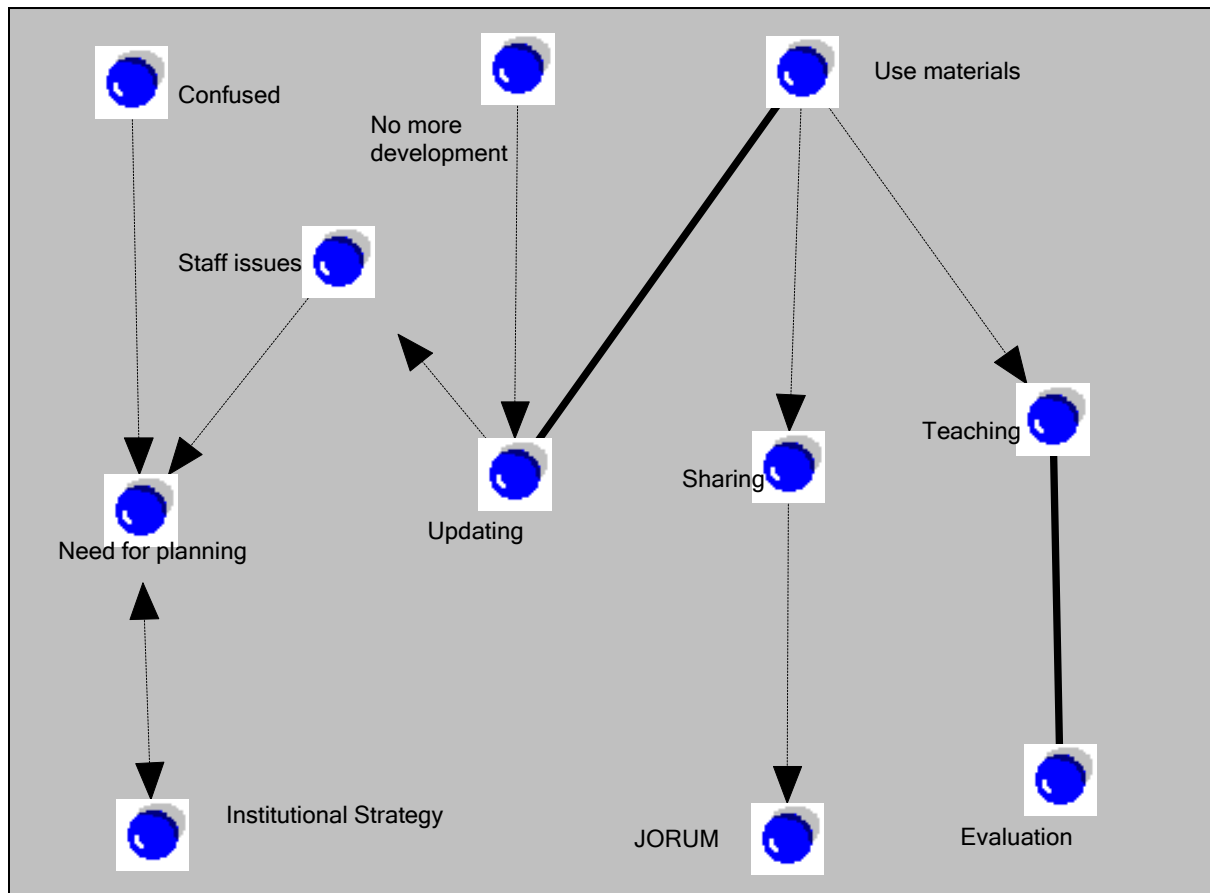


Figure 4: Embedding

My role, I have no idea (...) Perhaps we need a plan for continuing to embed and for dissemination as well.

I still think that we will have meetings to discuss how the embedding is going. I hope we might manage to make one of those meetings international, to keep our contacts going with the Penn State folk somehow.

There may be an impact on institutional strategies for elearning, but most people expected embedding to involve continued use of the resources that had been created and further improvements to teaching practices as a result of the lessons learned during the development phase of the project. More sharing of materials should be enabled, possibly via a digital library. In the UK at least, this is seen as most likely to be JORUM.

My expectation of embedding is I would like to see all the nuggets formally available in the teaching as part of the syllabus, if not the activity plan, all found a place in the curriculum.

I'll carry on with the teaching that I have been doing with DialogPlus and looking at ways of further improving it and learning from what the students are telling us.

I'm involved in the embedding phase through to July which involves us getting everything into JORUM

Hopefully, more people will share and use resources, because at the moment unfortunately there is very little actually sharing. When people have stopped running around creating everything and talking about it and setting it up, then you can sit back and see what's there that we can share and use and there will probably be an annual cycle of revamping materials.

This last point was expanded on by others and, whilst it was felt that there should not be more developments, several people recognised that materials would need to be updated. It was not clear if support would be available for that and reuse does also depend on continuity of teaching staff.

Embedding them without the support of the original materials developer or tutor is going to be interesting because possibly they can quite quickly become outdated.

I'm interested in how the Dialog stuff will continue to work as we go into this unsupported phase. Of course what will happen is that the currency of these materials, it seems to me, diminishes quickly. They need updating frequently to keep them fresh and working properly. So it will be very, very interesting to see how that works, whether people will be able to maintain their resources at the current high level of standard.

The concern always was that when the support staff disappear the project falls off the precipice. I don't think that's happening. The teaching that's been developed and other elements are slowly beginning to be rolled out. That's continuing, but it would be a lot easier to do that if there was that kind of resource available for people to buy into, perhaps competitively. However it was arranged, it would be hugely helpful.

I'm not sure what the future of [course x] will be. Embedding does depend on continuity of staff.

I'm not sure what the mechanism will be to maintain the materials and keep them fresh. I'm sure that's the same for all the materials because we have lecturers moving all the time.

3.7 Impact

Interviewees were asked what they thought would be the lasting impact of DialogPlus. Many referred back to their answers to previous questions. The responses are modelled in Figure 5.

It was notable that the lasting impact is seen mainly in terms of the effect of the project on the participants, in terms of the Geographers' experience, the changes to their teaching practice and their hopes for lasting collaboration. These most nominated significant outcomes are shown by university and role in tables 11 and 12.

The biggest thing will be how the Geographers themselves in the future tackle these issues again, play around with the ideas given their experiences of this project.

So the experience of DialogPlus even though the digital library aspect was a failure, our experience with JORUM, with the toolkit, with the notion of a learning object, all of that is going to be very valuable experience.

The intangible benefits of renewing enthusiasm for teaching and professional development, those sort of things wouldn't get washed away in the same way that developing a plagiarism detection tool might get replaced. The human resource investment is the thing that's lasting.

I know that it has had a big impact upon how I view and think about teaching and technology and this will of course remain in the future. I am much more aware of the opportunities and constraints of elearning and what can be achieved.

More effectively, a community or some kind of constant dialogue between members about online learning resources, topics, skills etc. The library may be quite static. whereas a constant dialogue between people would be better and I think that will happen because people have become colleagues, friends even so that will work.

I'm very much hopeful and quite optimistic that some of these collaborations will last. We're now talking about things involving Penn State and other WUN partners that are really just at the beginning and if just a part of that comes off then some of those will last for quite a long time.

That relationship will be a lasting outcome. It will help future projects to build on that trust.

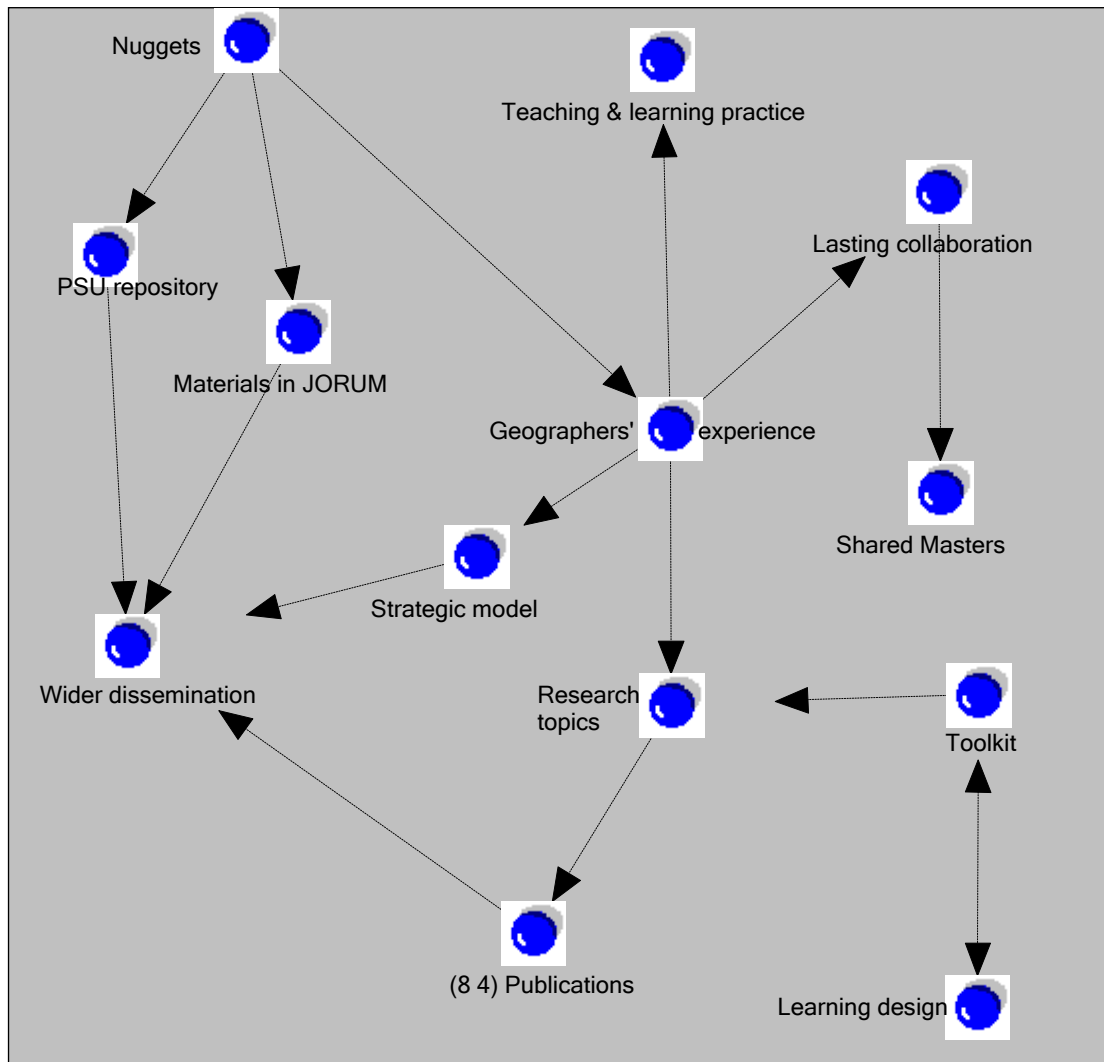


Figure 5: Lasting Impact

	PSU (2)	Leeds (5)	UCSB (1)	Southampton (8)	Total (16)
Teaching & learning practice	1	2	0	5	8
Geographers' experience	1	1	0	5	7
Lasting collaboration	1	3	1	2	7

Table 11: Lasting impact by institution

	Materials developer (9)	Teacher (8)	Technical developer (5)	Project manager/ Coordinator (6)
Teaching & learning practice	56%	88%	20%	33%
Geographers' experience	44%	75%	20%	33%
Lasting collaboration	44%	38%	36%	50%

Table 12: Lasting impact by role

4. Summary and Conclusions

This report has considered the responses of sixteen interviewees to questions about the processes and outcomes of the DialogPlus development phase, expectations for the embedding phase and the overall impact of the project. Interviewees gave frank and reflective answers and responded thoughtfully to follow up questions.

There is notable consensus on the quality of the collaboration between project team members, both within their own institutions and between the partner universities. Respondents recognise some failings, especially with reference to the amount of actual sharing and reuse of resources, and the absence of a digital library infrastructure as a mechanism for these aspects. There is no strong consensus about what might have been done differently to resolve these issues.

Whilst some of the created resources and course innovations are viewed as significant positive outcomes, staff are aware that they have a potentially limited lifespan. However, there is widespread recognition of the positive impact of the project on personal development, learning and professional practice. There is enthusiasm for the use of digital technologies to enhance student experiences and learning, improved understanding of how to develop, implement, support and evaluate elearning and appreciation of the effort involved to do this well. There is some satisfaction about contributions DialogPlus has made to other networks, notably WUN and UNFOLD.

Embedding and dissemination appear to overlap in the minds of some interviewees and there is a perceived need for planning in this area. The teachers will continue to use some of the resources created in their own courses, and to apply what they have learned to further innovations. There is optimism about the potential for shared courses and future collaborations. The role of digital libraries, whether institutional or national, remains unclear but the UK partners are willing to experiment with JORUM.

Postscript

It seems fitting to end this report with three quotes that illustrate the predominantly upbeat views held about the lasting impact of the project.

I hope that some of our contributions to the literature are going to help advance elearning and particularly policy and strategic visioning for elearning. I think we have a lot to contribute.

I hope the work and things we've done in terms of outlining the nature of learning activities will be useful in terms of others' work nationally and internationally in terms of taking forward the concept of learning design. That's a really important and exciting area of research.

Extending the three way model of modular exchange to a number of other world class opportunities (...) That's a very exciting prospect. If it does happen it will definitely be a very lasting legacy of DialogPlus.

Appendices to the staff report

B.1 Interview Questions

These questions were used to guide the semi-structured interviews:

- 1) What has been your role in the D+ development phase?
- 2) Who have you worked closely with?
- 3) What has gone well? Why?
- 4) What has not gone well? Why?
- 5) What, if anything could have been done differently?
- 6) What significant outcomes are you aware of? How would you value them?
- 7) How have you disseminated the project / outcomes
 - a) locally?

- b) nationally?
- c) internationally?
- 8) How has D+ affected
 - a) you personally?
 - b) your colleagues?
 - c) your students?
- 9) What are your expectations of the embedding phase of the project? What will be your role in it, if any?
- 10) What do you think will be the lasting impact of D+?
- 11) Is there anything else you'd like to say about the project processes or outcomes?

B.2 Interviewee Attributes

Interviewee	University	Primary role	Secondary role
1	Southampton	Materials developer	Teacher
2	Southampton	Technical developer	Technical support
3	Southampton	Technical developer	Technical support
4	Southampton	Teacher	Materials developer
5	Southampton	Teacher	Project manager
6	PSU	Technical developer	Materials developer
7	UCSB	Project manager	Technical developer
8	Southampton	Teacher	Materials developer
9	Southampton	Technical developer	Evaluation support
10	PSU	Teacher	Project coordinator
11	Leeds	Materials developer	Teacher
12	Leeds	Project manager	Teacher
13	Leeds	Materials developer	Project coordinator
14	Leeds	Teacher	Materials developer
15	Leeds	Teacher	Materials developer
16	Southampton	Project manager	Researcher

Appendix D: Publications Online

The project team members have produced a large number of publications and conference contributions. Those that are available online are listed here.

C Bailey, M Zalfan, H Davis, K Fill, & G Conole (2006). Panning for gold: designing pedagogically-inspired learning nuggets. *Educational Technology & Society*, 9(1): 113-122, (Special Issue Theme: Learning Design). [Online: http://www.ifets.info/journals/9_1/10.pdf]

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