Transforming Curriculum Delivery through Technology
Stories of challenge, benefit and change
Over the last decade, JISC-funded programmes of work have involved over 1,000 projects and more than 200 universities and colleges. Transforming Curriculum Delivery through Technology is one such programme which has investigated how technology can support transformative models of delivery in a range of contexts in further, higher and continuing education, including distance and work-based learning.

In a period of great change, the issues addressed by the Transforming Curriculum Delivery through Technology Programme have acquired particular urgency. Educators need to know what kind of technology-enhanced intervention works best for their learners and what steps they need to take to implement change. Through the pioneering work of the 15 projects in the programme, they can see more clearly where technology adds value, note the lessons learnt and take forward achievements relevant to their context and purpose.

The challenges the projects have investigated have been wide ranging. How can curriculum areas make use of emerging as well as established technologies to improve engagement, retention and achievement? Can the curriculum be made more responsive to the changing needs of society, learners and employers? Is it possible to deliver cost and time savings that enhance rather than detract from the overall learning experience? By applying technology to its best advantage, the programme has helped formulate answers to such questions.

In the process, the programme has accumulated compelling evidence of the benefits technology-supported delivery can offer. These include:

- Greater choice and autonomy for learners
- More efficient working practices for learners and staff
- Increased access through flexible or alternative modes of delivery
- More personalised, authentic and relevant learning experiences
- Enhanced assessment and feedback
- More timely and cost-effective administrative processes

The value of the programme may extend still further. Changes brought about by many projects have had a wider impact within their institution or curriculum area, and the influence of their work is now being felt further afield. In most cases, such outcomes have been achieved by means of simple, accessible and affordable technologies.

As a result of these achievements, the Transforming Curriculum Delivery through Technology Programme has significantly moved forward our understanding of the part technology plays in the delivery of 21st century learning.

“What is impressive is the number of projects that have become firmly embedded in their own institutional practice, yet have also influenced policy and practice elsewhere.”

Professor Peter Hartley, Critical Friend to the JISC Transforming Curriculum Delivery through Technology Programme
About the programme

During 2008–2010, the Transforming Curriculum Delivery through Technology Programme investigated the potential for technology to support more flexible and creative models of curriculum delivery. This publication captures outcomes from individual projects and summarises the key points emerging from the programme.

In the context of the Transforming Curriculum Delivery through Technology Programme, ‘curriculum delivery’ is understood to mean the many ways in which a curriculum enables learners to achieve their learning goals. Teaching, learning support, advice and guidance, coaching, mentorship, peer and collaborative learning, feedback and assessment, personal development planning and tutoring, skills development and practice, and enabling access to curriculum resources are processes encompassed by the term ‘curriculum delivery’.

Institutions taking part in the programme included 13 universities and three further education colleges. The starting point for each project was to identify challenges in their particular context that might be addressed by the intervention of technology. Some of the most significant issues now facing post-16 education were represented in the challenges they tackled: making assessment and feedback more relevant, enhancing learner employability, personalising curriculum delivery, engaging large and diverse groups of learners, achieving efficiency gains and increasing the flexibility and responsiveness of the curriculum. Improving engagement, retention and achievement was also a driver of curriculum change.

The technologies trialled included many that are already well-established aids to learning and teaching – podcasts, e-portfolios, virtual learning environments (VLEs), blogs and wikis, for example – but the programme has also overseen innovations such as a curriculum-mapping tool, and use of immersive worlds and semantically based web technologies. Nearly 60 different technologies and standards were recorded as being used throughout the programme’s lifecycle.

In its entirety, the Transforming Curriculum Delivery through Technology Programme provides a rich insight into the ways in which institutions and individual curriculum areas can make best use of technology to respond more robustly to the demands of a changing world.

A partner programme, Institutional Approaches to Curriculum Design, is funded until 2012. Emerging outcomes from both programmes confirm the close inter-relationship between curriculum design and delivery processes. A shared online resource, the Design Studio, showcases the work of the two programmes and provides access to a freely available body of resources.

Find out more
Transforming Curriculum Delivery through Technology Programme
www.jisc.ac.uk/curriculumdelivery
The Design Studio
http://jiscdesignstudio.pbworks.com
Introducing the projects
Meeting the challenges involved in curriculum delivery

On campus

**College of West Anglia**
Funded by Becta, Springboard TV addressed issues of motivation and retention on media courses by remodelling the curriculum around production activities for an internet TV station. Achievement and progression improved sharply, resulting in the college being awarded the Association of Colleges 2010–2011 Beacon Award for Leadership of Innovation in Curriculum Development.

**Kingston College**
KUBE (Kingston Uplift for Business Education) explored the potential of technology to increase engagement on higher education business courses at Kingston College. Outputs such as Curriculopoly [a board game to promote creative use of blended learning tools and techniques], KU Chat [a learner-led pre-induction networking site] and a pedagogic planning toolkit helped embed blended learning more widely across the college.

**University of Exeter**
In response to challenges posed by rapidly increasing numbers and an internationally diverse body of learners, INTEGRATE (Integrative Technologies Project) successfully trialled a range of technologies to create vibrant learning experiences and more efficient administrative practices at the University of Exeter’s Business School.

**University of Hertfordshire**
ESCAPE (Effecting Sustainable Change in Assessment Practice and Experience) responded to national and institutional concerns about assessment and feedback. Using an appreciative inquiry approach, the project helped curriculum teams identify learning-centred assessment practices relevant to their context and discipline.

**University of Westminster**
Making Assessment Count narrowed the gap between learner and staff expectations of feedback by means of a three-stage process first introduced in the School of Life Sciences at the University of Westminster. Managed online by learners, the process prompts deeper reflection on feedback and can lead to better informed dialogue between learners and personal tutors.

The projects took different approaches but shared a common aim: to bring about more relevant, meaningful, appropriate and effective learning experiences.
Beyond the campus

Coventry University
COWL (Coventry Online Writing Laboratory) met the challenge of providing flexible support for academic writing skills by developing a model for personalised remote delivery based on widely available technologies. Access and choice have been improved and a seamless blended learning support environment is now in place.

Kingston University with De Montfort University
MoRSE (Mobilising Remote Student Engagement) combined mobile technologies, social networking tools and a VLE to enhance learning on placements and field trips. The project, which involved employers, staff and learners, used mobile technologies to set up a laboratory ‘in the field’, making learning beyond the institution more authentic and efficient.

Lewisham College
Becta-funded Making the New Diploma a Success enabled Lewisham College to develop a learner portal to provide access from different locations to personalised information and course management tools. Initially designed for the 14-19 vocational diploma, the portal has subsequently revitalised the wider curriculum and increased motivation, retention and achievement.

Outputs range from replicable strategies for stakeholder engagement to innovative approaches to learning, teaching, assessment and feedback

At a distance

The Open University
ATELIER-D (Achieving Transformation, Enhanced Learning and Innovation through Educational Resources in Design) harnessed Web 2.0 technologies to develop an innovative online environment for art and design education, known as the ‘virtual atelier’. Project outcomes have since informed the development of a radically new level 1 Open University course called Design Thinking.

University of Leicester
DUCKLING (Delivering University Curricula: Knowledge, Learning and INnovation Gains) investigated the impact and cost effectiveness of four technologies in work-based distance learning. Podcasting and voice boards offered high value. Despite their initial cost, e-book readers increased flexibility. Virtual worlds, although engaging, carried greater time and cost implications.
The programme encompassed a variety of subject disciplines ranging from hospitality to art and design and medicine.

Middlesex University

ISCC (Information Spaces for Collaborative Creativity) addressed a recurrent challenge for design education: engaging learners in creative conversations. Technology-rich information spaces which support learners in presenting their designs, then capturing and replaying the ensuing discussions, may hold the answer.

University of Bristol

eBioLabs developed online interactive tools to prepare a large and diverse body of learners for laboratory-based work, enabling greater value to be gained from practical sessions. Staff workload has also been reduced by automating processes of coursework submission, marking and delivery of feedback.

St George’s, University of London

G4 (Generation 4) developed interactive online medical scenarios (virtual patients) to enhance problem-based learning in medical education. Designed to promote effective clinical decision-making skills, virtual patients enable learners to consider different options and explore the consequences of their choices in the safety of an online environment.

Newcastle University

Dynamic Learning Maps developed a new way of navigating the curriculum by means of text-based or visual mind maps. Maps can be developed individually or communally and can be extended by connecting topics, adding reflections and personal files. Integration with e-portfolios and feeds from other systems is also supported.

University of Oxford

Cascade harnessed online technologies to respond to challenges posed by a reduction in funding for continuing education. Tutors are now supported in course design by VLE-based exemplars, while learners can enrol, pay fees and submit their assignments within a streamlined online environment.
Exploring the benefits
Efficiency gains, quality improvement

• Streamlined processes
• Quality improvement

The programme’s focus on challenges has ensured its outcomes reflect the real-world issues faced by institutions as they strive to deliver high-quality learning in difficult economic times.

Streamlined processes

The outcomes of several projects indicate that technology improves the efficiency and the effectiveness of institutional processes associated with curriculum delivery. Online services, for example, not only yield cost and time savings but also improve the interaction between institutions and their learners – as demonstrated by Cascade, where the greater convenience of automated enrolment, fee payment, assignment submission and administrative support increased enrolment.

“Between 2007–2008 and 2010–2011, the total number of online enrolment transactions in the first quarter of the year increased by 142%... Growth in financial value was even greater, with a 290% increase over the same period.”

Cascade

Quality improvement

Efficient, integrated systems may also enhance the quality of learning. As well as reducing costs, a single log-in to personalised information such as timetables and records of attendance and punctuality, as provided by eME, Lewisham College’s learning portal, can have a beneficial impact on motivation.

“For students, the most popular and motivating tool has been the instantaneous access to their timetables, attendance and punctuality reports... Registry no longer provides students with printouts but instead points them... to eME. This has also resulted in significant cost savings.”

Making the New Diploma a Success

Several projects indicate that online resources may be key to improving the quality of curriculum delivery to large, diverse learner cohorts. eBioLabs increased the efficiency and effectiveness of laboratory-based sessions by providing interactive preparatory and post-session resources via a VLE. The integrated systems developed as a result of the project supported learners in submitting assignments online and enabled staff to track performance, assess coursework and deliver feedback with greater ease.

“By the end of 2010–2011, eBioLabs will have prepared students for over 35,000 laboratory contact hours and handled more than 22,000 pieces of coursework.”

Key points

• Online systems and processes yield efficiency gains that benefit both institutions and the communities they serve
• Efficient, personalised learning support processes improve the effectiveness of learning

Moving online

“Online processes bring about a more flexible, streamlined working environment for students, tutors and administrators. Our Registry staff deal with approximately 260 course assignments across 48 course cohorts a year. Moving submission online saved 30 minutes or more per assignment – a significant amount of time over a week. Add in student enrolment and fee payment and the department has engineered significant savings in time and costs.”

Sean Faughnan, Project Director, Cascade
Exploring the benefits
Learning and teaching enhancements

- Choice, access and flexibility
- Authenticity and employability
- Assessment and feedback
- Participation, retention and achievement

Enhancing the learning experience was one of the major themes of the programme. Project teams recording challenges of poor attendance, retention and achievement, isolated learner communities, limited response to feedback, or the need to make learning more appropriate and authentic, ranged widely in their search for technology-based solutions. Their requirements included improved access, increased flexibility and choice, and more authentic learning and assessment experiences.

**Choice, access and flexibility**

**DUCKLING, ATELIER-D, MoRSE and COWL** investigated ways of augmenting the experience of learning at a distance, in the workplace, on location or as an extension to face-to-face delivery. Trials of Web 2.0 technologies (**ATELIER-D**) and internet telephony (**COWL**) showed that even disciplines with a tradition of face-to-face delivery, such as art and design and academic writing, can widen access and increase choice by means of online technologies. The experience gained from such innovations can be transferred to other contexts.

"Podcasting proved to be a low-cost, high-value technology in that it helped address challenges without any significant capital or time investment."

**DUCKLING**

The flexible approach taken by the projects contributed to the richness of the programme. Where new technologies did not prove viable, projects often found innovative ways of using existing technologies. More frequently, the technologies

"Increased levels of motivation, engagement and group discussion were reported which are characteristics associated with successful learning."

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The creation of Springboard TV has had a major impact on the motivation and passion of our students for their subject. Springboard TV enabled us to reverse the decline in applications and enrolments, improve the engagement, retention, achievement and attainment of students in the media area.

Ben Jackson, Project Manager, Springboard TV

Key points
- Technology has a key role to play in making learning experiences more flexible, authentic and rewarding
- Learners benefit from working as co-partners with staff to enhance the curriculum

Authenticity and employability

In some cases, the affordances of technology facilitated practices that could not easily be achieved in any other way. This was particularly evident in models of curriculum delivery that aimed to develop workplace skills and increase the realism of the learning experience.

G4, ISSC, MoRSE, Springboard TV and ATELIER-D used technology to replicate real-world practices through which learners acquire workplace skills – for example as film producers [Springboard TV], trainee doctors [G4] or land surveyors [MoRSE]. Outcomes from these projects showed that learner satisfaction increased in line with the authenticity of the learning experience and the greater responsibility and control afforded to learners.

“The Higher Diploma which ran over the full two years of the project saw retention grow from 62% to 92% and achievement from 69% to 73%.”

Making the New Diploma a Success

Participation, retention and achievement

The programme as a whole demonstrated that targeting challenges with pragmatic uses of technology can have a significant impact on the way learners experience and respond to the curriculum. Springboard TV and Making the New Diploma a Success in particular reported significant improvement in retention and attainment as a result of technology-enhanced interventions.

Placement greater responsibility on learners, either as agents of change or as managers of their own learning, may have an influence on such achievements. INTEGRATE recorded benefits for learners from participating in the process of enhancement, for example by researching the effects of the use of technology on their peers.

Assessment and feedback

Enhancing assessment and feedback was the focus of several projects. Making Assessment Count, for example, harnessed simple online tools to promote learner reflection on feedback with the aim of raising achievement. ESCAPE, on the other hand, offered support to staff by means of a toolkit of assessment enhancement activities. In line with the programme’s aims, both projects focused on transforming the learning experience in sustainable ways rather than promoting the use of technology as such.
Exploring the benefits
Transformation

- Institutional change
- Wider influence
- Learner-centred landscapes

Transformative practice demonstrates benefits of a kind that make a return to former ways unthinkable. The term ‘transformative’ may also be applied to innovations that spread beyond project boundaries to change curriculum delivery on a wider scale. The programme provides examples of both interpretations.

Institutional change

The KUBE blended learning planning toolkit changed practice irrevocably in Kingston College by eliminating staff perception of technology as an optional extra. Involving learners in curriculum-related decisions also set a precedent for more active learner participation in curriculum transformation. Benefits from these innovations were visible in learner achievement and satisfaction data thus ensuring their sustainability.

“Students have benefited from the project, with approximately 80% of the first year cohort of full-time students involved... stating that it has increased their motivation to study.”
KUBE

As a result of DUCKLING, five additional curriculum areas at the University of Leicester planned to implement podcasting while, by remodelling the curriculum for media courses, Springboard TV became a similar catalyst for curriculum transformation at the College of West Anglia. Outcomes from the project included the reinvigoration of staff morale and a lasting impact on the way the college communicates with its stakeholders.

“The channel has been adopted by the college as a communication tool and is now central to the college’s marketing strategy.”
Springboard TV

Transforming the learning experience

“I think I might have to say that this has been my favourite day so far. It’s the first time during my whole degree that I’ve gone from collecting data myself to displaying it as a finalised product I created. Basically, the first time I’ve taken the whole GIS process from start to finish all myself!”
Student, Kingston University, MoRSE

Wider influence

Project outcomes in some cases have the potential to change practice on a wider scale. G4 reported that for the first time ‘e-learning had to be taken seriously in medicine and healthcare’ and that benefits might be realised in other disciplines. eBioLabs had a similar story to tell.

“eBioLabs has achieved real transformational change, has become embedded throughout the faculty and is likely to spread further afield.”
eBioLabs

Learner-centred landscapes

The empowerment of learners through technology-enabled innovations is arguably the most far-reaching outcome from the programme. Work by the projects both enhanced learning and placed learners at the heart of curriculum change. Tools and processes to help learners make sense of the curriculum and adopt increasingly more active roles in its development and delivery – as demonstrated by Dynamic Learning Maps and INTEGRATE – are the remaining essential ingredients of sustainable curriculum transformation.

Key points

- Small but crucial interventions can result in transformative effects
- Greater learner empowerment requires an increased focus on digital literacy skills
Achieving transformation

The scope of projects in the Transforming Curriculum Delivery through Technology Programme ranged from small-scale trials in particular modes of delivery or subject disciplines to large-scale departmental or institutional innovations. The strategies developed by the projects to facilitate change are correspondingly diverse.

**Strategies for facilitating change**

- Holding two-day workshops for course teams, subject librarians and learning technologists ([DUCKLING](#))
- Bringing together teaching and e-learning teams for 'visioning days' ([KUBE](#))
- Setting up and sustaining dialogue with key staff ([INTEGRATE](#))
- Taking an appreciative inquiry approach to support staff in enhancing assessment practice ([ESCAPE](#))
- Involving learners in peer mentoring ([MoRSE](#))
- Emphasising gains for hard-pressed staff ([G4](#))
- Engaging senior managers ([Cascade](#))
- Involving learners as change agents ([Springboard TV and INTEGRATE](#))
- Developing a board game to promote staff engagement with blended learning ([KUBE](#))
- Using social networking tools to establish online communities ([ATELIER-D](#))
- Communicating the purpose behind the use of technology ([ISCC](#))
- Using scorecards to check the balance between key elements ([COWL](#))
- Engaging laboratory assistants in learner observation ([eBioLabs](#))
- Outsourcing VLE management to free up technicians' time ([Making the New Diploma a Success](#))
- Setting up drop-in help facilities for learners ([Making Assessment Count](#))
- Using learners as co-designers and evaluators ([Dynamic Learning Maps](#))
- Creating teaching fellowships to support innovation by curriculum teams ([DUCKLING](#))

The projects embarked on their own unique journeys supported and guided by expert advisers and project group facilitators, the critical friends appointed to the programme. Although approaches differed, project teams progressed through four interconnected stages, with stakeholder engagement at the heart of the change management process.

"Persuasion is an absolutely indispensable component in any form of change management exercise."

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"Change happens one conversation at a time."

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"The work has real meaning when students are embedded in the process."

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“Learning technologies are not pedagogically neutral... it is important to establish the purpose(s) and approach to be taken.”

Professor Peter Chatterton, Critical Friend to the JISC Transforming Curriculum Delivery through Technology Programme

“Students are the best quality controllers. Give them every opportunity to feed back where improvements can be made.”

eBioLabs

“The presentation of research evidence in a variety of formats has enabled others... to adapt and test the ideas in their own courses.”

DUCKLING

“One of the most important achievements of the programme was to instil into institutions the importance of sustaining and embedding their projects. Project teams overcame barriers to sustainability by developing internal and external collaborations and partnerships, using change management techniques and aligning project outputs with institutional strategies, processes, systems and services.”

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DUCKLING
The Design Studio is a dynamic, wiki-based toolkit which draws together a range of existing and emerging resources to provide a valuable insight into the effective use of technology in curriculum design and delivery processes. An unrivalled source of ideas, guidance, evidence of impact and sharable resources, the Design Studio is aimed primarily at curriculum teams and the managers and staff who support their work. Thus resources in the Design Studio will have particular relevance for:

- Senior curriculum managers
- Educational developers and staff development teams
- Quality enhancement teams
- Library, information and IT services
- Learning and teaching committees
- Student services and guidance teams
- Administrative and marketing teams

The Design Studio is under continuous development as resources and outputs emerge. Maintained by JISC infoNet, which leads the Support and Synthesis project for the two programmes, the Design Studio will continue to be sustained as a community resource after the programmes end.

http://jiscdesignstudio.pbworks.com

Resources from the JISC Transforming Curriculum Delivery through Technology Programme available in the Design Studio include:

- Implementation guidance
- Lessons learnt
- Transformation stories
- Learning designs
- Models and frameworks
- Information on technologies, systems and software
- Toolkits
- Case studies
- How-to guides
- Posters
- Video tours
- Activities

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The JISC Transforming Curriculum Delivery through Technology Programme is supported by a network of organisations and community experts participating in a Support and Synthesis project led by JISC infoNet in partnership with other JISC Advance services, JISC CETIS and the Higher Education Academy.

JISC e-Learning Programme
www.jisc.ac.uk/elearningprogramme

JISC Institutional Approaches to Curriculum Design Programme
www.jisc.ac.uk/curriculumdesign

JISC Transforming Curriculum Delivery through Technology Programme
www.jisc.ac.uk/curriculumdelivery

Programme Support and Synthesis Project
www.jiscinfonet.ac.uk/curriculum

Programme Synthesis Report: Curriculum innovation - pragmatic approaches to transforming learning and teaching through technologies
www.jisc.ac.uk/curriculumdelivery

Sustaining and Embedding Innovations: Good practice guide (JISC 2011)
http://sustainembed.pbworks.com

The Design Studio
http://jiscdesignstudio.pbworks.com

JISC Advance
www.jiscadvance.ac.uk

JISC CETIS
http://jisc.cetis.ac.uk

JISC infoNet
www.jiscinfonet.ac.uk

The Higher Education Academy
www.heacademy.ac.uk

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