

Briefing paper to support Call I: Transforming Curriculum Delivery Through Technology within Circular 08/08

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Introduction

This briefing paper accompanies Call I: Transforming Curriculum Delivery Through Technology within JISC Circular 08/08. It is intended to provide background information about the rationale and context for the Call. Prospective bidders are strongly encouraged to attend the Briefing Meeting to be held on the 24th June in Birmingham. Information on this meeting is available at:

<http://www.jisc.ac.uk/curriculumdeliverymeeting/>. Specific questions concerning the call should be addressed to Lisa Gray, Programme Manager, JISC e-Learning Programme (l.gray@jisc.ac.uk).

Scope and definitions

In HE and FE the *curriculum* usually means the learning and teaching to take place within a specific programme of study, leading to specific unit(s) of credit or qualification.

'*Curriculum delivery*' in this circular is meant as shorthand to embrace the many ways in which learners are helped to achieve the outcomes offered to them by a curriculum. In curriculum delivery, learning and teaching staff may have considerable freedom to plan sessions, choose materials, and decide how to support a specific cohort of learners to achieve their goals. Individual learners may also have considerable flexibility in how they engage with curriculum resources. Curriculum delivery addresses the questions 'how will these learners achieve?' and 'what challenges and support do they need?' as they encounter the curriculum. Effective curriculum delivery also asks 'what kinds of interactions are these learners engaging in and how are these being supported'? It also asks 'how will learners be given feedback on their progress and assessed on their achievements?' and seeks to continuously enhance the opportunities presented for learning.

We do not intend by using the term 'delivery' that projects should focus on the delivery of information to learners, or suggest that this is an appropriate or adequate way of enabling learners to achieve curriculum goals.

Projects funded under this circular will differ from projects funded under JISC Circular 5/08 on curriculum *design* in that they will focus on processes which take place when real learners engage with a designed curriculum. Teaching, learning support, access to learning opportunities and resources, dialogues and interactions, advice and guidance, coaching, mentorship, peer learning, feedback and formative assessment, personal development planning and tutoring are all processes that might be involved.

The call is looking for projects to explore how *technology* can support these processes more effectively – for example more flexibly, more adaptively, and in a more integrated way – particularly from the perspective of the learners engaged in the curriculum.

In practice there is overlap and interplay between the processes we are calling curriculum 'design' and curriculum 'delivery'. It is essential that this should be so¹. For example, the educational rationale for design decisions should be understood by staff involved in the delivery process, and ideally by learners too, while evidence from real learners' engagement with the curriculum should inform future iterations of design. The aim of the two circulars is not to keep these processes apart but to understand how technology can support different phases of the curriculum cycle more effectively. Bidders should refer to the Table of Differences² for more guidance.

¹ The learning design community defines an intermediate stage, 'instantiation', during which a curriculum design is adapted for a specific instance of its delivery with a real cohort. There are three processes defined by the IMS Learning Design specification: authoring (design), production (instantiation), and delivery (see http://www.imsglobal.org/learningdesign/ldv1p0/imsl_d_bestv1p0.html)

² See <http://www.jisc.ac.uk/media/documents/programmes/elearningcapital/curricdesigntableofcalls.doc>

Previous JISC programmes have explored specific technologies for curriculum delivery such as personal learning environments, e-assessment systems, e-portfolios, mobile and wireless technologies and gaming environments. There is also a growing body of evidence about how such technologies can help learners engage more effectively with aspects of the curriculum. Some of this work is summarised and referenced below. The aim of this call is to apply these developments in projects that focus on the curriculum as a whole, and particularly on whole-curriculum **transformation**.

Production and repurposing of **course materials** and the development of specialised **learning environments** may be important aspects of curriculum delivery. The JISC funds many projects in the area of content production and digitisation³, repurposing content⁴ and the development of learning environments and tools⁵, so bids are unlikely to be funded which focus only on these. However, projects might wish to address how these developments can be integrated into curriculum delivery on a departmental level, or harnessed as part of a holistic approach to curriculum transformation.

In funding these projects the JISC is concerned to encourage the use of technologies to address a particular curriculum **challenge, opportunity or issue**. Paragraph 33 of the Circular should be consulted for examples. Other agendas for change are welcome providing that, in tackling them, projects can expect to transform curriculum delivery in line with the overall vision of the programme (paragraphs 24-30).

Projects need to be ambitious enough in their scope that, by working to transform a specific curriculum area, they can enhance curriculum delivery and therefore learning opportunities on a wider scale. It is expected that a range of technologies will be considered and used in an integrated fashion to enhance learners' experience of the curriculum as a whole.

Current programmes and agencies supporting enhancement and transformation of curriculum delivery

1. The Higher Education Academy Subject Centre Network⁶ exists to support and enhance learning and teaching in specific curriculum areas. All Subject Centres fund small-scale projects, many of which have involved the use of technologies in curriculum enhancement⁷. Many Subject Centres have also contributed to the JISC Distributed e-Learning programme⁸, exploring subject-specific applications of technologies such as e-portfolios and e-tools, and strategies such as sharing e-learning content and accessing digital resources.
2. The HEFCE-funded Centres for Excellence in Teaching and Learning⁹ promote excellence and innovation in learning and teaching. Some have a specific remit for the use of technology while others consider technologies for learning within a remit of another kind, such as a subject area or teaching approach.
3. The Higher Education Academy Pathfinder programme¹⁰ has funded many institutional initiatives in the use of technology for curriculum delivery.
4. Bidders should refer to the JISC Infokits¹¹ which have been developed to support institutions in several areas relevant to curriculum delivery, including:
 - Planning and designing technology-rich learning spaces
 - Effective use of VLEs
 - Implementing e-Learning
 - Implementing the Ferl Practitioners Programme
5. The QIA Excellence Gateway¹² is a new resource designed for FE institutions to link quality improvement with curriculum enhancement and continuing professional development of teaching

³ For a summary of these activities see <http://www.jisc.ac.uk/whatwedo/themes/eresources.aspx>

⁴ http://www.jisc.ac.uk/whatwedo/programmes/programme_elearning_capital/reproduce.aspx

⁵ See for example the JISC e-learning framework programme

(http://www.jisc.ac.uk/whatwedo/programmes/elearning_framework) and the Users and Innovations programme

(http://www.jisc.ac.uk/whatwedo/programmes/programme_users_and_innovation.aspx)

⁶ <http://www.heacademy.ac.uk/ourwork/networks/subjectcentres>

⁷ See for example these projects from the Geography, Geology and Earth Sciences Centre:

<http://www.gees.ac.uk/projtheme/elearning/geesel.htm>;

⁸ <http://www.heacademy.ac.uk/ourwork/learning/elearning/del>

⁹ <http://www.heacademy.ac.uk/ourwork/networks/cetls>

¹⁰ See <http://elearning.heacademy.ac.uk/weblogs/pathfinder/> for more details

¹¹ All available from <http://www.jiscinfonet.ac.uk/infokits>

¹² See <http://teachingandlearning.qia.org.uk/teachingandlearning/>

- staff. It provides access to summary outcomes from of previous and current initiatives to enhance curriculum delivery through technology. This web site includes links to a range of 'Innovation in FE'¹³ projects including many in the use of ICT.
6. The newly-established Becta/LSN Technology Exemplars Network¹⁴ aims to improve the use of learner focused technology and the levels of e-maturity among providers in the FE and Skills sector, by sharing practice among providers with a strong track record of embedding technology into learning and teaching.
 7. The JISC has funded extensive work on *learning objects and learning object repositories*¹⁵, *e-portfolios*¹⁶, *e-assessment*¹⁷, *e-administration*¹⁸, *personal learning environments*¹⁹ and *technology-enhanced learning environments*²⁰. Depending on the nature of their proposal, bidders may wish to consider how some or all of these technologies can be drawn upon in transforming curriculum delivery, and to explain how their project will build on existing development outcomes.
 8. The JISC Users and Innovations programme²¹: Next Generation Technologies and Practices strand is exploring the use of emergent technologies – such as blogs, wikis, social bookmarking and personalised environments – to provide a more coherent and personalised experience for users. Some bidders may find it useful to consider emerging work from this programme.
 9. The e-Learning team have recently been working with JISC InfoNet to pull together a range of outcomes from previous JISC funded programmes in the activity area broadly defined as 'Learning Resources and Activities'. These include reports, websites, toolkits, models, frameworks, cookbooks and case studies. The aim is to provide one place for people to access such content to support their own work and prevent duplication. This resource is currently in development but should prove particularly useful to projects funded under this call²².
 10. The JISC²³ and the Higher Education Academy²⁴ are both funding projects to explore how learners experience e-learning in the curriculum. The JISC PB-LXP project, based at the Open University, is specifically investigating how different approaches to curriculum delivery impact on the learner experience²⁵. JISC has also funded MORI to carry out two surveys – of 16-18 year-olds and of new university entrants – to establish how learners' expectations of technology are changing. Any of these initiatives may provide useful contextualising information²⁶.
 11. An early task of the Curriculum Design and Delivery Support and Synthesis Team will be to review the available evidence in more detail, to distil the lessons learned and offer synthesised background materials to support the funded projects.

Previous reports and project outcomes relevant to this circular

This is an illustrative summary and not a comprehensive review. Bidders will need to carry out their own reviews of evidence to ensure their proposals are well grounded, build positively on past developments, and complement other initiatives. The messages offered here are selected from available reports and do not pretend to do justice to what are often complex and long-term programmes of work. Where possible, the messages have been checked with the originating projects or authors, but their approval should not be assumed.

Reports/Resources & Key Messages

JISC CAMEL 'Exploring the Tangible Benefits of e-Learning' report (Ferrell et al, 2007)

<http://www.jiscinfonet.ac.uk/publications/camel-tangible-benefits.pdf>

A review of 37 JISC-funded projects found that e-learning approaches can offer tangible benefits in terms of:

¹³ <http://excellence.qia.org.uk/page.aspx?o=157051>

¹⁴ See <http://news.becta.org.uk/display.cfm?resID=34346> for the current status of the network.

¹⁵ See http://www.jisc.ac.uk/whatwedo/programmes/programme_rep_pres.aspx for a list of recently-funded projects in this area.

¹⁶ <http://www.jisc.ac.uk/whatwedo/themes/eportfolio.aspx>

¹⁷ <http://www.jisc.ac.uk/whatwedo/themes/eassessment.aspx>

¹⁸ <http://www.jisc.ac.uk/whatwedo/themes/eadministration.aspx>

¹⁹ See <http://zope.cetis.ac.uk/members/ple>.

²⁰ <http://www.jisc.ac.uk/whatwedo/themes/elearning/tele/definitions.aspx>

²¹ <http://www.jisc.ac.uk/users/innovation>

²² <http://www.jiscinfonet.ac.uk/themes/lra>

²³ <https://mw.brookes.ac.uk/display/JISCle2/Home>

²⁴ <http://www.heacademy.ac.uk/ourwork/learning/elearning/elro>

²⁵ http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_pb1xp.aspx

²⁶ <http://www.jisc.ac.uk/publications/publications/studentexpectations>

- Cost savings and resource efficiency: e.g. e-assessment meant marks for a cohort of 30 could be recorded in 2hrs rather than 10hrs.
- Student achievement: e.g. findings of 10% improvement in student pass rates on implementing appropriate e-learning approaches.
- Recruitment and retention: e.g. evidence of attrition rates during first year being lowered with use of e-portfolios
- Skills and employability: virtual case studies and opportunities to keep in contact with tutors while on placement are valued by students
- Widening participation: many examples of learners accessing educational opportunities through ICT who would otherwise lack the ability to participate.
- Special needs: offering courses in a variety of modes allows better support to students with specific needs, currently under-represented in UK HE (untapped market could be worth £796m)

Higher Education Academy Blended Learning Review (R.Sharpe and G.D. Benfield, 2007)

http://www.heacademy.ac.uk/projects/detail/lr_2006_sharpe

- Redesigning courses is crucial to embedding e-learning successfully
- e-Learning needs to be embedded over a period of time across a whole programme or departmental team
- Iterative design and development should include peer review and feedback from students
- Successful curriculum design and re-design makes explicit its underlying principles and rationale
- Curriculum design needs to include an evaluation and analysis phase: there is little research about what makes curriculum interventions work

Higher Education Academy Benchmarking Phase 2 report (V. Adamson and J. Penderleith, 2008)

<http://elearning.heacademy.ac.uk/weblogs/gwella/?p=27>

- *A focus on technology as an enabler rather than e-learning as an end in itself was emphasised. It was suggested that the term e-learning is no longer helpful in the wider context of technology-enabled learning, teaching and assessment.*
- *Several respondents identified the need for a better understanding of the costs and workload requirements of e-learning and blended learning, including costing the time and effort required by both academic and support staff.*

JISC report on sharing e-learning content (A. Charlesworth et al, 2007)

<http://ie-repository.jisc.ac.uk/46/1/selc-final-report-3.2.pdf>

- Currently there is little formal sharing of curriculum resources via repositories with appropriate licensing. Informal small-scale sharing does take place between colleagues.
- There is little culture of sharing within institutions, though there is within peer-to-peer, web 2.0 type networks. Sharing between institutions tends to be within subject communities.
- Putting technical solutions for sharing in place without institutional commitment or knowledge of user requirements is unproductive.
- Educationally, there must be a common delivery endeavour (e.g. common learning outcomes, common educational challenges) where sharing is part of the solution.
- Most institutions do not yet have policies or practices for managing and archiving learning materials: even fewer are thinking about retaining and managing learner-created materials.
- IPR problems and perceived problems remain a barrier to sharing of curriculum resources.

NCAT Programme in Course Redesign (C.Twigg, 2004-2006)

<http://center.rpi.edu/whoweare.html>

- From 1999 to 2004, The National Center for Academic Transformation (NCAT) worked with 30 diverse two- and four-year college courses (50,000 students annually) to prove that it is possible to improve quality and reduce cost in HE.
- Course redesign using information technology was key to achieving both outcomes.
- Twenty-five of thirty course redesign projects showed significant increases in student learning; the other five showed learning equivalent to traditional formats.
- Of the twenty-four projects that measured retention, eighteen reported a noticeable decrease in drop-failure-withdrawal rates, ranging from 10% to 20%, as well as higher course-completion rates.
- Most dramatically, all thirty institutions reduced their costs by 37% on average, ranging from 20% to 77%, and produced a collective annual savings of about \$3 million.
- Other positive outcomes included better student attitudes toward the subject matter and increased student and faculty satisfaction with the new mode of instruction.

Distributed e-Learning Regional Pilots

http://www.jisc.ac.uk/whatwedo/programmes/programme_edistributed/pilotsdetail.aspx

These projects were funded to support lifelong learners, facilitate progression, and enable better collaboration and sharing of resources among staff in similar curriculum areas. The pilots have been able to demonstrate enhancement of the experience for learners using a wide variety of applications and approaches²⁷.

JISC/SFC Transformation Projects

General lessons learned²⁸

- Transformation projects should be based on sound, compelling and transparent educational thinking.
- ICT should support the delivery of powerful, research-based teaching and learning ideas, translated into clearly defined principles for implementation.
- Application of principles should be tailored to disciplinary and institutional contexts.

REAP project

<http://www.reap.ac.uk/>

- Assessment and feedback are critical drivers of student learning
- Both assessment and feedback are demanding in terms of staff time and resources.
- Both deeply affect the quality of student-teacher interaction.
- They are the main areas of dissatisfaction in the UK National Student Survey (NSS)
- Assessment redesign with technology can result in improved learning, higher student satisfaction and more efficient use of staff time, with students actively generating their own feedback and scaffolding the development of their peers
- The redesigns show both learning and staff efficiency gains as well as how technology can add value
- A focus on the redesign of assessments can be transformative of the entire curriculum

TESEP project

<http://www2.napier.ac.uk/transform/>

- Explored at three institutions whether the transformation of learning, teaching and assessment practice could be driven by e-pedagogy.
- Two principles: 1. *That to make a real difference to the learner experience, we must try to engage learners in active and self-directed learning at an early stage in their studies and to achieve that we need to encourage them to take responsibility for their learning.* 2. *That some e-learning approaches can play an important role in this, particularly where learners can be encouraged to use technology to locate their own material and enable collaborative work, formative assessment and discussion with peers.*
- TESEP has generated fundamental changes to: institutional structures and strategies, academic frameworks and course approvals, and processes of programme re-design.
- It is feasible to drive institutional transformation in learning and teaching through a focus on pedagogic principles.

JISC/NSF Digital Libraries in the Classroom projects

DIDET (Engineering subjects)

<http://www.didet.ac.uk>

- Student information literacy skills are patchy and are not taught extensively in engineering curricula. Students need considerable help to use metadata (e.g. keywords and descriptions) for cataloguing and searching resources.
- There is a potential conflict between student creativity and compliance with digital copyright laws.
- Designers search and learn differently when dealing with text-based information as opposed to video-based information. A video-based documentation paradigm allows for the automatic capture and indexing of informal design knowledge, which can then be shared and re-used.

DialogPlus project (Geographical subjects)

<http://www.dialogueplus.org>

- Learning activities are a basic unit of curriculum design. Activities can be created, shared, adopted and adapted more readily through use of appropriate design tools and technologies
- Teachers need support and guidance with respect to quality of resources and design of appropriate activities.
- There is a need to capture, describe, manage and reuse exemplary curriculum designs.
- The DialogPlus Toolkit and associated taxonomy have been developed to address these needs

²⁷ See <http://www.jisc.ac.uk/publications/publications/delregionalpilots.aspx> for details of these outcomes

²⁸ Source: David Nicol (personal communication, May 2008)

<p>JISC Design for Learning programme</p> <p>e-Learning Models desk study http://www.jisc.ac.uk/uploaded_documents/Stage%20%20Learning%20Models%20(Versio%201).pdf</p> <ul style="list-style-type: none"> — Models of teaching/learning can be very broadly classified as associative, constructive (individual focus) constructive (social focus) and situative: approaches to learning and teaching with technology can be mapped against these models.
<p>Design for Learning Phase 2 http://www.jisc.ac.uk/elp_designlearn</p> <ul style="list-style-type: none"> — A truly personalised curriculum should allow learners to participate differently in accordance with their preferences and needs and to design progressively more aspects of their own learning experience. Existing design tools and processes often do not support this. — Learning design tools can improve practitioners' thinking and planning skills and will be adopted if they: (1) fit the way practitioners normally plan for learning; (2) enable a variety of appropriate activities to be offered to students; and (3) can integrate with existing resources and tools²⁹. — Mechanistic pedagogical models of learning design are at odds with the effective use of network IT [and web 2.0 applications]:... more generalised learning designs are called for and more adaptable models of e-learning in general.
<p>JISC pedagogy planning tool projects http://phoebe-project.conted.ox.ac.uk/ & http://www.wle.org.uk/d4/</p> <ul style="list-style-type: none"> — Digital technologies can support the processes of educational planning, both to initiate trainee teachers into good design-for-learning practice and to provide experienced staff with inspiration for alternative approaches, tools and methods. — Requirements for pedagogy planning tools (many of which have been achieved in prototype) are available from the project web sites. These requirements can help to inform other types of intervention around educational design and curriculum processes.
<p>JISC Domain Model projects</p> <p>LADIE (Learning Activity Design in Education) http://www.jisc.ac.uk/whatwedo/programmes/elearning_framework/elfref_southhampton.aspx</p> <ul style="list-style-type: none"> — The LADIE project developed a series of learning activity use cases to illustrate the current state of research into e-learning pedagogy. — The relationships between educational theories and the development of learning activities for curriculum delivery was found to be a very complex one. — The project distinguished four levels of abstraction of theory or mode, and explored how these related to terms in common use among practitioners. — The final report highlights the constraints of use cases in mapping interactions and support services, particularly for learning activities that include the generation and reuse of second order learning objects (objects produced by learners themselves). <p>FREMA (e-learning Framework Reference Model for Assessment) http://www.jisc.ac.uk/whatwedo/programmes/elearning_framework/elfref_frema.aspx</p> <ul style="list-style-type: none"> — The FREMA project reviewed assessment practices at a number of participating institutions and produced a range of useful models that demonstrate how assessment processes and entities relate to one another. — An ontology of assessment-related concepts (both processes and entities) — An entity concept map which uses the DialogPlus taxonomy to define learning activity and learning context (see DialoguePlus³⁰) — A process concept map which shows all the processes involved in the assessment lifecycle, from authoring of tests to grading and dealing with appeals.
<p>Other relevant project outputs</p> <p>JISC Learners' Experiences of e-Learning programme Phase 1 http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_learneroutcomes.aspx</p> <ul style="list-style-type: none"> — Effective e-learners use what they have to hand (e.g. mobile phones, ipods) to engage with the curriculum — They use their personal technologies, know-how and networks to enhance the support available to them

²⁹ eLIDA CAMEL Project Completion Report (J. Jameson, 2008)

³⁰ <http://www.dialogueplus.org>

<ul style="list-style-type: none"> — They are adept at multi-tasking but not as skilled at finding, evaluating and using information in academic contexts, or at using technologies for deep learning goals — Curriculum delivery should recognise the 'underworld' of digital communication and information discovery that learners use to support their studies — Key choices that are important to learners within a flexible curriculum are: where I learn, who I learn with, when and how I am assessed, (and then) what technology I use for all this.
<p>JISC/MORI student expectations surveys (2007 and 2008) http://www.jisc.ac.uk/media/documents/publications/studentexpectations.pdf</p> <ul style="list-style-type: none"> — The net generation expect ubiquitous access to technology at university but have very little idea how it can/could be used to support their learning. — 88% are using social software sites, but only in a social context. They find it hard to imagine using such sites for coursework or study, and had reservations about this possibility. — There is an urgent need for higher e-literacy skills among a generation for whom access and interaction are taken for granted. — Traditional teacher/pupil learning methods are preferred as the backbone for everyday learning. Technology needs to be used as a tool to complement this way of learning, and HEIs should explain its benefits rather than assuming young learners will be enthusiastic adopters.
<p>Higher Education Academy Pathfinder blog: summary of ALT-C 2007 Pathfinder symposium http://elearning.heacademy.ac.uk:80/weblogs/pathfinder/?p=96</p> <ul style="list-style-type: none"> — There are five broad topics or focus of activity in the Pathfinder programme: student support/experience, staff development, institutional policy or strategy, and the application of some new technology. Underpinning all of these is an emerging awareness of the need to focus on curriculum development and course redesign. — Technology presents opportunities to revisit course design and helps to identify the need for a holistic review of provision, with particular emphasis on quality, value, return on investment and environmental issues. (As an aside, institutions may soon be required to quantify and publish the carbon footprint of each of their courses).³¹
<p>RELOAD/ReCourse (JISC CETIS) http://www.reload.ac.uk/ / http://www.tencompetence.org/ldauthor/</p> <ul style="list-style-type: none"> — The ReCourse (previously Reload) suite of tools provides support for learning design conforming to IMS interoperability specifications. — It includes: a publisher where teachers can set up and populate courses; an integrated repository which can return information about units of learning which are stored there; authoring of services and (coming soon) a questionnaire and test component. — The IMS Learning Design specification itself is built on the Educational Modelling Language developed at the Open University of the Netherlands, intended to be neutral with respect to pedagogical approach. — The LD4P³² project showed that teachers found the Reload editor challenging to use, but the development of ReCourse (with European Commission funding) is intended to address these issues and make the tool more usable.
<p>NI e-Learning CETL http://cetl.ulster.ac.uk/elearning/index.php?page=home</p> <ul style="list-style-type: none"> — This CETL has been using a 'hybrid learning model' to help staff: formalise and make explicit their curriculum planning practices; put practice into context; provide access to curriculum resources; and add a human context to items such as teaching plans and learning designs — The CETL is also developing add-on tools for its VLE which can query student administration systems to extract profiling information, translating this into meaningful reports to support curriculum planning and delivery
<p>SOLSTICE CETL http://www.edgehill.ac.uk/solstice/values.htm</p> <ul style="list-style-type: none"> — Multidisciplinary teams are essential to successful curriculum design for e-learning and blended learning — The SOLSTICE model produces programmes which are flexible and responsive to the needs of specific groups of learners and which have been conceived in collaboration with employers. — With such a curriculum, one size does not fit all: it is essential to address learners' unique contexts and concerns, to evaluate provision continually, and to re-design aspects of the delivery

³¹ Post by Jane Plenderleith reporting on Veronica Adamson's contribution to the Pathfinder ALT-C Symposium.

³² http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_ld4p.aspx

<p>if these are not successfully meeting learning outcomes.</p> <ul style="list-style-type: none"> — The needs of employers can be met more expeditiously within this flexible delivery model. — The programmes are continually evaluated, updated and re-designed, with action research taking place alongside delivery.
<p>InQBATE CETL http://www.inqbate.co.uk</p> <ul style="list-style-type: none"> — Development and evaluation of flexible, multi-configurable, technology-enhanced real-world environments for learning ('creativity spaces') — Embedding creativity into the curriculum
<p>LearnHigher CETL http://www.learnhigher.ac.uk</p> <ul style="list-style-type: none"> — Learners need to acquire an increasingly complex range of skills for effective lifelong learning, including information literacy and e-learning skills — These skills are best acquired if they are integrated into curricula and practiced in ways which are relevant to learners' subject interests and long-term life and learning goals.
<p>General curriculum resources</p>
<p>Constructive alignment (John Biggs) http://www.itslifejimbutnotasweknowit.org.uk/files/CPLHE/Biggs%20Constructive%20Alignment.rtf</p> <ul style="list-style-type: none"> — What the learner does... is to construct meaning through relevant learning activities — What the teacher does... is to set up a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes — Key is that the components in the teaching system, especially the teaching methods used and the assessment tasks, are aligned to the learning activities assumed in the intended outcomes — In a poor system, the components (curriculum, teaching and assessment tasks) are not necessarily integrated and tuned to support learning, so that only 'academic' students spontaneously use higher-order learning processes. — In an integrated system, all aspects of teaching and assessment are tuned to support high level learning — Teaching and learning take place in a whole system, embracing classroom, department and institutional levels.
<p>Information literacy http://crm.hct.ac.ae/events/archive/2003/speakers/bruce.pdf & http://dis.shef.ac.uk/literacy/project/</p> <ul style="list-style-type: none"> — Curriculum needs to encompass a range of literacies including information and digital information literacies – the critical location, evaluation and use of information in a digital environment³³ — Digital information literacy is strongly linked with the capacity for independent and lifelong learning: different ways of approaching information seeking and use correlate with different levels of learning outcome³⁴ — Interest in information literacy is international and growing³⁵ — The American Libraries Association has developed information literacy competency standards for HE³⁶; (NB similar standards have been developed by SCOUNL³⁷ and CILIP³⁸ in the UK). — As individuals and groups decide on ways of thinking about [information literacy], and which value systems it is important to identify with, their interpretations ...give their programs distinctive characteristics³⁹. — we need to see information literacy as forms of information practice that can be encouraged or discouraged by particular learning activities⁴⁰ — NB a recent HEA project 'UK academics' conceptions of, and pedagogy for, information literacy' found a common perception that supporting information literacy was always 'someone else's job'⁴¹

³³ Caroline Stern (2002) Information literacy unplugged: teaching information literacy without technology. White paper prepared for UNESCO, the US NCLIS and National Forum for Information Literacy. (<http://www.nclis.gov/libinter/>)

³⁴ Louise Limberg(2000) Information Literacy Around the World

³⁵ Hannelore Rader (2002) Information literacy –an emerging global priority. White paper prepared for UNESCO, the US NCLIS and National Forum for Information Literacy (<http://www.nclis.gov/libinter/>)

³⁶ <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.cfm>

³⁷ <http://www.sconul.ac.uk>

³⁸ <http://www.cilip.org.uk/>

³⁹ Christine Bruce and Phil Candy (2000) People, Politics and Potential, in Information Literacy Around the World, Charles SturtUniPress, Riverina

⁴⁰ Bruce, C and Candy, P (2000) Information Literacy Around the World

⁴¹ <http://dis.shef.ac.uk/literacy/project/>

Conceptions of the curriculum

- Conceptions of teaching and learning are shown to influence practice in curriculum design
- Design of learning experiences has a powerful influence on learning outcomes⁴²
- Atherton suggests a four-way classification of approaches to curriculum design: academic/induction, academic/construction, vocational/mastery, vocational/developmental⁴³
- The curriculum can also be understood in different ways: as a body of knowledge to be transmitted; an attempt to achieve certain outcomes in students; a process which both learners and teachers enter together; a form of praxis (theory and practice integrated)⁴⁴

Costs and benefits of ICT-related innovations

- Insight: a model for evaluating the costs and benefits of ICT in Teaching and Learning⁴⁵
- Bacsich *et al's* Costs of Networked Learning project (2001) is widely referenced in the literature and remains a benchmark study⁴⁶. See also The Costs of Networked Learning (chapter) in *Networked Learning: Perspectives and Issues*⁴⁷
- See also the cost savings/resource efficiency chapter of the CAMEL Tangible Benefits of e-Learning report.⁴⁸

e-maturity or institutional capacity for e-learning

- Several approaches have been developed for assessing an institution's capacity to use technology in a strategic way to improve learning outcomes
- Becta⁴⁹ hosts a web page on e-maturity with links to key indicators and evidence
- The HEFCE⁵⁰ and HEFCW⁵¹ e-learning strategies include key indicators of effective use of technology for learning

⁴² Bowden and Marton, 1998; Biggs and Watkins, 2002; Prosser and Trigwell, 1999

⁴³ <http://www.learningandteaching.info/teaching/curriculum.htm>

⁴⁴ <http://www.infed.org/biblio/b-curric.htm> - there are many helpful references here, despite the focus on 'informal' and adult learning

⁴⁵ D. Nicol et al., 2002. See <http://www.jiscinfonet.ac.uk/Resources/externa-resources/strathclyde-insight-case-study>

⁴⁶ <http://www.matic-media.co.uk/CNL-1.doc>

⁴⁷ C.Ash and B. Bacsich (2001) in C. Jones and C. Steeples (eds) *Perspectives and Issues in Networked Learning*, Springer-Verlag: New York

⁴⁸ <http://www.jiscinfonet.ac.uk/publications/camel-tangible-benefits.pdf>

⁴⁹ <http://feandskills.becta.org.uk/display.cfm?page=1897>

⁵⁰ The original strategy is available from http://www.hefce.ac.uk/pubs/hefce/2005/05_12/

⁵¹ See http://elearning.heacademy.ac.uk/wiki/index.php/Indicators_of_Success_2008 for a discussion of these on the Higher Education Academy wiki