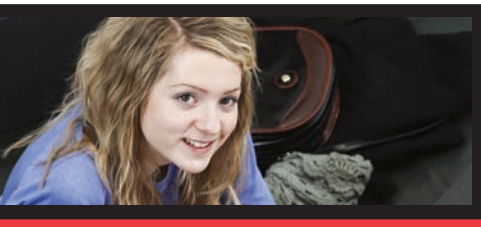
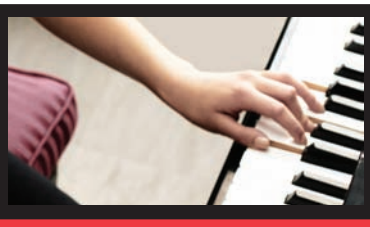
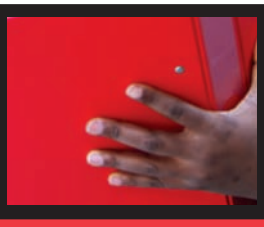




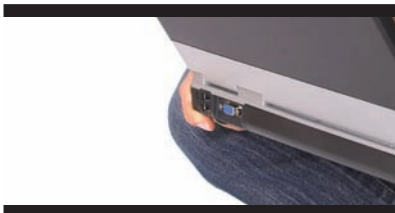

Effective learning and teaching in UK higher education

A Commentary by the Teaching and Learning Research Programme

The Higher Education Academy

T·L·R·P TEACHING & LEARNING RESEARCH PROGRAMME

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL



The Teaching and Learning Research Programme has been the UK's biggest-ever initiative in education research, exploring every aspect from preschool provision to lifelong and workplace learning.

In this Commentary, we draw together the findings of the TLRP's higher education projects, which have examined access to university and the widely varying experience of being a student or teacher in UK higher education.

We know that higher education in the UK is tangibly better than it was just a few years ago. Even more impressively, the student experience has been improved despite rapid growth in student numbers, which has not been accompanied by a commensurate increase in staff and other teaching resources.

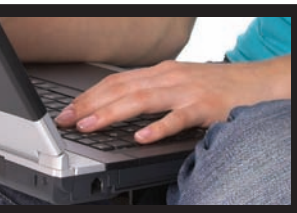
As we show in these pages, there is still room for teaching and learning in higher education to improve. In particular, styles of teaching and student support need to recognise the increasing diversity of the UK student body. It also needs to respond better to the wide range of ways in which people go to university. While many students at older universities study full-time and get much of their social life from the institution they attend, students at newer universities are more likely to combine study with work and family commitments.

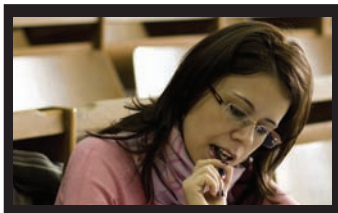
A principal function of any higher education system is to provide the professional people that a modern society needs to function and grow. The research we describe here suggests that these professions each have their own ways of speaking, thinking and acting, and that these are as important as raw subject knowledge in the process of turning from a newly-arrived student into a functioning and skilled specialist.

Our research also shows that higher education institutions should take a broad view of their role. As well as specific subject knowledge, higher education should increase students' self-awareness and make them into motivated lifelong learners. We hope that this Commentary will help teachers, managers, policymakers and others involved with higher education to think more clearly about this challenge.

We hope you enjoy this Commentary and look forward to your response via our web site, www.esrc.ac.uk.

Professor Ian Diamond FBA AcSS
Chief Executive
The Economic and Social Research Council



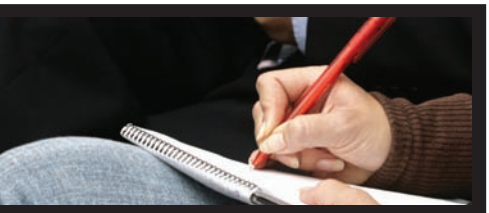
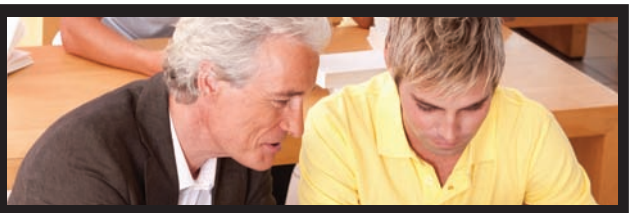
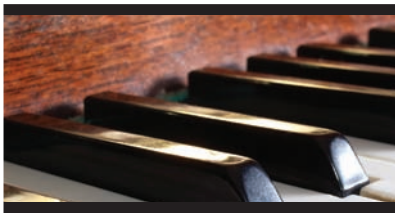


contents

Miriam David

This Commentary has been written by Miriam David with John Brennan, Patricia Broadfoot, Alan Brown, Richard Cox, Pauline Davis, Noel Entwistle, Mary Fuller, Dai Hounsell, Martin Jephcote, Sean Mackney, Pat Mahony, Mark Newman, Rosie Perkins, Alan Smith, Elizabet Weedon, Graham Welch and Julian Williams.

For further information please see www.tlrp.org/proj/Higher.html

Key dates in the development of higher education and UK Universities.

To understand today, it is helpful to remember where universities have come from.

12-15th century:

Wave of medieval universities formed, following developments in Constantinople, Salerno, and Preslav in Bulgaria:

England: Oxford 1167; Cambridge 1209

Scotland: St Andrews, 1413; Glasgow 1451; Aberdeen 1495; Edinburgh 1582

By the nineteenth century growth of civic and red-brick universities in:

England: Birmingham; Bristol; Durham 1832; Exeter 1855; Victoria University including Leeds, Liverpool, Manchester, Sheffield and London (Birkbeck; Imperial; KCL; LSE; QMUL; RHUL; UCL)

Northern Ireland: Queen's Belfast (1849) formed as part of all-Ireland university

Wales: Multi-campus University of Wales formed 1893 and included Lampeter (1822); Aberystwyth, Bangor, Cardiff, Swansea

There was a parallel growth of teacher education in universities and in specialist colleges. In Scotland, the universities of Edinburgh and St. Andrews established chairs of education in 1876.

1919 University Grants Committee (UGC) formed to support funding of universities

1920s Some new universities formed in England eg Leicester (1921) Reading (1926)

1944 Education Act formulates a notion of equality of educational opportunity

Late 1940s-early 1950s Keele, Nottingham and Southampton (formerly external degrees of either London or Oxford universities)

1961-64 New campus universities: East Anglia (1963) Essex (1964) Lancaster (1964) Newcastle upon Tyne (1963, formerly part of Durham), Sussex (1961) Warwick (1965) and York (1963) received royal charters

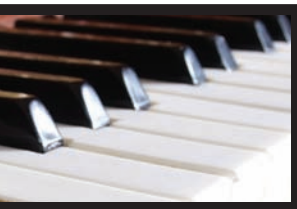
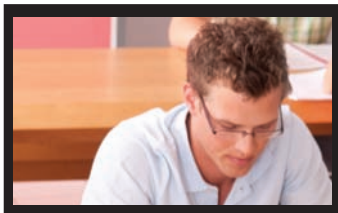
1963 [Sir Lionel] Robbins Committee reports on Higher Education Cmnd 2154

1966 New universities created from Colleges of Advanced Technology (CATs): Bath; Bradford, City, Loughborough, Surrey

1966 Antony Crosland, Labour Secretary of State, makes speech on binary policy for HE

1970 30 Polytechnics created from Local Authority colleges of technology, including Bristol, City of London Greenwich, Kingston, Central Lancashire, Leeds, Manchester, Newcastle, North London, Oxford, Sheffield, South Bank, Staffordshire.

1972 James report on Teacher Education and Training commissioned by the Secretary of State for Education and Science suggests major changes in training institutions.

1986 Start of Research Assessment Exercise (RAE) for Universities.

1992 Included some former Polytechnics; repeated in 1996, 2001 and 2008

1988 Education Reform Act created two UK funding councils, the Universities Funding Council (UFC) and the Polytechnics and Colleges Funding Council (PCFC)

1992 Further and Higher Education Act created new universities based upon former polytechnics; and Higher Education Funding Councils for the UK nations

1994 Higher Education Quality Committee (HEQC) established by the bodies representing the universities and colleges to contribute to the maintenance and improvement of quality in UK institutions

1994 Russell Group formed (at Hotel Russell in London) - member universities have medical schools and are research-intensive, including Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Leeds, Liverpool, London (now separate colleges), Manchester, Newcastle, Oxford, Sheffield, Southampton; now composed of 20 UK universities including Cardiff and Warwick

1994 1994 Group of 19 smaller pre-1992 Universities formed

1997 Coalition of Modern Universities (CMU) formed based on former Polytechnics and university colleges since 1992; 25 in England, six in Scotland, three in Wales.

1997 Dearing Report on Higher Education in the Learning Society

1997 Labour Government in power accepts a revised version of the Dearing report

1997 The Quality Assurance Agency for Higher Education (QAA) established: independent assessment of how UK higher education institutions maintain their academic standards and teaching quality

2002 Devolution to Scotland,(through a Scottish Parliament) and Wales (through a Welsh Assembly) implemented. In Northern Ireland a devolved assembly was created as a result of the 1998 Belfast agreement but was not operational from 2002 until 2007

2002 White Paper on the Future of Higher Education Cm 5735 contextualising global expansion

2004 Higher Education Academy (HEA) formed from a merger of the Institute for Learning and Teaching in Higher Education, the Learning and Teaching Support Network and the TQEF National Co-ordination Team. It now includes 24 subject centres for specific subjects taught in HE.

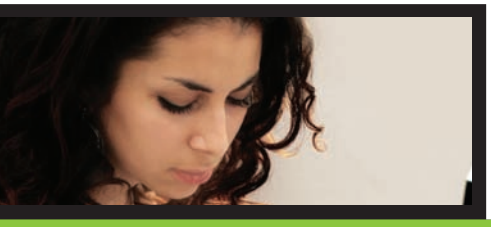
2004 Higher Education Act and the introduction of student fees.

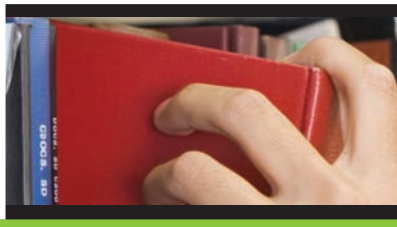
2007 Department of Innovation, Universities and Skills (DIUS) separated from the Department for Children, Families and Schools in UK Government, and takes on responsibility for research from the former Department of Trade and Industry. Its research role is UK-wide but its teaching role applies only to England.

2007 CMU renamed the Million+ universities' think-tank. It represents almost 30 UK universities.

2008 Incorporation of FE colleges and university colleges as universities providing foundation degrees

2009 HEFCE's revised research strategies for equity and higher skills development



Introduction

This Commentary has been written to provide key evidence-informed principles, based on our analysis of our research evidence, for pedagogies, policies and practices in the diverse range of higher education encountered in the UK today.

It is intended as a contribution to current UK debates on improving student learning experiences in diverse universities and in other higher education settings.

It focuses especially on learning and teaching to achieve equality in diverse student access, and to achieve equity and fairness in student success and outcomes from higher education.

Its context is the national and international transformation of higher education in response to the growth of the global knowledge economy in the twenty-first century.

The evidence that we discuss comes from the Teaching and Learning Research Programme (TLRP). The TLRP included seven projects on higher education practice, with several on specific aspects of learning appropriate to undergraduate students in higher education, a group of projects on teacher education across the UK's four nations, and a suite of seven projects on widening participation in higher education. A companion to this report, our Commentary on *Widening participation in higher educatio*n, may be found on the TLRP web site.

Together these projects on teaching and learning covered 60 UK higher education institutions, including some specialist colleges for music and education. Research was conducted in over 40 colleges and old and new universities in England, two in Northern Ireland, eleven in Scotland and five in Wales. They ranged across modes of study (full-time and part-time) and subjects, from the social sciences, such as business studies, education and sociology, to the humanities such as history, and to science, technology, engineering and mathematics (STEM) subjects including biology and medicine.

From this plethora of research, and our analysis of all the projects, we have developed a series of evidence-informed principles for effective pedagogies in higher education. By effectiveness, we mean a commitment to ensuring fairness and equity in learning and teaching for student outcomes from their higher education experiences. Our principles are to emphasise the social role of universities and other forms of higher education in democracies, which also depend on the capacity for critical argumentation (Mclean 2007), and to support the professional educational development of teachers and lecturers in higher education.

We begin by summarising these principles with examples from our higher and post-compulsory education projects. We then provide detailed illustrations from specific projects, together with a summary of their main findings and their implications for pedagogies, policies and practices. We also make recommendations, based upon our evidence-informed principles, about the future of teaching and learning in universities. These cover areas such as improving the quality of learning for students, and their experiences as undergraduates and as new teachers in higher education. Our work points to possible changes in pedagogic, policy and institutional practices to make higher education more effective and equitable.

Summarising our research evidence on learning and teaching in higher education, we argue that over the past decade, there have been major improvements in the quality of student learning experiences across these diverse systems of higher education. Recent changes have included new forms of universities, and further education colleges becoming universities. This improvement is in part a response to policy measures intended to develop quality assurance mechanisms in the context of a dramatic growth in participation in higher education.

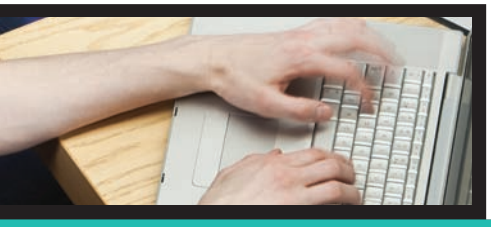
This growth has been encouraged by policy measures to widen access to and participation in higher education. There are more students, from socially and economically disadvantaged backgrounds participating in some form of post-compulsory or higher education than was the case ten years ago. Figures from the Higher Education Statistics Agency show that in 2007-8 there were 2.3 million HE students in the UK, of whom 1.8 million were full-time and part-time undergraduates. This is 400,000 more than in 1997-8.

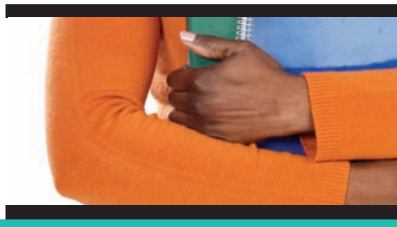
In 1997-8 45 percent of undergraduates were men whereas in 2007-8 only 40 percent were. This means that now there are far more women students in higher education than men and that this is a growing trend. There are also far more students from racial or ethnic minorities and non-European Union countries in the UK than ten years ago.

Although the overall quality of learning has improved, changing policy contexts and competitive institutional practices have not been conducive to equitable environments for the present broad range of students, who are being educated in a variety of subjects and settings.

Inequality continues to affect both individuals and institutions. Growth in student numbers has not been accompanied by increases in institutional and teaching resources. This systemic inequality has affected student-teacher relationships and forms of learning in all subjects, including inter-disciplinary work.

However, there are also opportunities for developing new and critical pedagogies. More inclusive or connectionist approaches, rather than 'teaching to the test,' would engage socially diverse students in a range of higher education subjects and settings.





Background to the TLRP projects

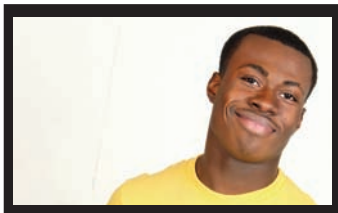
The TLRP was a response to Government concerns about the quality of educational research within the expanding systems of higher education across the UK. It was decided to coordinate educational research in a major programme managed by the Economic and Social Research Council (ESRC), but with funding from the Higher Education Funding Council for England (HEFCE), the other funding councils, and other agencies in the devolved UK. The focus of this research was on how to improve the quality of teaching and learning throughout education from pre-school to higher education and lifelong learning. Its first projects were funded in 2000.

TLRP's initial emphasis was on school education. Its early research on teaching and learning in higher and post-compulsory education was relatively limited and covered aspects of learning such as problem-based learning (PBL) and a consideration of how subjects were taught in their institutional settings. It was largely concentrated in older universities, including the Russell Group (see key dates table). This concentration was in part caused by the growing necessity for academics to conduct research. The emerging systems of teaching and research quality assessment, known then as teaching quality assessments (TQA) and the research assessment exercise (RAE) contributed to this. 'Research active' is the name given to academic staff submitting to the RAE, but there is no such similar term for those who are simply 'teaching active'.

The increasingly sharp differentiation between research and teaching following the 2004 Higher Education Act has led to the older universities becoming known as the research-intensive universities in contrast to the newer higher education institutions being known as teaching-intensive. Despite this, the Government had begun to invest in improving teaching and learning across all forms of higher education through the organisation of the Higher Education Academy (HEA) and its 24 constituent subject centres, plus centres of excellence in teaching and learning (CETLs). This emphasis has become a growth area for research underpinning teaching and learning within and across subjects and disciplines, sometimes referred to as pedagogic research.

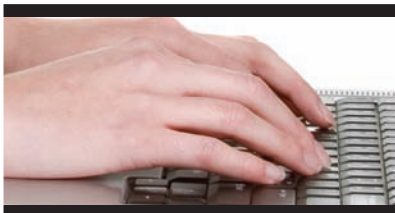
There is indeed a lively public policy debate, through Government and the Department for Innovation, Universities and Skills (DIUS), about developments in higher education and the balance between teaching and research. Higher education has expanded massively in a range of institutions, from universities to university colleges and to colleges of further education. This raises questions about equitable practices and provisions, for diverse students and for different institutions.

What are universities for and how should they be organised? Are they to be mainly of benefit to the economy, society or the individual student? Should different types of university receive similar resources for similar purposes, or should each type of university focus on specialisms and select its students accordingly? The universities themselves have clustered into pressure groups such as the Russell Group, the 1994 Group and Million+ to argue for increasingly scarce resources for research, teaching or both. Moreover, the distribution of Quality Research (QR) funding between universities following the 2008 RAE has highlighted growing differences between subject areas, especially the humanities and social sciences versus Science, Technology, Engineering and Mathematics (STEM). Do these differences affect the quality of student learning in different subjects, settings or contexts? Do 'research active' staff offer better pedagogic practices than 'teaching active' staff? Are findings in this area based upon pedagogic research, or upon research which contrasts the social sciences and humanities with the natural sciences?




Research on Technology Enhanced Learning
Understanding, Creating, and Exploiting Digital Technologies for Learning
Teaching and Learning Research Programme
TLRP
www.tlrp.org





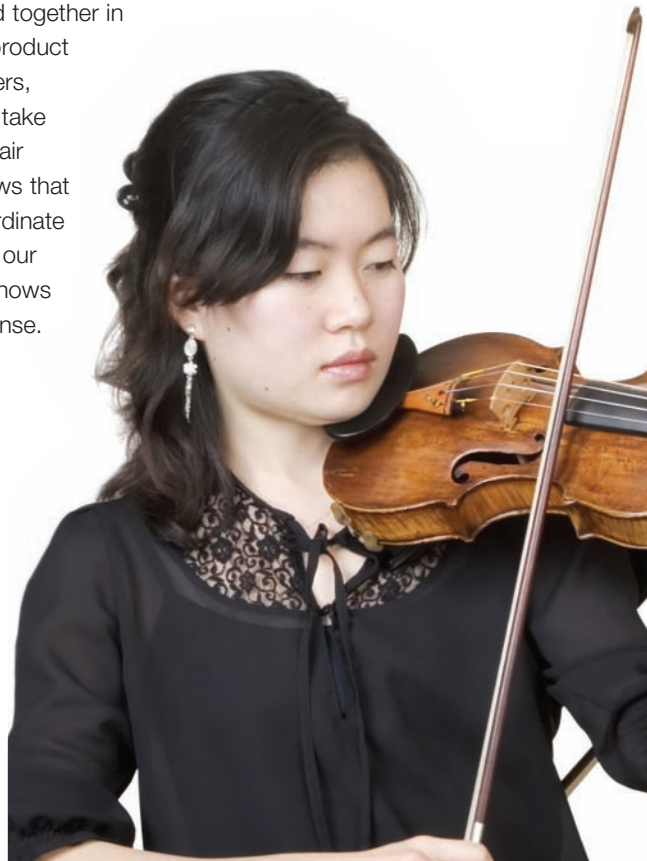
TLRP's framework for analysis: evidence-informed principles

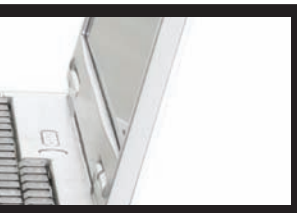
We draw on the following projects about learning quality and outcomes in an increasingly diverse mass higher education system for our evidence. They are:

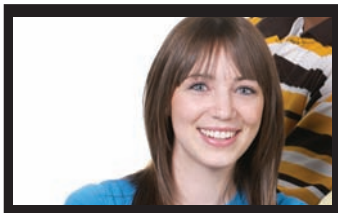
- Social and Organisational Mediation of University Learning
- Disabled Students' Learning in Higher Education
- Enhancing Teaching-Learning Environments in Undergraduate Courses
- Learning to Perform in Music in Advanced Musical Learning Settings
- Problem-based Learning
- Vicarious Learning and Teaching of Clinical Reasoning Skills
- The suite of seven Widening Participation in Higher Education projects
- A Values-based Approach to Teacher Education in Northern Ireland
- Competence-Based Learning in the Professional Development of Teachers in Scotland and linked with
- Teaching and Learning Policy in Post-Devolution UK Contexts

In addition, we review complementary projects on post-compulsory or further education to illustrate how the changing contexts and forms of higher education are influencing effective learning and teaching.. We focus on aspects of students' learning and the contexts of teaching, within a changing and highly charged policy context.

We provide an analytical summary of the research evidence, grouped together in what we call evidence-informed principles. These principles are the product of an iterative process of consultation and debate between researchers, practitioners, policy makers and the TLRP Directors' Team. Here we take a decidedly committed stance to trying to ensure more equitable or fair policies and practices for and in higher education. Our evidence shows that the fast-changing policy context for higher education has had an inordinate influence on research and on teaching and learning. After presenting our evidence-informed principles, we conclude with what our evidence shows about to how to equip all learners equitably for life in the broadest sense.

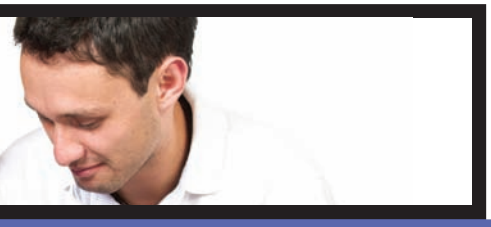
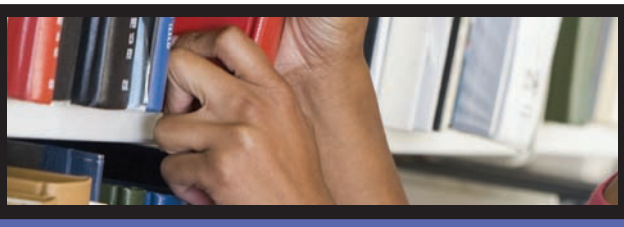
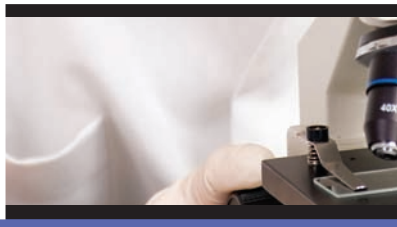






We use the phrase 'teaching and learning' interchangeably with 'pedagogy'. We are aware that there is a lively debate between educational researchers in higher education about 'the science of practice or praxis of teaching'. In recent professional developments for academics, lecturers and tutors in post-compulsory and higher education, ideas about pedagogy and pedagogical research have become usual. However, teachers and academics have particular subject expertise which may value specific approaches to 'the inner logic of the subject' and its 'ways of thinking and practising'. These vary from social or psychological perspectives in the social sciences to an unquestioning view of the natural scientific approach. Some people argue that 'pedagogy', by definition, applies only to the learning of children. Learning processes change fundamentally as children become adults. Others argue that the process of learning evolves from school to university as students develop intellectual resources for learning. What is at issue, they say, is in the cognitive aspects of transition, and the shift is essentially in the learner's autonomy. We use the concept of 'pedagogy' although we are aware of these debates. It highlights the contingent nature of effective teaching, reminding us that lecturers, teachers or trainers are most effective when they plan approaches in response to how students are learning.

Our work uses a broad definition of what is learned. We go beyond subjects taught at school, such as mathematics and biology, to include others whose study begins in higher education such as electronic engineering, social sciences such as social care, and teacher education, with its implications for academic and educational development. We have also given more prominence to the importance of learning relationships. These are crucial in all sectors, but especially in adult and lifelong learning. They illustrate the essentially political and social roles of universities and other higher education institutions. Most importantly, we have found that the use of ICT has come to dominate all subjects and disciplines and is threaded throughout our studies. This is a major theme for the next phase of TLRP, through the new Technology Enhanced Learning (TEL), discussed in a companion Commentary *Education 2.0? Designing the web for teaching and learning.*

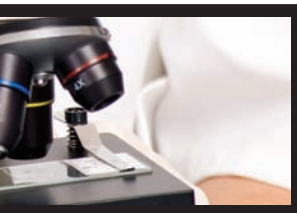




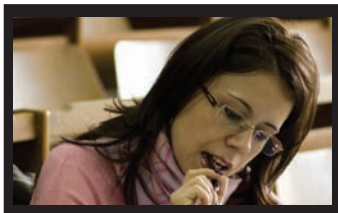
Research methods and data collection

The way in which each project defined and selected the individuals and institutions that it studied is crucial to understanding our research evidence and its implications for policy and practice. The perspectives linked to a range of concepts, theories and methodologies from the social sciences; from education to psychology to sociology, and were often interdisciplinary. They involved quantitative and qualitative approaches, and different ways of selecting individuals and higher education institutions for study. A range of research designs were deployed. They involved economic, educational, ethnographic, policy, sociological and socio-cultural, including historical activity, methodologies. The evidence collected using these different methods included:

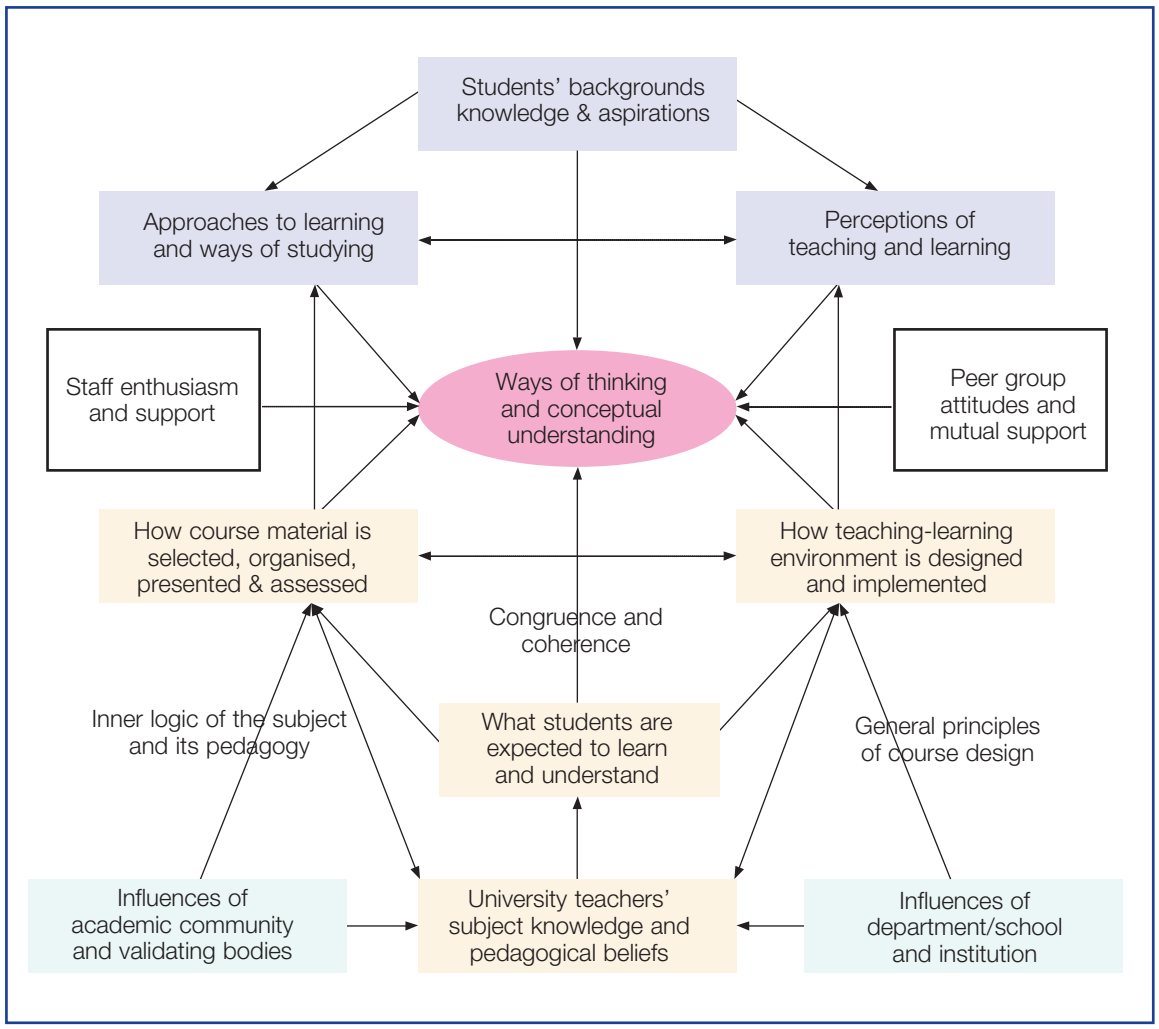
- Administrative datasets from UCAS, HESA, and PLASC and others
- New qualitative and quantitative data on types of learners in colleges, higher education institutions and universities, and on adult learners
- Data on individual full and part-time learners. These include: young people in post-compulsory 14-19 settings, such as sixth forms, further education colleges, or further-higher institutions; university undergraduates; adult learners with equivalent qualifications; Conservatoire music students; and a small number of postgraduate students in music and teacher education.
- Information from a range of further and higher education colleges, from new and old universities, and from specialist colleges for music including Conservatoires. These were new datasets gathered from teachers, academics and managers, or other leaders and administrators in these institutions.
- Across all the projects we worked in over 40 universities or specialist colleges in England; two in Northern Ireland; eleven in Scotland and five in Wales, balancing new and old universities across the UK.
- The subjects or disciplines students studied included:
    - Biology, Biological Sciences and Bio-sciences
    - Business Studies and Economics
    - Electronic Engineering
    - Health Sciences, including nurses, speech and language therapists
    - History
    - Mathematics
    - Music, working with performance and professional musicians in four different genres: Western classical, popular, jazz and Scottish traditional music
    - Nursing and continuing nursing education
    - Social Care
    - Sociology
    - Teacher Education including primary, post-primary and secondary PGCE

There were certain limitations to the data collected. There was not a major emphasis on social or diversity issues in the main datasets, although some of the projects emphasised these questions. In particular, the varying concepts of diversity were important to SOMUL and to the seven widening participation projects, while gender was a key variable for the music and some of the teacher education studies.

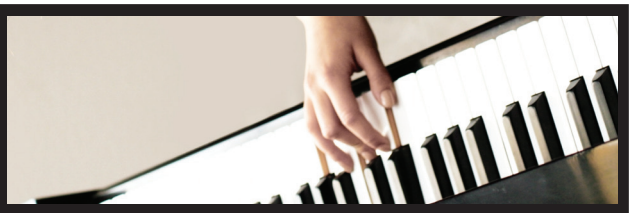
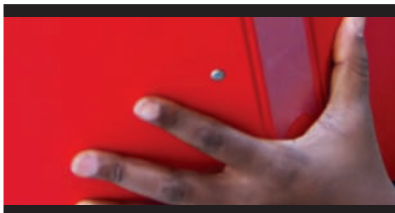




There are several ways of conceptualising approaches to teaching and learning in higher education. One such approach can be drawn from one of our major projects (ETL) using broad psychological concepts. This model is a heuristic device which separates teaching from the rest of the teaching-learning environment with a focus on 'the inner logic of the subject' and its pedagogy. It can be illustrated as follows:



We present the 10 evidence-informed principles overleaf. Then we provide examples of the project findings as illustrations. We list the key findings or implications from our main HE projects first, followed by examples and illustrations from the other post-compulsory education and work-based learning projects. We then provide brief summaries of the projects and how their findings relate to the principles. Each project's Research Briefing (RB) is referred to by number and can be found in the Publications section of our web site: www.tlrp.org.

TLRP's evidence-informed principles for effective pedagogies

1. Effective pedagogy demands consistent policy frameworks, with support for learning for diverse students as their main focus. Policies at government, system, institutional and organisational level need to recognise the fundamental importance of learning for individual, team, organisational, institutional, national and system success. Policies should be designed to create effective and equitable learning environments for all students to benefit socially and economically.

Although contexts for learning differ in an increasingly diverse higher education system, there are important commonalities in the outcomes of learning. Universities need to understand and take account of a range of student orientations and types of engagement. Current policy priorities on knowledge, skills and employability may not be in tune with the priorities of many students (RB 32).

Policy development for dual sector 'further and higher' education is uneven and unstable, and is led by sector bodies for higher education. Separate funding and quality regimes for Further and Higher Education have evolved despite the lack of a developed rationale for a two-sector system (RB 40).

Support for disabled students has expanded and is now managed through centralised support units. In line with disability equality legislation, lecturers are expected to make reasonable anticipatory adjustments to curriculum, pedagogy and assessment practices, and students are legally entitled to these adjustments (RB 46).

Despite devolution, policies on teacher education and development across the UK appear to be strongly influenced by UK-wide trends. The ways in which teaching and learning are defined in each nation appear to be the result of an accommodation between these trends and national contexts, histories and cultures. The policy-making and policy implementation processes in each nation demonstrate different levels of engagement on the part of the various key stakeholders (RB 49).

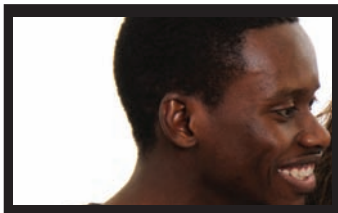
Faced with endless change, teachers feel under pressure from college managers and from external monitoring to ensure that their students remain on courses and attain qualifications (RB 52).

Current policy and managerial approaches are damaging learning in FE. The main problems are inadequate and unstable funding and too much focus on measured outcomes (RB 12).

Despite increased investment, inequity persists within the Learning and Skills sector and between the LSS, schools and higher education. Top-down funding and targets have high costs and unpredictable outcomes and leave little room for responsiveness to local conditions (RB 28).

2. Effective pedagogy depends on the research and learning of all those educators who teach and research to support the learning of others. The need for lecturers, teachers and trainers to learn through doing research to improve their knowledge, expertise and skills for teaching should be recognised and supported.

Conceptually-focussed research evidence about students' experiences of their courses can help staff to fine-tune teaching and learning environments. The quality of learning and teaching in undergraduate courses can be systematically enhanced through using richer sources of evidence to guide course development (RB 31).

In the field of teacher development, our central use of practitioners as researchers was innovative, and generated insider knowledge that led to a deeper, more detailed picture of what new teachers were learning. Teachers as researchers have different experiences and understandings of the research process. These have methodological implications for research partnerships with users, and for the interaction between academic and operational discourses (RB 56).

Diagnostic accuracy involves the generation of true hypotheses, the ability to rule out alternative hypotheses and consider negative evidence, and the use of professional vocabulary. Expertise consists of subject-specific knowledge as well as more general problem-solving skills. Applying both is an enormous cognitive challenge to students (RB 54).

The term Problem Based Learning (PBL) is used for a wide range of practices. Previous reviews do not provide sufficient evidence to support the widespread adoption of PBL without further research. Where PBL is introduced, it should be accompanied by rigorous evaluation (RB 8).

3. Effective pedagogy recognises the significance of informal learning to developing specific expertise. Learning with friends, families, peer groups and professionals should be recognised as significant, and be valued and used in formal processes in higher education.

Underlying what students learnt in specific course units was a developing grasp of how to think and go about the subject like an expert. The concept of ways of thinking and practising in a subject offers a powerful means of planning and evaluating the fundamental goals of a degree (RB 31).

Conservatoire students expect and hope for a broad career in music. Students teach others while in HE and report that this enhances their own performance and career preparation (RB 47).

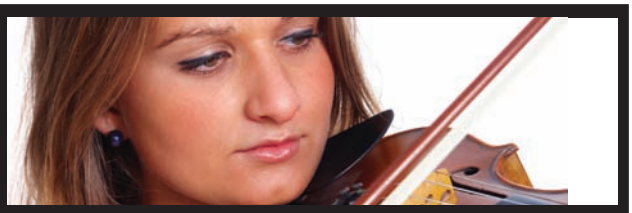
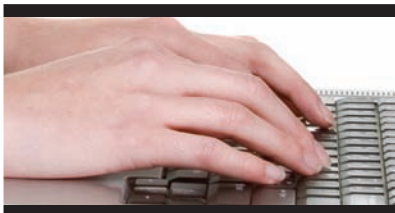
Simulated discussions between pairs of students, and students and tutors, were useful for students who observed or overheard them vicariously. The majority of students felt that observational learning is an efficient way for them to learn, allowed them to learn more professional ways of talking about clinical concepts, and gave them more time to reflect than traditional teaching (RB 54).

Problem-based learning (PBL) did not appear to meet student' expectations of learning, teaching or their role as a student. Further study in other settings is required to identify whether improved student outcomes can be produced with PBL. The results found here may be specific to the type of PBL offered or its implementation (RB 9).

Coping with pressure and accommodating students' wider lives undermines and restructures teachers' professionalism, professional identities and classroom practices (RB 52).

People can learn from their lives through the stories they tell about them. This is important for their identity and agency (RB 51).

There is often a mismatch between the literacy practices of everyday life and the workplace on the one hand, and those of college courses on the other. All student learning is mediated by text, even in the most 'practical' subjects. Lecturers often overlook the communicative aspects of learning by focusing on social and cognitive aspects. Students often produce text, such as logbooks, assessments, essays and 'pieces of writing,' to demonstrate knowledge, understanding or capability rather than to support learning (RB 50).

4. Effective pedagogy fosters both individual and social processes and outcomes. Students should be encouraged to build relationships and communication with others to assist the mutual construction of knowledge and enhance the achievements of individuals and groups. Consulting or collaborating with students as learners about their learning makes this effective.

Students often seem to assign more importance to the personal and social dimensions of change than to the academic. Although contexts for learning differ in an increasingly diverse higher education system, there are important commonalities in the outcomes of learning. Reputational differences between universities may not always correspond to differences in 'what is learned'.(RB 32).

Musical performance anxiety is common, especially for female and Western classical musicians. Levels of MPA tend to be higher immediately prior to a performance, but reduces once it begins MPA is a normal experience for musicians. What matters is how individuals learn to deal with it. Performance expertise develops in a community of practice alongside peer support. Helping others to learn improves personal performance. (RB 57 and 61).

Disclosure and acceptance of the label of disability was problematic for some students, especially those with unseen impairments. Disabled students are a heterogeneous group. Their experiences and outcomes are linked in a variety of ways to the nature of the student's impairment. The development of inclusive and flexible curricula would require fewer adjustments to be made and would ensure fairness for all whilst maintaining academic standards (RB 46).

Students working with other students frequently communicate their lack of confidence and indicate when they are 'stuck' or lack knowledge. The discourse of expert tutors operates on a different level and tends to focus on subject knowledge and diagnostic strategy. Students reassure each other that they are not alone in their difficulties. Observing dialogue vicariously achieves the same learning outcomes as direct participation (RB 54).

These responsive practices go beyond engaging with established institutional systems where professional and organisational boundaries are strong (RB 48).

Learning is complex and multi-faceted, and can only be understood relationally (RB 51).

A range of collective, individual and contextual influences interact to affect people's propensity to learn across the life course. Older people define 'learning' in a wide variety of ways but perceive it to have a number of positive outcomes (RB 58).

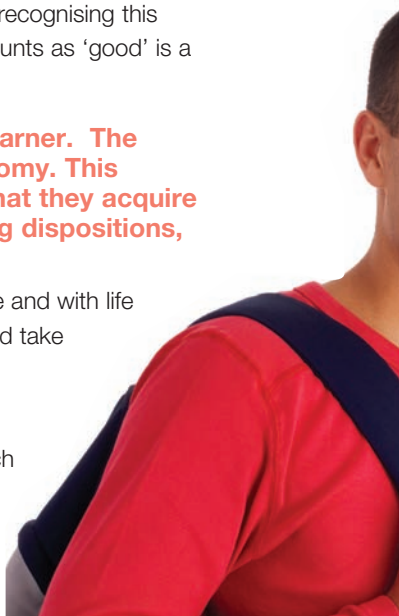
Effective collaboration is related to the autonomy available to key partners and the role of external bodies. Rules set outside this context may constrain effective collaboration. Commitment to collaborative working is enhanced and deepened when it is seen to lead to tangible outcomes (RB 34).

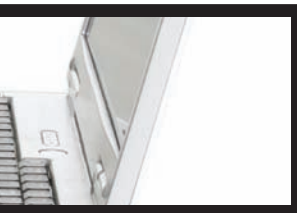
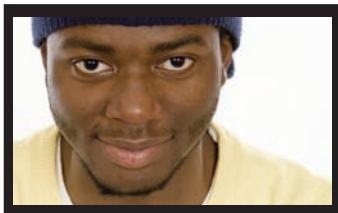
Learning in FE is shaped by complex cultural relationships. Improving learning depends upon recognising this complexity. The nature of good learning and teaching varies from context to context. What counts as 'good' is a value judgement (RB12).

5. Effective pedagogy promotes the active engagement of the student as learner. The main aim of higher learning should be learners' independence and autonomy. This involves engaging students actively in their own learning, and ensuring that they acquire a repertoire of learning strategies and practices, develop positive learning dispositions, and build the confidence to become agents in their own learning.

Students differ in their engagement with higher education, with their subject, with university life and with life outside university, and accordingly have different priorities. Universities need to understand and take account of a range of student orientations and types of engagement. (RB 32)

Although most courses worked well as environments that supported learning, students were often dissatisfied with guidance and feedback on course work. Conceptually-focused research evidence about students' experiences of their courses help staff to fine-tune teaching and learning environments (RB 31).



In music, the transition from school to Conservatoire is challenging. Student experience in the first term is crucial in establishing a positive trajectory from day one. Students should be supported from early on in their course to develop a broad identity as a musician and to redefine and widen their career expectations (RB 47).

The dominant notion of traditional and non-traditional students creates over-simplistic understandings which limit the development of inclusive, engaging teaching. Academic developers should create a more sophisticated understanding of diversity that reflects students' range of social, cultural and educational backgrounds (RB 41).

The particular PBL curriculum which was studied resulted in a reduced teaching workload (RB 9).

Learners described their relationships with tutors as the key to their learning, progress and success (RB 28).

Securing long-term employment continued to be a significant challenge for many beginning teachers. Many questioned the value of Professional Development Activities (PDAs). Fragmented employment experiences for beginning teachers reduce the quality of Early Professional Development (RB 36).

Current professional training does not prepare practitioners for working outside established organisational practices (RB 48).

Students' complex social lives are brought into the classroom and being a student is fitted into a wider life. This affects participation and engagement in learning (RB 52).

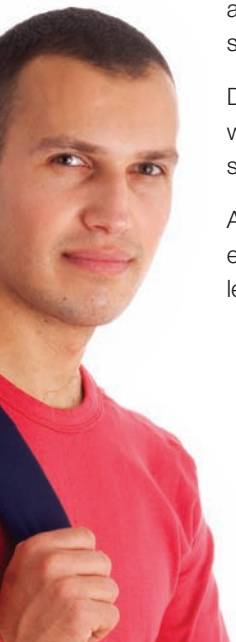
While there are surface similarities between the educational policy frameworks of the various UK nations, there are also significant differences, for example in the relative attention afforded to social and moral values (RB 49).

'Industry educators' serve two roles as knowledge brokers: supporting the design of new programmes and facilitating learner engagement with the programme (RB 60).

6. Effective pedagogy needs assessment to be congruent with learning. Assessment should be designed for maximum validity in terms of learning outcomes and learning processes, and also should be specific to the type of subject or discipline involved, even if it is interdisciplinary. It should help to advance learning as well as determine whether learning has occurred.

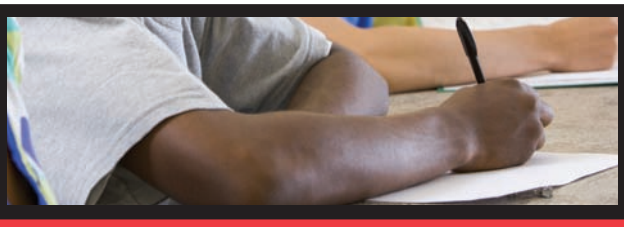
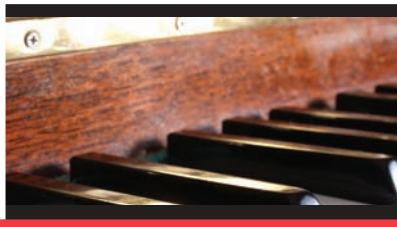
The adjustments which were made by academic teachers to the curricular offer tended to be limited and formulaic, particularly in the area of assessment. The development of inclusive and flexible curricula would require fewer adjustments to be made and would ensure fairness for all whilst ensuring the maintenance of academic standards (RB 46).

There was an inescapable subject dimension not only to what students learnt but also to how they were taught and assessed in undergraduate courses. In efforts to review and enhance teaching and learning, more attention should be given to what is distinctive about a given subject area (RB 31).



Diversity requires universities to meet the varied needs of very different types of student. In attempting to cope with increasing student diversity, certain institutions are effectively running parallel universities for different types of student (RB 32).

A culture of 'performativity' in colleges reinforces "teaching to the test" that can be damaging to learners, especially in mathematics education. Policy should reduce the pressure to teach to the test by giving value to learning outcomes of deep understanding and learning dispositions (RB 38).

7. Effective pedagogy requires learning to be systematically developed. Teachers, trainers, lecturers, researchers and all who support the learning of others should provide intellectual, social and emotional support which helps learners to develop expertise in their learning for it to be effective and secure.

Although most courses worked well as environments that supported learning, students were often dissatisfied with guidance and feedback on course work. Conceptually focused research evidence about students' experiences of their courses helped staff to fine-tune teaching and learning environments (RB 31).

Students seeking musical expertise should be encouraged to pursue activities alongside and within their specialism that will help them create their own expansive learning environment (RB 47).

Work on learning clinical subjects showed that the majority of students felt that observational learning is an efficient way for them to learn, allowed them to learn more professional ways of talking about clinical concepts, and gave them more time to reflect than traditional teaching (RB 54).

Combined vocational and academic qualifications significantly increase the probability of access to HE compared to vocational education and training alone. Processes which support combining academic and vocational qualifications need to be strengthened and developed (RB 42).

Professional learning for new teachers is dominated by emotional and relational factors in its first few months, when they form their professional identity (RB 56).

Re-contextualisation of knowledge takes place in programme design; in teaching and learning; in the workplace; and in learners as they make sense of the whole. The structure of foundation degrees enables the dual accreditation of professional qualifications in ways that are valued by learners (RB 60).

8. Effective pedagogy recognises the importance of prior or concurrent experience and learning. Pedagogy should take account of what the student as learner knows already to plan strategies for the future. This includes building on prior learning but also taking account of the emerging concurrent learning in context, and the personal and cultural experiences of different groups of students as learners.

Poorer and richer students who achieve similarly in secondary school have similar HE participation rates. We need to improve the achievement of poorer children in secondary schools to widen their participation in HE (RB 39).

Feedback needs to be faster and more helpful to students, particularly where they are inexperienced in undergraduate study and classes are large and diverse (RB 32).

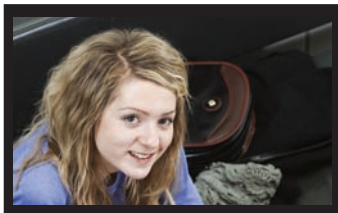
Music curricula need to be more sensitive to the ways in which gender and genre impact on musical learning. They should be differentiated to address biases that can have negative influences on musicians' learning trajectories (RB 61).

Students' learner identities are influenced by their experience of school, their current university experience and their social circumstances. More work needs to be done in primary schools to enable children to understand how to realise their aspirations (RB 44).

In the Continuing Nursing Education Programme of an English HE institution, on all the measures used, students in the PBL curriculum reported lower levels of satisfaction than those experiencing a traditional curriculum. The dropout rate of the former was ten times greater than in the latter (RB9).

Most learning takes place through work processes, and is triggered by challenging work and by consulting or working alongside others (RB 25).

Some students have had negative prior experiences as learners, especially in school, often leading to negative learner identities. Not all are equipped with the knowledge and skills for learning (RB 52).



9. Effective pedagogy engages with expertise and valued forms of knowledge in disciplines and subjects. Pedagogy should engage students with the concepts, key skills and processes, modes of discourse, ways of thinking and practising and attitudes and relationships which are most valued in their subject. Students need to understand what constitutes quality, standards and expertise in different settings and subjects.

Specific course units gave students a developing grasp of how to think and go about the subject like an expert (RB 31).

Learning to perform requires a complex balance between breadth and depth of learning. Musical expertise is not achieved solely through narrowing of focus (RB 47).

Musicians experience higher levels of anxiety in contexts where they feel more exposed, for example in solo or small group performances, irrespective of their musical genre. Levels of anxiety tend to be higher immediately prior to a performance, but reduce once it begins Other-than-classical' musicians (jazz, popular, traditional) have common developmental biographies, while western classical musicians tend to have a separate profile (RB 61).

Multi-faceted partnerships with industry can embed knowledge flows within and between programme design, teaching and learning, the facilitation of learning, workplace practices and the learner (RB 60).

High skills offer Britain a competitive economic advantage. Demand for knowledge workers rises exponentially in the knowledge economy (RB 53).

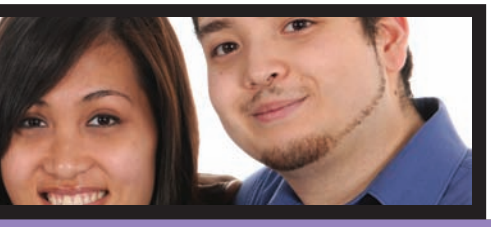
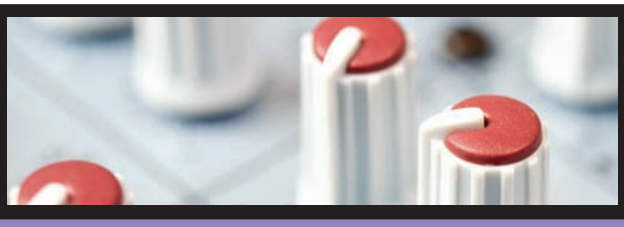
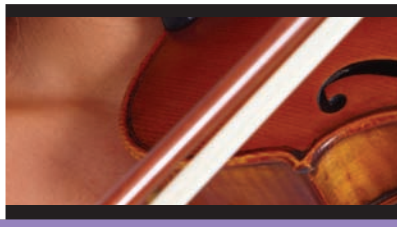
10. Effective pedagogy equips learners for life in its broadest sense. Learning should help individuals develop the intellectual, personal and social resources that will enable them to participate as active citizens, contribute to economic, social or community development, and flourish as individuals in a diverse and changing society. This means adopting a broad conception of worthwhile learning outcomes and taking seriously issues of equity and social justice for all, across social, economic, ethnic and gender differences.

The HE experiences of others within an individual's social networks critically shape the perceptions of adults who are 'potentially recruitable' to higher education. Identification with entrants to HE who are 'people like me' in terms of education, social and employment background influences their decision-making between and within generations (RB 43).

Education is a route to prosperity and social justice for all. Learning = Earning (RB 53).

Learning is ubiquitous at all stages of life and varies in its significance and value (RB 51).

Many older people maintain a variety of interests well into old age and enjoy learning in a range of ways (RB 58).

What is learned at university? The social and organisational mediation of university learning (SOMUL)

This project used 15 university case studies of student learning in biosciences, business studies and sociology to examine university learning and the student experience in different settings in UK universities. 13 universities - 11 in England (5 new; 6 old), a new university in Wales and an old one in Northern Ireland were used. A student survey involving nine universities included a Scottish university. Given the increasing diversity of higher education, and policy measures to enhance expansion, this project illustrates most vividly our first principle, on the need for national and institutional policy consistency. The team show that there are

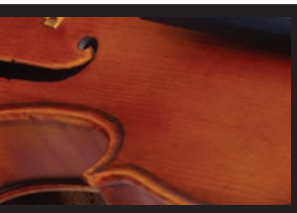
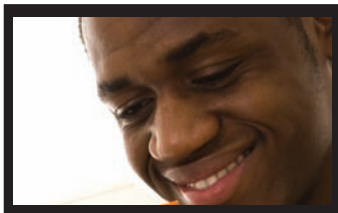
- Tensions between drivers of policy in relation to excellence and diversity
- Issues concerning policies on research and teaching
- Wide support for the creation of the HEA despite differences of view regarding wider systems of quality assurance, accountability and enhancement
- Support for widening participation policy (although it is seen as underfunded)
- Balance between 'institutions' and 'subjects' as drivers and implementers of policy

These findings emphasise the 'whole university experience' and support our principle eight on prior and concurrent experiences. Many students are effectively 'part-time' and have paid work and/or domestic responsibilities. The team found evidence about personal development, social capital, subject and generic skills and the issue of employability.

They explored the relationships between three kinds of diversity – of universities, of students, and of what students learn while at university. While there are official statements about what students are supposed to learn, and unofficial perceptions about the 'best' and the 'worst' places to learn it, there is very limited evidence about what different kinds of students learn at different kinds of university. The team developed a simple typology based on two dimensions: the diversity of the student population, and the extent to which the student experience is a shared one.

Diversities of students	Diversities of universities	Diversities of outcomes
educational backgrounds	curriculum organisation	subject knowledge and competences
social backgrounds	organisation of staff	generic competences
lifestyles	organisation of students	social capital
life stages	organisation of space	confidence and identity
forms of engagement	reputation and tradition	

The research was led by Professor John Brennan, Centre for Higher Education and Research and Information, The Open University, with Professor David Jary and Professors Mike Osborne and John Richardson.
For further information, visit: http://www.tlrp.org/proj/phase111/brennan.html

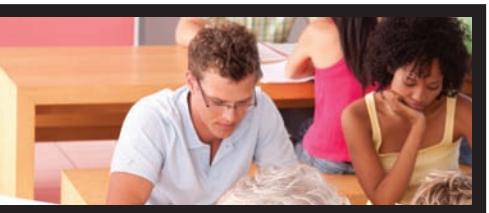
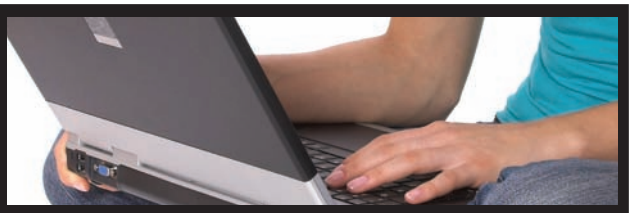
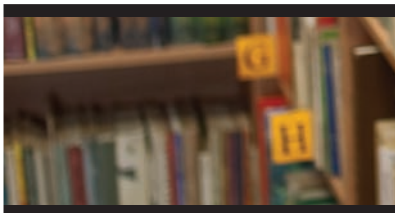



Key findings and implications from "What is learned at university?" (RB32)

Although contexts for learning differ within an increasingly diverse higher education system, there are important commonalities in the outcomes of learning.	Reputational differences between universities may not always correspond to differences in 'what is learned'.
Students differ in their engagement with higher education, with their subject, with university life and with life outside university, and have different priorities accordingly.	Universities need to understand and take account of a range of student orientations and types of engagement.
Students often seem to assign more importance to the personal and social dimensions of change than to the academic.	Current policy priorities on knowledge, skills and employability may not be in tune with the priorities of many students.
In attempting to cope with increasing student diversity, certain institutions are effectively running 'parallel universities' for different types of student.	Diversity requires universities to meet the very different needs of very different types of student.

Major implications: what is learned at university?

- The dominant hierarchical conception of diversity in current UK higher education policy discourse provides only a very limited reflection of the more complex pattern of diversities that exist and neglects the considerable commonalities that can be found.
- The policy drivers of the UK government and HEFCE have been to increase the diversity of the UK higher education system along a continuum from research intensive to teaching only institutions The increasing polarisation of higher education threatens the economic and wider cultural and social benefits sought from an overall expansion of higher education
- Students in the SOMUL study endorse the learning outcomes claimed in the generic elements of Subject Benchmark statements. However, this tells us only part of the story of what is learned at university. Personal as well as narrowly academic outcomes are also important to students.
- Whilst problematic aspects of the sometimes part-time nature of the student experience (which can involve term-time paid work) must be recognised, so should the opportunities which this can provide for a wider range of learning outcomes, both employment-related and for personal development.
- The employability and skills agenda set down by government may not be fully shared by students. A narrow focus on employability and skills risks neglecting equally important ways in which higher education changes people's lives and the communities in which they live.
- Our models of organisational and social mediation of university learning and our findings about students provide useful general 'tools for thinking'.
- More specific substantive pointers about learning and teaching and student orientations and the outcomes of higher education can then be identified.
- This work also contributes to more general higher education discourses.
- It poses number of challenges to current national policies and thinking, especially from the student 'voices'
- We also consider other supporting research.

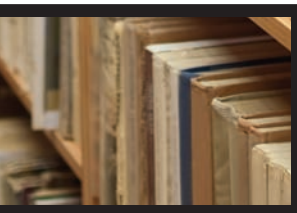




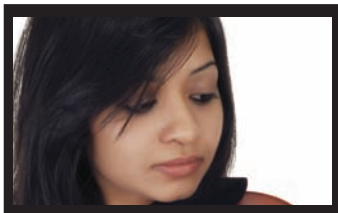
Enhancing the quality and outcomes of disabled students' learning in higher education: experiences and outcomes

This project also provides evidence to corroborate our principles, most importantly on equipping diverse learners for life. Our key finding about policy changes in support of disabled students focuses on institutional limitations in implementing the legislation. The implications of the study point clearly towards more effective and inclusive pedagogies to enable the range of disabled students from those with visible to invisible impairments to be included. The study was designed to explore disabled students' experiences of learning and their educational outcomes compared with those of non-disabled students. It was carried out in the context of the Disability Discrimination Act's requirement to make reasonable adjustments to teaching, learning and assessment practices. The methods used included the following:

- A survey of attitudes to learning of all disabled students in four English and Scottish universities These were Gloucestershire (post-1992, strong teacher training history), Central Lancashire (post-1992 with a strong applied focus), Lancaster (founded 1964), Edinburgh (founded 1582, Scottish, different degree pattern from England). They were selected on the basis of their varied histories, size, curriculum and geographical location;
- A survey of non-disabled students' attitudes to learning for purposes of comparison;
- An analysis of the degree outcomes of disabled students in comparison with the wider student body;
- Case studies of four universities to investigate differences in policy and practice with regard to disabled student's learning and assessment;
- Case studies of 31 disabled undergraduate students' learning experiences.

The introduction of the Disabled Students' Allowance in the early 1990s and of premium funding a decade later led to an increase in the proportion of disabled students in higher education, a growing proportion of whom had a diagnosis of dyslexia. These developments posed particular problems for universities, which had traditionally provided very little learning support. This problem was particularly acute amongst older universities. Post-1992 institutions had always recruited a somewhat wider mix of students and were better equipped to deal with a more diverse student population.





Key findings and implications about disabled students' experiences in HE (RB46)

Support for disabled students has expanded and is now managed through centralised support units. In line with disability equality legislation, lecturers are expected to make reasonable and anticipatory adjustments to curriculum, pedagogy and assessment practices and students are legally entitled to these adjustments.	Although lecturers are generally supportive of disabled students, they sometimes feel overwhelmed by requests for individualised adjustments and unsure about the balance between maintaining academic standards and accommodating the needs of disabled students.
The adjustments which were made tended to be limited and formulaic, particularly in the area of assessment.	The development of inclusive and flexible curricula would require fewer adjustments to be made and would ensure fairness for all whilst ensuring the maintenance of academic standards.
Disclosure and acceptance of the label of disability was problematic for some students, especially those with unseen impairments.	Better communication between and within central services and academic departments would ensure more effective support for all disabled students, not just those who contact the disability support office.
Disabled students are a heterogeneous group and experiences and outcomes are variably linked to the nature of the student's impairment.	More effective monitoring of the experiences and outcomes of disabled students by impairment should lead to more effective support for those most at risk of academic failure.

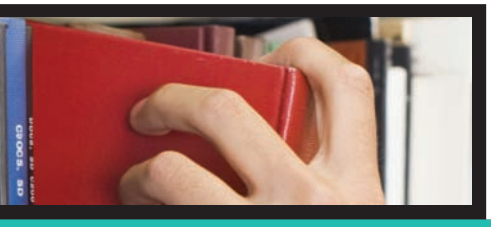
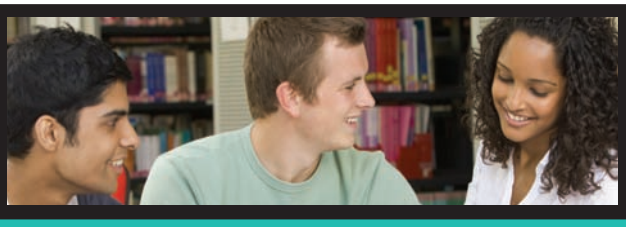
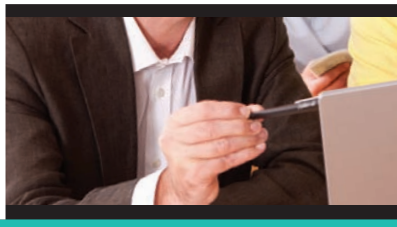
Major implications for disabled students in higher education

This project has a number of implications for how higher education institutions develop policies, pedagogies and practices to ensure the inclusion of all disabled students. It is clear that institutions have, and are continuing to develop, support services for disabled students. It is also evident that students appreciate the support they are offered. However, different types of institutions experience a range of tensions. The way that support is developed further in these institutions will need to take these into account. We found that heavy time commitments for research affect staff availability for teaching more in pre-1992 institutions than in newer universities. In spite of these differences, there are some challenges which apply to all institutions, particularly around resources of time and money.

'You're learning through experience – you're not being told 'this is what you should do with your time', and I think it's good preparation for the real world – what I've learnt is how to manage your own time, how to use it productively, how to basically manage yourself. It's not just music – it's about myself as well, socially and emotionally'

About the project

The research was carried out by Professor Mary Fuller and Professor Mick Healey with colleagues – Katie Kelly, Jan Georgeson Hazel Roberts, and Gill Oddy at the University of Gloucestershire; Professor Alan Hurst at the University of Central Lancashire; Professor Terry Wareham at Lancaster University with Moria Peelo and Linda Piggott; and Professor Sheila Riddell with Dr Elisabet Weedon at the University of Edinburgh.
For further information, visit: http://www.tlrp.org/proj/phase111/fuller.htm

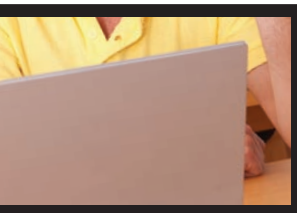
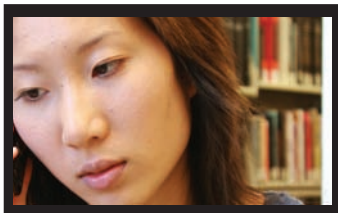
Enhancing teaching-learning environments (ETL) in undergraduate courses: the influence of subjects and settings

This project corroborates many of our principles but most especially on how important research, either pedagogic or subject-specific research, is to improving student learning in diverse settings. It also contributes to several other principles on expert knowledge and expertise, forms of prior or concurrent learning, the active engagement of students, and teachers' feedback and quality. The conceptual framework for understanding how to capture 'congruence' between students' academic learning and teachers' ways of thinking and practising is also drawn from this project. The researchers argue that high-quality undergraduate learning can be encapsulated through approaches to learning, ways of studying and ways of thinking and practising in the subject, which they term WTP. Undergraduate teaching and learning environments can be encapsulated through constructive alignment; congruence and coherence and the 'inner logic' of the subject and its pedagogy.

This project, by researchers at the Universities of Edinburgh, Coventry and Durham, focused on a cross-section of subjects - electronic engineering, biological sciences, economics, and history – and 26 course units from 19 departments in seven new and 12 old universities in England, Scotland and Wales. Focusing generally on one first-year and one final-year module in each university, they interviewed collaborating staff (N = 90); had questionnaires completed by students (N = 6488) at the beginning of each selected course unit (LSQ, the Learning and Studying Questionnaire) and then at the end of it (ETLQ, the Experiences of Teaching & Learning Questionnaire). They also interviewed small groups of students about their experiences of the teaching (N = 668). Course teams were involved in reviewing the strengths and limitations of their unit or module, drawing on evidence collected by the research team, and in modifying the unit in order to enhance student learning. These modifications were then monitored to measure their impact.

Key findings and implications about enhancing teaching-learning environments (RB31)

Underlying what students learnt in specific course units was a developing grasp of how to think and go about the subject like an expert.	The concept of ways of thinking and practising in a subject offers a powerful means of planning and evaluating the fundamental goals of a degree.
There was an inescapable subject dimension not only to what students learnt but also to how they were taught and assessed in undergraduate courses.	In efforts to review and enhance teaching and learning, more attention should be given to what is distinctive about a given subject area.
Although most courses worked well as environments that supported learning, students were often dissatisfied with the guidance and feedback on course work.	Feedback needs to be faster and more helpful to students, particularly where they are inexperienced in undergraduate study and classes are large and diverse.
Conceptually focused research evidence about students' experiences of their courses helped staff to fine-tune teaching and learning environments.	The quality of learning and teaching in undergraduate courses can be systematically enhanced through using richer sources of evidence to guide course development.

Major implications

This team addressed their findings about how to sustain and improve the quality of learning and teaching in contemporary HE to university teachers, academic managers, academic and educational developers, and those with responsibilities for quality assurance and accountability for standards.

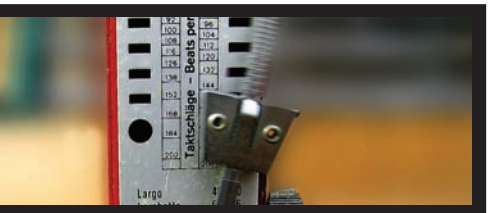
Their crucial finding is that the development of ways of thinking and practising is at odds with recent trends in most universities. High-quality undergraduate learning entails assimilating subject knowledge, and the skills, strategies and conventions that are inseparable from the practice of the subject at an advanced level. Current procedures for course design and review seem to concentrate attention on specific module outcomes rather than on these more fundamental goals. This can mean that students fail to make connections between topics and do not see the subject as an integrated whole. Harnessing the expertise of course teams, educational researchers and academic developers in an evidence-based collaborative approach may be a powerful tool for enhancing teaching quality.

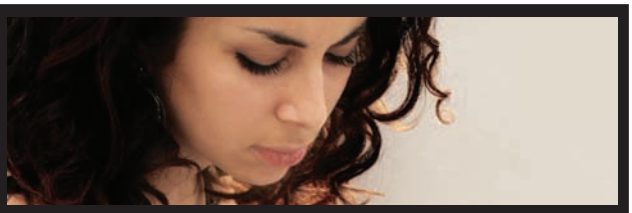
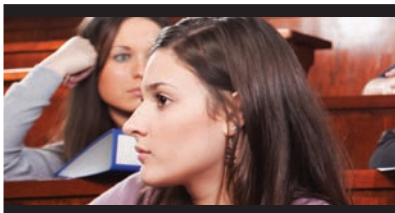
The new concepts also open up fresh vistas on learning and teaching in an age of mass higher education. It offers lecturers, tutors, course teams and educational developers powerful new tools for planning, monitoring, reviewing and enhancing undergraduate courses. An inventory to provide detailed feedback from students to staff about their experiences of teaching and learning environments to allow staff to see what aspects need enhancing was also developed.

The project's main implications for university teachers lie in what it found about using different ways of thinking and practising to pinpoint fundamental subject goals, and of congruence as a key analytical tool in course planning, monitoring and review. For academic developers, the project demonstrates the effectiveness of collaborative, evidence-informed approaches to improving the quality of teaching and learning. Policy makers and senior managers need to ensure that quality assurance mechanisms facilitate improvements rather than impede them. More specifically, there should be greater acknowledgement of the challenges – in terms of management and resources – of large first-year courses for full-time undergraduates.

About the project

The research was carried out by Professor DJ Hounsell, Professor NJ Entwistle, Professor JHF Meyer, Professor LR Land, Dr CDB Anderson, Dr KJ Day and Dr VS McCune, at the Universities of Edinburgh, Coventry and Durham.
For further information, visit: http://www.tlrp.org/proj/phase11/phase2c.html



Improving learning to perform in advanced music learning

Two complementary projects constitute this study of advanced music learning: Learning to Perform (L2P) and Investigating Musical Performance (IMP). Together they address all of our principles. Both provide evidence on the active engagement of learners and the development of expert knowledge. L2P also develops the significance of informal learning, whilst IMP focuses on research and learning of music educators, systematic development of musical knowledge and expertise in social processes and contexts, and the importance of prior and concurrent experiences in musical education.

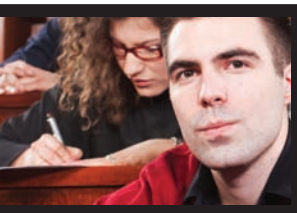
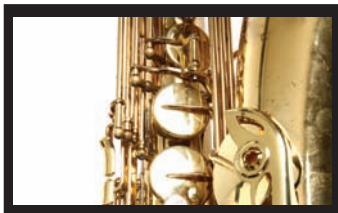
L2P was based at the Royal College of Music in London and explored the development of undergraduate musicians in Conservatoires, where the one-to-one lesson format was traditional. It investigated how western classical musicians learn and how their learning experiences and outcomes can be improved. IMP was a two-year comparative study of advanced musical performance, investigating how classical, popular, jazz and Scottish traditional musicians deepen and develop their learning about performance in undergraduate, postgraduate and wider music community contexts. The project was a multi-site, multi-methods research project, with four higher education partners (the Institute of Education, University of London; University of York; Leeds College of Music; and the Royal Scottish Academy of Music and Drama, Glasgow).

Key findings and implications from L2P: enhancing understanding of musical expertise (RB47)

Learning to perform requires a complex balance between breadth and depth of learning. Musical expertise is not achieved solely through narrowing of focus.	Students seeking musical expertise should be encouraged to pursue diverse activities alongside and within their specialism that will help them create their own expansive learning environment.
The transition from school to Conservatoire is challenging. Student experience in the first term is crucial in establishing a positive learning trajectory from day one.	Students should be supported from early in their course in developing a broad identity as a musician and in redefining and widening their expectations.
Conservatoire students expect and hope for a broad career. Students teach others while in higher education, and report that this enhances their own performance and career preparation.	Conservatoires can best support learning by the use of flexible programmes that allow students to develop the professional skills that they need, at the time that they feel they need them.

Major implications from L2P

Learning to perform can be improved through an expansive approach, redefining and widening student expectations and ensuring flexibility in the learning process. Finding the balance between study, practice and work that contributes to a broad portfolio of skills is the key challenge for those seeking expertise in music. Students need to move between breadth and depth as they develop expertise, using each to complement the other, and should be encouraged to create their own expansive learning environment in which to do so. Institutions of music should recognise the challenging transition from school to Conservatoire, constructively challenging students' identity and allowing them to build and widen their concept of what it is to be a successful musician. Conservatoire students typically seek a career in music, and institutions need to provide space for students to explore professional skills as one facet of their developing musical expertise. The most effective way is a tailored approach appropriate to the student's progress and stage of development. Allowing students to access resources as and when they need them will help them develop their expertise while preparing effectively for their chosen future career.

Key findings and implications from IMP: how do musicians deepen and develop their learning about performance? (RB61)

'Other-than-classical' musicians (jazz, popular, traditional) have common developmental biographies. Western classical musicians tend to have a different profile. This difference can be both strength and weakness.	HE and FE music departments should promote a more holistic view of what constitutes a musician and provide many and varied opportunities for cross-genre collaboration, learning, shared performance and rounded performance excellence.
Gender is important in learning approaches. Male and female musicians exhibit group differences that cut across musical genres.	Music curricula need to be more sensitive to the ways that gender and genre impact on musical learning, and to be differentiated to address biases that can have negative influences on musicians' learning trajectories.
Musical self-efficacy and perceptions of expertise increase with wide experience, particularly in a portfolio career of performing and teaching.	Helping others to learn improves personal performance.
Musical performance anxiety is common, especially for female and Western classical musicians.	Strategies for dealing with performance anxiety should be part of the formal preparation of all musicians, irrespective of genre.
An ideal institutional culture is inspirational, facilitates academic, professional and personal development and fosters a supportive community of learning, whilst allowing the development and pursuit of personal interests.	The foundations for a successful performance career are built on students' informal and formal learning experiences, networking, group activities and sustained support for transitions from tutors.

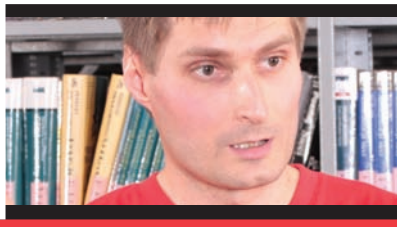
Major implications about how musicians deepen their learning of performance across four musical genres

University departments, Conservatoires and colleges have a responsibility to educate and prepare performers for the demands of their chosen profession, including challenging and demystifying the conception that musicians who are skilled and successful do not experience pre-performance nerves. Performance anxiety is a concern for a significant majority of undergraduate and professional career musicians, across all four of the musical genres. Successful strategies for coping with the demands of performance should be person- and performance-specific. The specific performance context may influence students' perceptions of the demands of performance and their ability to cope with them. Since all musicians attribute high importance to their 'musician self' as key to their identity, an ideal institutional culture should be inspirational. It should promote a positive learning environment, facilitate academic, professional and personal development and foster a supportive community of learning, whilst allowing the development of personal interests. The foundation for achieving more fruitful symbiosis between musicians of different communities and educational backgrounds was a key finding. Music departments in further and higher education should aim to promote a more holistic view of what constitutes a musician, and provide varied opportunities for different kinds of performance engagement and cross-genre collaborations. They should also encourage teaching staff to be proactive and accessible, encouraging students to build professional contacts, and supporting their transition into professional life. Learners should appreciate the value of, and be open to, cross-genre collaborations.

About the teams

L2P was carried out by the late Dr Janet Mills (2004-2007) and Rosie Perkins at the Royal College of Music, London and IMP by Professor Graham Welch, Ioulia Papageorgi, Andrea Creech and Evangelos Himonides, Institute of Education, University of London
For further information, visit: http://www.tlrp.org/proj/phase111/L2P.htm and http://www.tlrp.org/proj/Welch.html





Problem-based and vicarious learning in HE for health care professionals

Two complementary projects on Problem-Based Learning (PBL) and Vicarious Learning (VL) as pedagogies especially for professionals in health care settings in higher education corroborate many of our principles. They provide evidence on developing expertise in social contexts, and the importance of prior and concurrent experiences for student learning of specific forms of expertise. PBL is a systems approach to pedagogy that exemplified the principles put into action. Our study did not support the superior effectiveness of PBL. It looked at a pilot systemic review and meta-analysis to evaluate the evidence for the effectiveness of PBL to try to achieve 'safe' knowledge of teaching effectiveness. It also undertook a randomised experiment to evaluate the impact of a part-time PBL curriculum in a continuing nursing programme, carried out at a higher education institution in London with nurses from five different hospitals.

Key findings and implications from the randomised experiment in continuing nursing education (RB9)

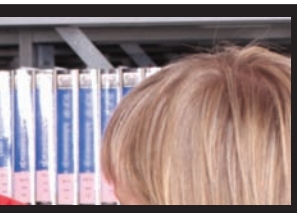
Students in the PBL curriculum reported lower levels of satisfaction than those experiencing a traditional curriculum. Their dropout rate was ten times greater than in the control curriculum.	PBL can increase student dissatisfaction and drop-out. In the case studied, it did not appear to fit with the expectations and values about teaching and learning that prevail in professional and occupational cultures of nursing and the National Health Service. A PBL curriculum, seems insufficient to overcome these barriers or to change such cultures.
PBL, in the form studied, did not appear to meet students' expectations about learning, teaching or their role as a student.	Further study in other settings is required to identify whether improved student outcomes can be produced with PBL . The results found here may be specific to the type of PBL offered or to its implementation.
The particular PBL curriculum which was studied resulted in a reduced teaching workload.	A reduced teaching workload seems to favour PBL, although the number of teacher hours per successful student is greater because of higher dropout rates.

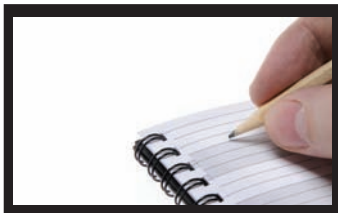
Major implications of the effectiveness of PBL

Studies of the effectiveness of PBL have concentrated on medical education in North America and Europe, focussing on measuring 'accumulation of knowledge' using multiple-choice assessments. This is not regarded by many advocates of PBL as congruent with the approach itself nor as a valid indicator of success. The randomised experiment revealed student dissatisfaction and a disjunction between expectations and practice. It appears to be taken for granted that everyone shares the principles, aims and values that underpin the PBL approach. There is no recognition that pedagogy is a site for struggle between competing discourses. PBL's focus on classroom practice distracts attention from issues in continuing professional education such as the tension between employer-driven demands and the 'personal growth' philosophy of CPE in higher education. However, PBL appears to be one of the more coherent pedagogical approaches in higher education. It offers opportunities for both large-scale rigorous evaluative studies and smaller in-depth qualitative studies to unpack the important components of the approach.

About the project:

The research was carried out by Mark Newman (Institute of Education, University of London); Trevor Corner (School of Lifelong Learning & Education, Middlesex University); Jeff Evans (Middlesex University Business School); Kate Ambrose, Phyl Morris-Vincent, Sheila Quinn, Lesley Vernon, Sarah Wallis (School of Health and Social Sciences, Middlesex University)
For further information, visit: http://www.tlrp.org/proj/phase1/phase1fsept.html





The VL project considered the effectiveness of learning through observing the teaching of others for developing health science students' clinical reasoning skills. In a three-phase project, it tested an interactive VL learning package on speech and language students and identified the difficulties that health science students in initial training have with clinical reasoning. It evaluated the outcomes in terms of learners' experiences, diagnostic skill development and use of professional language as a form of emerging expertise.

Key findings and implications from VL: developing health science students' clinical reasoning skills (RB54)

Diagnostic accuracy involves the generation of true hypotheses, the ability to rule out alternative hypotheses and consider negative evidence, and the use of professional vocabulary.	Expertise consists of subject specific knowledge as well as more general problem-solving skills. Applying both is an enormous cognitive challenge to students.
Students working with other students frequently communicate their lack of confidence and indicate when they are 'stuck' or lack knowledge. The discourse of expert tutors operates on a different level and tends to focus on subject knowledge and diagnostic strategy.	Students reassure each other that they are not alone in their difficulties. Observing dialogue vicariously achieves the same learning outcomes as direct participation.
Stimulated discussions between pairs of students and students and tutors to generate dialogues were useful for students who observed or overheard them 'vicariously'.	Video clips are a rich corpus of reusable learning content. Topics in this project cover subject information, clinical reasoning strategies, and expressions of hesitancy and uncertainty that reassure the learner.
The majority of students felt that observational learning is an efficient way for them to learn, allowed them to learn more professional ways of talking about clinical concepts, and gave them more time to reflect than traditional teaching.	Vicarious learning is effective across a range of different learning outcomes – cognitive, strategic, affective, social-emotional.

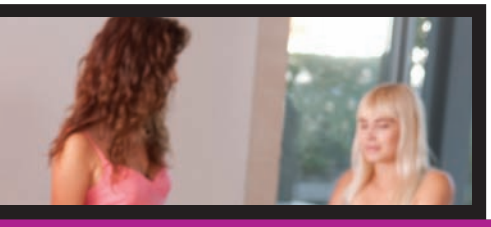
Major implications

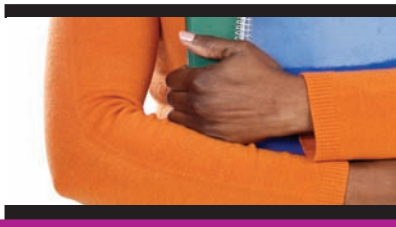
This research has relevance for other programmes, including non-clinical subjects, prompting debate about which aspects of clinical reasoning can be explicitly taught rather than being learned by inference, and how recording the way other people learn can itself be used for educational benefit. Health science students of speech and language therapy face challenges when learning to reason clinically. Accurate diagnoses require domain-specific knowledge of language and cognition in non-impaired people, of language disorders, of tests of language and what they measure, as well as generic strategic skills and knowledge of how to communicate using professional language.

VL offers the advantage that students are reassured by seeing other students experiencing the same difficulties as themselves, and by being exposed to other students' discussions of difficult topics. They also gain from observing experienced clinician educators who model professional language use, a process termed empathic identification. Dialogue between students or with tutors is not focused for effective re-use. In technology-enhanced learning contexts, VL can be personalised to allow students to decide when to retrieve a dialogue or to allow the system to detect impasses and relevant clips to view, a process called mixed initiative learning. Students benefit from VL in their clinical training in skill acquisition, from exposure to good models of professional language use, and in academic self-esteem and self-confidence.

About the study

The project was carried out by Dr R J Cox University of Sussex, Dr J R Lee University of Edinburgh, Professor R A Varley, University of Sheffield and Dr J Morris, Newcastle University
For further information, visit: http://www.tlrp.org/proj/phase111/cox.htm





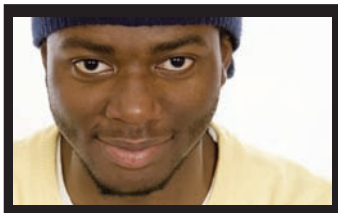
Pedagogies for mathematics and social diversity in higher education

The suite of seven TLRP projects on widening participation in higher education focused chiefly on how to achieve fair access to and participation in HE. Taken together, they offer corroboration of our principles about the importance of consistent policy frameworks to achieve fair access and equitable participation in higher education for a diversity of students. Here we look across the projects to consider the findings and implications for effective teaching and learning in higher education. One key issue concerned the pedagogies for specific subjects such as mathematics or vocational education and training in access to HE. Another was how to teach for social diversity. Here we consider especially the findings from two projects: Keeping Open the Door to Mathematically-demanding Programmes in Further and Higher Education, and Learning and Teaching for Social Diversity and Difference in HE. Both considered pedagogies for more inclusive learning environments, and programmes that make significant differences for students' learning outcomes.

HEFCE's strategic plan for 2006-11 states: "We are particularly seeking to increase demand from groups who are under-represented in these subject," including science, technology, engineering and mathematics (STEM). The Maths education project was based in sixth form and further education colleges and considered students 'on the cusp' of participating in higher education. Approximately half the students in the sample took A Level mathematics without an intention to continue to use the maths in subsequent studies. Mathematics for many students and teachers is considered a way to get ahead. These students all felt that at university 'You won't have teachers; you'll teach yourself' and thus that university pedagogy was more impersonal and less social, and that lecturers would offer less informal support. The context of mathematics provides for an accentuation of general pedagogic principles.

Key findings and implications from the widening participation in HE projects:

Programmes can make significant differences to drop out rates and to the value of mathematics for students (RB38).	'Connectionist' teaching practices can make a significant difference to students' dispositions and understanding, especially for students with lower GCSE grades (RB38).
Programmes should be designed to engage students in meaningful uses of mathematics, e.g. via modelling coursework (RB38).	If we value inclusion, and outcomes such as understanding and disposition, more connectionist teaching should be encouraged (RB38).
Students value teaching that recognises their individual academic and social identities and that addresses their particular learning needs. (RB41).	University teachers need to develop inclusive pedagogic practices and curricula that take account of the diverse interests and needs of students in each class (RB41).
The dominant notion of traditional and non-traditional students creates over-simplistic understandings which limit the development of inclusive, engaging teaching (RB41).	Academic developers should help create a more sophisticated understanding of diversity that reflects students' range of social, cultural and educational backgrounds (RB41).
'The students deconstruct and reconstruct their social and class identities creating hybrid identities (RB44).	Universities need to be mindful of the diversity of needs, cultures and ways of being amongst their students, maintain high expectations of their students and enable them to maximise as broadening an experience as possible (RB44).

Major implications of the projects on maths education and on teaching and learning for social diversity

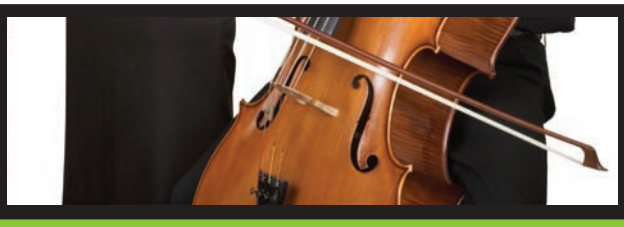
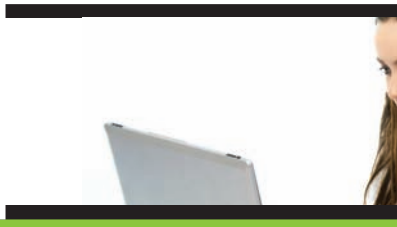
All the projects agree on a major educational and policy implication, which leads into discussions about practices and pedagogies. This implication is stated most clearly by the Maths team, who write that 'policy should reduce the pressure to teach to the test by giving value to learning outcomes of deep understanding and dispositions.' This approach of 'deep understanding and dispositions' had been traditional in more academic rather than vocational forms of education until recently. If policy-makers want to encourage students to be well disposed to further study of science, technology, engineering and mathematics (STEM) within a performance management environment, practical measures of disposition and affect are important. The principle should be to try to measure what we value rather than to value what we can easily measure. The team goes on to argue that the same is true of teaching practices. The Maths team is clear about appropriate strategic pedagogies, saying that "the structure of the whole programme, including assessment, materials and technologies, is important to what is learnt. It needs to be designed and continuously monitored with great care for the full range of valued learning outcomes. Currently there is no sense of a design behind curriculum development nationally". The team goes on to say that "widening the participation of young people in mathematically-demanding courses means recognising the diversity of learners' 'repertoires' of aspiration. Dialogue with learners must address these distinct constituencies and must be multi-voiced." The team is also explicit about what kinds of pedagogical improvements are required, arguing that "if we value inclusion, and outcomes such as understanding and disposition, more connectionist teaching should be encouraged."

The Learning and Teaching for Social Diversity team agrees, saying that "university teachers need to develop inclusive pedagogic practices and curricula that take account of the diverse interests and needs of students in each class." The team argues that "this requires more than a simple technical response. Teachers need the opportunity to reflect upon their own identities as learners and teachers, to consider issues of cultural, social and educational diversity and difference among students, and to be aware of their impact on the learning and teaching environment."

How academic or education developers might transform pedagogies or teaching and learning for social diversity is the concern of this team. It argues that such a transformation would lead to improvement and enrichment. Increased student diversity offers a rich classroom resource of knowledge and experience that can enhance students' understanding and increase academic engagement.

University systems designed to assure 'quality' and maximise the economic efficiency of teaching resources reduce teachers' scope to make the most of this potential learning resource, and constrain their capacity to create inclusive pedagogies. This has implications for university leaders concerned with resource planning, quality enhancement, and learning and teaching. They need to invite challenge to the status quo, and value teachers' lived experiences. They should try to prevent systems and policies from limiting the learning and teaching of students from diverse backgrounds.

For further information about the projects, please follow the links from http://www.tlrp.org/proj/Higher.html

UK teacher education and values underpinning professionalism

Many projects focussed on teacher education, perhaps inevitably given our emphasis on teaching and learning. They addressed the values underpinning professional educational developments and how to embed them through teacher education. Here we look at some which considered aspects of teacher education in and across the UK's four nations and their development in higher education in respect of professional training. They all provide further evidence of what effective pedagogies entail, especially focussing upon the social contexts and processes of learning, and how professionals develop their expert knowledge and skills. Of paramount importance is how the differing policy contexts affect these values-based approaches. A Northern Ireland project took the question of a values-based approach seriously, whilst a Scottish study focused on the early professional development of teachers through competence-based learning. A scoping study reviewed the structures and processes in place to support Initial Teacher Education (ITE), induction and early professional development (EPD) across the four nations. A Values-based Approach to Teacher Education in Northern Ireland explored students' and beginning teachers' experiences of teacher education and professional development, focussing on their understandings of the values underpinning their teaching and learning experiences. New Teachers as Learners: A Model of Early Professional Development in Scotland was designed to improve the learning of new teachers by developing a research-based, practical model of early professional learning. The project showed that it is possible to connect conflicting experiences and standards through a more sophisticated recognition of early professional learning.

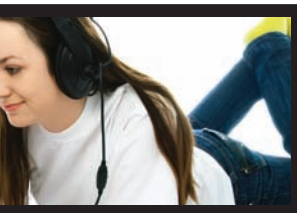
Learning to Teach in post-devolution UK provided a map of current policy and practice in the four nations of the UK to identify similarities and differences.

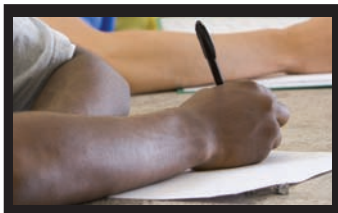
Key findings and implications from learning to teach in post-devolution UK (RB49)

Teacher education and development policies in all four UK jurisdictions are moving towards integrated professional development frameworks based on 'standards' or their equivalent.	Policies on teacher education and development across the UK appear to be strongly influenced by supra-national trends.
While there are surface similarities between these frameworks, there are also significant differences, for example in the relative attention afforded to social and moral values.	The ways in which teaching and learning are defined within each nation appear to be the result of an accommodation between supra-national trends and national contexts, histories and cultures.
There are major differences between the administrative structures and institutional arrangements for teacher education in the four jurisdictions.	The policy-making and policy implementation processes in each national context demonstrate different levels of engagement from the various key stakeholders.

Major implications: Learning to teach in post-devolution UK

Across the jurisdictions of the UK there are moves towards more coordinated policies for the provision of services to children and families. Learning to teach in the post-devolution UK involves greater collaboration between sectors of education and between professionals in education-related work. This 'edu-care' agenda has clear implications for teacher education, and in Northern Ireland and Scotland there are moves towards the inclusion of opportunities for shared modules with social work and community education programmes in teacher preparation courses.

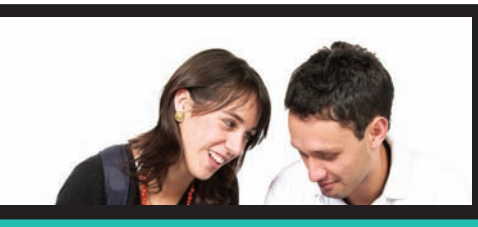




This trend towards convergence is also being promoted at a supranational level by the European Union (EU), the Organisation for Economic Cooperation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and there are examples of international policy sharing in teacher education. The pressure for convergence is evident in the mutual recognition of qualifications, the creation of systems to regulate cross-border mobility of teachers, and the search for comparability via international benchmarks and quantifiable performance indicators.

Approaches to initial teacher education and continuing professional development across the UK should aim to support teachers with opportunities to undertake reflective, collaborative, classroom-focused inquiry in order to develop a well-informed approach to their own learning journey or trajectory.

The extent to which the values basis of teaching is addressed varies between contexts, but teacher identity is more positive where such matters are a common subject for professional discussion. The high priority given to narrowly-focused learning outcomes has been found to restrict teachers' identities and professionalism. The nature of teacher learning varies during their careers, with different needs being identified during different professional life phases. Cognitive learning processes may be less significant than emotional and relational aspects, especially during the early stages.



Emerging codes of practice across the four nations address the question of values in professional standards in distinctive ways.

1. Northen Ireland is hot:

   The Council has sought to articulate the core mission of education and, as importantly, the ethical code underpinning our work as professionals. Teachers, … engage first and foremost as individuals with a sense of moral purpose and responsibility and it is in the interaction between mission, ethical understanding, and professional knowledge that the mystery … of good teaching is to be found… the ethical and value-based approach to teacher professionalism and professional identity is the hallmark of the Council's advocacy. (GTCNI 2007 P. 5)

2. Scotland is warm:

   By the end of the programme of ITE, students will: Demonstrate the ability to discuss the principles informing their own view of education, the curriculum and professional practice, drawing on a knowledge and understanding of moral and religious values and philosophical ideas in a changing society. (The Standard for ITE in Scotland, Benchmark 1.3.1 p. 8)

3. Wales is cool:

   S1: Professional values and practice: these Standards outline the attitudes and commitment to be expected of anyone qualifying to be a teacher, and are derived from the General Teaching Council for Wales's Statement of Professional Values and Practice. (Becoming a Qualified Teacher: Standards for Qualified Teacher Status, standard 1)

4. England is cold.

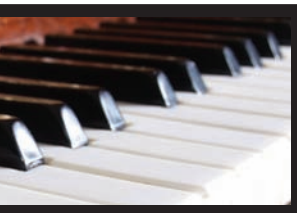
   Those recommended for the award of QTS should: Demonstrate the positive values, attitudes and behaviour they expect from children and young people. (TDA 2007 p.7)

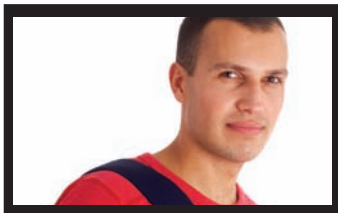
The pattern that has emerged since devolution seems to be one in which the English context is increasingly distinct from the other three jurisdictions. Possibilities for divergence after devolution continue to be influenced by the social, political and cultural legacies of each component country within the UK, as the distinctive inflections contained within apparently similar administrative frameworks seem to show. It remains important for teachers to learn how to operate in the moral domain. There are key political and professional consequences of silence. (See Mahony, P. (2009) 'Should Ought be Taught?' Teaching and Teacher Education (forthcoming).

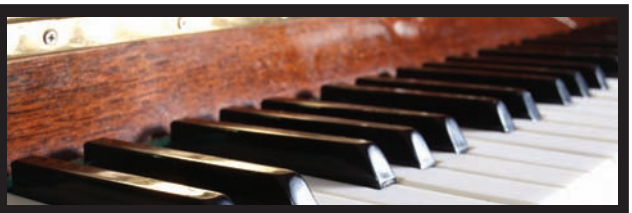
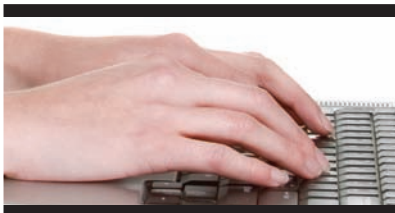
About the project

The research was carried out by Dr. Martin Jephcote, Cardiff University, Professor Pat Mahony, Roehampton University, Professor Ian Menter, University of Glasgow, Professors Anne Moran and Alan Smith University of Ulster, Dr. Moira Hulme, University of Glasgow

Further information, including seminar papers and a comparison of provision in all four jurisdictions of the UK, can be found on the project website: http://www.learningtoteach.org/





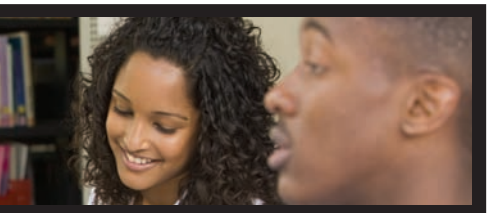
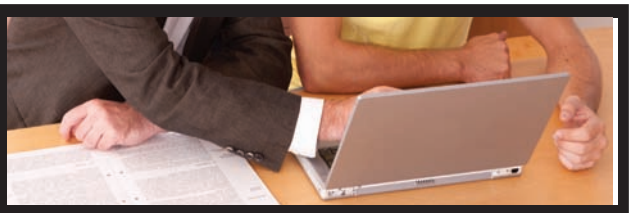
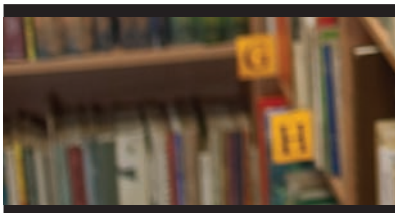
Effective pedagogies for the future of higher education?

Drawing on our evidence-informed principles, our recommendations are addressed to

- National agencies such as the two English Government departments (DCSF and DIUS) and their Scottish, Welsh and Northern Ireland equivalents; UK national Funding Councils and the Research Councils, the Higher Education Academy, Quality Assurance Agency, and the government Office For Fair Access (OFFA)
- Universities and other higher education institutions, especially pro vice-chancellors for teaching and learning, those responsible for curriculum organisation and student support services, and for academic or educational development
- Subject and course leaders at universities and other higher education institutions
- Individual academics, lecturers and tutors

We find a need for improvements in, and more research on:

- The UK policy framework, especially given the global economic climate (Principle 1). Here consideration needs to be given to governmental and administrative responsibilities, which are currently divided between various government departments.
    - The purposes of differential as opposed to equitable resources for universities, university colleges, mixed-provision further and higher education, and other forms of provision need revision.
    - Equitable resources for all types of student, for both teaching and support.
- Pedagogic research, with resources to develop teachers and lecturers in higher education and colleges better (Principle 2). Here the focus should be on research into, different types of inquiry, educational and academic development.
    - Professional educational or academic development, including for the teaching profession, giving consideration to the moral purposes and social role of higher education (Principle 10)
- Expertise and experience (whether prior or concurrent) (Principles 6-9) in relation to pedagogies to engage socially diverse students:
    - Developing critical, connectionist and inclusive pedagogies
    - Forms of knowledge or ways of thinking and practising in subjects
    - Assessment to be congruent with learning.
- Social and informal contexts for learning in the full range of institutions and subjects including the active engagement of the student as learner (Principles 3-5)
- Individual students in relation to equity and diversity (Principles 8 and 10)
    - Learning in higher education extends beyond subject expertise to personal and social development and critical thinking
    - Learning should help individuals develop the intellectual, personal and social resources that will enable them to participate as active citizens, contribute to economic, social or community development and flourish as individuals in a diverse and changing society.
    - This means adopting a broad conception of worthwhile learning outcomes and taking seriously issues of equity and social justice for all, across social, economic, ethnic and gender differences.

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- Education 2.0? Designing the web for teaching and learning, http://www.tlrp.org/tel/publications/files/2008/11/tel_comm_final.pdf
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- Towards expansive apprenticeships, http://www.tlrp.org/pub/documents/apprenticeshipcommentaryFINAL.pdf
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This is the twelfth in a series of TLRP Commentaries designed to make research-informed contributions to contemporary discussion of issues, initiatives or events in UK education. They are under the research programme's editorial control, but their production and distribution may be supported by sponsors. Commentaries are available from the TLRP office or at our website.

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