

Research to raise achievement

Welcome to the second edition of "Teaching and Learning", the Newsletter of the ESRC Teaching and Learning Research Programme.

This Newsletter is to bring you up to date with our research work on raising attainment. All of our research is being undertaken by partnerships of researchers, practitioners and policy advisers, and we are working with them to make sure it has positive impacts on practice.

The core of this bulletin consists of updates on the Projects and Networks within the Programme which are most relevant to your sector. The teams concerned would all welcome your comments on their particular research and would be happy to add you to their mailing lists. Each report has a contact address at the end, and in many cases a website URL where you can find more information.

Since our first edition last September, there has also been progress on a number of our Programme-wide activities.

- We held our first Programme Conference in November at the University of Leicester. We are planning a further major conference in 2002, when many of our projects will be well placed to report on early findings and their implications.
- We have published a report on the implications of recent developments in neuroscience for research on teaching and learning (see page 8).
- A three-year Research Capacity Network to support development of researchers' skills has started work (see page 7).
- The Programme has been allocated a further £10.5 m. to undertake a third phase of research focused on post-compulsory education and lifelong learning, including teacher and trainer education (see page 8).

The version of this Newsletter aimed at post-compulsory education includes a questionnaire about the research agenda for Phase III. We would also welcome responses to the questionnaire from other interested parties. Please let us know if you would like a copy of this; you can also complete it on-line on our Website.

We would be grateful if you could pass this Newsletter on to relevant colleagues after you have read it. Let us know if further copies should be sent to people we have missed in our distribution.

More details about the Programme, as well as the versions of this bulletin for the other sectors of teaching and learning, are on our website at www.ex.ac.uk/ESRC-TLRP/. We will be developing this over the coming months to include more progress reports from projects as they begin to generate research findings, and more contributions from teachers, trainers and policy makers.

We would be very happy to receive suggestions from you on the sort of content you would like to see on the website and in future editions of this Newsletter, or on the Programme generally and how we can engage effectively with the teaching and learning community. You can do this by e-mailing us: J.W.Kanefsky@exeter.ac.uk or writing to the address on the rear cover.

Project Reports

Understanding & Developing Inclusive Practices in Schools

This collaborative action research network involves researchers from three higher education institutions working in partnership with twenty-four schools, in three Local Education Authorities, led by Mel Ainscow (University of Manchester), Tony Booth (Canterbury Christ Church University College) and Alan Dyson (University of Newcastle upon Tyne).

The overall purpose is to define, evaluate and disseminate practices that can help to improve outcomes for traditionally marginalised learners. In this context the idea of marginalisation includes groups whose difficulties within the education system are usually treated separately, in respect to both research and policy agendas. The Network is addressing the following questions:

- What are the barriers to participation and learning experienced by pupils?
- What practices can help to overcome these barriers?
- To what extent do such practices facilitate improved learning outcomes?
- How can such practices be encouraged and sustained within LEAs and schools?

Each team in the Network has established a partnership with one LEA that has made a commitment to address issues of inclusion and exclusion within its improvement plans. Schools have been invited to participate on the basis of a similar commitment to identifying barriers to participation and learning for their pupils, and to the development of practices to overcome them. Staff in these schools and LEAs are receiving training and support in collecting and using evidence in relation to the agenda of the Network. The research teams are monitoring these activities carefully in order to generate evaluative case studies of the schools' and LEAs' attempts to develop their capacities for fostering the learning of all pupils in their communities.

Over the first year there have been opportunities for university and LEA partners from the different areas to meet, share ideas and plan collectively, and within local areas for teachers, LEA officers and university staff to meet and compare progress with individual action research projects. On March 7th / 8th 2001 there was the first opportunity for Network partners in schools, LEAs and universities to meet and work with each other at a National Seminar. The event provided the opportunity for teacher researchers from across the country to reflect on activities to date, focus on emerging research themes and issues, and make links with schools beyond local groups. A substantial part of the agenda of the conference was devoted to presentations by teachers of their action research activities in schools.

Participants were overwhelmingly positive about the 24 hour event. Many spoke of the value of hearing others' perspectives, both on the nature of inclusive practices, and on the action research processes going on in different schools and local areas. For example, one teacher said:

'The conference enthuses you for going back into school. All the time you are listening and seeing what might apply to your own situation.'

One LEA officer was particularly struck by the professional culture over the 24 hours, and by teachers' commitment to the action research processes developing in schools. Teachers also spoke about the benefits of being involved with the Network in general. They spoke of links with university partners challenging them to think, to 'delve a bit deeper than the school consensus.' An LEA officer spoke of the value of the project in 'getting people to collaborate and providing the opportunity to evaluate what they're doing.'

The Seminar confirmed the value of meeting as a whole Network. It allowed practitioners to begin to understand their work in a wider context – to *'fit together different pieces of the jigsaw -'*. Participants came away eager to meet up again to continue the process of sharing ideas and experiences, and university partners came away reminded of their responsibility to assist this networking.

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Evidence-based Practice in Science Education (EPSE)

The EPSE Research Network (led by Robin Millar, John Leach, Jonathan Osborne and Mary Ratcliffe) is exploring ways of helping teachers, and others in science education, to make greater use of evidence from research.

One of our projects centres on using diagnostic assessment to collect the kind of evidence that teachers require to make decisions about what individual pupils, or groups of pupils, should do next if they are to make progress. Along with a group of teacher partners, we have chosen four science topics to work on: electricity, forces, particle ideas in chemistry and biochemical life processes (digestion, respiration and photosynthesis). For each topic we have started from the diagnostic questions that researchers have used in published studies to probe pupils' ideas and understanding. Whilst these are useful, we have found that most need considerable modification and improvement to make them more useful for teachers. Our teacher partners are also clear that diagnostic tools must be quick to use and also quick to analyse – if the information required to take decisions is to be available when it is needed, and not several days later!

We are currently in the middle of the development phase. Teachers who have tried out some diagnostic questions in their schools are enthusiastic about the insights they provide about pupils' thinking. Our target is to have a large bank of diagnostic materials ready for use by teachers in the 2001-2 school year – so that we can explore more fully how this sort of material can influence and inform teachers' actions and decisions – and what effect this has on pupils' learning and understanding of some key science ideas.

In a second, related project, we are working with a small team of teachers to develop short sequences of lessons, each focusing on a key idea that research has shown to be difficult for many pupils. By making explicit the source of the learning difficulty and trying to tackle it directly, we hope that more pupils can be helped to grasp the ideas in question. So far we have developed three short research-based teaching sequences (on electricity, chemical reactions, and photosynthesis), and our teacher partners have tried these out. This will enable us to modify and improve the sequences and – perhaps as important – to improve the way we communicate to teachers the points which are crucial for implementing these effectively. Some other teachers, not involved in developing the lesson sequences, will try to implement them later in the year – so that we can see if they are able to use them with as much success as the teachers who contributed to their development.

The third EPSE project looks not at teaching and learning scientific ideas, but at what pupils understand about science itself as a form of enquiry, and their ideas about the nature of scientific knowledge. It relates directly to the new Ideas and Evidence strand of National Curriculum Sc1. Our starting point was to acknowledge that teaching aims in this area are less clearly defined. So we asked a panel of 25 'experts' what they thought the public needed to know. They included eminent scientists, philosophers and sociologists of science and people with interests in the public understanding of science, as well as some experienced science teachers and educators. Nine themes emerged which two-thirds or more of the group rated as important enough to be included in the school science curriculum. A full report on this work will be available from the EPSE web site later in the summer.

Building on these findings, we are now working with a team of 12 teachers (of Key Stages 2-4) to develop materials and strategies to teach these key themes. The teachers have begun trying out with their classes some of the ideas developed, and we are observing the outcomes, in order to evaluate the strengths and weaknesses of different approaches. Before starting, we collected data from the pupils about their understanding of various aspects of the nature of science. In July, we plan to test these pupils again to see what changes the lessons introduced by their teachers have produced in their understanding.

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Project Reports

Consulting Pupils about Teaching and Learning

The rationale of this Network is that:

- consultation with pupils can offer a practical agenda that teachers can work on to improve teaching and learning;
- pupils' attitudes to learning in school are likely to be more positive if they feel good about themselves as learners and feel that the institution respects them: consultation and participation can enhance pupils'
 - personal confidence (the individual dimension) and
 - sense of inclusion (the social dimension).

We also think that changes in teachers' perceptions of pupils' capabilities can raise teachers' aspirations for pupils and this can lead to enhanced achievement.

We are working with teachers to:

- develop skills and strategies for consulting pupils, of different ages and in different settings, about aspects of teaching and learning;
- gather evidence of the power of pupils' accounts/analyses and of the ways in which their insights can be used to improve teaching and learning;
- develop ways of reflecting the principle of consultation and participation in the organisational structure of schools;
- evaluate the impact on pupils, teachers and schools of supporting pupil consultation and participation

The Network is co-ordinated by Jean Rudduck at Homerton College, Cambridge and involves colleagues from King's College London, Sussex University and the School of Education at Cambridge. It works through seven smaller projects and a Network of interested teachers:

Project 1: Donald McIntyre and David Pedder are working intensively with 3 secondary schools. The focus is on exploring and documenting how teachers respond to pupils' ideas and commentaries on improving teaching and learning in different subjects.

Project 2: Kate Myers, John MacBeath and Helen Demetriou are working with 7 secondary and 2 primary schools. The focus is on developing and documenting ways of consulting pupils about teaching and learning in different contexts and evaluating the different approaches.

Project 3: Michael Fielding and Sara Bragg are working with 3 secondary schools on the organisational implications of introducing and sustaining a commitment to pupil consultation and participation.

Project 4: Michael Fielding and Sara Bragg are working with 2 primary and 5 secondary schools. They are exploring and documenting the potential of pupils acting as (co-) researchers into the process of teaching and learning in ways that enable them to learn more effectively.

Project 5: Madeleine Arnot, Diane Reay and Beth Wang (with help from Julia Flutter and Isobel Urquhart) are working with 2 primary and 2 secondary schools. They are exploring, through pupil consultation, how the conditions of learning in school and classroom affect the identity and participation of different groups of pupils.

Project 6: Julia Flutter is working with 4 secondary schools in phase 1 (and, from autumn 2001, with primary and more secondary schools). The focus is on supporting innovative school-based initiatives which are breaking new ground in terms of pupil consultation and participation.

Project 7: Julia Flutter is co-ordinating a series of academic seminars for the project team, to document and theorise the growth of interest in pupil voice. The topics for the seminars are: *Different constructions of childhood; Developing a language for talking about learning; Pupil voice and democracy.*

About 150 teachers/schools have joined the Network in addition to the schools that are working with team members on individual projects. Network members contribute views and accounts of experience and in turn will receive reports, papers and ideas emerging from the seven projects. Two conferences are planned: the first, Autumn 2001; the second, Spring 2002.

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Teaching and Learning

Improving the Effectiveness of Pupil Groups in Classrooms.

This large scale study led by Peter Blatchford, Maurice Galton and Peter Kutnick is designed to develop and evaluate effective group-work at Key Stages 1, 2 and 3. The project aim is to enhance the learning/achievement potential and motivation of pupils working in classroom groups by actively involving teachers in a partnership programme designed to raise levels of group-work during classroom learning.

By taking a 'what works and why' approach, the project will contribute to practice, policy, and theory and will promote a more considered approach to the use of groupings within classes. Findings will enable teachers to adopt new approaches based on sound evidence of their effectiveness, and allow them to consolidate and improve current uses of group-work across a range of curricula.

The project involves a partnership between researchers, teachers, pupils and LEAs in both the design of the group-work programme, and its evaluation. It will involve regular meetings of teachers and researchers at the relevant sites. A further aim is to help teachers set up support groups either within a school or between local schools. Currently we are setting up teacher groups for the development of group-work approaches and resource packs to be used in stage 2 of the project. Early responses from teachers are encouraging. The teacher – researcher meetings not only offer support for the use of group-work but also enable teachers to share experiences and strategies and to reflect on their own practice. We are developing opportunities for teachers to use involvement in the project as a contribution to a professional development course. Enquiries are welcome from schools and teachers interested in finding out more about the project or being involved at any of the stages.

The project website (see below) will allow access to current research, results and resources for the implementation of the group-work. It will also enable teachers, pupils, and others to interact with the project.

Contacts:

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InterActive Education: Teaching and Learning in the Information Age

The overall aim of this project is to examine the ways in which ICT can be used in educational settings to enhance learning, working with a LEA and a number of schools and colleges. It will provide evidence on the best ways of using ICT in teaching different subjects.

The project centres around 'subject design initiatives' in which teachers from participating schools work alongside researchers and teacher educators to draw on research evidence and practical expertise to develop innovative and appropriate uses of ICT in the classroom. Work so far has focused on building the project teams, developing theory and methodology and reviewing relevant literature in the field.

Teachers will start trying out activities in the classroom in the Summer Term, and this will involve an iterative phase of design and evaluation together with the use of video data in order to focus on classroom practice. Subject design teams are reviewing the range of ways in which ICT can be incorporated into the teaching and learning of particular aspects of a subject, with a focus both on the ways in which ICT might be used by professionals in the area (for example for composing in music) and on the use of ICT for specific learning aims.

The research activity throughout the project will focus on the following 5 themes:

- Educational policy and management of ICT in schools
- Teaching and learning
- The role of subject cultures in mediating ICT use
- Teachers and professional development
- Learners' out-of-school uses of computers.

Research on learners' out-of-school uses of computers will report early in the project in order to inform the work of the subject design teams. Students' use of computers in the home is increasing and this presents teachers with the challenge of assessing computer-produced work, negotiating students' growing expertise in the use of new technologies and confronting inequalities in differential access to computers in the home.

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Project Reports

Learning how to learn: in classrooms, schools and networks

Other projects

The project is a collaboration between the University of Cambridge, King's College London and the University of Reading and primary and secondary schools in Oxfordshire, Medway, Essex, Hertfordshire and two Virtual Education Action Zones.

The project is being taken forward in three distinct ways. Firstly, *Learning how to learn* will track how changes in teachers' actions impact on the attitudes, experiences, and actions of learners, in order to be able to link interventions to outcomes. Secondly, the project will broaden the focus from assessment for learning to a more general focus on the regulation of learning, which will include more explicit attention on the role of students' metacognitive processes in learning. Thirdly, the project will explore different methods of intervention.

In some schools the intervention will be at classroom level, with support being given directly to subject-teachers, while in others the support will be for senior management teams attempting to introduce these ideas on a whole school basis. We will also explore the extent to which face-to-face and computer-mediated networking between teachers and schools assists in the process of building capability.

The project builds on previous work at King's College London on the development of formative assessment in Oxfordshire and Medway. The focus of the earlier King's-Medway-Oxfordshire Formative Assessment Project was on changes in the actions of teachers. KMOFAP worked with 24 secondary school teachers of mathematics and science over a period of approximately 18 months, building on the findings of a review of research in this field. Although the data are still being analysed, it appears that a gain of half a GCSE grade per pupil was achieved. It also generated details of strategies adopted by teachers and data on trajectories of teachers' change and perceptions. Perhaps most importantly, however, the project has produced a network of teachers who have been active in disseminating their work, both within their schools, and more widely, which will be central to the *Learning how to learn* project.

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For details of the KMOFAP project, contact Dylan Wiliam at King's College (dylan.wiliam@kcl.ac.uk).

Martin Bloomer, Denis Gleeson, Phil Hodgkinson, David James and Keith Postlethwaite, *Transforming Learning Cultures in Further Education* Contact: Prof. Martin Bloomer, Centre for Educational Development and Cooperation, University of Exeter, Heavitree Road, Exeter EX1 2LU.

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Noel Entwistle, Dai Hounsell, Erik Meyer, Liz Beaty, Hilary Tait, Charles Anderson, Katherine Day and Ray Land, *Enhancing Teaching-Learning Environments in Undergraduate Courses* Contact: Prof. Noel Entwistle, Higher and Further Education Department, University of Edinburgh, Paterson's Land, Edinburgh EH8 8AQ.

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Michael Eraut, Frederick Maillardet, Carolyn Miller and Stephen Steadman, *Learning During the First Three Years of Postgraduate Employment* Contact: Prof. Michael Eraut, Institute of Education, University of Sussex, Falmer, Brighton BN1 9RG. Tel: 01273 877794 E-Mail: m.eraut@sussex.ac.uk

Martin Hughes, Andrew Pollard, Guy Claxton, David Johnson and Jan Winter, *Home-School Knowledge Exchange and Transformation in Primary Education* Contact: Prof. Martin Hughes, Graduate School of Education, University of Bristol, 35 Berkeley Square, Bristol BS8 1JA. Tel: 0117 928 7007 E-Mail: Martin.Hughes@bristol.ac.uk

Carol McGuinness and Noel Sheehy, *Sustainable Thinking Classrooms* Contact: Dr. Carol McGuinness, School of Psychology, The Queen's University, Belfast, Northern Ireland BT7 1NN. Tel: 028 90274373 E-Mail: c.mcguinness@qub.ac.uk

Mark Newman, *The Effectiveness of Problem-Based Learning in Promoting Evidence-Based Practice* Contact: Mr. Mark Newman, School of Health, Biological and Environmental Sciences, Middlesex University Archway Campus, Furnival Building, Highgate Hill, London N19 5ND. Tel: 0208 362 6702 E-mail: m.newman@mdx.ac.uk

Terezinha Nunes, Peter Bryant and Jane Hurry, *The Role of Awareness in the Teaching and Learning of Literacy and Numeracy in Key Stage 2* Contact: Prof. Terezinha Nunes, Department of Psychology, Oxford Brookes University, Gypsy Lane Campus, Headington, Oxford OX3 0BP. Tel: 01865 483770 E-Mail: tnunes@brookes.ac.uk

Helen Rainbird, Karen Evans, Phil Hodgkinson and Lorna Unwin, *Improving Incentives to Learning in the Workplace* Contact: Prof. Helen Rainbird, Centre for Research in Employment, Work and Training, University College Northampton, Park Campus, Broughton Green Road, Northampton NN2 7AL. Tel: 01604 735500 E-Mail: helen.rainbird@northampton.ac.uk

Or see the Programme Website at www.ex.ac.uk/ESRC-TLRP/

Teaching and Learning

Teaching and Learning Research Capability Building Network

The Programme has recently appointed a multidisciplinary team from Cardiff University School of Social Sciences to form the basis of a Teaching and Learning Research Capability Building Network. It is led by Stephen Gorard (co-ordinator), Laurence Moore, Gareth Rees, Ken Prandy, John Furlong and Ray Crozier.

This is a three year initiative. The key objective is to co-ordinate and support the research capacity building activities of the Teaching and Learning Research Programme, and thereby produce a significant enhancement in the methodological skills and social scientific approaches of a substantial body of UK educational researchers and practitioner-researchers, both within the Programme and in the UK educational research community more widely.

Our particular focus is a substantial group of early to mid-career researchers, who will eventually move to future research projects with a wider range of high level research skills than at present. In particular, we expect to provide or broker high level skills training in design, analysis and interpretation of quasi-experimental and experimental research designs, advanced analytic techniques, complex project management, the combination of different forms of evidence, and theory-building in teaching and learning. We will also provide more general training in the appreciation of research results utilising high level techniques (appropriately packaged), for the benefit of practitioners, practitioners, and policy-makers. As a by-product we also expect to provide some assistance for researchers in their current projects and so strengthen the work of the Programme.

The activities undertaken in pursuit of this objective include a consultation exercise (within the first six months) concerning the skills and needs of UK educational research; the subsequent evaluation, brokering and provision of relevant training materials; and the recommendations for further capacity building exercises based on our terminal evaluation.

Our work with the researchers will be designed to maximise their motivation to engage with the Network, and subsequently to promote long-term interaction, learning and resource-sharing between individuals within this community. Learning sets, secondments and 'buddies' are particular mechanisms by which this might be achieved.

The Network will be starting its work soon. In the meantime any thoughts, comments, useful contacts, details of existing capacity-building activities etc. would be very welcome (in the first instance to Stephen Gorard at the address below).

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The implications of recent developments in neuroscience for research on teaching and learning

A review of recent developments in neuroscience by Sarah-Jane Blakemore and Uta Frith of the Institute of Cognitive Neuroscience, London, has recently been published on the Programme's website, with a request for comments from others with an interest in the field – see under "Consultation Papers", or contact Tess Elsey in the Programme Office, E-mail: T.J.Elsey@ex.ac.uk Tel: 01392 264845.

Phase III three

for the Teaching and Learning and Research Programme

We now have funding of £10.5 m. from the Higher Education Funding Council (HEFCE) for a third phase the Programme. Phase III will focus on post-compulsory education and lifelong learning, including training in the commercial, voluntary and public sectors of employment and learning in the third age. It will also include training and continuing professional development of teachers and lecturers, and research which addresses transitions between compulsory and post-compulsory education and training.

As with earlier stages of the Programme the core objective will be to support research which focuses on raising attainment. This will be pursued through partnerships between practitioners and policy makers with researchers in all stages of developing research projects, so these generate outcomes which address the needs of policy and practice.

There will be an extensive and proactive period of consultation on what the research priorities and research specification for Phase III should be. We will therefore be holding a number of invitation-based consultation seminars in different locations and also arranging a number of focus group discussions with hard-to-reach groups.

Since the issue of insufficient capacity of the research community to undertake high quality studies in the post-compulsory field was a feature of earlier stages of the Programme, we will also be making a significant commitment developing research capacity and the formation of research partnerships in the fields included within Phase III. We will be working closely with the research, policy and practice communities in post-compulsory education and training on this.

A questionnaire seeking views on research priorities, questions and the issues which would most benefit from research has been sent to a wide range of interested parties and placed on our website. We would welcome contributions to this consultation from others with an interest in the sectors covered by Phase III, particularly colleagues with expertise in teacher training and development, or in transitions between compulsory and post-compulsory education. You can complete the questionnaire on-line via the Programme website. Alternatively, contact Tess Elsey at the Programme Office E-mail: T.J.Elsey@ex.ac.uk or Tel: 01392 264845 for a printed copy.

the programme

The ESRC Teaching and Learning Research Programme's prime objective is to support research which will lead to improvements in the achievement of learners of all ages, in all sectors and contexts of education, training and lifelong learning throughout the UK. The Programme comprises a number of large-scale research projects and other related activities designed to achieve that aim, co-ordinated by the Programme Office in Exeter. It has total funding of £23 million from the Higher Education Funding Council for England (HEFCE), the Scottish Executive, the Welsh Assembly and the Department for Education and Employment (DfEE) and is managed by the Economic and Social Research Council (ESRC).

Strategic management of the Programme rests with a Steering Committee of practitioners, academics and other users chaired by Professor Sir David Watson, Director of the University of Brighton. See the Programme Website for a full list of members. Key contacts are:



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