



RESEARCH ON TECHNOLOGY ENHANCED LEARNING¹

Understanding, creating, and exploiting digital technologies for learning

SECOND CALL FOR RESEARCH PROPOSALS

Summary

1. Outline applications are invited under the second call of the Teaching and Learning Research Programme's Technology Enhanced Learning Phase (TLRP TEL). The aim of the call is to support innovative interdisciplinary research collaborations focusing on the creation, development and exploitation of digital technologies for learning through a better understanding of their capability to transform the quality of learning experiences and lead to enhancements in learning outcomes. Proposals addressing 4 key research challenges on technology enhanced learning -Productivity, Personalisation, Inclusion and Flexibility – are sought. This £6m second call is being funded by the ESRC and EPSRC, in partnership with the e-Science Core Programme, JISC and Becta.
2. To be eligible for funding under this competition, applications *must* be interdisciplinary and demonstrate significant added value from the *integration* of research perspectives from both the social and the technological sciences. Proposals *must* combine substantive inputs and expertise drawn from *across* the fields of research traditionally supported by ESRC and EPSRC to address one or more of the 4 key research challenges outlined in the full specification.
3. User engagement and partnership throughout all stages of the research and the support of fundamental research and innovation through to effective application and use in relevant learning contexts are key aspects of this Call. Applicants will be expected to build such considerations into their research design and to include a communication and knowledge transfer strategy within their full proposals.
4. Funding of approximately £5.5m (at 100% full economic costs) is available to support research projects under this call as a part of this £6m second phase. Outline research applications are invited for up to £1.5m (100% FEC of which the funders will meet 80%) and periods of up to 4 years to start from summer 2008 onwards. It is expected that a mix of smaller and larger projects will be supported as follows:
 - i) smaller projects (e.g. between £100k and £500k at 100% FEC), for example, to support newer inter-disciplinary teams at a more formative and/or experimental stage in the development of their research ideas;
 - ii) larger projects up to £1.5m at 100% FEC, for example, from more established

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inter-disciplinary teams seeking to develop their partnership in innovative directions or from teams seeking to build on innovative exploratory work and take it forward to the next stage in its research development.

5. Applications may be submitted by researchers based at any UK higher education institutions or other independent research organisations eligible for ESRC or EPSRC managed mode research funding. Consortia, may involve, but are not required to involve, more than one UK HEI (or eligible independent research organisation). Applications involving partners in other education and/or training organisations and/or technology design organisations, as appropriate, are encouraged.
6. Proposals must be submitted through the Joint Electronic Submission System (Je-S) by 4:00 p.m. on the closing date of 12 July 2007. The outcomes of the Panel's assessment of outline proposals will be announced in late September 2007. Full proposals are expected to be due on 27 November 2007.

Teaching and Learning Research Programme: Technology Enhanced Learning² **Second Call for Proposals**

CONTEXT, AIMS & PRIORITIES FOR THE SECOND CALL

Context

1. E-learning, or technology enhanced learning (TEL) has been identified as being of key importance for the UK government and there are official strategies in relation to particular educational sectors in Northern Ireland, Scotland, Wales and England. This programme of research will build strong conceptual foundations in an area that is recognised as crucial to the future of learning in the UK but which also has global implications. A number of documents considered in the preparation for this Call are listed in the Annex. Other links are provided at the TLRP TEL Virtual Research Environment (<https://groups.tlrp.org> - joining instructions are included in the Annex).
2. Technology is now a common aspect of learning and everyday life. In 2005, for example, 68 per cent of 15 year olds reported using a computer frequently for school work, with larger numbers routinely using ICT for entertainment and communication. Furthermore, in all sectors over the last five years there has been a rapid increase in the provision and use of technology to support learning. Since 2002, for example, the use of subject-specific software in schools has more than trebled (over 30 per cent of teachers now reporting regular use). In Further Education there has been a 10 per cent growth each year in the number of colleges delivering a broad range of activities through learning platforms (now over 60 per cent). And in Higher Education over 9 in 10 institutions report delivering substantial amounts of teaching materials in this way.
3. The 'Digital economy', in its broadest sense, covers the range of processes, mechanisms and facilities that support economic and societal activities based on digital transactions, as addressed in the Government's Technology Strategy (<http://www.dti.gov.uk/innovation/technologystrategy/tsb/index.html>). Research required must develop concepts, infrastructures, and understandings of the co-evolution and social shaping of technologies and their potential application and use, which provide the basis for creating products and services to support the digital economy. Studies indicate that the absence of a research capability impedes uptake and thereby constrains economic growth.
4. The 'Digital Economy' Programme, led by the EPSRC, and supported by ESRC and the other Research Councils, aims to accelerate the transformation of the relevant fundamental research to applications that will have economic and societal benefits. The current EPSRC/ESRC investment in 'Technology Enhanced Learning'

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constitutes not only an integral part of the 'Digital Economy' Programme but also epitomises the type of application area into which interdisciplinary and user-centred ICT research can impact upon.

5. This research Call takes place against a background of significant developments in advanced ICT techniques. They are establishing an advanced e-infrastructure that includes the virtualisation of computational and data resources, the automated processing, integration and reuse of information through Semantic Web technologies, support for knowledge sharing and distributed team-working, and new mobile and ubiquitous computing systems. A computer science research agenda which is applicable to technology enhanced learning includes personalised tools, services and environments, context-aware computing, mobile computing, enhancement of collaboration and workflow tools and services, autonomic (self-managing) systems, human computer interaction and context-aware computing amongst others.
6. Every member state of Europe now has an e-science programme, and the EC IST programme supports concertation activities in areas such as Semantic Grid and standards. The US cyber-infrastructure has also been influential (e.g. NSFALT http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12834). These meet internationally through community efforts such as the Open Grid Forum (OGF) and nationally through the network of e-Science centres and the e-Social Science community.
7. Such new developments stand to benefit the entire learning technology lifecycle, starting with the conceptualisation, design and development of systems and content to support learning experiences and opportunities, through to deployment, maintenance, evaluation and reuse. Importantly, they can support practitioners and stakeholders at each stage including teachers, learners, administrators, researchers and service providers.
8. Collaboration across disciplines in the academic community indicates a willingness to understand the bigger picture in pursuit of innovative, creative and exciting solutions to supporting learning across contexts, cultures and age groups. The funding bodies are keen to support interdisciplinary collaboration which will produce high quality research and contribute to innovative, creative and exciting solutions to supporting learning across contexts, cultures and age groups.

The Teaching and Learning Research Programme

9. Given the need to bring together understandings of both learning and technology and draw on perspectives from the social, cognitive and technological sciences, ESRC is leading the TLRP TEL phase, in partnership with EPSRC and close collaboration with other partners including JISC, Becta and the HEA. The TEL initiative will be managed as a further phase of the TLRP and award holders will be expected to make a significant contribution to the Programme.
10. The *Teaching and Learning Research Programme* (see www.tlrp.org) is a £40m initiative involving, at present, some 500 researchers. Previous phases of the Programme have been funded by the HEFCE, DfES, Scottish Executive, National Assembly for Wales, Northern Ireland Executive and the ESRC. Through its research,

it aims to improve outcomes for learners of all ages in teaching and learning contexts across the UK. The Programme manages almost 70 projects and also coordinates a number of thematic investments. It has strong links with many user organisations and has established a significant range of output vehicles for dissemination and impact. The Programme aims to be interdisciplinary and support the development of research expertise and capacity in teaching and learning. TLRP is managed by a Directors' Team of five part time academics. A new TLRP Associate Director for TEL, to lead and support this technology enhanced learning phase is currently being appointed as a part of this second phase of activity. The new Associate Director will work closely with the current TLRP Director, Professor Andrew Pollard, and TLRP Directors' Team.

11. Proposals should show awareness of TLRP's core objectives and of the potential for liaison with existing projects and thematic developments where appropriate. Successful applicants will be expected to collaborate fully with the TLRP Directors' Team and to participate in Programme activities throughout the life of the Programme, including those arranged as a part of the Programme's Communication and Impact Strategy. They will be required to produce an annual progress report for consideration by the Directors' Team and Steering Committee and a final end of award report which will be subject to interdisciplinary peer review through ESRC's evaluation procedures.
12. Under the first TLRP TEL call 7 development awards were supported and 3 large research grants. Further details of funded projects are available on the TLRP website at <http://www.tlrp.org/proj/tel.html> . Proposals under the second call should complement the three large grants funded under the first call. Applications addressing other sectors, challenges, contexts and issues will be welcomed. Holders of development awards under the first phase are eligible to apply for follow-up funding under this second call but their applications will be considered in open competition with other proposals. Applicants do not need to hold current funding under the TLRP TEL to apply under the second call which has been designed to support new and innovative inter-disciplinary research partnerships as well as more established teams.
13. Applicants under the first call are welcome to apply under the second call. However, proposals which were unsuccessful under the first call should only be resubmitted if substantially revised, taking into account where appropriate any feedback received on the first proposal; it is expected that the composition of research teams, aims, objectives, methodology, approach (e.g. to assessment of impacts on learning outcomes), inter-disciplinary integration, user engagement and dissemination plans will have been revised where necessary. A short (up to 1 side of A4) summary the changes made to the original proposal should be appended to the outline proposal as an annex. Applications judged not to have been significantly revised will not be accepted for processing.
14. The future development of TEL within TLRP will be designed to maximize synergies and added value both within and beyond the Programme. There will be activities to embed the new phases within TLRP's previous work, but also to expand the latter to embrace new communities and ideas from e-learning, computer science, etc. Capacity building activities across the interdisciplinary field will thus remain a priority. An expansion of the project portfolio is also expected, beyond the projects

funded via the first TEL call and to be commissioned under this second call. Two proposals currently under consideration include: First, subject to confirmation of funding it is hoped to run an 'Ideas Factory / sandpit' type event ³, following the completion of the second phase (probably during 2008/9) to support capacity building in one or more key remaining areas within the TEL field; this is likely to lead to funding of 1-5 further projects. Second, TLRP's 'Associated Projects' scheme, in which projects funded elsewhere become embedded within the Programme for mutual benefit, will be used to engage with a similar number of projects. The total TLRP TEL cluster of projects may thus ultimately exceed a dozen.

Aims and Scope of the Call

15. *Definitions:* Within this Call 'technology enhanced learning' (or e-learning) is intended to cover the co-evolution of understanding of advanced digital technologies and learning or the support of learners in informal and formal settings. 'Learning outcomes' may be interpreted broadly. For instance, it includes both the acquisition of skill, understanding, knowledge and qualifications and the development of attitudes, values and identities relevant to a learning society.
16. *Aims:* This call is designed to support innovative interdisciplinary research collaborations focusing on the creation, development and exploitation of digital technologies for learning through a better understanding of their capability to transform the quality of learning experiences and lead to enhancements in learning outcomes. Projects selected for funding are likely to entail greater risk or require more analytic depth than the normal operation of the technology enhanced learning market would provide.
17. *Interdisciplinarity:* *Authentic* interdisciplinary integration and innovation is sought. The research questions central to this call require interdisciplinary teams that bring together understandings of both learning and technology and draw upon perspectives from many disciplines in the social, cognitive and technological sciences. True interdisciplinarity should go beyond mere collaboration. Exposure to the concepts, ideas and methodologies of other disciplines should change the way researchers think about their own discipline. The focus for applications should explicitly remain on the complex research questions that are challenging enough to need high level innovation from a *combination* of such disciplines.
18. *Software outputs:* Software outputs generated under this call will normally be open-source unless a case is made to the contrary, where clear benefits of not being open

³ For further information about Ideas Factory activities funded by the EPSRC and ESRC, see www.epsrc.ac.uk/ResearchFunding/Programmes/Cross-EPSRCActivities/IDEASFactory/default.htm

and

www.esrcsocietytoday.ac.uk/ESRCInfoCentre/opportunities/current_funding_opportunities/corporategovernanceideasfactory.aspx

- source are clearly articulated. Applicants must also specify what licence the outputs will be released under in their application. Successful applicants will also have articulated a strategy for the sustainability of outputs beyond the life of the project.
19. *User engagement, knowledge transfer and impact:* Users, stakeholders and potential beneficiaries should be engaged with the research at all stages, including conceptualisation and design, and may be members of consortia. Recent educational research on TEL has found that teachers, lecturers and trainers continue to be centrally important in designing and supporting learning with digital technologies. The potential of these technologies will not be realised unless the role of teachers, lecturers and trainers is taken into account in the plans for take-up of the research, either as mediators or as end-users of the tools, resources, and research outcomes being developed. Applications should demonstrate anticipated strategies for knowledge transfer, application and renewal to high leverage bodies related to the education professions, the learning technologies industry, policy-makers and the wider economy. Whilst TLRP TEL first round projects are concentrated at English HEIs, this funding initiative remains a UK wide opportunity.
 20. *Cumulation of knowledge:* Applications will be expected to draw on and extend existing knowledge in relevant fields of academic scholarship both in the UK and beyond. Potential applicants may wish to review the issues being studied and the findings being generated by other recent investments in e-learning and education by funders such as: JISC, HEFCE, SFC, WAG, DENI, HEA, DfES, Becta, NESTA, AHRC and the EU as well as EPSRC, ESRC and TLRP (see the Annex). Where appropriate, applications will be expected to engage with other relevant research and development initiatives and such bodies as the e-Learning research programmes of JISC, Becta, and HEA, the UK e-Science community (for example, through the network of e-Science centres including the National e-Science Centre in Edinburgh), the e-Social Science community (through NCESS), the work of the Joint Information Systems Committee (for example, by building on the work undertaken through JISC development programmes) as well as the international community, through, for example, the Open Grid Forum).
 21. *Sectoral foci:* Proposals may focus on any single age or stage of learner or could draw across different sectors, subject disciplines, age-groups, and places of learning, including informal and community-based learning, workplace learning, and home-based learning. While proposals may focus on one sector or discipline initially, they are encouraged to extend the application beyond this, given the commonality of TEL issues across education, and the transition of learners themselves across sectors and disciplines. Expected audiences and the intended benefits must be clearly identified. In the first TLRP TEL competition, awards were made to two large projects associated with Key Stage 3 schooling and to one focused on higher education. TLRP remains committed to studying learning across the lifecourse. The sectoral balance of the portfolio will be considered before final decisions about the second round are taken.
 22. *Capacity building:* This funding initiative is intended to support UK academic communities and their user partners in building sustainable capacity for

interdisciplinary research on technology-enhanced learning. Applicants are asked to demonstrate how their proposals will contribute to the development of research capacity in the field of technology-enhanced learning and to consider how this may be sustained beyond the lifetime of the project. In addition to supporting the career development of researchers, applicants may wish to consider ways of providing structured development and training opportunities for teachers, other education professionals, policymakers and representatives from industry, either as researchers or in other capacities. These opportunities could include mentoring schemes, internships, studentships, the use of accredited courses and other approaches to CPD (continuing professional development). Capacity building activities may be directed at all stages of the research process and could include the development of new tools and resources for training purposes or events designed to facilitate a better understanding of the challenges involved in interdisciplinary research.

23. The initiative also aims to exploit synergies with other activities in this area. For example, the Grand Challenges in Computing: Learning for Life (GC8) recognises the need to promote partnerships between those who develop technology and a broad range of social science researchers who seek to understand the nature of learning and the interaction and organisational effects of technology. The Grand Challenge seeks to organize activities to support the development of such partnerships, and contribute to the capacity building in this area, see: http://kn.open.ac.uk/workspace/gccr_l4l/index.cfm
ESRC are also involved in a number of related initiatives in relation to research capacity building, see, for example:
ESRC National Centre for Research Methods (NCRM) <http://www.ncrm.ac.uk/>
ESRC Researcher Development Initiative (RDI) initiative: <http://www.rdi.ac.uk/>
ESRC Research Methods Programme: <http://www.ccsr.ac.uk/methods/>
24. *Substantive foci:* Applications under this Call should consider how technology enhanced learning can contribute to one or more of the challenges to the research community identified for this Call: *Productivity, Personalisation, Inclusion and Flexibility*. In addressing these challenges, all domains of learning are of interest, including curricular subjects and disciplines associated with formal educational settings and the knowledge and skills called for in workplaces and informal settings across the lifecourse, including community-based learning and learning at home. The overall portfolio of successful investments is expected to address a wide range of types and contexts of learning.

Research challenges

25. The call's encouragement of a focus on 'learning outcomes' requires serious consideration and will need explicit attention in any research design. It may be helpful to consider the following questions:
- Whose learning outcomes are to be enhanced?
 - What is the nature of the learning outcomes which are targeted?
 - What form of intervention is planned to enhance learning outcomes?

- What is the nature of the evidence which will be collected in respect of these outcomes?
- How will such evidence be analysed in respect of learning outcomes?
- What provisions are to be made in the research design to support conclusions about the effectiveness of the intervention, rather than the influence of any other factor?

For a helpful analysis of early TLRP experience on such matters, see *The Curriculum Journal*, Vol 16, No 1, March 2005.

26. The four substantive research challenges, as described below, are intended to focus the TLRP TEL portfolio on a number of key strategic issues where there is a need for interdisciplinary insights. However, the text describing each challenge is not meant to be prescriptive. Innovative proposals approaching these issues in different ways are welcome. The themes should not be seen as being mutually exclusive and bids may address more than one theme.

Productivity: Achieving higher quality and more effective learning in affordable and acceptable ways

27. There are multiple expansionist pressures on all sectors of education: to extend their reach, widen participation, and improve levels of attainment. Technology can enhance productivity in education in many ways. It may support greater output for the same level of resource input by achieving economies of scale, more choice in what and how to learn, higher attainment, more active learning. It may support better ways of working for both teachers and learners that enable them to use their time more efficiently.

Research under this heading might assess, for example, the extent to which both learners and teachers can achieve more with the time they invest, the longer term sustainable economic use of technology enhanced learning, socio-cultural processes of adoption in formal and informal education and training, or the transitions between them. The intention is to inform the development of practice, innovation, and investment policy. In particular, proposals are invited which contribute towards an evidence-informed analysis of the benefits and costs of personalisation of learning through technology across the life-course.

28. We look for proposals that tackle the interdisciplinary research challenges that will contribute to achieving such objectives e.g. proposals that:
- investigate and develop the social and cultural conditions and technological environments most likely to improve productivity of practitioners' and learners' time by, for example, facilitating reuse, collaborative development and sharing of technology enhanced learning resources, and by improving the personalisation of the learning experience;
 - build economic modelling practice capable of assessing the principal forms of value offered by the most innovative technology enhanced learning against realistic costing models, to inform evaluations of investment returns and future

investment policy for technology enhanced learning;

- exploit the rich potential of TEL systems for dynamic, interactive information re-representation, multiple representation and information design
- develop our understanding of the characteristics of institutional infrastructure that encourage sustainable mainstream innovation in new ways of balancing face-to-face and online teaching methods.

Personalisation: Transforming the quality of learning, teaching and assessment by exploiting the responsive and adaptive capabilities of advanced digital technologies to achieve a better match with learners' needs, dispositions and identities.

29. Research under this theme will explore how digital technologies can help to match the needs, abilities, aspirations, and circumstances of learners and learning communities through personalised technology and services in order that more learners are able to achieve a higher order of learning outcome, especially at basic skills levels and at higher levels. It will explore issues such as how technologies can be developed and used to connect learners to networks of others and to derive social support in learning processes and to enable learners to make informed choices about their own learning and to learn where, when and with whom they want, in ways that suit their approaches to learning and learning identities. Approaches to providing learners with easy access to a personal learning environment that offers culturally, educationally and psychologically appropriate tools, resources, and support for their learning will be explored. The use of new technology for innovative forms of assessment for learning may be a topic for investigation.
30. We look for proposals that tackle the interdisciplinary research challenges that will contribute to achieving this objective to a degree that would be impossible without technology enhanced learning, e.g. proposals that:
- use an understanding of the implications of personalised learning to investigate innovative solutions for new areas of curriculum development, and for new and more challenging forms of assessment for learning.
 - develop the interoperability standards and technologies needed to achieve seamless and personalised support for learners at any stage in their formal and informal learning, e.g. new forms of naturalistic multimodal interfaces to improve the quality of on-line communication and collaboration; new techniques for augmented individual and social cognition;
 - use research into learning strategies and other approaches to learning, user profiling, recommender systems, learner modelling, and personal development planning, to support effective tools and services that are capable of matching individual needs, abilities, interests, dispositions and identities, and of yielding a higher level of personal performance;
 - link an understanding of the social and cultural benefits, and the associated challenges of safety, security and privacy, of personalised learning to innovative technical solutions;

- develop ways of networking individuals and groups of learners to achieve new, socially appropriate forms of challenge and support in learning;

Inclusion: Improving the reach of education and lifelong learning to groups and individuals who are not best served by mainstream methods.

31. This theme will explore how digital technologies can be used to support learners who are exceptionally talented, who have become disaffected from learning, who have special educational needs or who are otherwise unable to study to achieve enhanced learning outcomes and progression. How can technology enhanced learning excite and stretch high achievers; motivate excluded learners through more engaging learning experiences, scaffolding progress into more challenging learning opportunities; provide greater accessibility to learning technologies for learners with physical disabilities; support learners with cognitive disabilities to enable them to achieve their learning potential; provide higher quality access to learning for learners at times and places of their choice, in association with appropriate others, at any stage of learning?
32. We look for proposals that tackle the interdisciplinary research challenges that will contribute to achieving such objectives through technology enhanced learning, e.g. proposals that:
 - bring experts in mobile and pervasive computing together with social science researchers and educational designers, to envision new environments for learning that allow people of all ages, backgrounds and capabilities to learn where, with whom and when they have a need or curiosity, e.g. developing and testing new, context-aware, mobile technology, or the design of learning spaces in museums, parks, heritage centres and rural or urban environments that support people's personal learning projects;
 - develop accessibility technologies that are straightforward to adopt, and will enable TEL systems to diagnose responses and adapt to all learners, whatever their access, learning needs and circumstances;
 - develop the design principles and prototypes that will help disaffected learners or those with cognitive disabilities to make faster progress and achieve greater accomplishment of basic skills and concepts, than may be possible otherwise;
 - build on research in cognitive science, teaching, learning and assessment, and the practice of digital content design for games, simulations, creative tools, etc, to develop design principles, learning formats, and prototypes to help progress towards a generation of TEL products which are capable of high levels of differentiation in learning challenge and which engender strong learner engagement.

Flexibility: Enabling the provision of education and skills to be deployed in more open, variable, and accessible ways, so that learning opportunities are available in a more seamless environment that can link classroom, home, workplace, and community.

33. This challenge is concerned with how users (learners, teachers, support staff, curators, curriculum designers, system designers and builders) can be supported to deploy

advanced digital technologies for their own purposes in schools, colleges, universities, the workplace, communities, or at home, to create personally meaningful and rewarding learning experiences. Research could examine, for example, how teachers and support staff can be supported to collaborate across sectors in communities of practice facilitated through advanced technology applications.

34. We look for proposals that tackle the interdisciplinary research challenges that will contribute to achieving such objectives through technology enhanced learning, e.g. proposals that:

- develop new techniques and metaphors to understand and support learning communities combining both human and computational agents, including the discovery of new learning communities, support for community memories, new forms of augmented cognition, theories and techniques to allow learning and reasoning over uncertain and incomplete knowledge;
- use innovative forms of computer-supported collaboration to build tools, methods and techniques to support the design, development and deployment of large-scale learning facilities, to support teachers and learners collaborating and sharing across different learning facilities at varying scales, from personalised learning structures to larger organisational, disciplinary, cross-cultural, and international structures;
- explore new forms of naturalistic and multimodal interface that can support distributed, transient and mobile communities of learners, whether at a distance, or co-located, synchronous or asynchronous, through a variety of different interaction devices;
- develop the educational and learner-focused requirements for the design of open TEL architectures, a common core of technical standards for all publicly and privately funded technology enhanced learning, and the means and methods to cope with legacy systems, and support re-usability;
- take advantage of open source methods to share software innovation and development with the wider, interdisciplinary community;
- exploit the rich potential of TEL systems for dynamic, interactive information re-representation, multiple-representation and information design.

Teaching and Learning Research Programme: Technology Enhanced Learning⁴ Second Call for Proposals

Funding Available, Application Procedures and Assessment Criteria for the Second Call

Funding available

1. The funding bodies have provided approximately £6m funding to support the second call for proposals under the TEL Phase of the TLRP of which approximately £5.5m is available to support projects under this call at 100% of the full economic costs. Funding will also provide support for appointment of an Associate Programme Director for TLRP TEL Phase and related Programme-level communication, impact and capacity building activities. It is hoped to support both established, large-scale interdisciplinary groups (perhaps including those derived from TEL1 developmental funding) and also new teams at a more formative stage of work. It is therefore anticipated that funding will support approximately 3-4 large projects and perhaps 3-5 smaller projects. Applications for smaller and larger projects will be considered in competition and there is no ring-fenced budget for small or large projects; the final mix between smaller and larger projects will depend on the relative qualities of those applications. In both cases, teams or consortia should be adventurous and able to demonstrate clear interdisciplinary potential and strong user partnerships.
2. Outline research applications are invited for up to £1.5m (100% FEC of which the funders will meet 80%) and periods of up to 4 years to start from summer 2008 onwards. Applications may be for:
 - smaller projects (e.g. between £100k and £500k at 100% FEC), for example, to support newer inter-disciplinary teams at a more formative and/or experimental stage in the development of their research ideas;
 - larger projects between £500k and £1.5m at 100% FEC, for example, from more established inter-disciplinary teams seeking to develop their partnership in innovative directions or from teams seeking to build on innovative exploratory work and take it forward to the next stage in its research development.

In both cases, budgets should be for 100% of full economic costs at current prices of which the Research Councils will meet 80% and for periods of up to 4 years (see ESRC Funding Rules 3.1.2 at <http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/opportunities/research%5Ffunding/>). The limits above relate to the 100% FEC figure, including any requested studentships (see below) and not to the 80% FEC RC contribution figure. Applications above £1.5m 100% FEC will not be considered.

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3. Collaborating partners could be within an institution, or come from other education and training organisations, or where appropriate, from the digital technology industry or existing TLRP projects. Proposals involving co-funding or contributions in kind to the research will be welcomed. Where appropriate, the costs incurred by user partners in contributing or carrying out the research may be included in the proposal where this is integral to the research design. Research consortia are not required to be multi-institutional, but must be interdisciplinary and include appropriate arrangements for engaging with 'user' partners. Education and training organisations could for example provide essential expertise and experience, perspectives on user requirements and fieldwork testing opportunities. The exchange of knowledge between all participating partners in a project will be one of the expected outcomes and applicants should describe how this will be supported.
4. Applicants for research projects of three years or more proposed duration may wish to include provision for linked interdisciplinary doctoral studentships provided that the outlet at which they would be based is eligible to receive either EPSRC or ESRC studentship funding. Up to three studentships can be applied for on any single application. It must also be clear that the studentship is not displacement for the normal research support required on the grant. The student must have a distinct, independent, interdisciplinary area of enquiry that will add value to the overall research objectives of the grant. The case for such a studentship will need to be set out in an additional section in the Je-S full proposal. Such students will also be expected to complete their PhD within four years, as with ESRC standard studentships. Studentships are not costed under FEC arrangements, but if awarded, the grant will meet the full 100% cost of the normal provision. Further information on applying for linked studentships can be found in the ESRC guidance notes at: http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/opportunities/current_funding_opportunities/ The cost of any requested studentships must be included within the £1.5m 100% FEC limit for applications under this call.
5. There will be one optional Briefing Meeting convened by the TLRP Director. For further information on this, please see: <http://www.tlrp.org/tel2/index.html>.
6. Applicants are advised to check the eligibility of any costs requested under ESRC Research Funding rules (available from the ESRC website) before applying.
7. Normal ESRC Research Funding rules will apply to all awards.

Development of Proposals

8. This competition will take place in several stages, as follows:

Stage 1: Announcement of Call. Briefing meeting.

Stage 2: Closing date of 4:00 p.m. on 12 July 2007 for outline proposals for projects from interdisciplinary project teams or consortia (with likely partners indicated)

Stage 3: Shortlisting of outline proposals for submission of full proposals by inter-disciplinary academic and user panel (September 2007)

Stage 4: Closing date of 4:00 p.m. on 27 November 2007 for shortlisted full proposals

Stage 5: Peer review of proposals, applicant responses to referees and funding recommendations made in March 2008

Assessment of Applications

9. Outline proposals will be considered by an expert interdisciplinary commissioning panel. The panel will comprise members of the TLRP Steering Committee and external experts in technology enhanced learning chosen by ESRC and EPSRC from both the research and user communities (representatives of funding bodies will also attend in a non-voting capacity). The Panel will make recommendations on which outline applications should be shortlisted for the submission of full proposals. Shortlisted full proposals will be assessed by referees selected jointly by the ESRC/EPSRC in consultation with other partners as appropriate using ESRC's standard peer review procedures. At least one of these referees will be chosen from amongst those nominated by the principal investigator. Proposals will then be considered by the commissioning panel which will make recommendations to the Councils on the priorities for funding.

10. When considering applications particular attention will be paid to the following research criteria:

Contribution and fit to the TLRP TEL Call. Does the proposal display an appropriate fit to the overall aims of the TEL Call? Is there creative engagement with the challenges to research defined in the TEL Call? Have learning outcomes been considered appropriately?

User engagement and partnership. Does the proposal include strong collaborative partnerships and appropriate user engagement with relevant policy-makers, practitioners and potential adopting organisations throughout all stages of the research? Is there evidence that relevant partners have been engaged, as appropriate, in the development of the proposal?

Interdisciplinarity. Has interdisciplinary collaboration and integration between the social and technological sciences been successfully established within the research design? Does the proposal make a good use of the opportunities to achieve added value through interdisciplinary collaboration in ways which make a significant contribution to the development of interdisciplinary research in the field?

Contribution to knowledge. Is the proposal grounded in a thorough review of the extant literature and complementary initiatives in relevant fields? Does the proposal have a coherent theoretical and analytical framework? Is it likely to make a significant contribution to the development of the current interdisciplinary research knowledge base?

Research Teams and Project Management. Does the proposal indicate that

the project team or consortium has the skills, expertise and time necessary to bring the research to a successful conclusion? Does the proposal have a clear, well-designed and robust project management structure capable of supporting the proposed partnerships, interdisciplinary integration, successful collaboration, and delivering on the specified work programme?

Research Design and Methods. Does the proposal clearly and fully describe a research design and schedule appropriate for the achievement of the stated research objectives? Is the project time-scale appropriate to the research design? Are there rigorous methods for assessing learning outcomes (broadly conceived)? Are there realistic proposals for data collection and data analysis? Has careful consideration been given to ethical issues? Has an appropriate risk analysis been conducted? Has the potential use of technology for research innovation been considered?

Contribution and fit to TLRP. Does the proposal display awareness of the overall aims and objectives of the TLRP? Where appropriate, does it attempt to build on existing work from the Programme? Is there a thoughtful commitment to active participation in the Programme as a whole?

Contribution to Research Capacity Building. Is there a commitment to helping to build research capacity in interdisciplinary research in the field of technology enhanced learning?

Communication, Knowledge Transfer and Impact Plans. Is there a well-developed project communication and impact plan, which would make a significant contribution to knowledge transfer? Is there a clear statement of the anticipated outputs appropriately targeted at a range of potential academic and non-academic audiences? Is there a coherent strategy for addressing sustainability and for maximizing the chances of product adoption, where appropriate?

Value for money. Does the research represent value for money relative to the likely outcomes? Are the resources requested necessary and adequate for the effective conduct of the research as outlined, including proposals for communication and impact?

Submission of proposals

11. Applicants are required to submit their application using the correct outline proposal template on the Research Councils Joint Electronic Submission system (Je-S). Postal or other forms of submission are not possible.
12. If you and your research organisation are already registered for Je-S, electronic applications can be accessed via the central Je-S web site at <https://je-s.rcuk.ac.uk/>.
13. Organisations wishing to register for Je-S should contact Je-S Helpdesk at JeSHelp@rcuk.ac.uk Tel: 01793 444164 (open 9:00 a.m. to 5:00 p.m. weekdays, except holidays). Users wishing to access the Je-S system for the first time are asked to check with their central administration on the status of the organisation's Je-S registration

before pursuing the option of creating an account through the Je-S system. Non-JES registered users are urged to ensure that they are registered at an early stage well in advance of the closing date and not to leave completion of the application and submission through the Je-S system too close to the deadline.

14. Please read all instructions / help text when using the Je-S system this form. If you require technical support on the use of Je-S please contact the helpdesk (see contact details above). The Je-S helpdesk should also be the first contact point for queries regarding the move to full economic cost proposals. Please note that this helpdesk can only address technical questions relating to use of the Je-S system and the introduction of FEC.
15. Questions regarding the commissioning process or other research council queries should be addressed to gary.williams@esrc.ac.uk
16. **Electronic submissions must be dispatched to the ESRC through JES for receipt by 4.00 p.m. on 12 July 2007. Please note that hard copies are NOT required.**
17. This deadline will be strictly enforced. It will not be possible to submit outline proposals under the call through Je-S after the closing date. Applicants are strongly advised not to leave completion and dispatch of applications to the last minute.

ANNEX: Links

A number of documents were considered in the preparation for this Call. All of these reports are available for download from the TLRP TEL Virtual Research Environment (VRE) at <http://groups.tlrp.org>

To join the TLRP TEL VRE, go to groups.tlrp.org and select 'New Account' When you have created an account, log in and go to 'My Workspace', followed by 'Membership'. Locate the worksite 'Technology Enhanced Learning Call' in the list and click 'Join'. A new link will then be created near the top of the webpage. All the reports above have been placed in the 'Resources' area of the TEL workspace in a folder called 'Background documents'

2020 Vision – Report of the Teaching and Learning in 2020 Review Group DfES
<http://publications.teachernet.gov.uk/default.aspx?PageFunction=productdetails&PageMadoe=leadership&ProductId=DFES-04255-2006&>

Association for Learning Technology (ALT) Learning Technology Research Strategy
http://www.alt.ac.uk/ALT_2005_Research_Strategy_20050420.html

Becta Annual Review 2006
<http://publications.becta.org.uk/display.cfm?resID=25948&page=1835>

Becta: Personalising learning with ICT
http://www.becta.org.uk/corporate/publications/documents/personalised_learning.pdf

Becta, Review 2005: Evidence on the Progress of ICT in Education
<http://publications.becta.org.uk/display.cfm?resID=25882&page=1835>

Beyond eLearning: practical insights from the USA (September 2006)
<http://www.e-skills.com/cgi-bin/go.pl/wbel/practice/details.html?uid=551>

British Educational Research Association (BERA) Assessing quality in applied and practice-based educational research
<http://www.bera.ac.uk/pdfs/Qualitycriteria.pdf>

Computer Games Research
<http://www.game-research.com/>

DENI, emPowering schools in Northern Ireland (2004)
<http://www.empoweringschools.com/>

DfES, Five Year Strategy for Children and Learners
<http://www.dfes.gov.uk/publications/5yearstrategy/>

DfES, Harnessing technology: Transforming learning and children's services (2005)
<http://www.dfes.gov.uk/publications/e-strategy/>

DfES, Personalised Learning

<http://www.standards.dfes.gov.uk/personalisedlearning/>

EPPI – Centre, Institute of Education, Thinking Skills Review Group Learning Skills and the development of learning capabilities – Review Report

<http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=1851>

HEFCE, Strategy for e-learning (2005)

http://www.hefce.ac.uk/pubs/hefce/2005/05_12/

JISC, Designing for Learning: an update on the Pedagogy strand of the JISC e-Learning Programme

www.jisc.ac.uk/elearning_pedagogy.html

JISC, The e-Framework for Education and Research – an Overview

<http://www.e-framework.org/Portals/9/Resources/eframeworkrV1.pdf>

National Assembly for Wales: The Learning Country 2: Delivering the Promise (2006)

http://new.wales.gov.uk/docrepos/40382/4038232/403821/the_learning_country_2/Learning_Country2_English.pdf?lang=en

Scottish Funding Council, E-learning and transformational change. (Information about a £6million programme to embed e-learning in HE/FE, 2005-2007)

http://www.sfc.ac.uk/information_learning/transformational_change.html

Taylor, J. et al, An e-learning research agenda (2005)

www.epsrc.ac.uk/CMSWeb/Downloads/Other/E-learningResearchAgenda.doc