“The programme has proved invaluable in raising the profile of e-learning in some more ‘traditional’ disciplines, where there has been much less emphasis on technology enhanced teaching and learning.”

“DeL funding has helped to develop the Centres’ thinking and approach to e-learning from being responsive to community needs to taking a lead in actively engaging their communities. There has been a noticeable growth in confidence and capacity in e-learning over the course of the programme.”

— Academy DeL I Report

“Through our project work, the Centre is now better informed in how best to meet the needs of our community in supporting e-learning, by providing practical examples of different approaches, models and case studies, and focusing on the benefits of using technology to support learning.”

— Biosciences Project report
e-Learning in the disciplines
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Foreword

This publication represents several years of collaboration between the Higher Education Academy and the JISC.

The Academy and JISC work with multiple stakeholder groups across the HE sector and this publication is aimed at individuals, teams and institutional managers.

One of the key strengths of this particular collaboration is in providing a discipline focus to support the HE sector. All 24 Academy subject centres undertook a lead role by working with their HE communities on the activities outlined in this publication.

A key outcome is the importance of considering the use of technologies within an overarching teaching, learning and assessment context and this is reflected in subsequent Academy and JISC programmes and has informed national policy and strategies.

For an electronic version of this publication and to view other resources available through the Academy’s Enhancing Learning through Technology (ELT) Programme, see: www.heacademy.ac.uk/ourwork/learning/ELT.

To view the range of JISC resources, see: www.jisc.ac.uk.
The DeL Subject Centre Programme (2004–2008)

Through its network of 24 Subject Centres the Higher Education Academy has taken a lead in exploring the field of technology-enhanced learning and teaching with a discipline-based approach.

The Subject Centre Distributed e-Learning (DeL) Programme involved two phases of projects over a four-year period. Funded by HEFCE and managed by the JISC, DeL developed technologies and explored cultural and organisational issues around the use of technology to support lifelong learning, particularly with regional and subject communities. A significant part of DeL involved a discipline focus through Academy Subject Centres, enabling them to engage with HEFCE policy and strategic vision and to work with their subject communities in using technologies to enhance learning and teaching.

There were four broad strands of activity:

— promoting and exploring the subject-specific issues around the sharing, reuse and repurposing of content
— exploring the uptake and embedding, in learning and teaching, of the outputs of the JISC Digitisation Programme
— exploring the use of e-portfolios in a subject context, particularly in the context of professional bodies and Sector Skills Councils.
— enhancing learning through the use of existing e-learning tools

Scoping studies conducted in Phase One of the Programme enabled the Subject Centres to gather information and resources relating to the use of technology to enhance learning and teaching in different academic disciplines, to raise awareness of areas of good practice, discuss issues and challenges, develop capacity to support e-learning, and promote the engagement of academic communities in the development and implementation of innovative practice using technology.

In Phase Two, which started in 2007, Subject Centres supported developments in a range of technology applications and implementations for learning and teaching in disciplinary and interdisciplinary contexts. They were encouraged to reflect the growing importance of social software and Web 2.0, and mobile and wireless technologies, with a particular focus on how these relate to the personalisation of the curriculum and affect the student learning experience.
Outsputs and resources

This publication is a synthesis of the key outputs and outcomes from both phases of the DeL Subject Centre Programme. It summarises some of the resources that were developed and are available through the Subject Centre websites, supported by additional information and insights from the project reports. It also draws on discipline-specific resources developed in other related initiatives, including the JISC CAMEL Tangible Benefits of e-Learning Project (CAMELBelt), the Academy/JISC Collaboration Initiative, and some Centres for Excellence in Teaching and Learning (CETLs).

The findings are presented in terms of themes that emerged as particularly significant for the Subject Centres in undertaking this work:

— Understanding the landscape and building communities
— Formative and summative assessment
— Using e-portfolios to support personalised learning
— Developing and using online learning resources
  — Developing reusable learning objects
  — Sharing and repurposing content
  — Using digitised resources
— Podcasting

The outcomes from the Subject Centre projects are explored in terms of different perspectives, including the institutional view, the experiences of individual academic practitioners, the impact on the disciplines themselves, and the international implications of the initiatives.

A comprehensive overview of the outputs and resources developed by the Subject Centres under the DeL Programme is available as tagged web links at: http://delicious.com/disciplines

Resources can be accessed and browsed at this site by Subject Centre and by academic discipline. They are also categorised in terms of the key themes and approaches to e-learning that were investigated and explored in the Programme.

1. www.jisc.ac.uk/camelbelt
2. www.heacademy.ac.uk/ourwork/learning/collaboration
3. www.hefce.ac.uk/learning/tlnits/cetl
Background – related programmes and initiatives

A key focus of the Subject Centre DeL Programme was the implementation and further exploration of outputs and resources from a number of JISC innovation developments. These included the overarching Distributed e-Learning programme, with its vision of facilitating lifelong learning and wider participation by providing:

— better opportunities for learners through the use of better learning tools, easier access to personal learning information such as portfolios, and access to greater quantities of quality assured learning materials;
— guidance for teachers on how to access, plan and use e-learning resources within appropriate e-learning systems;
— benefits to institutions by enabling links between schools, colleges and universities that can be used to encourage progression into higher education;
— benefits to funders by providing exemplars of good practice in the use of e-learning systems, exploring how technology can support widening participation and regional partnerships, and by demonstrating how the Academy and the JISC can work fruitfully in partnership.

These aims were addressed through initiatives in the following areas:

— e-learning infrastructure
— repositories for e-learning and other resources
— e-learning tools
— cultural issues, subject differences and embedding
— sharing e-learning content.

Exploring the use of outputs from Phase One of the JISC Digitisation Programme was also a specific focus of the Subject Centre DeL Programme. The JISC series of digitisation projects is unlocking a wealth of unique, hard-to-access material from the 16th century to the present day, creating a critical mass of rich, permanent digital resources for the benefit

4. www.jisc.ac.uk/whatwedo/programmes/programme_edistributed.aspx
5. www.jisc.ac.uk/digitisation
of UK further and higher education. Phase One of six projects began in 2004 and included 18th Century Parliamentary Papers, Archival Sound Recordings, 19th Century Newspapers, Medical Journals Backfiles, NewsFilm Online and Historical Population Reports. Phase Two of the Digitisation Programme commenced in 2007 with sixteen further ambitious projects, and the digitised resources they produced are being launched in 2009.

Some of the Subject Centres were also taking forward outputs and outcomes from the JISC Exchange for Learning (X4L) Programme, which ran from 2002 to 2006. This Programme was concerned with developing, using and maximising the pedagogical potential of online learning resources and objects.

The activities and outputs of the JISC Design for Learning Programme (DfL) were concurrent with and relevant to the Subject Centre Programme. Starting in 2006, DfL projects aimed to support practitioners in the process of designing, planning and orchestrating learning activities (‘design for learning’) in a range of learning programmes and contexts across UK FE and HE. A key principle of this Programme was ensuring that the process of design for learning is based on sound pedagogic principles, evidence-based and learner-centred. The DfL Programme was particularly relevant to the work of the Subject Centre DeL projects in facilitating the development of processes and tools for developing pedagogically sound and coherent programmes of learning using shared educational resources.

6. www.jisc.ac.uk/whatwedo/programmes/x4l
7. www.jisc.ac.uk/whatwedo/programmes/elearningpedagogy/designlearn.aspx
Understanding the landscape and building communities

Subject Centres were able to use the DeL Programme to undertake an in-depth exploration and analysis of the use of technology to support learning, teaching, assessment and research in discipline areas across the sector. Several Centres undertook wide-ranging surveys of tools and technologies, staff skills, interests and areas of expertise, and student experiences and expectations. Case studies were commissioned, offering insights into the use and potential use of technology in different disciplines and in a range of institutional contexts. The Programme also presented an opportunity to instigate initiatives using technology to support the development of communities of practice and networks of practitioners engaged in e-learning both within and across academic disciplines. Some projects specifically focused on the development of tools and resources for staff skills and capacity development.

The Economics Subject Centre developed The IT Skills Anorak Test to help teaching staff who are less confident with basic IT skills, such as developing presentation slides or using online services. The test asks twenty questions about IT skills and awareness and provides a bookmarkable, personalised subset of tips for staff to fill in gaps in their knowledge. The project also produced an index of IT skills videos and other tips, including some two-minute videos to explain the Economics Network’s e-learning services.

Another mini-project explored the use of an online learning inventory to enable students to develop their metalearning capacity (their awareness and control of their own learning process) in relation to a set of threshold concepts in economics, and to assess the connection between metalearning and improved academic achievement.

“The dissemination of the results of this project is being used as a basis for persuading more departments to take up online learning profiles as a way to foster metalearning.”

ESCalate organised a series of e-learning workshops across the UK, with resources on a range of generic e-learning topics and issues of interest. The Centre has also produced a series of resources to support the development of student employability in a range of academic disciplines, using an online environment to support mature students on a Foundation Degree, and a guide for external examiners.

Medicine, Dentistry and Veterinary Medicine (MEDEV) organised a number of mini-projects to support communities of practice in a range of disciplines and cross-disciplinary areas:
— The Viki (Veterinary Information and Knowledge Interface) Wiki initially focused on veterinary pathology resources, and moved on to other areas of the curriculum as the project progressed (now known as WikiVet, the resource has generated interest from a pharmaceutical company which is considering supporting it for five years)
— Development of a framework for the teaching of Veterinary Public Health in UK universities
— Scottish Medical Schools’ online community of practice for medical ethics teachers
— Professional Education Public Involvement Network (PEPIN) – a resource to facilitate collaborative working and practice development, using forum software to build and sustain a community of practice
— Supporting a community of MEDEV professional developers – using Blackboard, the project links closely with the MEDEV Resource Archive for Teacher Training (shared teaching resources for staff developers in medical, dental and veterinary education)

These five projects represent a range of styles and approaches, including strongly subject-led communities of practice with regular members (WikiVet), broader UK-wide communities with rolling or changing membership (PEPIN) and country-specific communities (Scottish Medical Schools’ online community of practice for medical ethics teachers).

The Centre for Bioscience undertook a survey of e-learning in the subject area and conducted interviews with staff in a range of institutions. The Centre then commissioned a series of mini-projects focusing on the use of tools and technologies to enhance learning and teaching in bioscience subject areas. Topics included an evaluation of podcasting in Exercise Physiology, teaching Chemistry using a Virtual Learning Environment (VLE), using digital personal audio guides, and iPod media packs for the Biosciences.

The case studies explored examples of effective practice with the use of mobile audio and video technologies in a range of topics from Anatomy to Statistics. The project also developed a data repository service which has been used to build resources for Academic coordinators across the whole of the Academy’s Subject Centre Network.

“Our survey and interviews identified that adequate time and resources are the key issues for e-learning practitioners in addition to the lack of recognition for producing content. Technical barriers exist and we can assist with lowering these for more effective re-use. We are working with our community to build effective networks through our e-learning reference group.”
The Centre for Sociology, Anthropology and Politics (C-SAP) undertook a comprehensive scoping survey on the use of e-Learning in the Social Sciences, through an online survey, follow-up telephone interviews and focus groups. This has given C-SAP a window into the current teaching practice within the social sciences, predicated around the use of e-learning. A number of themes were explored, some as questions arising from the wider DeL programme on using and sharing electronic resources, and some relating to more specific issues of pedagogy, e-learning support for staff, and how this manifests in curriculum planning.

Health Sciences and Practice conducted a scoping survey of the use and development of e-learning in health sciences and practice disciplines throughout the UK. The main objectives were to explore issues influencing the implementation and use of technology for learning by both early and late adopters, to identify barriers to implementation and good practice, and review the use of e-learning within curricula representing a range of teaching models and approaches.

Following a national scoping study into the use and perceptions of e-learning in departments across the sector, the English Subject Centre set out to explore the effectiveness of a departmental or other ‘subject-based unit’ approach to support for the embedding of e-learning in higher education. The Centre organised and coordinated mini-projects in four different institutions, with departments of varying size, operational autonomy and teaching contexts. The main aim of these mini-projects was a comprehensive investigation of how an ‘e-learning advocate’ can encourage effective and sustainable e-learning practice in a departmental teaching community.

The projects focused on supporting staff in the use of existing tools and technologies to enhance their learning and teaching practice, including the institutional VLE and online resources, and raising awareness of innovations in other disciplinary and institutional contexts.

The model proved highly successful in the departments that were involved, and has generated considerable interest in other English departments and beyond. The main achievements for all e-learning advocates included support for pedagogical development and a better understanding of the student experience, for professional development, sharing good practice and building a departmental skills case. The e-learning advocates were also instrumental in shaping departmental and institutional policy for e-learning developments, breaking down disciplinary barriers and supporting collaboration between different services and groups within institutions.
“As a direct result of the Advocacy, e-learning acquired a renewed currency within the Department and it is in this sense that funding opportunities such as this are extremely valuable. Not only do such projects raise awareness of key pedagogic issues but they also provide e-learning practitioners with the time to think and develop their own ideas, ensuring that the integration and implementation of e-learning is predicated upon ‘best fit’ not simply reactive adoptions.”

Philosophical and Religious Studies supported a series of mini-projects, including the organisation of e-learning workshops and a conference, the creation of online presentations, a guide for e-learning in the area, and a bibliography of subject-specific e-learning resources. Surveys of e-learning practice were also carried out with academics and students in the area. A key finding was the importance of continuing the process of developing the use of e-learning tools and technologies to support the enhancement of learning and teaching practice in the PRS area.

“The sheer number of people interested in e-learning has been pleasantly surprising for us … the positive impact on our subject community is that there is now a greater awareness of their part that we provide support for e-learning initiatives, and that there are academics in other departments working on similar projects. This opens up opportunities for us to broker the knowledge and experience available, and to set up networks of those with similar interests.”

The Psychology Network brought together representatives from sixteen institutions across the UK which offer specialist provision in educational psychology. This has helped the formation of a unique forum for networking, sharing ideas and good practice, and the group has developed a VLE with teaching materials to support the supervision of practice placements.

Business, Management, Accountancy and Finance supported ELSIE: Understanding and Developing Higher Education E-Learning Strategies in International Environments, a project focusing on gaining an understanding of best practices when developing and delivering e-learning provision within UK Business Schools and Management Departments.
Supporting formative and summative assessment

Through the DeL Programme, some Subject Centres explored and implemented a range of tools, technologies and approaches relating to formative and summative assessment. These included the development of question banks and peer assessment tools, processes for the assessment of creative disciplines, and resources to support the work of external examiners. Developments in the use of technology to support and enhance formative and summative assessment practice have generated interest in the subject communities themselves, and have also stimulated cross-disciplinary initiatives in some institutions.

The Economics Subject Centre had been running a prototype question bank for some years, and had become aware of opportunities to develop the content and functionality of the resource to meet the needs of the community. By the end of the project, the volume of questions in the bank had more than doubled. The new material that was added focuses mainly on economics and statistics, but also includes questions on finance, business and basic spreadsheet skills. Each question is complex, and includes an underlying economic model, randomisation and feedback. The new question bank is supported by easily installable software, a user-friendly interface, and clear documentation for downloading and using the questions in the curriculum. Some of the content was also adapted into an online Instant Remedial Maths Test.

— The Assessment Question Bank is an archive of assessment questions submitted by the economics academic community, from which users can assemble, view and print exams and tests.
— ExcelAssess is free software that allows users to administer self-marking exams in Excel. It comes with a large bank of questions in database skills, statistics, basic mathematics and economics.

The Engineering Subject Centre has developed the EASIMAP tool, a web based system that is designed to enable academics to map programme, module and assessment level learning outcomes to the QAA Benchmark Statement for Engineering. In addition to the tool itself and the initial pilot, the project has also produced a report on the use of personal development planning tools and e-portfolios in UK HE Engineering Departments, a stakeholder needs analysis report, and a briefing paper detailing a model for the transfer of data from EASIMAP to selected personal development planning tools and e-portfolios.
Key benefits of EASIMAP:

— Provides greater alignment in terms of the planning, design, management, delivery, monitoring and evaluation of degree programmes
— Fosters more effective and informed communication, discussion, and dialogue about the design, delivery and assessment of learning outcomes both within and between departments
— Enables assessment criteria more closely to reflect the intended learning outcomes and to identify instances of over- and under-assessment of learning outcomes
— Brings greater transparency and explicitness to programme quality assurance and accreditation processes
— Provides more timely, structured and constructive assessment feedback to students to enhance their reflection upon and planning of their academic and personal development

Some key lessons emerged from this project relating to the challenges of trying to address a range of complex processes and diversity of practice across the discipline.

“despite major advances in relation to frameworks, practice is still astonishingly varied”

“On reflection, it is clear that developing smaller more bespoke tools, or developing each function of the tool at separate stages, would have been both easier to achieve and more effective to promote than trying to create a single monolithic tool.”

The Maths, Stats and OR (MSOR) Network supported the STACK project. This focused on computer algebra systems performing automatic and sophisticated symbolic algebraic calculations, which are widely used within the subject community for research. Well-established communities of users support the underlying computer algebra packages by reusing and repurposing them, which in turn enhances the reliability of the overall system. MSOR adapted two paper-based books as online assessments, Algebra Refresher and Calculus Refresher. Approximately 222 Calculus and 104 algebra question templates were authored. Most of the questions have full worked solutions, which depend on the random versions, and all have feedback.
Phase Two of this project included the integration of STACK into Moodle to enable better access to the materials, more flexibility and the incorporation of the resources in a wide range of academic programmes. The resources developed in this project have been showcased at a number of national and international conferences and events.

“Small, community-led projects are more likely to succeed and offer excellent value for money.”

Another mini-project focused on the refinement and redevelopment for online access of the Model Choice programme. This is a popular computer-assisted assessment system, created in the early 1990s, which tests students’ skills at recognising from a brief description which family of probability distributions they should work with in order to solve a problem. A similar system for Testing Statistics was also developed, giving students practice in choosing which hypothesis test to use in particular scenarios.

“This project re-emphasises the huge potential of modern technology to support and enhance teaching and learning, particularly in Statistics.”

The Physical Sciences Centre developed a question bank for physical science assessment in during the first phase of the DeL Programme. The question bank provides ready access to individual questions via appropriate searching and browsing facilities, and supports question export as Learning Object packages as well as in other forms suitable for import into specific assessment systems. In Phase Two, activities and tools were developed to engage the physical sciences community in adopting and embedding items from this question bank into the curriculum.

The main outputs from the project include an academic interface for the question bank, and over 1,200 chemistry and physics questions available for use. The project has also produced a review of assessment systems (including the IMS Question and Test Interoperability (QTI) specification) which has generated interest in the wider community through the JISC CETIS Assessment Special Interest Group. It has led to a number of further collaborative developments including involvement with the JISC-funded OU Mathematics Question Bank project.
“This activity brings together assessments from diverse sources and delivers them packaged, ready to use, in the most popular VLEs and assessment systems.”

“Automated formative and summative quizzes and assessments can be a real academic time-saver and, if used imaginatively, can seriously enhance student learning.”

WebPA is an open source online peer assessment tool for recognising individual contributions to group work and allocating an adjusted mark accordingly. WebPA was developed into open source software by the Physical Science Centre, in collaboration with the Engineering Subject Centre and partners at Loughborough and Hull Universities. This work addressed the commonly recognised difficulty of assessing group work appropriately to ensure that each student receives a fair mark, based on their individual contributions.

The Subject Centre for Philosophical and Religious Studies funded a project that used special features of WebCT for an in-depth study of two aspects relating to e-learning and philosophy. First, the project assessed the suitability for automated, or semi-automated assessment, taking into account opportunities partly to replace assessments that are ripe for internet plagiarism and weighing this against a perceived reluctance within the profession to move away from essay-style assignments. The project also experimented with a WebCT-integrated ‘TurnitinUK’ submission feature for other, essay-type assignments. Second, the project explored the extent to which student learning is enhanced by mentored participation in specific activities, and identified potentially valuable features in the functionality of the learning environment.
Using e-portfolios to support personalised learning

The Subject Centres undertook a number of projects focusing on developing and implementing e-portfolios to support personalised learning. A key issue of interest that emerged from the Subject Centre work on e-portfolios was the relationship between formal and informal learning in various disciplines. This included an exploration of the nature of academic credit, how credit is determined, and how it is assessed and awarded. The work of the Subject Centres also highlighted the pedagogic implications of e-portfolios, highlighting that more than a repository of artefacts and proof of achievement, an e-portfolio is a valuable learning experience in itself. Some technical challenges were identified in terms of systems interoperability and the functionality of specific e-portfolio tools. However, the work of these projects has highlighted the potential value of e-portfolios in a range of academic disciplines and contexts. In particular, the Subject Centres have raised the profile of the academic e-portfolio for CPD and accreditation with professional and regulatory bodies in various sectors.

Art, Design and Media supported the Evolve project, which explored the relationship between current perceptions of e-portfolios in education and the traditional role of a design portfolio. It aimed to encapsulate features of current e-portfolio practice in the sector, seeking to identify the underpinning values that inform and determine creative portfolio development.

The project focused on four key questions:

— How can e-portfolios in art, design and media enhance learner skills and employability?
— How do e-portfolios support learners’ articulation of these capacities for appropriate audiences?
— How do subject needs influence the use and uptake of e-portfolios?
— How can the needs of diverse stakeholders (learners, teachers, HEIs, employers) be served by e-portfolios?

The main outputs included a review of emergent themes, case studies exploring the implementation of e-portfolios in three different institutional contexts, and a literature review in the form of an annotated bibliography. A particular focus of the ADM project was the role of e-portfolios in enhancing student employability.
“e-portfolios enhance the ability to communicate widely about student achievements, address wider global audiences and increase individual visibility in the professional context”

“Specialist subject needs are a significant factor in the use and uptake of e-portfolios. There are crucial differences between the ways in which those in art and design contexts construe the concept of portfolios and the generally accepted idea of the educational ‘e-portfolio’”

The Centre for Education in the Built Environment conducted an investigation into the use of e-portfolios by students undergoing periods of workplace experience in the Architecture, Town Planning, Construction and Real Estate professions. A particular aim was the provision of practical guidance for staff in the use of e-portfolios to encourage meaningful and useful reflection on practice.

“The pedagogic benefits of using e-portfolios do not differ significantly from using traditional methods of recording and reflecting upon experience. What is important is providing structure and support which encourages students to reflect.”

The use of e-portfolios in the health-related professional and regulatory bodies is relatively high compared to other sectors. Health Sciences and Practice conducted a survey of the use of e-portfolios in the education of health-related professionals with a view to identifying what works well and why, and what does not work so well and why. Project outputs include a set of succinct guidelines for the development and use of e-portfolios in Health Sciences and Practice.

The UK Centre for Legal Education (UKCLE) considered the introduction of e-portfolios not just for the delivery of legal education, but also within the professional legal environment. It sought to develop a system to allow students to create a personal e-portfolio which would follow them through their undergraduate, postgraduate and professional lives to include their training, CPD and any subsequent academic qualifications. Key themes relating to the use of e-portfolios for legal education were identified and explored in case studies focusing on the University of Glasgow Graduate School of Law, the Oxford Institute of Legal Practice, and the University of Westminster, and the University of Cumbria.
The use of e-portfolios in legal CPD is under consultation in both England and Scotland. The UKCLE DeL project has helped to inform the approach taken by the Law Society of Scotland to the work-based learning element of the new education and training regime for the profession. The project has also generated international interest, with contacts from the USA and Australia seeking to find out more about the use of e-portfolios for legal CPD. The project has also helped to inform the further development of the PebblePad e-portfolio system, with webfolios created by the UKCLE project being showcased as examples of good practice.

Key outputs include four institutional case studies, and briefing papers on Getting Started with e-Portfolios offering advice on the use of e-portfolios in law, and guidance for students, staff and employers.

“Requirements that learning in the workplace be evidenced and continued once the legal professional is qualified, combined with the requirement for reflection and self-awareness on the part of the learner, means that the e-portfolio could be regarded not as extra work, but as carrying out the work which must be done already, more effectively, thoroughly and in a way which helps the individual to develop their professional skills for their own benefit and that of their employer.”

The Physical Sciences Centre developed an e-Portfolio Framework to support undergraduates, postgraduates and professionals in a range of disciplines. This provides a simple but effective method of building subject specificity into an e-portfolio, no matter which tool is used (or none at all). The method has been used to support courses in a number of disciplines within the physical sciences and beyond. One of the key outcomes of this project was the effectiveness of a relatively ‘low-tech’ solution to address the challenges of serving a community that uses many different tools, technologies and applications for student e-portfolios. Another key output is the Practice Guide: Supporting Student e-Portfolios, which has proved popular and useful in a wide range of contexts.

“Both our general approach to giving e-portfolios discipline specificity and our publication ‘Supporting Student e-Portfolios’ have been widely accepted by those of multiple disciplines.”
Although we aimed to support our own specific community, our work has proved to be of much wider value.

As part of the DeL Subject Centre Programme, Medicine, Dentistry and Veterinary Medicine organised a one-day conference entitled “ePortfolios, identity and personalised learning in healthcare education” in February 2008. The conference attracted 150 delegates from across the UK (and from all parts of the health and social care sector) and included four keynote speeches, 21 presentations over four streams of activity, and 18 posters covering a wide range of healthcare related disciplines. 3,000 copies of the Conference Proceedings were distributed to the Subject Centre network and relevant Special Interest Groups.

“Whilst many of the issues being faced across discipline communities are analogous, putting them in a discipline-specific context makes them more relevant to teachers actually delivering the curriculum on a daily basis.”

Psychology supported the development of a case study on the promotion of reflection and metacognition (The Use of e-Portfolios in ‘The Psychology of Learning and Study’). This work outlined the benefits that students perceive in using an e-portfolio, with a particular focus on reflective learning.

This work also confirmed that making explicit key concepts from educational psychology, such as metacognition, self-efficacy, learner autonomy and motivation, had great benefits. First, these concepts enhanced the students’ own understanding of the rationale and potential benefits of completing a reflective portfolio on their own learning. Second, incorporating theory in their reflections helped students achieve enhanced insight. Finally, exposure to findings from educational psychology enabled students to reflect on how they could apply these findings to their learning and personal development during the remainder of their degree and to future careers.

“An important implication is that explicitly embedding theories and findings from educational psychology into psychology students’ personal development planning modules has great benefits.”
Within the field of Education, the electronic portfolio represents a means to demonstrate the acquisition of teaching skills along with an understanding of the values of the learner. When used by practitioners, it both facilitates and demonstrates the continuing professional development of the qualified teacher. By offering the ability to adapt and restructure the learning, and by presenting a range of technical tools for use both in reflective analysis and the presentation of skills development, the learner/practitioner is therefore provided with the opportunity for ‘constant’ reflection rather than the ‘periodic’ reflection offered by more traditional paper-based portfolios. The study undertaken by ESCalate, the subject centre for Education, demonstrated how the flexibility inherent within the e-portfolio structure readily adapts to the fluid and transitional nature of Education – from Personal Development Planning (PDP) as a learner through to Continuing Professional Development (CPD) as a probationary teacher and then forward through a career as a teacher/practitioner.

The first phase of the study identified examples of institutional practice and invited views on the successes, failures and barriers to implementing e-portfolios into the mainstream initial teacher education curriculum. Phase Two was undertaken in institutions in Scotland, England, Northern Ireland and Australia, centred on a twelve-month longitudinal study using learner blogs. The findings of the study also highlighted how the use of e-portfolios within Education helps to overcome the periods of ‘learner isolation’ that are often unintentionally created by the ‘vocational’ aspect of learner placement. e-Portfolios provide a platform to create an informal online social support network and a forum for discussion and reflection involving peers, mentors and teachers.
Digital resources

Subject Centres undertook a range of activities concerned with the development and use of online materials and resources for learning and teaching. While some developed reusable learning objects (RLOs) for use with a particular learning community, a multidisciplinary approach and the potential generic applicability of RLOs were key features of several developments. Some initiatives focused on the reuse and repurposing of existing learning objects and resources, with a particular focus on resources emerging from the JISC Digitisation Programme. Others explored the application of audio and video technologies, particularly podcasting for pedagogic purposes in a range of disciplinary contexts.
Developing Reusable Learning Objects

The Evaluating Multiple Interpretations Generative Learning Object (eMI GLO) is a collaborative venture between the History Classics and Archaeology Subject Centre, the Centre for Excellence in Teaching and Learning in Reusable Learning Objects (RLOs), and Universities’ Collaboration in e-Learning (UCeL). Funding was initially provided under the JISC Design for Learning Programme as part of the Sharing the LOAD project, and further funding has been forthcoming from the Higher Education Academy under the CETLs Mini-Projects scheme. Using this funding a ‘proof of concept’ GLO was developed, designed to develop critical thinking skills through student engagement with and evaluation of multiple scholarly interpretations in the historical disciplines. This online package is easily customisable by tutors and can be used within a variety of learning environments. Exemplar materials include an interactive instantiation of the Altar of Pergamum in Berlin’s PergamumMuseum.

Prior to the DeL Programme, the Centre for Sociology, Anthropology and Politics had undertaken a series of successful collaborative RLO initiatives in association with UCeL, with a particular focus on teaching quantitative methods in social sciences. The Applied Statistical Methods Generative Learning Object was one of the outcomes from the first Phase of the DeL Programme, developed in response to a recognised need within the Social Sciences to improve methods of engaging students with data literacy. C-SAP took the opportunity provided by DeL funding to take forward the existing relationship with UCeL and the collective experience in developing reusable learning objects in the development of a RLO on Recognising Nominative Categorative Data.

The Hospitality, Leisure, Sport & Tourism Network undertook a student evaluation of RLOs that were introduced on undergraduate modules as part of a package of blended learning approaches.

They also produced More Sustainable Tourism – a web-based resource and curriculum guide with international RLOs on tourism and climate change for teaching at undergraduate and postgraduate levels.

A summary document is also available with links to relevant RLOs on Research Methods and Approaches, Leisure and Sport, Sociology, Study Skills, together with a brief background paper discussing RLO design.
Within the Information and Computer Sciences (ICS) disciplines the rapidly changing curriculum presents an ongoing problem. Teaching and learning resources typically have a short shelf life, so the continuing development of reusable learning materials is core to the activities of the ICS subject network. Through the DeL Programme, ICS supported work relating to the creation and repurposing of RLOs and the development of question banks with model answers and formative feedback. The project also produced case studies of integration and reuse to inform practitioners and encourage pedagogic research.

ELSIE (e-Learning Support for Inter-Professional Education) was a project organised by Health Science and Practice to create reusable learning objects (RLOs) to support interprofessional education.

Languages, Linguistics and Area Studies (LLAS) developed the Learning Object Creator (LOC), a pedagogically driven and technically easy to use tool for the creation of basic learning objects. They also developed a training workshop in the use of the tool, with accompanying guides and training materials. A number of learning objects were produced and shared with other practitioners. A key outcome of the project was the creation of a community of practice for sharing and reusing learning objects for teaching languages, linguistics and area studies.

Working on this project has enabled the Centre to enhance the working experience of teachers of LLAS subjects in a number of ways. It has also helped to develop expertise within the Centre in e-learning design, content authoring and the production of learning objects, and has led to a number of further collaborative initiatives.

“Using the LOC has consolidated my views on effective learning materials and increased my understanding of effective online learning material.”

The Physical Sciences Centre has produced a number of employability resources specifically designed to be used to support the teaching of employability skills to physical sciences students. The resources are readily and easily adaptable for use in any other discipline context and a version for the education discipline is also available, developed with the support of ESCalate. The employability resources have been successfully embedded in curricula at a number of institutions around the UK.
These materials include reports on practice and also practical resources that can be used in the classroom. The Physical Sciences Centre also offers employability visits to supplement support for embedding the resources in the curriculum. The Centre has produced the materials as an online resource with installation instructions, guidance to academics and additional activities which can be imported to a VLE.

The Subject Centre for Philosophical and Religious Studies funded the design of a course template and accompanying materials including a range of RLOs for online delivery of provision in theology and religious studies. The materials focused on incorporating developing principles and models of pedagogical excellence in online delivery, and the effective transformation of materials originally developed for face-to-face delivery. Templates, RLOs and their underlying principles have been disseminated to the PRS community through workshops, training days, conferences, published papers, and will be made available for general use through the PRS network.

A DeL-funded project at the University of Cambridge also collated a wealth of resources about the Assyrian empire from undergraduate lectures and seminars, as well as student work, to support teaching at Cambridge and to provide resources for colleagues in history of science and religion who do not have access to specialist libraries.
Sharing and repurposing resources

Student difficulties with mathematics present a particular challenge for the economics HE community. As part of the DeL Programme, the Economics Network produced a series of fifteen customisable case studies relating mathematical concepts to everyday topics such as sport league tables, house prices and credit cards. Each introduces one or more mathematical techniques in the context of the topic, takes the student through example calculations and includes some formative assessment questions.

The project also produced an interactive index of Maths for Economics resources, and a booklet of suggested answers for the assessment questions.

In association with the University of Alaska Southeast, the Economics Network has produced a series of customisable PowerPoint slide shows making extensive use of animation and algebra to present macroeconomic models. They include explanatory text and can be used by students for self-paced revision.

PRISM is an interdisciplinary learning website developed by PALATINE that allows lecturers and students to view and assemble collections of exemplar works from the subject areas of dance, music, theatre, architecture and design, art and film in some of the influential art movements of the ‘modern’ period in Europe and the United States. Works, productions and artefacts are grouped by movement (or ‘ism’).

Exemplars are contributed by subject specialists. Each is accompanied by a rationale that includes examples of how the work might be used in learning and teaching across the creative and performing arts.

The Physical Sciences Centre produced a teaching resource of skeletal material from an excavation at Hulton Abbey. Whilst the initial aim of this project was to produce digitised resources for forensic science teaching, these can equally and readily be adopted by other organisations and institutions. Due to the anatomical nature of the skeletal excavations there is potential for use in anthropological and biological studies (such as the study of disease). The resources also have historical and religious sociological and cultural applications as well as in photographic studies, computing and e-learning technologies.
The Psychology Network developed the Repository of Student Practicals (RoSP) offering online access to materials and resources to support student practical work and the teaching of research methods within psychology at undergraduate and postgraduate levels. RoSP provides:

- access to high quality resources catalogued from across the Internet, which are typically difficult to find using conventional search engines
- access to a range of exemplar lab reports which help students construct their own more effectively
- show-me video tutorials on how to perform common tasks in the major statistical packages
- show-me video tutorials covering the basic building blocks of constructing paradigms in the leading experiment generators
- content that is easily embedded into lecture courses
- a continuing service backed by the Psychology Network in the UK

In its first year of operation RoSP has been recognised as a valuable resource for the UK Psychology subject community, and has also been accessed by users in more than 145 countries.

The Subject Centre for Philosophical and Religious Studies supported a project focusing on the use of mind maps in teaching philosophy. The Mind Mapping Project sought to provide an interactive online e-learning environment that has become a permanent resource for teachers and students of philosophy of religion and related subjects.

The UK Centre for Legal Education developed guidelines of good practice for sharing resources within law, with case study examples highlighting cultural and discipline specific issues. This project was also taking forward outcomes from the JISC X4L Lawpaths project, with particular emphasis on addressing issues relating to the provision of a sustainable user community for the resources.

“There is scope for a further project to develop a resource sharing strategy for legal education.”
Subject centres in collaboration

Newsfilm Online Digital Resources – Supporting and Enhancing Student Learning

This is a large-scale collaborative project between the Subject Centre for History, Classics and Archaeology, the Subject Centre for Sociology, Anthropology and Politics, the Subject Centre for Geography, Earth and Environmental Sciences, and the Centre for Excellence in Teaching and Learning in Reusable Learning Objects (RLO-CETL). It has developed online exemplars (subject tutorials) using materials from the Newsfilm Online archive, one of the outputs of the JISC Digitisation Programme.

The exemplars have been created by academics teaching in HEIs across the UK. They provide resources for teaching at all levels of FE and HE, and are also suitable for the schools sector. The exemplars can be used with many learner groups, including face-to-face teaching in small and large groups, and online distance learning provision.

Exemplars are designed to address pedagogical issues, including:

— effective embedding of images within teaching
— development of historical understanding
— development of empathetic skills
— development of critical thinking skills through contextual analysis of news film and related materials (rushes, running orders), and comparative work with textual materials such as print media and secondary sources
— development of evidence-based argumentation skills
— development of group skills (for example, through the provision of an online forum or use within seminars)
— development of independent learning skills
— use of reflective learning logs

Subject-specific content of the exemplars has been structured into interactive learning resources using a Generative Learning Object Authoring Tool created by the RLO-CETL. The development of this Authoring Tool presents an opportunity for the RLO-CETL to work closely and collaboratively with academics from humanities disciplines, and to extend its research on pedagogical patterns in RLOs into the humanities. The Authoring Tool is thus being specifically adapted for the needs of the target community,
enabling practitioners to load multimedia assets and pedagogical commentary into executable learning designs which accord with discipline-specific pedagogical patterns and paradigms. The resulting learning objects can then be re-used and re-purposed by other tutors to meet their local needs by using the Authoring Tool.
Podcasting

The IMPALA (Informal Mobile Podcasting And Learning Adaptation) project explored the educational potential of podcasting in supporting and enhancing student learning in Geography, Earth and Environmental Sciences (GEES). Three main areas were explored:

— How can podcasting help students and staff tackle ‘troublesome knowledge’ and ‘threshold concepts’ in GEES subjects?
— How can podcasts help students’ learning in ‘multiple learning spaces’ in GEES subjects?
— What are the key issues and enablers for sharing, re-using and re-purposing podcasts and exemplars across GEES disciplines?

Key outputs included seven user exemplars, and a 10-factor podcasting development model which served as a useful tool in developing pedagogical podcasts within GEES subjects. The project also created a digital repository of exemplar podcasts for GEES practitioners. These include podcasts for fieldwork preparation, providing information and instruction in the field, demonstrating field techniques and equipment use, and using student-created video podcasts as a means of assessment.

“For inherently visual subjects, video podcasts are effective particularly in relation to engaging students and promoting their learning motivation, and improving practical-based learning.”

Health Sciences and Practice conducted an evaluation of podcasting development and its use in health-related disciplines, exploring the use of podcasts in learning situations, and establishing priority areas for future podcast discussions. Two different podcasts production styles were explored: the project produced two audio podcasts of small group discussions focusing on Interprofessional Education, and a further seven audio/video podcasts of lecture-style keynotes and panel sessions at annual events and conferences organised by the Subject Centre.

As well as the podcasts themselves, the project also produced some guidelines, hints and tips on the use of podcasting for pedagogic purposes that have relevance beyond the health-related disciplines.

“Podcasting can be used as a dissemination tool to inform current practices in learning and teaching. Investment in podcast development and the establishment of a podcast...
The Hospitality, Leisure, Sport and Tourism (HLST) Network supported the further development of a mini-project initiated as part of the Re-Engineering Assessment Practice (REAP) project under the Scottish Funding Council’s e-Learning Transformation Programme. This explored the use of videopodcasting in conjunction with interactive lectures using personal response systems, as a means of developing learner responsibility and increasing student feedback. HLST also undertook a discipline-wide research project to explore and evaluate the benefits of podcasts as an additional tool in a blended learning environment.

The Psychology Network supported the production of a podcasted e-magazine (e-zine) for psychology undergraduates to promote student engagement and academic community, with eleven regular and 3 supplementary episodes over the academic year. Student responses to the e-zine were relatively lukewarm compared to the enthusiasm that was demonstrated in other contexts for recordings of technically complex material such as lectures and other audiovisual material to support classes. However, those involved in the production of the e-zine have benefited in terms of increased technical skills and knowledge of the area.

“The most popular topics for the e-zine were, in order; the final year project, the placement year, assessments, careers, revision advice, features on sandwich placements and advice on study. Thus possibly a more academic e-zine might have a greater impact but the overall message is that the main beneficiaries of the e-zine were the people who produced it.”

Social Policy and Social Work used a series of five-minute ‘Talking Heads’ video clips to produce a set of reusable digital learning materials on the theme of ‘what is social policy?’ These were published these on YouTube via a swapsoton channel, whilst also promoting via the SWAP website with text transcripts. This provided an open-source route to publishing the videos and was also user-friendly and accessible for students. The clips were also cut into smaller segments enabling more granular use in a range of teaching contexts.

The Centre also produced helpsheets on the use of a range of applications in teaching contexts including instant messaging tools (for example SIMPLE), social bookmarking and tagging tools (such as delicious) and document sharing applications like Google Docs.
International perspectives on e-learning in the disciplines

The work of the UK Centre for Legal Education on using e-portfolios to support professional development in legal practice has generated interest abroad. The Centre has had contacts from both the USA and Australia seeking to find out more about the project, and is investigating the possibility of setting up a wiki to collate international discussion and resources.

The EASIMAP tool developed by the Engineering Subject Centre is being used to enhance dialogue and co-ordination of the design and delivery of programmes with colleagues at overseas campuses in China and Malaysia.

The Medbiquitous group in North America is an international group of professional medical and healthcare associations, universities, commercial, and governmental organisations dedicated to advancing healthcare education through technology standards that promote professional competence, collaboration, and better patient care. As part of the DeL Programme, MEDEV supported participation in the Medbiquitous 2006 meeting in Baltimore, Maryland to enable input from the UK medical and healthcare communities, and to act as a conduit back to the community via the Subject Centre.
# Subject centres

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<thead>
<tr>
<th>Subject Centre</th>
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