

The Reinvention Centre for Undergraduate Research

The University of Warwick and Oxford Brookes University

**Two-Year Evaluation
July 2007**

The Reinvention Centre for Undergraduate Research

| | |
|----------------------|--|
| Dr Mike Neary | Director (0.5 FTE) |
| Dr Chris Rust | Deputy Director (0.4 FTE) |
| Dr Cath Lambert | Academic Co-ordinator, Warwick (0.5 FTE) |
| Pete Smith | Academic Co-ordinator, Brookes (0.5 FTE) |
| Dr Catherine Hanley | Academic Manager (1.0 FTE) |
| Caroline Gibson | E-journal Manager (0.1 FTE) |
| Adam Cartwright | Centre Administrator and Technology Integrator (1.0 FTE) |
| Jamal Karliyeva | Office Manager (0.5 FTE) |
| Sumila Bhandari | Secretary (0.8 FTE) |
| Carol Parker | Administrator (0.3 FTE) |
| Elisabeth Simbuerger | Postgraduate student, Warwick |
| Rebecca Kiddle | Postgraduate student, Brookes |

This report was written in collaboration by the staff and students of the Reinvention Centre.

Table of Contents

| | | |
|--|--|----|
| Executive summary | | 5 |
| Part I: Background and Rationale | | |
| | Introduction | 7 |
| | Teaching, learning and the University | 7 |
| | Research and teaching: redressing the balance? | 9 |
| | The concept of excellence | 9 |
| | Models of change | 10 |
| | Applied evaluation: methods and methodologies | 11 |
| | Critical indicators in a theoretical framework | 12 |
| | The Future of the University | 14 |
| Part II: Activities of the Centre | | |
| Student as Producer | | 15 |
| | Staff and students: reward and recognition processes | 16 |
| | Academic Fellowships | 16 |
| | Small Grants Fund | 23 |
| | Undergraduate Research Scholarship Scheme | 25 |
| | The Reinvention Centre conference | 26 |
| Teaching in Public | | 26 |
| | Social learning and teaching space | 27 |
| | Community engagement | 31 |
| | Dissemination | 33 |
| | Working with accredited teaching programmes | 36 |
| | Relationships | 36 |
| Teaching for Complexity | | 38 |
| | Pedagogic research | 39 |
| The Future of the University | | 42 |
| | Impact on teaching and learning | 43 |
| Conclusion | | 44 |
| Bibliography | | 46 |
| List of Appendices | | 48 |

Executive summary

Background and Rationale

The core aim of the Reinvention Centre for Undergraduate Research at the University of Warwick and Oxford Brookes University is to 'reinvent' the undergraduate curriculum through the promotion of research-based learning. In so doing, the Reinvention Centre is attempting to re-create the notion of an inclusive academic community where learners, teachers and researchers are all seen as scholars in the common pursuit of knowledge. The activities of the Reinvention Centre are intellectually grounded in the previous work of those involved in research-based learning at the two institutions, providing a framework within which progressive educators now working with the Centre are able to develop their work in collaboration with each other and with students in an atmosphere of mutual support and an ever-expanding academic network.

The Reinvention Centre is grounded conceptually and practically in the work of Ernest Boyer (1990) and the Boyer Commission's 'Reinventing Undergraduate Education' (1999), from which the name of the Centre is taken. In particular the Reinvention Centre at Warwick and Brookes is informed by Boyer's notion of the 'scholarship of engagement' which seeks to unite teaching and research within the undergraduate curriculum. Through a critical engagement with Boyer's work the Reinvention Centre has developed its own concepts that are beginning to have an impact across the sector, for example Student as Producer, Teaching in Public and Teaching for Complexity.

Activities of the Centre

The Centre's collaborative nature has been both challenging and invigorating: challenging in that the traditions, cultures and procedures of two very different institutions have had to be navigated; invigorating in that we have established a productive and progressive working relationship across the whole of the joint team. The Centre is recognised at both institutions as having a positive influence on learning and teaching, and both universities have invited Centre staff to inform their future development of research-based learning directly.

In order to embed research-based teaching and learning across the undergraduate curriculum, we have established a thriving Academic Fellowship programme, which has so far awarded £150,000 to 19 staff not only at Warwick and Brookes, but also at Ruskin College, Oxford, an institution which is one of our close dissemination partners. In this way we have been able both to reward staff for existing excellence in linking teaching and research, and to encourage others to follow; this Fellowship programme has impacted on over 1700 students. We have also been able to support research undertaken by undergraduate students, via each institution's Undergraduate Research Scholarship Scheme and via our Small Grants Fund at Warwick, funding a total of 163 undergraduates with awards ranging from £200 to £2000. We are also planning to encourage research collaboration between academic staff and students through our project funding and Collaboration Fund (Warwick) and our Community Research Fund (Brookes).

The staff of the Centre have worked with accredited teaching programmes at both institutions by running sessions dedicated to linking teaching and research, and by evaluating Warwick's Postgraduate Certificate programme.

In line with our commitment to enable undergraduates to become research active, a core interest of the Reinvention Centre is the redesign of the spaces in which students learn, and we have engaged with this at a number of levels. We are closely allied with the Learning Grid at Warwick, and have developed its ethos of social learning space in the creation of an innovative social teaching space, known as the Reinvention Centre at Westwood (Warwick). We have also undertaken a major refurbishment at Brookes to create a dedicated environment to facilitate research-based learning. In conjunction with the ASKe CETL at Brookes, we have instigated a series of annual symposia around the subject of social learning space.

Much of the discussion to follow draws on our ongoing pedagogic research which we have pursued in order to investigate the subject of research-based learning at each of our institutions and to evaluate the impact of the Centre on the student learning experience. Alongside this research, our

dissemination output has been substantial. A range of scholarly material has been published in a number of forms; members of the Centre have made presentations at conferences and other events; our website continues to receive a substantial number of visitors; we have created an electronic journal of undergraduate research; we have defined an effective and efficient publicity strategy. We are also in the process of organising an international conference which we will host in September 2007.

The Reinvention Centre has formed strong and close relationships with a number of other CETLs, with the HEA and with other institutions of Higher Education.

We are in the process of developing plans to ensure the sustainability of the Centre following the cessation of HEFCE funding in 2010.

Both of our host institutions are seeking to embed research-based learning in their undergraduate curricula by including it as a core activity in their teaching and learning strategies.

Part I: Background and Rationale

Introduction

[...] evaluation is not simply about making judgements about whether the concrete goals in an institutional change strategy have been achieved. It is about ways of capturing transitional shifts in the institutional culture, which may not be possible to measure quantitatively, but which are important to understand the outcomes of improvements made. Achieving an adequate insight into these transitions requires a different approach to evaluation from one that simply attempts to measure observable outputs. As well as collecting data on whether targets have been met, evaluation is also about understanding what is happening and giving a vivid account about the 'state of play' (D'Andrea and Gosling, 2005:198).

This evaluation aims to provide a 'vivid account' of the work of the Reinvention Centre to date, which it will achieve in two key ways. Firstly, the discussion integrates documentation of the Centre's activities and achievements – the 'observable outputs' – with critical analyses of the outcomes from applied evaluation and research. From the outset, applied evaluation has been central to the ongoing development of the Centre. Drawing on aspects of action research, this evaluative function forms part of the work of all members of the Centre and is informed by the theoretical traditions and conceptual frameworks developed in the academic subject areas in which we are located.

Secondly, the evaluation of the work of the Reinvention Centre is firmly situated within the terms and considerations of the policy debates informing the CETL initiative. In line with this, the discussion here explicitly recognises the social, political and economic contexts within which our work is taking place. Further, it aims to evaluate critically the complex and dynamic relationships between day-to-day events and activities within the host institutions, institutional policy developments, and broader intellectual debates about teaching, learning and the contested nature of the university itself. These debates are outlined in the following sections, which aim to provide an overview of the contested field of Higher Education and, within this context, to present the theoretical and methodological concerns informing the work of the Reinvention Centre and the content and form of this evaluation report. To begin, we turn to consider the ways in which teaching, learning and research are central to contemporary policy debates.

Teaching, Learning and the University

The Reinvention Centre for Undergraduate Research is funded by the Higher Education Funding Council for England's (HEFCE) Centre for Excellence in Teaching and Learning (CETL) initiative. The primary aim of the CETL programme is to raise the level and quality of teaching and learning in Higher Education.¹

In originally proposing the Reinvention Centre, we embraced the conclusions of the Boyer Commission in the United States,² inspired by the earlier work of Ernest Boyer. Boyer points out the imbalance between research and teaching and argues for a reconfiguration with teaching recognised as important and fundamental part of academic life. He provides a framework and a baseline on which to consider the relationship between teaching and research. Boyer was concerned with reinventing the relationship between teaching and learning in HE in the US: 'The most important obligation now confronting colleges and universities is to break out of the tired old teaching versus research debate and define in more creative ways what it means to be a scholar' (Boyer, 1990: xii). He formulated this debate within four versions of what he referred to as 'scholarship': the scholarship of discovery – research; the scholarship of integration – interdisciplinary connections; the scholarship of application/engagement – knowledge applied in

¹ The CETL funding has involved the distribution of approximately £300 million to 81 centres in 58 different institutions (74 CETLs in 54 institutions in England; 7 CETLs in 4 HEIs in Northern Ireland), the biggest single investment in teaching and learning in HE.

² The Boyer Commission's report is available to download in full at <http://naples.cc.sunysb.edu/Pres/boyer.nsf/>

wider community; and the scholarship of teaching – research and evaluation of your own teaching (Boyer, 1990). However, the Boyer Commission, in advocating an Academic Bill of Rights, including a commitment for every university to provide ‘opportunities to learn through enquiry rather than simple transmission of knowledge’ (p.12) acknowledges the influence of a much earlier educational thinker, John Dewey (1938), and his observation that ‘learning is based on discovery guided by mentoring rather than on the transmission of information’ (p.15).

Building on this view of learning, there are a number of powerful arguments as to why and how research-based teaching and learning can raise the level and quality of teaching and learning in Higher Education. These include the points that research-based learning effectively develops critical academic and evaluative skills that are used to support problem-based and inquiry-based learning and raise the level of the somewhat more traditional project work (Wieman, 2004). Research-based learning equips students to continue learning after tertiary study, making links to the lifelong-learning agenda (Brew, 2006:14). In addition to the demands of the ‘knowledge society’ (Scott, 2002:13), research-based learning encourages students to ‘construct’ knowledge through increasing participation within different communities of practice (Cole, 1990; Scribner, 1985), and can be set against the traditional, positivist model of teaching, where faculty experts are transmitters of knowledge to the passive student recipient. Research-based learning exemplifies a social-constructivist view of learning (Vygotsky, 1962, 1978; Bruner, 1986, 1990), changing the relationship between student and teacher, with students becoming active collaborators and co-producers of knowledge in a joint enterprise, encouraging participation and retention as well as ‘elevating degree aspirations’ and degree completion while at the same time increasing the likelihood that students will decide to go on to postgraduate work (Pascarella and Terenzini, 2005:407).

In addition to raising the level of teaching, another aim of the CETL programme is to enhance the status of teaching and learning as a professional academic activity and thereby challenge the domination of research in Higher Education (DFES, 2003). It is intended that this transformation in the status of teaching, and with it the culture of Higher Education, will not only take place within the institutions to which the money has been awarded, but across the wider Higher Education community (HEFCE, 2004). This policy implies that any discussion of teaching and learning in Higher Education must involve not only a consideration of what goes on in the classroom, but the role, function and nature of the university itself.

As the burgeoning literature testifies, the role, function and nature of the university are subject to increasingly intensive debate as Higher Education undergoes profound transformations at the national and international level.³ There is no longer any consensus about the ‘idea’ or the ‘uses’ of the university (Newman, 1873; Kerr, 1963), if there ever was. Universities are being ‘realised and reshaped’ (Barnett, 2000; 2005), ‘rethought’ (Scott, 1995; Rowland, 2007) and ‘redefined’ (Scott, 1998). While some regard these transformations positively, others feel that these changes undermine the academic mission of the university, leading to ‘crisis’ (Scott, 1984), ‘de-professionalisation’ (Nelson and Watt, 2003), ‘corporatisation’ and ‘commercialisation’ (Aronowitz, 2000; Bok, 2003; Slaughter and Leslie, 1997; Callinicos, 2007), ‘ruination’ (Readings, 1996) and even the ‘death’ of the university itself (Evans, 2004).

Programmes forming part of the CETL initiative, such as the Reinvention Centre for Undergraduate Research, are well positioned to help identify and realise connections between national and international policy-making, and the localised experiences of teaching, learning, research and administration within contemporary universities. It is therefore imperative that such programmes contribute to these debates, and that the impact of their input can be effectively evaluated. In the case of the Reinvention Centre, a substantive focus of our contribution pertains to what is often referred to as the ‘research-teaching nexus’. The contested and multi-faceted nature of this relationship informs the aims of the CETL initiative and is at the heart of wider debates about the nature of the university itself.

³ ‘In the last ten or twelve years, British Higher Education has undergone a more profound reorientation than any other system in the industrialised world.’ (Halsey, 1995: 302).

Research and Teaching: redressing the balance?

It has been well documented that the field of Higher Education is characterised by the severe imbalance between teaching and research (Brew, 2003). Key to the CETL initiative is the concern to address this imbalance, with the aim of raising the status of teaching (HEFCE, 2004). The relationship between teaching and research is integral to debates about the future of the university. As Angela Brew (2006) argues:

The relationship between teaching and research is intricately embedded within ideas about what universities do and what they are for. It is fundamental to what is understood as higher learning and to ideas about the nature of the academy. Understanding this relationship raises substantial questions about the roles and responsibilities of higher education institutions, about the nature of academic work, about the kinds of disciplinary knowledge that are developed and by whom, about the way teachers and students relate to each other, about how university spaces are arranged and used, indeed, it raises fundamental questions about the purposes of higher education (Brew, 2006: 3).

These fundamental questions are central to the work of the Reinvention Centre for Undergraduate Research, a Centre for Excellence concerned with the relationship between teaching and research in general, and the support of research and teaching at the undergraduate level in particular. The fact that the Reinvention Centre is based in two universities with very different institutional histories, the University of Warwick and Oxford Brookes University – making a link between the 1960s expansion in university education, the Polytechnic experiment 1965-1992, the emergence of a group of research-intensive universities, and the unifying project of the post-1992 arrangements – means that the work of the Centre has a unique contribution to make to these discussions. This contribution is informed by the theoretical resources which we utilise in order to explain and critique the ways in which the work of the Reinvention Centre forms part of a larger intellectual project working to transform higher education.

In the following section, we locate our theoretical orientations in relation to a number of 'ideal-type' models, as put forward by Skelton (2005). These models and their descriptors help map out different possibilities for conceptualising the role, function and nature of the university. They do so through a consideration of the diverse ways in which the concept of 'excellence' in universities can be understood. While clearly integral to the work of CETLs, 'excellence' is a highly contested concept. A careful delineation of what excellence in teaching and learning might mean is therefore an important foundation on which to develop subsequent discussion and against which to evaluate meaningfully the contribution of the work of the Reinvention Centre.

The Concept of Excellence

As Skelton (2005) argues, the concept of excellence is contested, but he suggests that 'alternative views can enhance people's understanding of teaching excellence, helping them to develop an informed and critical personal standpoint' (2005: 25). To this end, he outlines four 'ideal-types' within which the concept of teaching excellence in Higher Education might be framed: traditional, performative, psychologised and critical. In the *traditional* model, knowledge is pursued for its own sake and the university serves as a cultural record and repository as well as providing the means of enhancing the society in which it is embedded. The *performative* model, which has come to dominate current debates, conceptualises Higher Education in terms of the contribution it makes to the national economy in a context of increasing global economic competition. At the level of the university curriculum, teaching programmes are designed to be flexible, innovative and individualised in order to enhance students' skills and employability. In contrast, the *psychologised* model, drawing on cognitive and behavioural psychology, establishes what is to be learnt and how it is to be taught via a focus on personality and learning styles. In this model, didactic, content-led teaching is thought to have limited value since it fails to recognise what students already know and ignores the ways in which they learn. Students are encouraged to take responsibility for their learning, which takes the forms of peer and collaborative work as well as reflexive learning activities. Finally, the *critical* model recognises that teaching is inescapably political, and therefore it is not possible to speak of the disinterested production of knowledge for its own sake, or to regard

teaching and learning as simply instrumental. Rather, critical teaching must take into account issues of social justice and personal empowerment, which can be achieved in the classroom through democratic forms of teaching, widening access to universities, promoting issues of equality and enabling student collaboration as well as independent learning. Skelton (2005) argues that while critical pedagogies have made limited impact, their influence is increasing in response to growing uncertainty about what constitutes the nature of the university as well as opposition to the commercialised and market-driven agendas dominating educational debate.

Models of Change

While recognising the limitations of ideal-types, these models provide a useful framework for helping clarify what might be meant by 'excellence' in teaching and learning according to diverse ideas about what the university is, or should be. Crucially, the frameworks through which CETLs understand and evaluate their own performance are directly linked to their own conceptualisation of the role, function and nature of the university. In order to account fully for the ways in which the work of the Reinvention Centre understands excellence in teaching and learning, thereby elucidating the terms within which our applied evaluation takes place, we turn briefly to re-consider the models already outlined. In so doing, we build on Skelton's (2005) descriptors by paying attention to the strengths and weaknesses of the different conceptualisations and by examining the models of *institutional change* which are implied by each of these ideal-types. As we have already highlighted, understanding institutional transformation is at the core of the CETL initiative and a prerequisite of fulfilling the requirements of successful educational evaluation (D'Andrea and Gosling, 2005). On the basis of these considerations, we present our rationale for grounding the work of the Reinvention Centre within an informed 'critical' position in relation to institutional change.

The *traditional* model implies that unnecessary change is to be avoided. In the traditional model, change is informed by, and takes place through, professional academic practice that is based in academic authority as well as the customs and traditions of academic subjects. While this model is academically grounded, it can be seen as elitist and failing to respond to dynamic social transformations taking place outside of the 'ivory tower'.

The *performative* model sees change as incremental and driven by evidence-based evaluations. Indicators of excellence, as measured through audit and performance reviews, including student experience and satisfaction ratings linked to learning and teaching strategies, are of central importance. Such evaluations provide mechanisms through which teachers are made accountable for the work they do, in ways that are not only regulatory but also provide a framework for the enhancement of teaching and learning. However the managerial and bureaucratic discourses and processes make the performative model of social change an anathema to many academics, particularly in the humanities and social sciences, for whom change is a more complex social phenomenon.

For the *psychologised* model institutional change is part of a developmental process based on cognitive change and consciousness raising, providing the tools and the strategies for individuals and institutions to learn and adapt. This model provides much of the intellectual framework for literature concerned with teaching and learning in Higher Education and the basis for the generic model that teachers are encouraged to use and adapt for their own teaching. The weakness of this model of institutional change is that it does not connect very strongly with the customs and traditions of other academic subjects and discipline areas in HE, and, for that reason, is often regarded as lying outside of, and even contrary to, the main interest of the academics in subject areas other than psychology.

Finally, the *critical* view sees institutional change as the outcome of conflict and struggle, forming part of much wider social, political and economic context beyond the institution. This approach, which can claim much of its legitimacy from the work of Paulo Freire (1970), the student protests in 1968 and progressive forms of teaching and learning developed as a result of these influences, aims to democratise radically the process of knowledge production at the level of society. For this critical model, institutional and social change is not the product of incremental policy changes, strategic planning or teaching innovation, but emerges out of much wider social, political and

economic processes, resulting in 'paradigm shifts' (Kuhn, 1970) and revolutionary transformations in the practice of teaching and learning.⁴

The Reinvention Centre is committed to the critical framework for excellence, using it to distil the most progressive applications from the traditional, performative and psychological paradigms. Critical in this sense does not mean 'negative judgements', but the awareness of the progressive possibilities that are inherent in even the most contradictory and dysfunctional contexts.

In these introductory sections we have described the ways in which we locate our work within the context of contestations about the university, in particular debates pertaining to institutional change by means of excellence in teaching and learning. Building on the theoretical approaches outlined above, we now turn to consider the ways in which we have carried out an applied evaluation of our work to date.

Applied evaluation: methods and methodologies

'Philosophers interpret the world; the point is to change it' (Marx, 1848).

The pedagogic research undertaken by the members of Reinvention Centre, with additional independent input where appropriate, can best be described as an applied evaluation utilising multiple methods and drawing on features of action research.⁵ Action Research has been described as being a way of bringing 'scholarship and praxis (practical action) together' (Reason and Bradbury, 2006: xxiv). It does this by:

- Responding to practical and pressing issues in the lives of people in organisations and communities;
- Engaging with people in collaborative relationships, opening new communicative spaces in which dialogue and development can flourish;
- Drawing on many ways of knowing, both in terms of evidence that is generated and diverse forms of presentations through which we can engage with wider audiences;
- Being strongly value orientated, seeking to address issues of significance concerning the flourishing of human social relations, communities and wider ecologies;
- Emerging as an organic process which cannot be predetermined but changes and develops as those engaged deepen their understanding of the issues to be addressed and develop their capacity as co-inquirers both individually and collectively (Reason and Bradbury, 2006: xxii).

Although action research is by no means limited to a Marxist interpretation, this practice has flourished as a form of liberatory and emancipatory research around the world (Freire, 1970; Kane, 2001), taking it beyond the more narrow focus of institutional change through which it is more regularly practiced (Reason and Bradbury, 2006).

As the introductory section has made clear, the scope of this evaluation goes beyond a narrow assessment of the activities of the Reinvention Centre in an institutional context, in order to engage with the wider policy implications of our work. Nonetheless, our research practice is grounded by being embedded within the institutions and subject departments/schools within which the Reinvention Centre is located: the School of the Built Environment at Brookes, and the Department of Sociology at Warwick. The applied evaluation, as well as the writing of this report, has been

⁴ With regard to research-based learning Tagg and Barr refer to a paradigm shift as having taking place in US HE. *From Teaching to Learning: A New Paradigm for Undergraduate Education – from instructional to productive learning paradigm* <http://critical.tamucc.edu/~blalock/readings/tch2learn.htm>

⁵ To this end, every member of the Reinvention team completes a questionnaire every six months which asks them to evaluate critically their activities over that time, and we re-assess our priorities accordingly. We also have an official external evaluator, Professor Angela Brew of the University of Sydney, and we have been pleased to secure the services of other external colleagues (for example David Gosling of Plymouth University) as "critical friends". In order to keep up to date with evaluation procedures amongst other CETLs, the Centre Academic Manager has joined the CETL evaluation network, which is proving to be a very useful source of information and support.

collaboratively undertaken by staff with administrative, clerical and academic responsibilities contributing to the work of the Centre from across both institutions. This approach aligns with the traditional model of institutional and social change, in that it is based on professional academic values and is informed by the radical and critical frameworks which seek to promote progressive institutional transformation extended to the wider higher education community.

Critical Indicators in a Theoretical Framework

This report is written in the context of the five stated general ambitions on the front of the original funding proposal. These are to:

- Reinvent the teaching and research nexus by bringing students more closely into research cultures;
- Support student engagement and the acquisition of critical skills and self-reflexivity;
- Support deep learning of the subject;
- Enhance final-year performance;
- Increase the acquisition of employability skills.

Following on from these critical success factors, we set specific targets for ourselves which included:

- An expansion of the number of modules across the faculties in which there are undergraduate research opportunities;
- The production of impact studies against benchmarks developed in relation to undergraduate research activity;
- Generation of Reinvention Centre Fellowships for academic colleagues;
- An increase in students' research capabilities to be demonstrated through the evaluation of final year performance in the two universities;
- Substantial use of new facilities to support undergraduate research;
- An expansion of online support to enable undergraduate research in the disciplines;
- An increase in the take-up of accredited extra-curricular undergraduate opportunities, including learning in the community;
- The development of cross-sector student and staff collaboration and exchanges between the students and staff of our two universities;
- Dissemination of Reinvention Centre initiatives in other UK universities, as well as a range of professional, statutory and voluntary organisations and the Higher Education Academy.

These ambitions and critical indicators are located within an intellectual (and organisational) framework made up of three 'working concepts': Student as Producer, Teaching in Public and Teaching for Complexity. These concepts have been established through the life-time of the Centre and they increasingly form the basis of much of our work. As such they have become the conceptual means through which we work towards the aims and ambitions outlined. The ways in which these working concepts help organise our work is reflected in the use of the concepts to structure the remainder of this report.

This issue of grounding our work in an academic and intellectual framework that extends beyond not only our initial proposal, but also further than the teaching and learning discourse on which much of the teaching and learning literature is embedded, has already been recognised as a key issue in evaluating the effectiveness of the CETLs and is regarded as an important factor in deciding the extent of any lasting impact by the CETLs. Gosling and Hannan (2007) argue that many of the CETLs are working with 'largely undertheorised practice' and that this is a weakness when it comes to providing a validation of practice which would not be 'useful or convincing to others in the sector'.

In order to invigorate and challenge the frameworks that have been established around the practice of research-based learning, the Reinvention Centre has developed a number of conceptual

frameworks within which to position the work of the Centre in a way that is intellectually convincing and coherent. These concepts are: Student as Producer, Teaching in Public and Teaching for Complexity.

Student as Producer

The concept of student as producer is derived from student slogans in 1968 '*We work, but we produce nothing*' (Cohen-Bendit, 1968); Freire's '*conscientisation*' (1970); Debord's '*Society of the Spectacle*' (1970); Pratt's '*Polytechnic Experiment, 1965-1992*' (1997); Barr and Tagg's '*productive learning*' (1995); Bishop's '*viewer as producer*' (2006). The concept implies that by connecting research and teaching undergraduate students become productive collaborators in the research culture of the department. This is particularly important in a context within which students have been forced into the position of consumers in a service culture that many academics regard as antithetical to academic excellence (Lambert *et al*, 2007). The concept of student as producer encompasses all of our funded work, as detailed below on pp. 15-25, and is the theme for our 2007 conference (p. 26 below).

Teaching in Public

This term was first developed in conjunction with our teaching room at Westwood (see below pp. 28-30), the plan to develop a streamed video to broadcast the activities in the room around the campus and on our website, and proposals to extend this facility to other teaching rooms on campus that are designed in the style of the Westwood space. Although we have not yet set this up, it is very much part of our plans for the room and for the campus. The concept has been made more substantive with the ways in which public 'not-teaching' spaces on campus at Warwick are being used for teaching with Reinvention support, the most visible example of this being the teaching that takes place in the Mead Art Gallery in Warwick Arts Centre. Both of these connect and develop our interest in the spaces within which teaching and learning takes place, which is a central Reinvention theme.

Teaching in Public is linked to the notion of Public Sociology (Burawoy, 2005), within which academics and their students are encouraged to get involved with issues of public concern outside of the campus. This also embraces the notion of public intellectual to include students as well as academics. This very much involves the kind of community links that the Reinvention Centre is making in a whole range of ways, not least the Brookes Community Research Fund and the work with the Thames Valley partnership.⁶

The concept also provides the space for the Reinvention Centre to generate a debate about the efficacy of providing higher education as a 'public good' (rather than a commercialised service) along the lines of the terms and conditions outlined by the UN Charter for Human Rights and in contradistinction to the current increasingly marketised provision of the 'student experience'. The extent to which the Reinvention Centre is affecting the debate in HE is evidenced by the fact the concept of Teaching in Public is the theme for this year's international conference for the Higher Education Academy's subject centre in Sociology, Anthropology and Politics (see <http://www.c-sap.bham.ac.uk/>). The concept of Teaching in Public encompasses our dissemination work, our creation of new learning spaces and our community engagement activities, as detailed below on pp. 26-38.

⁶ The Thames Valley Partnership is a voluntary organisation that seeks to create safer and stronger communities through longer-term and sustainable solutions to the problems of crime and social exclusion. They work with criminal justice partners, local authorities, voluntary and community organisations and the private sector. More information may be found at www.thamesvalleypartnership.org

Teaching for Complexity

In this section we set out our critique of the concept of supercomplexity, a notion that is gaining increasing prominence within HE teaching and learning circles. We counterpose the concept of supercomplexity with the notion of complexity.

Barnett (1997) argues for research-based teaching on the grounds that we now live in a 'super-complex' society that is 'not just unknowable; it is radically unknowable' (p. 4), and in which the university is reduced to 'a site of organised enquiry for generating and managing uncertainty' (p. 18). For Barnett 'what is required is not that students become masters of bodies of thought, but that they are enabled to begin to experience the space and challenge of open, critical enquiry' (Barnett, 1997: 110).

While agreeing that the social world is uncertain, we disagree that it is unknowable. Indeed, it is precisely through teaching students 'bodies of thought' that social science can continue to renew and reinvent itself in the face of increasing complexity. While the social world may be increasingly complex, a reinvigorated social science should be able to convey that complexity as well as the reasons for it clearly and coherently. In the moment of the super-complex, a world that is radically unknowable, the idea of the university is lost.

In order to know our world we have to research it, including the world of HE. This section will include all of the various research that has been done by the Reinvention Centre (see pp. 38-42 below).

The Future of the University

The Reinvention Centre is one of 19 CETLs based in more than one university. Warwick and Brookes have a record of previous relevant collaboration among the core team through a number of projects (Project LINK; a Phase 5 FDTL project in the Scholarship of Engagement in Politics) and both institutions fully supported our collaborative bid. The decision to submit a collaborative bid had a pedagogic and economic rationale and was underpinned by a confidence in the collaborative model already established. Pedagogically, we were concerned to support an inclusive model of undergraduate research across the UK sector; economically, the Centre could pool the considerable gains and outputs from externally and internally funded initiatives from both institutions.

The collaborative nature of the Reinvention Centre has been both challenging and invigorating. The Centre team across both institutions has an excellent working relationship; those based at each institution hold a weekly meeting, with one in every four of these being a joint meeting of the entire Warwick/Brookes team. More formally, the Centre at each institution has a Management Committee – meeting four times per year – comprising Centre staff and other members of the core team, along with institutional representatives; we also have a joint Steering Committee which includes senior staff from both Warwick and Brookes and external representatives, which meets twice per year.

Initially some concerns were raised that too much staff time might be spent in travel, but these have proven to be unfounded, as we find that regular interaction is a major advantage for the sharing of ideas. Members of the team communicate frequently, whether face-to-face, via email or telephone, or via video-conferencing. Some early glitches caused by each institution having different traditions or different procedures on various issues were overcome, and although the implementation of the Centre at Warwick and at Brookes may differ, this may be seen as an opportunity for the sharing of practice rather than a disadvantage. At an institutional level, a contractual agreement was agreed and signed at an early stage in the Centre's life.

One of the aims which we set out in our original bid was to enhance the collaborative experience via the regular exchange of students between institutions. These exchanges have not been as frequent as we might have envisaged, mainly due to the exigencies of setting up and establishing the Centre in each of its host departments. We intend to promote further exchanges in the future and to create more synergy between our respective departments.

The nature of this collaboration, across two very different types of University, allows the Reinvention Centre to look beyond an institution focus and to consider its own work and the CETL programme as a whole, across the HE sector. An important condition of the CETL funding was how the programme would affect the sector as a whole and the Reinvention Centre has taken this responsibility seriously from the outset. This approach connects the Reinvention Centre to the debates about what goes on in the classroom and the role and the nature of the University itself. At the end of this paper we will consider in what ways our work can make a contribution to the future of each University, Warwick and Brookes, and to the HE sector as a whole.

Our main point is that the current dichotomy between teaching and research means that universities are unable to maximise the full potential of the resources that constitute and contribute to the life of the university, with the undergraduate as the yet-unrecognised resource. In order for these resources to be maximised, the relationship between teaching and research needs to be reconfigured in ways that enable and allow those resources to be liberated and developed in ways that are beneficial to all of those involved. This does not mean that teaching and research are simply integrated into an already existing system, but that teaching and research are recognised as the organising principles of the university: the structuring dynamic around which everything is arranged, and that the university is reorganised or reinvented accordingly. The strength of the model that we are proposing is that it does nothing to undermine the real nature of the university, but works by intensifying the core activities of Higher Education: research and teaching/teaching and research.

This concentration on the relationship between teaching and research in order to make teaching more like research, and research more like teaching, is not to impose a framework within which all else must be included, but rather to set up a dynamic and, at times, contradictory relationship out of which all manner of forms of teaching, learning and research can emerge, as yet unimagined. This ambition to invent and reinvent forms of teaching and learning and the production of knowledge in ways that are beyond our imagination is not meant as another academic self-indulgence, but is suggested as a way of confronting and dealing with social, political and economic problems that appear to be beyond our capacity for meaningful intervention and certainly not resolvable within the terms we currently understand.

Part II: Activities of the Reinvention Centre

THE STUDENT AS PRODUCER

This section deals with the extent to which students have been involved as collaborators in the production of knowledge. It details some of the core activities of the Reinvention Centre such as the funding of academics and students to develop research and research-like activities both inside and outside of the curriculum. This includes detailed information on the funded projects, feedback and statements from students and teachers, as well as a review of the processes by which the money is allocated. The section shows a spread of funding across the two universities in terms of Academic Fellowships (19 amounting to £150,000), URSS scholarships (£53,000 put towards awards for 117 students),⁷ Small Grants Fund (£15,000 awarded to 46 students) and other smaller-scale funding schemes.

In terms of our critical indicators this section shows evidence of

- Reinventing the teaching and research nexus by bringing students more closely into research cultures;
- Supporting student engagement and the acquisition of critical skills and self-reflexivity;

⁷ At Warwick we co-fund the URSS along with the Centre for Academic and Professional Development (using TQEF money); the Centre's £23,000 donation to the scheme is therefore only a part of the total awarded to students during the past two years. At Brookes we have funded the entirety of the £30,000 awarded.

- Supporting deep learning of the subject;
- An expansion of the number of modules across the faculties in which there are undergraduate research opportunities;
- Generation of Reinvention Centre Fellowships for academic colleagues;
- An increase in the take-up of accredited extra-curricular undergraduate opportunities, including learning in the community.

More work is needed in the area of

- The development of cross-sector student and staff collaboration and exchanges between the students and staff of our two universities.

Staff and Students: Reward and recognition processes

One outcome which we expected from the activities of the Centre was a strengthened reward structure for colleagues who were able to demonstrate that they made close links between their teaching and research through the promotion of undergraduate research. The primary method through which this has been achieved is our flagship Academic Fellowship programme, details of which may be found below.

The Reinvention Centre has also acted as a catalyst for reward and recognition for Centre staff: for example, the Director was promoted to a Readership in 2007 primarily as a result of his work here; he was also awarded a National Teaching Fellowship in 2007 by the Higher Education Academy.

While the indirect and direct funding of student research is motivated by the pedagogic rationale already outlined, the Reinvention Centre also wishes to ensure that student research activity is appropriately rewarded and recognised. This view is in keeping with our commitment to integrating research-active undergraduate students into the research cultures of their discipline and university. To this end students are encouraged to share their experiences of research (process, as well as outcomes) by a range of methods including seminars and talks, academic publication within and outside of the university, the making of documentary films and participation at relevant conferences. Such activities are supported and promoted by the Reinvention Centre through the provision of camera and film-editing equipment and training, the use of plasma screens in the Learning Grid for displaying students' work, the establishment of an online undergraduate research journal, and the participation of students in key public events, including a forthcoming international conference, *Student as Producer: Reinventing the Undergraduate Curriculum*.

Academic Fellowships

The core activity of the Reinvention Centre is based on a Fellowship programme, which both rewards colleagues for their excellent teaching and encourages them to expand further their notions of undergraduate research. The opportunity to apply for the first tranche of Fellowships in Year 1 was directed primarily at members of the core team, and a number of these are now engaged in or have completed their projects.

Initially we started with different requirements in each institution regarding claims for excellence: colleagues at Warwick were asked to address the Centre's working principles (consolidating the ties between teaching and research; encouraging undergraduate research within the curriculum; redesigning the spaces within which students learn; and disseminating knowledge about research-based learning across the HE sector) while those at Brookes were required to 'provide evidence of teaching or learning development excellence already achieved' via a detailed list of criteria. However, we later became concerned that Brookes's fairly strict requirements might discourage colleagues from applying, so they were later relaxed somewhat in order to bring the two systems more into line with each other, and to make the primary requirement one of successful involvement in teaching and learning innovation. We also developed a separate funding initiative for projects relating to undergraduate research, which was related to the innovative ideas of the applicants

rather than any emphasis on reward for previous excellence; this is detailed below in the section on 'community engagement' (pp. 32-33).

We have developed a comprehensive system for assessing Fellowship bids. A panel which comprises the Director, the Deputy Director, both Academic Co-ordinators, the Academic Manager and an external member (currently Dr Glynis Cousin, Senior Advisor at the HEA) considers each application against the published criteria (timescale; aims, approaches and activities; outcomes and dissemination; evaluation plan; budget; and compatibility with the Reinvention Centre's aims). At first we intended to accept applications throughout the year, but it became apparent that we might be in danger of being unable to fund a suitable project simply because it was submitted after the whole Fellowships budget had been allocated for that particular year. Therefore we now invite applications once per year, with a deadline of 31 January; this enables us to assess all applications together on a competitive basis, and has worked well. Each Fellow may be awarded a grant of up to £10,000; this is released in two parts, the first to set up the initiative and the second on receipt of a completed evaluation report of the project.

Our initial plan was that after two years, the Academic Fellowship scheme would be rolled out further to include other departments and schools within the two institutions; however, due to the success of the programme, we have already been able to expand from Sociology and the Built Environment into areas as diverse as medicine, history and professional development. A short summary of each current or completed Fellowship is included below, with feedback from the Fellowship holder provided for projects which are complete, or are near to completion; for evaluative purposes this includes both positive and negative comments regarding their experiences and projects. For further details of each project please see our website at www.warwick.ac.uk/go/reinvention/people/fellows

Summary of fellowships awarded funding to date

- ***Projects completed or nearing completion***

Dr Paul Taylor, Department of Chemistry, University of Warwick

"Reinventing Organic Teaching Laboratories" (100 students, October 2005-March 2006)

This project aims to reinvent the role of Warwick Chemistry undergraduate teaching at Levels 1 and 2, with the aim of putting learning through practical experience at the front end of the undergraduate learning experience. Specifically, it will reinvent the Organic Chemistry units at these levels to make them more enquiry-based in nature, exemplifying the possibility of using laboratory classes as primary methods of exposing students to new aspects of theory.

"Our own Year 4 undergrads were strongly supportive of the introduction of more enquiry-based lab classes:

- *the "traditional" early year practical units had taught most of the necessary laboratory techniques, but had failed to explain the underlying theory – it was difficult not to treat the given procedures like recipes – there was little thought involved in the process;*
- *the "traditional" units had not prepared them for their final year research projects - they were not well prepared for the reality of research (that experiments fail or are inconclusive) and initially the students had felt that such disappointing results were their own fault."*

Specific outcomes are:

- *reinvention of the Organic Chemistry units at Levels 1 & 2 (ca 150 students per annum) to make it enquiry-based in nature;*
- *comparative evaluation of students' attitudes to laboratory teaching through "traditional" and "enquiry-based" laboratory classes;*
- *exemplification of the possibility of using laboratory classes as primary methods of exposing students to new aspects of theory;*
- *dissemination of the experience gained to the Department, Faculty, Institution and wider HE sector.*

“The results were extremely pleasing, suggesting that our aim of putting learning through practical experience at the front end of the undergraduate learning experience had largely succeeded. Indeed, any negatively expressed comments can be read as positive in the light of the Year 4 students’ reflections (vide supra) on the failure of more traditional classes to prepare them for research.”

Dr Andrew Williams, School of Law, University of Warwick

“Experiencing Human Rights: Learning through Research” (87 students, October 2005-October 2007)

The underlying rationale of this project is to provide opportunities for students to achieve a better understanding of human rights, in all their complexity and variety, through experiential research in the community. Various student-led projects were established which facilitated the participation of undergraduates in human rights research and experiential learning opportunities.

“I was already engaged with these sorts of activities but it had all gone a bit moribund and was not really coalescing around a particular idea and it was all very ad hoc. The Reinvention Fellowship money focused my mind on what the project is and what I wanted to do. For me maintaining the research element of the project was fundamental, but also working out how to administer the project and that all should be for the benefit of the students. I wanted to be able to do all three effectively – not any one on their own or at the expense of the other.

The establishment of the Centre has led to an explosion in interest and initiative, internally and externally, at all levels, around Criminal Justice, Civil Justice and Death Penalty.

The key issue is that students feel as if they own the projects and the research and to use it as they see fit. The problem with most teaching on modules is that students do the work for assessment and write it up in the way in which they feel the marker wants it to be done. But with this work they are released from that constraint and take ownership of the whole process so that it is not just research but a whole learning experience...it’s life changing stuff...Leading to the development of community projects in their own way and by making their own connections.

At the department level it is beginning to have a real impact, colleagues can see there is a sense of real exposure to real things that are happening and that they are already teaching about. It’s a natural fusion of their own research and what students can get into.”

Andrew was short-listed for the National Law Teacher Award (runner up) by Open University Press, in April 2007, based largely on the work of the Fellowship.

Emeritus Professor Alan Jenkins, Westminster Institute of Education, Oxford Brookes University

“The effective adaptation of USA undergraduate research schemes to the UK context” (all Brookes undergraduates, January 2006-July 2007)

Through visits to the USA, principles of how to adapt such schemes to the UK context have been established and are now being developed in detail for Brookes and other institutions. A central concern is to develop policies that can be maintained after CETL funding.

“The major impact has been as the architect and coordinator of a ‘fact-finding’ trip to the States involving myself and two others looking for what was transferable to the UK, and in particular to Brookes. This has led to dissemination events at Brookes, a summary publication, and a policy paper to Brookes Learning and Teaching Committee. The latter was warmly endorsed by the committee and has been sent out to the Schools for their consideration. My US visits have also had a national impact feeding into my external

dissemination activities, primarily with the HEA, and has helped to inform the pages I have contributed to their website.” (see <http://www.heacademy.ac.uk/rtnexus.htm> and <http://www.heacademy.ac.uk/5482.htm>)

Dr Christina Hughes, Department of Sociology, University of Warwick

“Embedding Undergraduates in the Research-Teaching Nexus: The Case of Money Sex Power in Global Context” (30 students, January 2006-December 2007)

This project is developing a curriculum which is not only research-led and student-centred but is co-managed and co-taught by students. Students are researching and delivering lectures and seminars on this third-year module in Sociology and, as part of the participatory action research model being used, a Student Steering Committee has been formed that contributes to the management and evaluation of the project. The overall aim is to explore how teaching and learning innovations of this kind can create a more active and engaged student response to the curriculum.

“They are much more engaged with the curriculum. Two students have said that this module has completely turned them around in a way that they have never experienced in this institution. This is completely phenomenal because this is precisely what we wanted to achieve. The level of expectation we put on them, it has blown their heads off, judging by their level of student intellectual engagement it has been an incredible learning experience. The class work is good, in the 2.1. range, but the presentations are again mind blowing. They are good enough for any conference and again that is where you see that level of engagement, intellectual curiosity and research skills. As well as being a brilliant learning experience it has been a brilliant teaching experience, not routine or going through the motions. As a form of professional development it has been a really excellent space for me to take some risks and see how they go. The Reinvention Centre, because it has got the brief that you can experiment and try new things, gives us the energy to feed that back all the way through the Sociology department.”

Christine Simm, Thames Valley Learning Resource Network, Ruskin College

“Knowledge for Change: Social Work Students as Creators of Knowledge” (30 students, April 2006-June 2007)

This fellowship involved students in the second and third years of the BA in Social Work. It contributed to students’ appreciation of research methods, the contestability of “knowledge”, the current debates about evidence-based practice and their understanding of themselves as creators (rather than merely recipients) of knowledge. It focused particularly on exploring the relationship between theory/knowledge and social work practice.

Professor Byron Mikellides, Department of Architecture, Oxford Brookes University

“Architectural Psychology In Action – Experiencing Architecture and Design” (100 students, January 2007-May 2007)

Architectural Psychology is an important aspect of studying Architecture. Students were exposed to different theoretical and experimental research and approaches, from human needs and emotions to colour, perception, space and cross cultural studies. They were asked to identify a problem, set up a hypothesis, establish the dependent, independent and intervening variables and test the hypothesis by meeting real clients.

“I have been working in the same way on this module since 1969, and although it has evolved over that time, and the clients have changed, the module has always been focused on ‘live’ projects and involved interviewing and researching ‘real’ situations. For the last ten years, it has focused mainly on designing safer communities and involved bringing back and involving alumni, the police, and other appropriate professionals, and culminated in a public

exhibition and awards ceremony. Reinvention's involvement has helped to put the course on the map. It has enabled me to produce a CD Rom of good practice with example reports, posters and photos of the exhibition. The major impact of the Reinvention Centre involvement is that the CD Rom, and the other guidance material that I am preparing as a result will hopefully ensure that this exemplary course continues."

- **Projects in progress**

Mary Hancock, Department of Architecture, Oxford Brookes University

"Researching the Design of Higher Education Spaces" (80 students, September 2006-September 2007)

The learning outcomes of the module 'Technology and Sustainability' are focused on students developing an understanding of how buildings are put together and how they function. We will be expanding the case study currently included in the module by specifically looking at teaching and learning spaces that respond to changing students' activities and approaches to learning.

Note: For a variety of logistical reasons, Mary only managed to make a small number of relatively minor changes to her module this year and spent less than £100 of her Fellowship award. But she has done a good deal of thinking and ground preparation which should help to make it a success over the next two years, so she has effectively deferred her project for a year and will commence in September.

Dr Claire Bishop, Department of History of Art, University of Warwick

"Art and Spectacle" (12 students, January 2007-January 2008)

This research-led project aims to find a new vocabulary for addressing the politics of spectatorship in contemporary art, while familiarising students with the history of an influential term that yokes together artistic and political positions. It is linked to an international symposium to be held at Tate Modern ('Rethinking Spectacle') in March 2007, and a collaboratively-produced research blog and website.

http://www.tate.org.uk/onlineevents/webcasts/rethinking_spectacle/default.jsp

"The fellowship has allowed me to work with my history of art students in ways that would not have been possible, allowing students a higher level of engagement with my work and the subjects we are studying."

Professor Rob Pope, School of Arts and Humanities, Oxford Brookes University

"Rewriting Text, Researching Community" (115 students, September 2006-September 2008)

The aims of this fellowship are to build a base for research through writing, especially rewriting, and to contribute to an interdisciplinary cluster and field in community-related research practice. Rewriting texts encourages student experiment in types of academic writing other than the standard essay; community-based research involves accessing and interpreting information, identifying and evaluating opinion, and generating insights and alternatives, all valuable skills for the undergraduate.

Note: Illness has caused Rob to have over three months off work; he has been unable to carry out his Fellowship project this year. The intention is that the project will now effectively start in September 2007.

Dr Anne Gerritsen, Department of History, University of Warwick

“Reinventing Galleons: Researching Global Connections” (40 students, October 2006-October 2008)

The main aim of this project is to make the students active participants in the research of global connections in the early modern world. Each seminar begins with a discussion of visual materials selected by the students, and these are subsequently posted online, as are the student presentations that support the student-led seminars. A ‘presentation’ to the department of this website-in-progress is planned for the third term. The students have also organised a fieldtrip to the Victoria and Albert Museum to view the Islamic Gallery.

“What is the most interesting is that fact that the module is not over, even after the teaching has finished: in the third term the students are making links to their assessed work, and developing a timeline software package with commentaries written by the students; others are working on something that they feel is missing from the module, something on Africa, in terms of global trade, this is very ambitious, with maps and illustrative pieces written by the students.

The point is that there is the space for the students to adapt the module in ways that they are interested in. The students who are doing this approach the subject in a different way, because they know that their research is being taken seriously and that it is making a serious contribution to the course as a whole, and in that sense the module is very much doing what I want it to do.

This means that their approach is more critical and engaged and that they have a real sense of ownership with the ability to change the module, and not simply passively listening to what we tell them.”

Further details of Anne’s Fellowship project are available at
<http://www2.warwick.ac.uk/fac/arts/history/undergrad/modules/hi163/seminars/>

- **Projects in their early stages or yet to start**

Richard Huggins, School of Social Sciences and Law, Oxford Brookes University

“Undergraduate Research Studentship Scheme (UGRS) in Social Sciences and Law” (50 students, March 2006-September 2007)

During this project I aimed to explore and examine existing models of Undergraduate Research Studentship schemes in the UK and then develop a model for piloting an UGRS in Social Sciences and Law at Oxford Brookes University. The emphasis was to have been on developing the relationship between student research and academic learning through student-designed and -led research projects under the supervision and guidance of academic staff, and the scheme was to have encouraged, supported and awarded academic credit for student research.

Note: Richard’s initial Fellowship project was to help develop a URSS scheme at Brookes, but because we wanted to speed up the introduction of a scheme he was asked to consider an alternative proposal. This he has now done, and he will commence that new project in September 2007. He has also had an impact already, however, as one of the other members of the ‘US trio’ mentioned by Alan Jenkins above.

Dr Caroline Wright, Department of Sociology, University of Warwick

“Evaluating and Reinventing Sociology’s Professional Skills Programme” (79 students, April 2007-June 2008)

The Department of Sociology at Warwick runs a Professional Skills Programme which aims to introduce research skills for first-year undergraduates. This fellowship will evaluate the existing programme and its capacity to deliver both transferable, subject-specific and intellectual research skills, and student reflexivity about research skill acquisition. Students will be involved in the design and implementation of the evaluation, and generating ideas for reinventing the programme.

Dr Christopher Bridle, Warwick Medical School, University of Warwick

“Social and Behavioural Medicine: Conducting Systematic Reviews of Research” (149 students, May 2007-April 2008)

Medical undergraduates are increasingly required to integrate their knowledge of different social and behavioural sciences with biological sciences. The aim of this project is to facilitate students' understanding of research in the social and behavioural sciences and the transfer of research evidence into clinical practice.

Dr Ruth Ayres, Centre for Academic and Professional Development, University of Warwick

“Does research-based learning meet its aims and provide “added value” for those undergraduates who undertake the Undergraduate Research Scholarship Scheme (URSS)?” (128 students, May 2007-December 2008)

The beneficial impacts of research-based learning have led a number of HEIs to implement different schemes. This fellowship will evaluate the extent to which Warwick's URSS has enhanced the learning and research potential of those undergraduate students who were involved, and evaluate the impact the Reinvention Centre has had on the scheme since its involvement began in 2005/06.

Dr Ken Howells, School of Life Sciences, Oxford Brookes University

“Clinical Science groupwork undergraduate research projects” (approx. 50 students, September 2007-March 2009)

On our second year Neuromuscular Physiology module we are extending the present groupwork component of the coursework to incorporate recent EU guidelines on Research Governance. The students will now be directly involved in all aspects of the research, from gaining ethical approval, through detailed subject monitoring to data analysis and publication.

Dr Glen O'Hara, Department of History, Oxford Brookes University

“Britain and Sea since 1588” (approx. 50 students, September 2007-June 2009)

This project will establish WIKI for students on the Brookes History advanced level course “Britain and Sea since 1588”. This should provide a deeper learning experience for students; place original research materials on the Web; and investigate how collaborative online teaching methods can be used by and for students.

Dr Helen Walkington, School of Social Sciences and Law, Oxford Brookes University

“Embedding undergraduate research opportunities in the year 2 Geography curriculum across 4 HEIs” (approx. 400 students, September 2007-September 2009)

This fellowship will embed undergraduate research opportunities in the year 2 geography curricula of 4 HEIs. This will provide students with a variety of undergraduate research experiences. The

project team will encourage the publication of research work in our e-journal of undergraduate research in geography, *Geoverse*.

Professor Peter Ratcliffe, Department of Sociology, University of Warwick

“Race’, Difference and the Inclusive Society: Fusing Research and Teaching” (28 students, October 2007-August 2009)

The module “Race’, Difference and the Inclusive Society” has until recently been taught in conventional lecture/seminar format. This project will enable us to rethink and redesign the module delivery, so that students will have the opportunity to engage in small-team research, and to acquire a thorough understanding of the conceptual, theoretical and historical terrain of the research field.

Small Grants Fund

The aim of these awards is to create a sustainable culture within which students come to be regarded as producers of real knowledge and part of the research culture of departments.

With a focus on small-scale, independent and extra-curricular research, grants of up to £1,000 enable individuals or small groups of students to pursue their own research ideas. Although all applicants will have an academic supervisor/sponsor within their own department and will also receive intellectual and practical support from Reinvention Centre staff, this funding stream is only available to undergraduate students themselves and in this way provides a very different model of research to that offered through curriculum-based research, through collaborative ventures or through schemes such as the URSS where the funding idea and initiative comes from an academic or department. To date, 16 small grants have been awarded to a total of 46 students (individual projects unless specified); feedback is included from those students who have completed their projects. Further information, including full reports from those students who have completed their projects, is available at www.warwick.ac.uk/go/reinvention/fundingopps/students

- Gender and U.S. sports

“It was terrific, something I really enjoyed. The work of research is considerable, it gave you an insight of research, its limits and possibilities. It helped me build a lot more confidence and self esteem as an academic researcher, it put me at a different level. The colleges changed their practice based on information I gave them about how to manage the self-esteem of young people and in particular young women in sports. I felt like I was producing really useful knowledge as a undergraduate student that affected the practice of sports departments in High Schools in the US.”

- The Bo-ao forum: a critical case study of actors in Asian regionalisation

“The project provided me with the opportunity for the hardest and most rewarding work I have ever experienced. The outcome that is by far the most important to me is my own learning about what research can mean. I have realised that the fun part about research is not finding data to fit into preconceived plans, but rather to find the unexpected. Due to this project I am now doing my PhD on the narrative configuration of regional time-space in Asia, with a special focus on China.”

- Why does the EU sign bilateral trade agreements with some states and not others? (2 students)

“The Reinvention Centre had a big impact on my student experience. Partly as a result of the research I did with them I will be starting a PhD, with an ESRC award, on the subject I did my Reinvention Centre research in. The project gave me motivation and sparked my interest and was really a great experience. It galvanised me. It was really good in terms of research skills for the dissertation that I am writing this year, so on the

whole it had a very positive impact. If it weren't for things like the Reinvention Centre I'm not saying that university would not have been good but it wouldn't have been half so good."

- The Legacy of the Polish Solidarity movement (7 students)

"Had it not been for the Reinvention Centre, the event would not have come to pass. Academically, due to the interactive character of the conference a forum was created for scholars, postgraduates and undergraduates to discuss the success and failures of Solidarity. Furthermore this forum enabled the fostering of new relationships, which has led to new co-operations on other research projects. The new president of the Polish society was so inspired he decided to host a similar event the following year."

- The Merits and limitations of introducing a participatory impact assessment and planning system to the Kayoma Women's Microcredit Association in Sierra Leone

"The Reinvention Centre gave me an opportunity to enhance my lecture and classroom learning by making it possible for me to research a topic I am passionate about at first hand. I was able to put into practice research techniques I had learnt during my studies at the University of Warwick. Through the Reinvention Centre I was able to go to Bo and interview and help run work shops with the members of the scheme. This experience has given me the confidence to develop this research if not personally then through other students. I have met with other students who are interested in developing this research or who have their own areas of interest and want to research in a developing country."

Ongoing projects

- The U8 Student International Development Partnership: 2007 Annual Summit (3 students)
- Modelling the impact of water interventions upon household water stress in rural Africa
- Broadcast: New Warwick Writing (6 students)
- A Bordieuean analysis of the field of British journalism, looking at the newspaper's role in the current media climate
- The Competitive mountain bike events industry in the UK
- Twentieth-Century Britain oral history workshop (11 students)
- The Effect of macroeconomic environment on the salaries of university graduates (2 students)
- High-risk services offered by independent escorts advertising on the internet
- The Effect of textbook distribution by the Tanzania Book Project in the region of Mtwara
- Matchbox Magazine (6 students)
- Do initiatives such as the "Consejos Comunales" in Venezuela have the potential to create a culture of true participatory democracy in the decision-making process of the "Bolivarian revolution"?

All of the above gives some indication of the breadth of research carried out under the auspices of the Small Grants Fund. Relevant dissemination of these students' research is integral to the funding and all grant holders submit a report to the Reinvention Centre on completion of the project. All students are regarded as Reinvention student researchers and are encouraged to participate in Reinvention Centre events; for example a number of students presented on their work at the Higher Education Academy *Research-Based Learning in Higher Education: the Warwick Experience* day conference on 25 October 2006; and all SGF award holders will be actively supported to participate in the *Student as Producer* international conference in September 2007. In this way not only do others see their research, but the profile of undergraduate research activity is raised and these students act as ambassadors for the Centre within their own departments. Students with similar research interests are encouraged to support each other and research strands are beginning to develop, such as the Sierra Leone research detailed above – these students have, in turn, been involved in discussion with the student who this year carried out research on water intervention in Ghana.

Undergraduate Research Scholarship Scheme

At Warwick

The Reinvention Centre part-funds the university's Undergraduate Research Scholarship Scheme (URSS), run by the Centre for Academic and Professional Development. The scheme gives students the chance to become directly involved in the research work of the university, share in the experience of being a member of a research team and take part in cutting-edge research. Departments and research centres are invited to nominate potential projects which offer good opportunities for students to gain insight into research work and develop valuable skills. Bursaries of up to £1000 are available for students to carry these out either full time during vacation or part time during term or vacation.

Since the Centre became involved in the previously existing programme, the scheme has attracted a great deal of interest: the number of applications rose from 12 in 2005 to 37 in 2006 to 80 in 2007.

A list of the 57 projects funded in the 2006/07 academic year is available at appendix 3; further details on the scheme are available at www.warwick.ac.uk/go/urss.

At Brookes

Based on the previously established scheme at Warwick, and with only minor organisational differences, Brookes launched its URSS scheme in November 2006 and has met its first year target by funding 16 students on 15 projects for the academic year 2006-7 (a list of these is available at appendix 3). We were pleased to find that the applications we received were distributed across a wide range of Schools at Brookes. All students will prepare a poster summarising the outcomes of their research, which will be displayed at a special event in October 2007, and will attend the *Student as Producer* conference in September.

Other funding for research-based learning

The Education Innovation Fund

At Warwick the Reinvention Centre has been influential in the establishment of the new "Vice-Chancellor's Education Innovation Fund", which has £1million of funding to award over two years to promote innovation in teaching and learning. The announcement of the fund included the following:

"[The University's] commitment to new and challenging ways of teaching has been demonstrated through its lead role in two Centres for Excellence in Teaching and Learning [...] these projects will have a progressive impact on creativity and innovation in teaching and learning at the University and they provide the context in which the Education Innovation Fund is being launched."

The Reinvention Centre's Director is one member of the panel which reviews the applications made to the fund.

The Lord Rootes Memorial Fund

The Reinvention Centre's Academic Co-ordinator (Warwick) is a member of the committee which reviews applications for the Lord Rootes Fund. While not explicitly a research fund, many of the projects supported by Lord Rootes have a clear research dimension and having a Reinvention Centre involvement in all the processes of this committee has entailed more joined up practice between different student funding streams across Warwick University.

Publicity for undergraduate funding

In the course of pursuing research into the sources of funding available for undergraduate student research at Warwick, the Academic Manager discovered that there were in fact several such sources of funding available, but that these sources had not been as widely publicised to students as they might have been, and that there was no overarching strategy for advertising them. In conjunction with the Assistant Registrar for Teaching Quality, the Academic Manager wrote a booklet entitled *Cash for Projects: Undergraduate Research Funding* which was printed and distributed widely among students during the 2006/07 academic year. Evidence suggests that student applications for each source of funding have increased, and an updated booklet is planned for 2007/08.

The Reinvention Centre conference

In September 2007 the Reinvention Centre will be hosting a major international conference entitled *Student as Producer: Reinventing the Undergraduate Curriculum*. We have confirmed Professor Steve Fuller (University of Warwick) and Eric Newstadt (a PhD student at York University, Canada) as keynote speakers, with a further 20 contributions proposed so far.

Key features of the conference are that it will:

- feature both academic and undergraduate research as well as research produced collaboratively with students and their teachers;
- critically explore the methodological and theoretical issues that underpin and/or undermine research based learning, and investigate the problems and possibilities of research-based learning;
- benefit from the creative involvement of *Talking Birds*, a company of artists who specialise in acts of educational reinvention and transformation.

The Centre called for contributions to this conference in any format, such as papers, posters, videos/DVDs or audio recordings, and established a dedicated website at www.talkingbirds.co.uk/pages/reinvention.html for the uploading of conference material. We were rewarded with a wide range of contributions. A full report on this conference will appear on our website after the event.

TEACHING IN PUBLIC

This section shows the visibility of the work of the Reinvention Centre across the two institutions, within other Higher Education Institutions and across the Higher Education sector as a whole. It includes an account of the ways in which the public presence of the Centre is felt in the refurbishment at Brookes and the redesign of a social teaching space at Warwick, including feedback from students and teachers who use the spaces. The section includes an account of the two international symposia hosted by the Reinvention Centre on the subject of social learning spaces as well as other conference involvement, as workshop presenter and/or keynote speaker at a considerable number of national and international events. The section also deals with the Centre's engagement with external partners within Higher Education, including other CETLS and the Higher Education Academy, as well as with employers. The section details the Centre's record in engaging with students in designing innovative forms of dissemination, including books written and produced by students as well as documentary films on issues of interest to undergraduates. The section also details the plans for a journal for undergraduate research as well as a particularly innovative project for teaching students research methods. The section shows how we plan to maintain the public presence of the Centre through developments on our website and our publicity and marketing strategy.

In terms of our critical indicators this section demonstrates:

- An increase in the acquisition of employability skills;
- Substantial use of new facilities to support undergraduate research;
- An expansion of online support to enable undergraduate research in the disciplines;
- An increase in the take-up of accredited extra-curricular undergraduate opportunities, including learning in the community;
- Dissemination of Reinvention Centre initiatives in other UK universities, as well as a range of professional, statutory and voluntary organisations and the Higher Education Academy;
- An increase in employability through research-based placements.

Further work is needed on:

- An expansion of online support to enable undergraduate research in the disciplines.

Social learning and teaching space

One of the core interests of the Reinvention Centre is the redesign of the spaces in which students learn.

In UK universities, space has tended to be designated for very specific purposes. Lecture theatres are for lectures, classrooms are for seminars, refectories are places to eat, libraries are places where you are quiet and work on your own. With an increased focus on student-centred collaborative learning, there has been a growing recognition that these spaces are neither adequate nor appropriate.

Social learning space is a relatively new idea, and covers quite a wide range of possibilities. At one end of that range is space that is used primarily for social activities, but where some learning might also take place – an internet café, for example. At the other end of the spectrum there is space which takes account of the fact that learning often requires social interaction, and is designed accordingly – flat rooms, movable furniture, etc. – as opposed to a tiered lecture theatre. But within that range, one general definition of social learning space might be 'a physical and/or virtual area that is not predominantly identified with either social or work/study perspectives but transcends both and facilitates both formal and informal student centred collaborative learning' (Oldenburg, 1991, cited in Williamson & Nodder, 2002). Another might be spaces that combine social activities (e.g. eating and drinking, getting to know people, staying in touch with people, hanging out in groups); learning (e.g. studying with others, group project work, meeting with advisors) and technology (e.g. writing, editing, printing, on-line research, e-mail, on-line discussion, on-line workshops/collaboration, socialising on-line and perhaps even playing games).

All of this is heavily influenced by a social-constructivist view of learning (Vygotsky, 1962, 1978; Bruner, 1986, 1990) that students need the stimulus of interaction with each other, in social groups, to construct their learning. Consequently, their contact with each other outside the classroom is often where they learn the most, and the importance of this type of learning is increasingly being recognised, in part due to the rapid advances in technology, in part due to reduced contact time and, some writers suggest, because current students are less attuned to knowledge delivery/lecture modes of teaching.

The Learning Grid (Warwick)

From the inception of the Reinvention Centre we have benefited from a close relationship with the Learning Grid at Warwick. The award-winning Learning Grid, which is managed by the Library, occupies approximately 1350 square metres and is open 24x7 in order to provide 'an exciting, innovative, integrated, flexible space that supports students by facilitating independent learning in new and changing ways' (see <http://www2.warwick.ac.uk/services/library/grid/>).⁸ The relationship

⁸ The Learning Grid was the winner of the international Jason Farradane Award 2006 for outstanding work in the field of information science: for more details see <http://www2.warwick.ac.uk/services/library/grid/awards>

between the Grid and the Reinvention Centre has been, and continues to be, reciprocal. In the first year, the Reinvention Centre made available £60,000 for equipment for additional resources for the Learning Grid, which was used to purchase items such as cleverboards, digital cameras, mini DV cameras, a video-editing suite and video-conferencing equipment. In addition, four new Reinvention Centre plasma screens were located on one wall of the Learning Grid, to be used primarily for promoting the work of the Centre and showcasing students' work. In an area close to the plasma screens, the Reinvention Centre created a distinctive space (with sofas, plants and artwork) which provides a base for Reinvention Centre staff (the Academic Co-ordinator and/or Centre Director) to hold weekly 'drop-in' sessions for students who are doing, or are interested in doing, research. These sessions are publicised across the university on both the Reinvention Centre and the Learning Grid's web-sites, and are well-attended by students from all over campus. Drop-in sessions enable students to talk through research ideas and to raise any ethical or practical concerns which may arise at any stage of the research process. In addition to the weekly drop-in, scheduled workshops aimed at current and prospective undergraduate researchers on the topic of conducting ethical research have been run by the Academic Co-ordinator and/or Reinvention PhD Student.

As an innovative learning space, the Learning Grid at Warwick has generated critical interest from across the sector in its architecture, learning ethos, use of space and use of interactive technologies. Since the development of the Reinvention Centre at Westwood teaching room (see below), both facilities have benefited from a growing recognition of the importance of the relationship between questions of space and design, and those of pedagogy.

The Reinvention Centre at Brookes

This involves the redesign and refurbishment of approximately 400 square metres of a building at the Gipsy Lane site. Influenced by developments in social learning space such as the Learning Grid at Warwick, this space will provide a dedicated environment to facilitate research-based learning.

The main space is to be a large open-plan area with the emphasis on flexibility. There will be nomadic IT work-stations, wi-fi access, mobile screens, to enable the 'colonisation' of different areas by student work groups, and a range of different types of seating. Not only will students be able to consume (cold) food and drink, but there will be hot and cold drinks vending machines. There will also be two additional rooms which students can book, either for more formal meetings, or to practice presentations. The larger of the two will also have video-conferencing facilities. The space will also house two offices for Reinvention Centre staff.

Initially, it is intended that use of the space will be restricted to students from the School of the Built Environment, but after two years access will be opened up to all second-year students in the university. Opening times will initially be 8.00am-6.00pm, but this will be reviewed. The room is expected to be in operation in the summer of 2007; the official opening is planned for the beginning of the academic year 2007-8.

The Reinvention Centre at Westwood (Warwick)

Following a successful bid to HEFCE for further funding under the Centre for Excellence in Teaching and Learning programme, The Reinvention Centre for Undergraduate Research was able to develop a new social teaching space on the Westwood campus. The space occupies 120 square metres and was opened for the start of the new academic year, 2006-2007.

The concept of 'social learning space' is gaining increasing prominence in Higher Education as universities design provision to suit the opportunities and demands of student learning in the 21st Century. The Learning Grid in University House and the BioMed Grid in the Medical School at Warwick, as well as the Learning Grid-style developments at Brookes University with Reinvention Centre funding, are at the forefront of these architectural developments.

While the concept of 'social learning space' is being increasingly recognised as an important aspect of University infrastructures, the new space at Westwood is one of the first of the new generation of 'social teaching spaces' to be developed in Higher Education. Social learning spaces within Higher Education focus on the students as independent and autonomous learners working individually or collectively outside of the classroom. The concept of social teaching space puts the activity of teaching at the centre of attention, concentrating on the way in which teaching is delivered. Although the practice of teaching is the main issue, the focus of activity is not simply the teacher. In social teaching spaces the activity of teaching is seen as a joint process between teacher-student in which knowledge is not simply transmitted from teacher to student, but that the teacher-student are engaged in an active, collective and collaborative process of knowledge construction, production and dissemination.

This social teaching space is fully IT enabled, but the design of the space is driven by the critical, intelligent and progressive pedagogies which inform the work of the Reinvention Centre and not the logic of technology. The critical, intelligent and progressive aspects of this teaching space are reflected in the spacious, uncluttered and minimalist aspects of the design, using high quality sustainable fixtures, fittings and furniture and maximum use of natural light. The space has high-specification lighting and sound systems to allow the teacher-student to design the ambience of the room to suit the requirement of each particular class. A great deal of attention has been paid to the acoustics, so that the room can facilitate different kinds of activity going on at the same time and at different times (e.g. simulated teaching, group work, lecture-style activity, and so on).

Central to the design of the space is a high-quality rubber floor, with under-floor heating. The floor is used not simply as something to stand on, but as a platform on which to work. This working at ground level is supported by customised iconoclastic furniture which adds geometry, colour and contouring to the space. Working and sitting on and close to the floor provides an international and multi-cultural sensibility to the space that is absent from northern European/American HE classrooms.⁹

The spatial intelligence inherent in the design demonstrates the way in which the space is:

- **Grounded** in the real lives of students and teachers and the materiality of the social world;
- **Democratic**, a two-way teaching process, with no privileged spaces from which teachers can claim authority, nor any subordinate areas to which students can be assigned;
- **Inclusive**, encouraging use by teachers, students and support staff from all over the University as well as by local community groups;
- **Spacious and uncluttered**, encouraging not only active movement and interaction among students and teachers, but also the free movement of ideas;
- **Disability aware**, with facilities to enable the widest possible participation;
- **Open**, we plan to broadcast the teaching that takes place in this room across the campus on plasma screens in significant locations, generating a sense of a Warwick-wide teaching community: *Teaching in Public*;
- **Physical**, challenging the notion of teaching as simply a cognitive experience demanding nothing more than instrumental functionality in classroom design, this new teaching space presents teaching as a sensuous, emotional, physical and tactile experience;
- **Complementary**, the space complements and supplements the rehearsal-based teaching carried out by the CAPITAL Centre and forms part of the matrix of new teaching and learning spaces being developed at Warwick, including the Learning Grid in University House and the BioMed Grid in the Medical School.

⁹ One of the most important social aspects of the space is that it has been designed in collaboration with other parts of the University. The Reinvention Centre has been fully supported in this initiative by all of our colleagues in the Sociology Department and also with colleagues in the School of Law, the departments of History and Chemistry, the Library, the Learning Grid, the Centre for Lifelong Learning, the Academic Office, the Finance Office, Warwick Hospitality, the CAPITAL Centre, the Space Management and Timetabling section, the Institute of Education, the Students' Union and the Student Westwood Users' Group, the Estates department, and of course our colleagues at Brookes. Warwick's Pro-Vice-Chancellor for Teaching and Learning has also given full support.

What the students say about the space:

Different to the normal way of learning at Warwick
Challenge to the way we think research learn and relate to each other
Encourages both students and learners to think outside the box
Promotes freedom of speech and thinking
A lot of space, technology, colourful
It's a different setting, a relaxed environment
Not the usual boring teaching room. Much more relaxed and lets us be more open
Spacious – allows for moving around and interacting
Not formal class structure: no chairs, tables, board
Bright, lots of light
It's a unique environment and structure
Spacious
Colourful
Interactive
Good place to interact and have active discussions
Good special feeling
Bright and spacious
Freethinking
Interactive and innovation
Different not formal – spacious and freethinking, suggests lots of room for ideas and innovation
Relaxed/social working environment
Potentially very successful
Allows very unstructured lessons
Sociable and informal
It is different form any type of learning I have experienced at university – a nice change
Informal
Comfortable
Fun
Easily rearranged for different types of work, e.g. lecture, presentation, groupwork
Breaking boundaries
Active learning
First steps towards something big!
Challenging
Makes you realise you can think outside the box
Warm big open space
Colourful
Punk
Laid back environment
Spacious
Light
Very informal, which seems to facilitate better discussion

Feedback received from staff includes the following:

“The Reinvention Centre has finally allowed me to undertake the flexible, responsive and research-led teaching that I have always wanted to pursue. The room's non-hierarchical configuration permits a relaxed and continually varied atmosphere in which to explore ideas across a variety of media; so far we have used it for viewing and discussing film, video, still images and texts. I have found that its resources work particularly well in collaboration with Warwick's e-learning facilities (especially blogs and podcasts), so that the weekly seminar becomes an informed forum for debating independent research, rather than a one-way download of information from teacher to student.”

“What creative people need is open space - a space where everything is possible, and endlessly possible, the space for error and experiment. For a writer, teaching and learning in The Reinvention Centre is like working on an open page. It holds potential as a creative open space, and offers room for error, experiment and astonishing achievement.”

More details on the Reinvention Centre at Westwood, including photographs and feedback from those who have used the space, are available at www.warwick.ac.uk/go/reinvention/westwood. The Centre at Westwood was also the main focus of a feature in the *Independent* newspaper in January 2007; a copy of the article is included at appendix 7.

Symposia on Social Learning Spaces

As part of our interest in, and commitment to, the development of space and its uses in Higher Education, we have instigated a series of annual symposia around the subject of social learning space.

The first symposium was jointly hosted by the Reinvention Centre and Oxford Brookes University's ASKe (Assessment Knowledge Standards exchange) CETL in January 2006 at Brookes. It was attended by 60 delegates, including Professor Anja Timm of the University of Lancaster, who gave the keynote speech; following this, presentations from the Learning Grid Manager at Warwick and from representatives of the Reinvention Centre and ASKe described current examples of the use or refurbishment of space. In the afternoon, delegates attended focus group sessions at which questions such as “How do students study now?”, “How can we change existing spaces?”, “How can we make these new spaces work?” and “What are the implications of these new spaces?” were discussed.

Following the success of this first symposium, a larger-scale event, also hosted jointly with ASKe, was held at Warwick in March 2007. This was attended by 160 delegates from a wide variety of CETLs and institutions, and included representatives from architecture firms and university Estates departments as well as those interested in the pedagogy of social learning spaces. Keynote speeches were given by a representative from the renowned SMC Alsop Architects and by the head of the Department of Planning at Brookes. The twelve breakout groups which met during the course of the day discussed themes such as “Learning spaces for active learning: design and evaluation”; “More than simply social: designing technology and spaces to support constructivist learning”; “Use of creative space in enhancing students’ engagement”; and “Collections, collaboration and cappuccino: enhancing learning in a library setting”.

Planning is now underway for a third symposium to be held in the spring of 2008.

Community Engagement

An important part of our work is community engagement. Such engagement enables us to communicate with a wider audience and enjoy reciprocally beneficial relationships with diverse groups outside of higher education. A funding stream for community project work has been designed to fund work carried out by students or involving academic staff and students collaborating on projects. These projects form an important part of the general strategy that is consolidating and developing the practice of undergraduate research-based learning across the disciplines. This fund was first established at Warwick, but we have recently set up a matching scheme, the ‘Community Research Fund’, at Brookes.

At the beginning of Year 1, the Reinvention Centre completed the documentary film *Universities plc?* which had been produced by Warwick undergraduate students the previous year. The film serves as a resource with which to instigate critical discussion around student active engagement with HE curricula. In particular, the content examines the possibilities of ‘social enterprise’ and scope for students to work with people and organisations beyond the university in ways that benefit both communities. With the involvement of some of the student-producers, the film has been shown at numerous events across the UK. Pending the production of the Reinvention Centre’s

second documentary film (*Students at Work: learning to labour in Higher Education – see below*), *Universities plc?* is now publicly available through the Reinvention Centre's website.

Other Year 1 projects involved Law students carrying out socio-legal research into domestic violence whilst working as volunteers at a local refuge. Allied to this, the *Gender Transformations* project involved four undergraduates working together with four postgraduates and two members of academic staff on a multi-method investigation into student activism. A co-authored article documenting the research was subsequently published in a peer-reviewed Sociology journal (WASS, 2007). One student published a reflexive article about the research process (Perrier, 2006) and papers were presented at academic conferences in Sheffield and Birmingham. The domestic violence and *Gender Transformations* projects required very little in the way of financial support, although they were demanding in terms of staff time.

The *Representations: student research in Visual Sociology and the Sociology of Story* project began in the middle of Year 1 and the first stage of it was completed in January 2007. *Representations* is a high quality book which has been edited by a team of undergraduate Sociology students (Alsop *et al.*, 2006). It contains selected student writing and photography from two innovative new Sociology modules – Sociology of Story and Visual Sociology. The Reinvention Centre published the book as the first in a series called 'Reinventing Undergraduate Research'. 1000 copies have been printed and the book was formally launched, together with the new Reinvention Centre teaching space at Westwood, at a high-profile event on 10 January 2007. Copies of *Representations* are being widely distributed (for example to other relevant CETLs). The undergraduate editorial team continues to be involved in critical discussions about the problems and possibilities of carrying out collaborative research. These discussions will make a significant contribution to the pre-conference debates around the theme of 'Student as Producer'. A second publication, entitled *Get Over It*, which is edited and produced by a new student editorial team working with the module leader and Reinvention Centre staff, is currently in print and will be released in July 2007.

Work on a new documentary film, *Students at Work: Learning to Labour in Higher Education* began in the middle of Year 1 with a core group of six undergraduate student volunteers working together with the Reinvention Centre's Warwick-based PhD student, the Technology Integrator, the Director and the Warwick Academic Co-ordinator. Working on the film has made extensive use of the Reinvention Centre at Westwood teaching facility and media-editing suite. While replicating some of the features and function of *Universities plc?*, *Students at Work* has involved students and staff working more closely as a collaborative team in order to script, research, direct, film and edit and produce the film.

All of these projects have been, and continue to be, integral to the Reinvention Centre's core activities. They have produced tangible research outputs which are key to communicating the work of the Centre to a wider audience both within the host universities and across the HE sector. These projects have also facilitated the development of collaborative research activities, particularly those involving students and staff working together. The processes of collaboration have themselves been subject to research and evaluation which is directly relevant to the pedagogical concerns of the Reinvention Centre. Given the importance of transparency and equity in funding arrangements and the importance of encouraging collaborative research across the university, the Reinvention Collaboration Fund was established at Warwick at the end of Year 1. Following a university-wide call the fund received four applications in January 2007, two of which have been funded for the maximum amount of £3,000. The first is a project managed by Dr Silvester Czanner in the Computer Science department which involves staff and students writing an online computer graphics textbook. The second develops work on micro-credit schemes in Sierre Leone, begun by Jane Shakespeare in 2005-2006, with the help of a Small Grants Fund bursary (see above). A further two students are now working with Jane. It is hoped that supporting the continuation of this project will enable a sustainable link to be developed between research students at Warwick and community groups in Sierre Leone.

Dissemination

Publications and conference presentations

Since 2005, staff and students associated with the Reinvention Centre have produced a number of academic publications and have presented material in a range of fora. For a list of these publications and presentations, please see appendices 1 and 2.

Website

The Centre's website, www.warwick.ac.uk/go/reinvention, is its principal communication and publicity tool. It provides information on the Centre, undergraduate research in general, available sources of funding and the activities of those in receipt of funding.

The website also provides information on the Centre's new teaching space, the Reinvention Centre at Westwood, with the timetable for this space available on the site and an online booking system planned for the near future.

The usage statistics for the site show an increased interest in the Centre. The following figures represent the total number of page views for the site for the given month, excluding visits from search engines and editors of the site:

| | |
|------------|------|
| October 05 | 1657 |
| January 06 | 1380 |
| April 06 | 1312 |
| July 06 | 2054 |
| October 06 | 4277 |
| January 07 | 4954 |
| Mar 07 | 4670 |
| May 07 | 4291 |
| June 07 | 5529 |

As with any website, it is important that the content is kept up to date. It has not always been possible to update the website as frequently as would have been desirable in the past due to time constraints but we will be addressing this as part of the staffing restructure which will take place in July 2007; 0.6 FTE of one full-time post will be given over to supporting the Centre's website and other technical infrastructure.

Improvements to the website planned for the near future are the addition of more high-quality content and interesting graphics as well as changes to ensure the site is equally focused on Warwick and Brookes; we also plan to apply for the domain name www.reinvention.ac.uk (or www.reinvention-cetl.ac.uk), which would provide a more memorable URL for the site and would also help to make it clear that the site represents both institutions of the CETL.

Plasma screens in the Learning Grid

The Centre has a small array of plasma screens, housed in the Learning Grid at Warwick, which is the most visible aspect of the Centre's presence in the Grid. The screens are used to inform students using the Grid of the Centre's activities and of ways in which they could become involved as well as to provide a medium for the dissemination of students' research through visually exciting slide-shows or film.

As a means of encouraging student interaction with the Centre and of obtaining more content for the screens, a regular artwork competition was set up in the autumn term of 2006 jointly by the Centre and the Learning Grid. This competition is run once per term and invites students to enter photographs, video clips, computer-generated or hand-drawn art in electronic format, all of which are displayed on the screens before a winner is chosen by an impartial judge and a prize awarded.

A great deal of interesting content for the screens has been received as a result of this competition. Please see www.warwick.ac.uk/services/library/grid/winners/ for further details.

Plans for future content include incorporating more of the content from the website, including more information about the activities of recipients of funding, and more moving footage – video clips, computer-generated sequences etc – to add interest and make greater use of the screens' capabilities.

The Academic Detective

The Academic Detective is a concept that has been created by our Academic Co-ordinator at Brookes. The concept originated as the title of a story about a fictional apprentice researcher and his first attempt to carry out an individual investigative project. The topic of the project is the relationship between residential density and social interaction and was chosen because of its relevance to a wide range of disciplines in the social and environmental sciences and in the built environment. Interest in *The Academic Detective* has been shown by SAGE Publishing, and the Academic Co-ordinator is currently involved in negotiations with an editor there.

The purpose behind the story of *The Academic Detective* is to create an example of research that students can draw on to help them understand the skills, processes and attitudes that are required for effective academic investigation. The central character in *The Academic Detective* is a student called Joe who lives on a small housing estate close to his university. The story is arranged in ten episodes and each episode contains ten to twelve questions that readers are invited to consider. In taught modules the questions have been the subject of classroom discussion, which has successfully provided students with an intuitive appreciation of methods of research.

The story of *The Academic Detective* is accompanied by a more formal treatment of the subject of research methods. A manual has been produced following the same structure as the story and containing materials drawn from authoritative texts and sources and presented in the form of boxes for compactness and easy reference. In taught modules the principles and application of the boxed materials are discussed and students then use this learning to tackle practical exercises of a kind that will equip them to eventually undertake their own research project.

The Reinvention Centre is committed to further development of the concept of *The Academic Detective* and some of the results of this work will appear on our webpages. The story itself will be revised and expanded to enliven the characterisations and the dialogue and to expand the accounts of the incidents that feature in the research project. The discussions that arise from the questions in the story will be written up with directions to the manual of boxed materials. The manual itself will be expanded with a larger number of diagrams, greater use of examples based on the story, and a commentary that includes suggestions for further reading. Finally, the practical exercises will be reviewed and full solutions provided.

Reinvention: A Journal of Undergraduate Research

Creating an undergraduate e-journal to showcase the work that students have undertaken through the Reinvention Centre has always been a key aim of the Centre.

Following several planning meetings it has been decided that an undergraduate journal is both desirable and feasible and will not only provide sustainability for undergraduate research but will help to put research at the heart of the undergraduate experience. It is also hoped that the journal can demonstrate that what students do has relevance beyond getting a degree and can ensure a sense of real purpose in the research work they have undertaken through the Reinvention Centre and present that work to a wider audience.

The journal is currently in the early stages of development but it has been decided that it is to be both multi-disciplinary and cross-institutional. It will be produced, edited and managed primarily by students at Oxford Brookes and Warwick universities, with strong support, particularly in the early stages, from Reinvention Centre staff. The journal will be electronic and will be interactive to

include links to film clips, other websites, photographs and any other resources linked to the published paper. The first issue of the journal is due to be launched at the Reinvention Centre's 'Student as Producer' conference in September 2007; the Call for Papers was circulated in July 2007. Key positions relating to the running of the journal have been filled by a combination of students and staff, with an undergraduate Editor.

We hope that the journal will provide a further basis for practical and focused collaboration between institutions, most immediately Brookes and Warwick through the Reinvention Centre, but also potentially with other CETLS, institutions and communities.

Publicity strategy

The Reinvention Centre seeks to market itself effectively and efficiently in order to maximise its outreach opportunities. To this end we have produced a publicity strategy which is overseen by the Office Manager at Brookes.

Aims and Objectives

- To promote the Reinvention Centre and its products/schemes within institutions so that all the relevant staff involved across two Universities are aware of, and have access to, the range of services offered by the Reinvention Centre;
- To identify target audiences and develop strategies for communicating with the different sectors, e.g. students, academic staff, professional bodies, etc;
- To develop and maintain a comprehensive and cost-effective publicity strategy, employing various marketing communication methods to reach as many of the target audience as possible;
- To generate a range of public relations activities to promote the services of the Centre, including workshops, conferences, seminars, etc;
- To develop a web site for the Reinvention Centre to raise awareness of the services offered and to provide structured on-line access to this information;
- To raise the general public's awareness of the role of the Reinvention Centre in the development of undergraduate research.

Target Audience

- Students at both Universities;
- Academic and learning development staff at both Universities;
- The wider HE community, both UK and internationally;
- The public at large.

The following promotional methods are utilised to reach the targeted audience and to sustain its support and interest in the services of the Reinvention Centre.

- Internal departmental newsletters at both Universities;
- University-wide publications:
Targeted articles, as appropriate, in On Stream, Teaching News and BeJLT at Brookes, and CommUnicate and the intranet at Warwick;
- Publicity material:
The general Reinvention-brand posters, pop-up and leaflets with outward-facing explanations of what the Reinvention Centre is about as well as production of specific leaflets and posters targeted at the selected audience, e.g. URSS leaflets targeted separately at students and research staff;
- Events:
The Centre has hosted a number of conferences, seminars and launches of its products/schemes to raise high level of awareness among target audience and encourage its involvement;
- Website:
The Reinvention Centre website is currently under development in order to further improve and diversify the material available: please see the section above for details.

Working with accredited teaching programmes and others

PCAPP (Warwick)

The Director is leading a long-term evaluation programme (over 5 years) across the University of the Postgraduate Certificate in Academic and Professional Practice (PCAPP) programme, which is followed by all probationary members of academic staff.

PG Certificate (Brookes)

The Deputy Director and a number of Academic Fellows have contributed to the PG Certificate in learning and teaching during dedicated sessions on linking teaching and research.

UpGrade (Brookes)

The Reinvention Centre at Brookes has funded two projects with the university's learning support unit UpGrade. The first is to provide specific support for research skills. This project has two aims, to provide support for individual students encountering difficulties but also to gather data on the nature of the difficulties, and the Schools and modules from which the students come. The second project is to act as a second source of support for URSS students, should they decide they need it.

Brookes Careers Centre

The Careers Centre has supported the URSS in a number of ways. They have helped to publicise the scheme, and are also willing to act as a 'brokerage' between students and staff who want to get involved with the scheme.

Research-based learning workshops (Warwick)

The Director has run a series of workshops for newly appointed academics as part of the PCAPP programme.

Warwick Skills Certificate

The Director has been involved in setting up a community-based learning programme as part of the Warwick Skills Certificate. The Director is currently working on the skills certificate on a programme to provide support students who want to work for International Non-Government Organisations. Please see www.warwick.ac.uk/study/csde/underg_programme/ for more information.

External relationships

Although based within Warwick and Brookes, it has always been the intention of the Reinvention Centre to impact across HE more generally through establishing working relationships with other HE institutions and organisations.

Relationship with the HEA

We have been able to work closely with the Higher Education Academy in a number of ways. One of the Academy's Senior Advisors, Dr Glynis Cousin, has been closely involved with the Centre and is one of the members of our assessment panel for Academic Fellowship applications. Her advice on these and other matters has been invaluable. In addition, our second symposium on Social Learning Space was organised in conjunction with the HEA's annual CETL networking event; members of the Centre have also a number of other events organised by the HEA. Centre staff have given keynote speeches and lectures at HEA conferences (please see appendix 2 for details), and the Centre Director was an advisor and consultant to the Higher Education Academy Centre for Sociology, Anthropology and Politics, 2004-2007.

Relationship with Ruskin College

The Ruskin College connection has extended to funding an Academic Fellowship in 2006 (see the section above on Fellowships for details) as well as a commitment to fund other Fellowships in the future.

Relationship with ASKe

Brookes has one other CETL, the ASKe CETL. We have formed a close relationship with ASKe, which is facilitated by Chris Rust being the Deputy Director of both. The most practical demonstration of this relationship has been the joint organisation of an annual national symposium on social learning space, which was held at Brookes in 2006 and at Warwick in 2007.

Relationship with the Capital Centre

Warwick has one other CETL, the CAPITAL Centre (a collaboration between the Departments of English and Theatre Studies and the Royal Shakespeare Company), with whom we have formed a close relationship. The CAPITAL Centre's aim is to introduce creativity and performance into teaching and learning, which links to one of our aims, that of reinventing the undergraduate curriculum. On a formal level, a representative from each CETL sits on the Management Committee / Advisory Board of the other. On a more informal level, the Reinvention Centre's Academic Manager and the CAPITAL Centre's Administrator (the equivalent post) hold regular meetings in order to identify any shared areas of work or potential joint activities. So far we have collaborated on the organisation of a seminar on assessment at Warwick and hope to work closely on other projects in the future. While its own dedicated building was being refurbished, the CAPITAL Centre also made use of the Reinvention Centre's innovative teaching space at Warwick's Westwood campus.

Relationship with other CETLs

There are four other CETLs working in the area of research-based or inquiry-based learning: the CETL in Applied Undergraduate Research Skills at Reading; the Centre for Enquiry-Based Learning at Manchester; the Centre for Inquiry-based Learning in the Arts and Social Sciences (CILASS) at Sheffield; and the Centre for Active Learning (CeAL) at Gloucester. We are in frequent communication with staff at these Centres, and have become involved in a number of events. Additionally, two undergraduate student representatives (from Warwick) represent the Reinvention Centre on the Student CETL network.

Relationship with the Scholarship of Engagement for Politics project

The Scholarship of Engagement for Politics is an FDTL5 project and is a collaborative endeavour between the Departments of Politics at the Universities of Warwick, Coventry and Oxford Brookes. The project's main aim is to develop, evaluate and promote the Scholarship of Engagement as a formal dimension of the Politics and International Relations curriculum in UK Universities and is doing this by harnessing the ability of work placements to enhance learning, and extending this into the formal curriculum through a variety of models and templates.

One of the keys to the success of the project and its aims is the inclusion of a research project in each placement. Students are encouraged in their placements to explore the meaning of 'politics' and their placement and their research become an essential and integrated dimension of their Politics undergraduate experience.

The project has developed partnership frameworks with local and regional government agencies, political actors, non-governmental organisations, and the voluntary sector. The project team has

then created a repertoire of examples of the Scholarship of Engagement, whilst evaluating the impact and effectiveness of this upon student learning, thus offering other UK Politics Departments the opportunity to develop their own models of engagement.

The Reinvention Centre and the FDTL Project have established a highly integrated working relationship. The Centre Director is a key member of the FDTL project's Steering Group, and the FDTL Director, Dr Philippa Sherrington, is a member of the Reinvention Centre's Management Group. In addition, Caroline Gibson, the FDTL Project Manager, also works on a fractional basis as the Reinvention Centre's E-journal Manager. These formal links ensure that dialogue is constant and open, facilitating support and the exchange of ideas; we also benefit from more informal links. In addition, both projects are engaged in establishing further cross-University engagement via future educational development projects. This has enabled us to cover employability issues through research-based activities and placements.

Relationships with other HEIs

Links with other colleges have involved inviting applications for funding under the Academic and Students Small Grants Fund (Aston University, Sheffield Hallam University, the University of Worcester, and University College Plymouth St Mark & St John); these funding applications have developed in response to requests from those institutions for advice and consultancy with regard to very specific issues including links between documentary film-making and research-based learning (Aston), employability and research-based learning (Marjon), research-based learning and the autonomous learner (Sheffield Hallam) and matters to do with classroom design to enable collaborative working between student and teacher (Worcester).

Links with other institutions have involved responding to special requests to run workshops, speak at seminars, and to act as advisors and consultants on various matters relating to teaching and learning. At Bath University this has involved issues relating to curriculum design and research-based learning; at Middlesex this has involved running sessions on how to enhance student engagement within the curriculum; at Queen's in Belfast work is being done on the notion of 'academic activism': researching and teaching political engagement within the curriculum, and at Anglia Ruskin, where the Reinvention Centre's Director is an external examiner, strong links have been established through formal quality enhancement.

TEACHING FOR COMPLEXITY

This section reviews research that has been commissioned by the Centre into its impact. This includes staff and student surveys about their attitudes and practice in relation to research-based teaching, and benchmark research to discover the extent of research-based teaching in the Warwick curriculum. Research carried out by the Reinvention Centre indicates that there has already been a progressive impact on the teaching activity in the Department of Sociology with regard to the supervision of third-year undergraduate dissertations. What the research reveals is that there is a varied level of compulsory research activity in the undergraduate curriculum at Warwick: 20% in social science, 36% in arts and humanities and 83% in the natural sciences. The research also reveals that academics would like to include more research-based activities in their teaching but feel constrained by a number of issues, not least the RAE. The section details the strong interest in research among first-year students coming to Brookes and that the curriculum should be research-based; it also explores new research being carried out under the heading 'the University and the City'.

In terms of our critical indicators this section shows:

- The production of impact studies against benchmarks developed in relation to undergraduate research activity.

Further research needs to be done on:

- An increase in students' research capabilities to be demonstrated through the evaluation of final-year performance in the two universities.

Pedagogic research

An important part of the work of the Centre so far has been to establish the extent to which research-based learning is taking place within each institution. To this end we have carried out a number of pedagogic research projects.

Surveys of Sociology students at Warwick

The Centre's PhD student at Warwick has been carrying out studies with a special emphasis on the institution's Department of Sociology.

These investigations have been carried out at both staff and student level and constitute a major part of the evaluation of the impact of the Reinvention Centre on the department. Research on first- and third-year Sociology students began in October 2005, and their understanding of undergraduate research was investigated by means of questionnaires at the beginning of each academic year. The aim of these projects was to gain an insight into the student cohorts and their expectations regarding the study of sociology and the act of doing research both at the beginning of their studies and during a later stage of their degree. The overall result of these studies was that students were very keen to implement their ideas in research-based learning processes at an early stage of their university career. Third-year students very often regretted not having had sufficient opportunities to carry out research and put theoretical ideas into practice in small projects throughout their studies.

This became most evident in a study which examined the experiences of third-year Sociology students writing their undergraduate dissertation. This piece of research had an immediate effect on the department's supervision procedures for final-year students, as the guidelines were amended as a result of this study. The number of hours allocated to supervision was extended and the general framework of the supervision relationship altered in order to provide a more coherent system of supervision for all students. This research was based on a questionnaire that was distributed to all finalists when they were submitting their dissertations in May 2006. Students were asked to reflect on the process of researching and writing the dissertation; we were particularly interested in the extent to which students perceived the dissertation as being integral to an academic culture of research and investigation. With 45 returned questionnaires out of 79 dissertation students, the response rate can be considered as quite high.

For most students, the dissertation is their first experience of an independent research project. 29 students said that they had done research before as a student: with the exception of two students who had carried out research projects funded by the Reinvention Centre, these research projects had been part of the Field Studies module during their second year. 15 students reported that they had not done anything before. Asked whether they thought that students were offered enough opportunities to get involved in research projects, 15 (34.1 %) agreed, 23 (52.3 %) found the opportunities given insufficient and 6 students (13.6 %) had not thought about it.

Overall, what students seemed to value most in their dissertation process was the fact that they could work independently. Out of 45 students, 73.3% claimed that they had enjoyed working independently. 12 students disagreed or strongly disagreed with this statement. This encompassed choosing a topic, approaching it in their own way and working quite autonomously throughout. 82.2 % (37) liked the fact that they had the chance to work creatively. 88.6% (39) reported that they had made a good choice of topic for their dissertation. 95.6 % (43) agreed that they had gained a depth of knowledge about their topic. Hence, despite problems with the process of writing, this is an experience shared by almost every student. However, independence comes at a price: students are generally accustomed to a rigid system of deadlines and assignments throughout their studies, and then, at a very late stage of their studies, they are asked to accomplish a rather independent

piece of research. This seems to be an ambiguous experience because the freedom to do this can be perceived as something very frightening and it can create uncertainty amongst students.

In addition to these studies that put emphasis on the student's perspective, the Centre's PhD student at Warwick is currently carrying out research within the department that focuses on the relationship between teaching and research. In qualitative interviews the majority of staff members (25) within the Department of Sociology are being asked to elaborate on the significance of teaching in their wider academic lives, how their teaching links to their research, their views of research-based learning and their teaching styles. These interviews will provide rich insights into the relationship between teaching and research within the department, covering different age groups, generations, gender and academic positions.

The teaching/research relationship at Warwick

The Centre commissioned a piece of pedagogic research to be carried out at Warwick which examined the relationship between research and teaching in undergraduate departments across three of the university's faculties: Science, Arts and Social Studies. The focus of the project was on the encouragement and cultivation of research skills in students, and the relationship between staff research and their teaching activities. The researcher, Natalie Pitimson, devised a questionnaire which was based on the framework for performance indicators as devised by Angela Brew in her document entitled 'Research-Led Teaching and Scholarship of Teaching Project' (submitted as a report to the Teaching and Learning Committee of the Academic Board of the University of Sydney in 2002). The questionnaire was sent to the Director of Undergraduate Studies on each of the relevant undergraduate degree programmes.

The completed questionnaires yielded some interesting statistics. The researcher found that there was a clear difference in the number of undergraduate courses which cited a dissertation or research project as part of their compulsory curriculum, with 57% not doing so. At a faculty level, only 20% of undergraduate courses in social studies concluded with a compulsory research project of some form, as opposed to 36% in the arts and 83% in the sciences. It also became apparent that there was an assumption within the sciences that the research carried out by members of staff was, by its very nature, beyond the understanding of students, exemplified by the respondent from the Department of Mathematics who described research carried out by their staff as 'unintelligible by undergraduates'. Assumptions of this nature perpetuate a belief that there is nothing to be gained from involving students either at the level of research or of dissemination; the Reinvention Centre hopes to develop ways of encouraging staff to break through such barriers and build closer relationships between research and teaching.

The questionnaires have been followed up with semi-structured interviews with those respondents who were willing to participate. The transcripts from these interviews are still in the process of being analysed but at this stage it is already apparent that there is a clear desire by many staff members to carry out more research-informed and research-led teaching. However, structural constraints in the form of student numbers, faculty regulations and the RAE are frequently cited as reasons why they are less likely to diverge too far from the 'traditional' teaching and learning model. Further themes will no doubt emerge as analysis progresses.

Brookes dissertation evaluation

In March 2006 a total of 82 final-year students in the School of Built Environment at Brookes completed a questionnaire devised by the Academic Co-ordinator (Brookes) entitled "*Please tell us about your dissertation...*"

The purpose of the questionnaire was:

- to provide the Reinvention initiative with baseline information on the student experience of dissertation work;
- to provide dissertation co-ordinators and supervisors with information that could be used to help improve the quality of dissertations;

- to provide dissertation students with the opportunity to voice some opinions about the single most important project on their course.

The following points summarise the results of the questionnaire survey:

- In almost all subject areas in the School about one half of dissertation students were in a position to respond to the questionnaire.
- For the majority of students the experience of writing their dissertation was a positive one and only compromised by, for some, the existence of competing university commitments.
- With the largest number of respondents being architects the use of visual images was the most prominent feature of dissertation work.
- Most students were well aware of the nature of a dissertation and its assessment criteria and disagreed that it was similar to previous work on their course.
- Most students generally felt they had been well-supported during their dissertation, especially by family and friends and by their supervisor and the university library.
- Most students strongly felt that they had got a lot out of their dissertation in several academic respects.
- Most students now rate their investigative skills highly.
- Most students feel they are well aware of aspects of current research in their subject.
- The majority of students offered some advice for future students with over half emphasising the importance of time management and/or making an early start.
- About two-thirds of students offered advice to the university on dissertation support with the majority of these making a range of points concerning supervision arrangements.

Online questionnaire survey of first-year undergraduates at Brookes

In November 2007 a short online questionnaire form was completed by a total of 548 first-year undergraduate students at Brookes. Potential respondents were sent a short email message that invited them to take part in the survey. A link in the email message took respondents to a webpage that comprised the questionnaire form they were being asked to complete. The principal purpose of the questionnaire was to gauge the opinion of new students on the inclusion of research-based teaching and learning in the undergraduate curriculum.

The following points summarise the results of the questionnaire survey:

- The survey secured a response from 548 first year undergraduate students who generally displayed the same characteristics as all first year undergraduates at Brookes with respect to age, gender, mode of study and subject of study.
- The respondents overwhelmingly expressed the view that they had come to university to reap the benefits of higher education rather than because they were influenced by family or friends.
- By overwhelmingly agreeing with a number of statements concerning the involvement of research in their learning, students expressed the strong view that their curriculum should be research-based.
- There is a small but clear tendency for part-time students and those in older age groups to express a stronger view in favour of research-based learning but males and females displayed the same pattern of views.
- The view in favour of research-based learning was expressed almost uniformly across the range of disciplines with only small and isolated differences shown by students in different subjects.

Research on social learning spaces: the University and the City

Work being undertaken by our PhD student at Brookes is focused on the range of spaces in the city, presupposing that social learning is not confined to a classroom. Social learning will be

considered in relation to interior spaces (e.g. classrooms), exterior spaces (e.g. university courtyards) and city-wide spaces (e.g. coffee bars, galleries, open public space and public art). The relationships between these spaces will also be considered.

The central research question is 'What are the key physical factors that affect the capacity of the full range of spaces in the city to foster social learning in undergraduates and potential undergraduates?' Therefore the central aim of this research is to develop a theoretical body of knowledge and propose design principles for achieving a range of successful Social Learning Spaces (SLSs). Research objectives are:

- to develop a conceptual framework, in order to understand the relationship between different learning processes and SLS types;
- to use this conceptual framework to analyse the relationship between different learning processes and typological and spatial factors of a range of SLSs at different morphological levels;
- to use the results of stage two to develop design parameters which outline how different spaces support different types of learning;
- to develop design proposals based on these design parameters and test these proposals in order to discover the level of acceptability of these proposals;
- to address issues that arise through the identification and analysis of precedents which provide potential solutions to them;
- to use the results of this investigation to develop a theoretical body of knowledge and propose design principles for achieving a range of successful SLSs.

Evaluating the Academic Fellowships

The impact of each Fellowship requires evaluation and the core team has produced a short manual as a guide, which recommends that the student learning experience should be examined by:

- Identifying (a) the intervention(s) that the Fellowship is introducing to student learning, (b) the interfering variables that may also influence student learning and (c) the outcomes in the student experience that the Fellowship is concerned with;
- Selecting a research design that will enable a relationship to be established between a given intervention and a range of outcomes; and
- Collecting sets of quantitative and qualitative data that will record the student learning experience

THE FUTURE OF THE UNIVERSITY

An important claim that we make is not simply to reinvent what occurs in the classroom, but to reinvent the University. Is it possible to sustain this claim?

From the evidence produced in this report it can be seen that the Reinvention Centre has begun to create a critical mass with the potential to effect, in Kuhn's terms (1970) a 'revolutionary' transformation in the teaching practice of the two host universities. An important aspect of the success of this influence is that the Reinvention Centre is working alongside progressive developments that are already occurring within the two institutions and across the sector as a whole. What the Reinvention Centre has done is to provide a focal point for an intensive debate within two research-intensive and teaching-intensive universities, consolidating, embedding and innovating on both practical and conceptual levels. All of this work has provided the space for the Reinvention Centre to contribute to the debate, outlined at the beginning of the paper, about the future developments of the CETLs within its host institutions, as well as about the nature of the University in general.

In what follows we detail the influence of the Reinvention Centre at the level at which policy is decided at both institutions. We will also discuss some ideas about how we are planning to take our work forward in the remaining funding period and beyond.

Impact on Learning and Teaching

The work of the Centre is being embedded within the institutional policies of the two universities. As a result of our work over the last two years the Reinvention Centre is recognised at both institutions as having a positive influence on Learning and Teaching. The Centre is currently represented on a number of university committees: The Learning and Teaching Committee at Brookes, and the Quality Enhancement Working Group and the Teaching Space Working Group at Warwick. The Centre Director is also a member of the decision-making body for the Warwick Awards for Teaching Excellence; we therefore have a direct input into some of Warwick's reward and recognition processes. Both the Pro-Vice-Chancellor for Teaching and Learning at Warwick and the Head of Student Learning Experience at Brookes sit on our Steering Committee.

In its first two years, the Centre has already made an impact on the Learning and Teaching Strategies of both its host institutions.

At Brookes, the Learning and Teaching Committee was presented with a paper by Richard Huggins, David Scurry and Alan Jenkins, who were funded by the Centre to undertake a visit to the USA to study good practice on linking teaching and research. The paper made a series of proposals which were very well received, and it is hoped that it will facilitate progress that contributes to the aims of the Centre as well as reinforcing the university's established commitment to undergraduate research. As a result of the paper and associated discussion the following kinds of proposals will be made for undergraduate programmes:

- Rename the double honours module 'Research Project'
- Include 'Research Skills' as a distinct group of learning outcomes in validated module descriptions
- Add a Research Methods module to programmes still without one
- Validate a first year module in the area of Academic Literacy & Practice
- Identify some second year modules that emphasise research practice (possibly including community research)
- Systematically examine second year modules in course programmes with a view to encouraging Module Leaders to place greater emphasis on the research potential of skills and methods that are already being covered in teaching and learning.
- Encourage undergraduate courses (through Research Methods tutors or similar) to assemble a Compendium of Research Skills that students will have acquired in their modules by the start of the third year
- Increasingly include Teaching assistants in module teaching teams, especially where research activity is involved
- Form a subject group of Research Methods tutors in order to improve the delivery and perception of the subject
- Form a subject group in the new area of Academic Literacy & Practice that is likely to be proposed for inclusion in first year programmes

At Warwick, the Director is a member of a working group within the University, chaired by the Pro-Vice-Chancellor for Teaching and Learning, the purpose of which is to advise the Pro-Vice-Chancellor about future directions for the teaching and learning strategy for the University. A key component of the development of teaching and learning is that it should include making the link between teaching and research as one of the organising principles for the future development of the University.

Conclusion: an intelligent theory of education

As we noted in our introduction our work is not simply about what happens in the classroom, what might be characterised as the teaching and learning perspective; we are also concerned with the wider question of the nature of the university itself, and to make the point that these two issues are inextricably linked. As we also observed, universities are undergoing fundamental transformations and the Reinvention Centre, as part of the CETL initiative, feels that it is important for CETLs to be involved in the debate about the reforms to the university system.

Our contribution to this debate is to raise the possibility of a closer and more intimate engagement between teaching and research, and for teaching and research to be reconfigured in ways that enable and allow students and their teachers to be able to reinvent their teaching and learning in ways that are beneficial to all of those involved.

In its most revolutionary and paradigm-changing form this means much more than simply inserting more research into the undergraduate curriculum or re-branding what already exists. What we are suggesting is that teaching and research should be recognised as the organising principles of the university: the structuring dynamic around which everything is arranged, and that the university is reorganised or reinvented accordingly. The strength of the model that we are proposing is that it does nothing to undermine the real nature of the university, but works by intensifying the links between the core activities of Higher Education: research and teaching; teaching and research.

What is provided from this model is not a template into which all forms of teaching and learning must be inserted, but rather one which establishes a dynamic and contradictory relationship out of which all manner of forms of teaching, learning and research can emerge, some as yet unimagined. The emergence of not-yet-imagined possibilities out of even the most dysfunctional contexts is the essence of the critical paradigm for excellence outlined at the beginning of this paper.

Evidence of reinvented forms of teaching and learning have already emerged out of the Centre's Academic Fellowships, for example student-managed seminars, and the writing of module teaching material by students; the teaching space at Westwood is a genuine innovation in the design of university classrooms, our Brookes PhD student's work on rethinking the university as the 'University and the City', and our Brookes Academic Co-ordinator's 'Academic Detective' are clear examples of imaginative ways of engaging with the academic life of the university. The various funding streams for student research, including the URSS and the Small Grants Fund, have allowed students to engage with academics on subject matter decided by the students themselves.

While the many practical examples of the work we are doing illustrate the range of activities that can be derived by linking teaching and research, what remains critical is how we conceptualise our work. It is through this conceptualisation that we define ourselves intellectually. While we understand the importance of building on the work of others in the field, not least the work of Ernest Boyer, we have been mindful of the importance of providing our own academic justification to the work that we are doing. Working through and establishing the concepts of Student as Producer, Teaching in Public and Teaching for Complexity, we have begun to provide a framework not only for our own work, but also for how academics might intellectualise the work that they are doing. For the Reinvention Centre to have had an important influence in intellectualising the teaching and learning agenda does not mean that academics need to take on our concepts, but that they should recognise the importance of conceptualising their teaching and learning in ways that are derived out of the traditions and customs of their own disciplines.

This ambition to invent and reinvent forms of teaching and learning and the production of knowledge in ways that are beyond our imagination is not meant as another academic self-indulgence, but is suggested as a way of confronting and dealing with social, political and economic problems that appear to be beyond our capacity for meaningful intervention and certainly not resolvable within the terms we currently understand.

The Reinvention Centre is currently in discussion with senior management both at Warwick and at Brookes with regard to developing a framework for sustaining the work of the Centre within both institutions. This will be a priority for the Centre during the forthcoming academic year. As to the

issue of sustainability, for the Reinvention Centre the only way to ensure sustainability is reinvention. We can let John Dewey have the last word on what that means (1938):

All social movements involve conflicts which are reflected intellectually in controversies. It would not be a sign of health if such an important social interest as education were not also an arena of struggles, practical and theoretical. But for theory, at least for the theory that forms the philosophy of education, the practical controversies that are conducted upon the level of these conflicts only sets a problem. It is the business of an intelligent theory of education to ascertain the causes for the conflicts that exist and then, instead of taking one side or the other, to indicate a plan of operations proceeding from a level deeper and more inclusive than is represented by the practices and ideas of the contending parties.

This formulation of the business of the philosophy of education does not mean that the latter should attempt to bring about a compromise between opposed schools of thought, to find a 'via media', nor yet to make an eclectic combination of points picked out hither and yon from all schools. It means the necessity of the introduction of a new order of conceptions leading to new modes of practice. It is for this reason that it is so difficult to develop a philosophy of education, the moment tradition and custom are departed from. [...] Hence, every movement in the direction of a new order of ideas and of activities directed by them calls out, sooner or later, for a return to what appears to be simpler and more fundamental ideas and practices of the past. (pp. 5-6)

Bibliography

- Aronowitz, S. (2000), *The Knowledge Factory: Dismantling the Corporate University and Creating True Higher Learning*, Boston: Beacon Press
- Athew, B., A. Kemmis and P. Weeks (1998), *Action Research in Practice: Partnerships for Social Justice in Education*, London and New York: Routledge
- Barnett, R. (2000), *Realising the University in an Age of Supercomplexity*, Buckingham: SHRE and Open University Press
- Barnett, R. (2005), *Reshaping the University: New Relationships between Research, Scholarship and Teaching*, Maidenhead: Open University Press
- Barr, R., and J. Tagg (1995), 'From teaching to learning: a new paradigm for undergraduate education', <http://critical.tamucc.edu/~blalock/readings/tch2learn.htm>
- Bishop, C. (ed.) (2006), *Participation: Documents of Art*, London: The MIT Press
- Boal, A. (1985), *Theatre Of The Oppressed*, New York: Theatre Communication Group
- Bok, D. (2003), *Universities in the Marketplace: The Commercialisation of Higher Education*, Princeton: Princeton University Press
- Boyer, E. (1990), *Scholarship Reconsidered: Priorities of the Professoriate*, Stony Brook, NY: Carnegie Foundation for the Advancement of Teaching and Learning
- Boyer Commission (1999), *Reinventing Undergraduate Education: a blueprint for America's research universities*, Stony Brook, NY: Carnegie Foundation for University Teaching
- Brew, A. (2003), 'Teaching and Research: New relationships and their implications for inquiry-base learning and teaching in higher education', *Higher Education Research and Development*, 22 (1), 3-18
- Brew, A. (2006), *Research and Teaching: beyond the divide*, Basingstoke: Palgrave Macmillan
- Bruner, J. (1986), *Actual minds, possible worlds*, Cambridge, MA: Harvard University Press
- Bruner, J. (1990), *Acts of meaning*, Cambridge, MA: Harvard University Press
- Burawoy, M. (2004), 'For Public Sociology', Address to the American Sociological Association, San Francisco, 15 August 2004
- Callinicos, A. (2007), *Universities in a Neoliberal World*, London: Bookmarks Publications
- Cohen-Bendit, D. (1968), *Obsolete Communism: The Left Wing Alternative*, London: Andre Deutsch
- Cole, M. (1990), 'Cognitive development and formal schooling; the evidence from cross-cultural research', In Moll, L. (ed.) *Vygotsky and education: Instructional implications and applications of sociohistorical psychology*, Cambridge: Cambridge University Press, pp. 89-110
- D'Andrea, V. and D. Gosling (2005), *Improving Teaching and Learning in Higher Education: A Whole Institutional Approach*, Maidenhead: SHRE and Open University Press
- Debord, G. (1970), *The Society of the Spectacle*, London: Black and Red
- Dewey, J. (1938), *Experiences and Education*, London: Macmillan
- DFES (2003), *The Future of Higher Education*
<http://www.dfes.gov.uk/hegateway/strategy/hestrategy/pdfs/DfES-HigherEducation.pdf>
- Evans, M. (2004), *Killing Thinking: The Death of the Universities*, London and New York: Continuum
- Fairclough, N. (2000), *New Labour, New Language?* London: Routledge
- Freire, P. (1970), *Pedagogy of the Oppressed*, London: Continuum
- Gosling, D., and A. Hannan (2006), 'Theoretical Underpinnings: An Analysis of Centres for Excellence in Teaching and Learning', paper presented to *Improving Student Learning Through Teaching*, University of Bath

- Halsey, A. H. (1995), *Decline of Donnish Dominion: The British Academic Professions in the Twentieth Century*, Oxford: OUP
- HEFCE (2004), *Centres for Excellence in Teaching and Learning: Invitation to Bid for Funds*, http://www.hefce.ac.uk/Pubs/hefce/2004/04_05/
- Kane, L. (2001), *Popular Education and Social Change in Latin America*, London: Latin America Bureau
- Kerr, C. (1963), *The Uses of the University*, Harvard: Harvard University Press
- Kuhn, T. (1970), *The Structure of Scientific Revolutions*, Chicago: Chicago University Press
- Lambert, C., A. Parker and M. Neary (2007), 'Entrepreneurialism and critical pedagogy: Reinventing the higher education curriculum', *Teaching in Higher Education*, 12 (4), 525-537
- Marx, K. (1973), *Grundrisse*, Harmondsworth: Penguin
- Nelson and Watt (2003), *Office Hours: Activism and Change in the Academy*, Abingdon and New York: Routledge
- Newman, J. H. (1996), *The Idea of a University*, New Haven and London: Yale University Press
- Pascarella, E. T., and P. T. Terenzini (2005), *How College Affects Students Vol. 2: a third decade of research*, San Francisco: Jossey-Bass
- Pratt, J. (1997), *The Polytechnic Experiment: 1965 – 1992*, Buckingham: Society for Research into Higher Education and the Open University
- Readings, B. (1996), *The University in Ruins*, USA: The Estate of Bill Readings
- Reason, P. and H. Bradbury (2006), *Handbook of Action Research*, London and New Dehli: Sage
- Rowland, S. (2006), *The Enquiring University*, Maidenhead: McGaw Hill
- Scott, P. (1984), *The Crisis of the University*, London: Croom Helm
- Scott, P. (1995), *The Meanings of Mass Education*, Buckingham: Society for Research into Higher Education and the Open University
- Scott, P. (ed.) (1998), *The Globalisation of Higher Education*, Buckingham: Society for Research into Higher Education and the Open University
- Scott, P. (2002), 'A lot to learn: we are all researchers now', *Education Guardian*, 8 January, <http://www.education.guardian.co.uk/egweekly/story/0,,628918,00html>
- Scribner, S. (1985), 'Vygotsky's uses of history', in Wertsch, J. (ed.), *Culture, communication and cognition: Vygotskian perspectives*, Cambridge: Cambridge University Press, pp. 119-145
- Senge, P. M. (1990), *The Fifth Discipline: the art and practice of the learning organisation*, New York: Currency Doubleday
- Skelton, A. (2005), *Understanding Teaching Excellence in Higher Education: towards a critical approach*, London and New York: Routledge
- Slaughter, S. and L. Leslie (1997), *Academic Capitalism: Politics, Policies and the Entrepreneurial University*, Baltimore: The Johns Hopkins University Press
- Vygotsky, L. (1962), *Thought and language*, Cambridge, MA: The MIT Press
- Vygotsky, L. (1978), *Mind in society: the development of higher psychological processes*, Cambridge, MA: Harvard University Press
- Wenger, E. (1998), *Communities of practice: learning, meaning and identity*, Cambridge: Cambridge University Press
- Wieman, C. (2004), 'Professors who are scholars: bringing the act of discovery to the classroom', presentation at The Reinvention Center Conference, November, 2004, *Integrating research into undergraduate education: the value added*, http://www.reinventioncenter.miami.edu/conference_05/wieman/presentation.htm
- Williamson, A. and C. Nodder (2002), 'Extending the learning space: dialogue and reflection in the virtual coffee shop', *Computers and Society*, 32 (3), ACM SIGCAS

Appendices

List of appendices

Appendix 1: Publications

Appendix 2: Keynote speeches and presentations; other conference papers

Appendix 3: URSS projects in 2006/07

Appendix 4: Factual data on student involvement

Appendix 5: Financial information

Appendix 6: What they say about us

Appendix 7: Copy of article from the *Independent* newspaper

Appendix 8: Reinvention Centre staffing diagram

Appendix 1: Publications

During the lifetime of the Centre, Reinvention staff members and students have produced the following publications related to our work.

Allan, L., E. Allen and M. Ezechukwu (eds) (2007), *Get Over it*, Coventry: The Reinvention Centre for Undergraduate Research

Alsop, N., S. Birks, M. Bush, L. Pinfold and E. Vryenhoef (2006), *Representations: Student Research in Visual Sociology and the Sociology of Story*, Coventry: The Reinvention Centre for Undergraduate Research

Healey, M., and A. Jenkins (2005), 'Research –Teaching Linkages', *HERDSA News* , 27(3)

Healey, M., and A. Jenkins (2006), 'Strengthening the Teaching-Research Linkage in Undergraduate Courses and Programmes', in Kreber, C. (ed.), *Exploring research-based teaching*, New Directions for Teaching and Learning, Jossey-Bass/Wiley

Jenkins, A. (2005), 'Institutional Strategies to Link Teaching and Research', *Academy Exchange*, December, <http://www.heacademy.ac.uk/academyexchange.htm>

Jenkins, A., and M. Healey (2005), *Institutional Strategies to Link Teaching and Research*, York: Higher Education Academy

Lambert, C., and A. Parker (2006), 'Imagination, hope and the positive face of feminism: pro/feminist pedagogy in 'post' feminist times?', *Studies in Higher Education*, 31(4), 469-482

Lambert, C., A. Parker and M. Neary (2007), 'Entrepreneurialism and critical pedagogy: reinventing the higher education curriculum', *Teaching in Higher Education*, 12(4), 525-537

Neary, M. (2005), 'Renewing Critical Pedagogy: Popular Education as a Site of Struggle', *Asian Labour Update*, Asian Monitoring Resource Centre, Hong Kong, <http://www.amrc.org.hk/5501.htm>

Neary, M. (2006), 'Crime and the University: The Story of Sort'd - A Community (Higher) Education Project', *Probation Journal: The Journal of Community and Criminal Justice*

Neary, M., and A. Parker (2005), 'Enterprise, Social Enterprise and Critical Pedagogy: Reinventing the Higher Education Curriculum', *National Council for Graduate Entrepreneurship, Policy Paper No. 2* http://www.ncge.org.uk/downloads/policy/Enterprise_Social_Enterprise_and_Critical_Pedagogy.pdf

Parker, A., M. Neary and C. Lambert (2005), 'Reino Unido: La Educacion En La Edad Modrena', *Educacion Superior y Mundo Escolar*, Calidad En La Educacion, Consejo Superior De Educacion, Santiago, Chile, pp. 319-335

Perrier, M. (2006), 'Reflections on practising student-staff collaboration in academic research: a transformative strategy for change?', *M/C Journal*, 9(2), <http://journal.media-culture.org.au/0605/08-perrier.php>

The WASS Collective (2006), 'Gender Transformations in Higher Education', *Sociological Research Online*, 12:1, <http://www.socresonline.org.uk/12/1/lambert.html>

Appendix 2: Keynote speeches and presentations; other conference papers

Neary, M., 'Renewing Critical Pedagogy: From Popular Education to Academic Activism: Teaching as a site of Struggle', *C-SAP conference*, University of Birmingham, November 2005

Simbuerger, E., 'The Academic Labour Process in the Social Sciences: An Exploratory Study of Young Postdoctoral Researchers in England', *Social Research into Higher Education*, University of Edinburgh, November 2005

Neary, M., *Universities UK, symposium of Vice-Chancellors' Long Term Strategy Group and Student Experience Group*, London, March 2006

Neary, M., 'The Reinvention Centre', presentation to Sir Alan Wilson, Director General of HE at DfES, University of Warwick, March 2006

Neary, M., 'Furthering Knowledge of Undergraduates in the Community', *Universities in the Community*, Brighton University, April 2006

Neary, M., 'Academic Activism: Critical Pedagogy and Popular Education – Research-based Teaching as a Site of Struggle', *British Sociological Association Conference*, Harrogate, May 2006

Neary, M., 'The Politics of Research-Based Learning', *Summit on Teaching, Learning and Research*, University of Alberta, Edmonton, May 2006

Neary, M., 'Universities Plc? Learning Enterprise in Higher Education', *Conference on the Scholarship Of Teaching and Learning*, London, May 2006

Neary, M., and Lambert, C.: 'Universities in the 21st Century', Keynote introduction: *Global Student Footprint conference*, University of Warwick, May 2006

Neary, M., 'Citizenship, Placement and the Practice of Human Rights: Freedom and Nonfreedom in an Age of Terror', Keynote Introduction to *CRUCIBLE CETL conference*, Roehampton University, London, June 2006

Neary, M., 'Research-Based Learning in Higher Education: The Warwick Experience', *Higher Education Academy Conference*, University of Warwick, October 2006

Lambert, C, and E Simbuerger: 'Reinventing Academic Practice', *Society for Research into Higher Education Annual Conference*, Brighton, December 2006

Appendix 3: URSS projects in 2006/07

Projects funded at Warwick:

In 2006/07, 57 projects were funded as follows:

- Making Molecules Quickly: New Applications of Multi-Component Reactions
- Commemoration in a Media Age: The Falklands War
- Can conditionality promote institutional reform in developing countries? A case study of structural adjustment programmes and their alternatives in Kenya
- Distribution of Termite Group 1 methanogens in different termite feeding guilds
- Development of a new detection technique for oscillations in the solar corona
- Isolation of novel thermophilic bacteria for biotechnology (biohydrogen production)
- Effects of Vegetation of Pond Retention Times
- Textual Collation of the First Edition of *The Wittie Faire One* for The Oxford University Press Edition of *The Complete Works of James Shirley*
- Simulation of Electron Energy Loss Spectra and Surface Plasmons
- Incorporation of Biofuels within a Hybrid Vehicle Powertrain Simulation Tool
- Neutrino Factory research: build and test a novel light and ionisation sensor
- Toroidicity-induced Alfvén waves in tokamaks
- The commodification of the University through the Bologna process: A study of the interaction of British and German conceptions of Higher Education
- Developing an eScience Resource for Neutrino Mass and Low Background Physics
- Trusted Routing in Mobile Adhoc Networks
- Trusted ad-hoc networks: extending DSR
- Shakespeare podcasts
- Control of storage oil mobilisation in Arabidopsis seeds by the lipase SDP1
- Probing the evolution of accreting binary stars
- Contextualising The White Devil: Politics, Religion and Theatre during the Reign of James I
- The reception of literary works in France during the Revolution
- Penile calciphylaxis in ESRF: world's first case of healing with conservative management
- The subclassification of low back pain using innovative data analysis: Intelligent Systems Engineering (ISE) and its application in medical diagnostics
- Constructing Elizabeth Isham
- Design of an Intelligent Software Engine for Research in Later Life Learning
- Ionization of Atoms in Gases and Plasmas by Beam Ions
- Elucidating hydrogen-bonding structure in novel synthetic guanosines by solid-state NMR: underpinning new molecular electronic devices
- Determining the Dark Matter content of our Galaxy, from Warwick
- Research in Computational Number Theory (the FLINT project)
- Autonomous navigation of the DCS mobile robot
- Europeanization of Higher Education systems - European Union, Bologna Process and Higher Education in Croatia and Slovenia
- Single dose intravenous Vitamin K for the pre-operative reversal of Warfarin in patients with proximal femoral fractures: a randomised trial
- The role of connexins in β -cell communication
- An electrically switchable molecular machine
- Tracking the language development of international children
- The efficacy of local corticosteroid injections in Achilles tendonitis
- Explorative research on intro-EU migrant and labour market regulations in the West Midlands
- Student satisfaction of learning support offered by the University and the Centre for Student Development and Enterprise
- Mobility and Identity formation in the Italian context: A web-based resource bank
- Magnetic levitation in neutrino physics: Calculate and build a demonstrator
- An investigation of optical spin polarisation of colour centres in diamond
- An investigation of plant defence against the fungal pathogen *Botrytis cinerea*
- Developing a Calibration Test of Detector Modules for Neutrino Physics

- Bathing for health and pleasure: the Turkish Bath at Leamington Spa 1860-1970
- Theoretical study of the elementary reactions in Grätzel solar cells
- Imaging protein targeting in living cells by fluorescent protein photoactivation
- Migratory flows from North Africa into the EU: Challenging normative interpretations of the 'problem'
- Laminar-Turbulent Transition of Boundary-Layer Flow over Rough Rotating Disks
- Research into practice: Analysis of epidemiological data to inform policy in health care in developing countries
- Comparative Study of Mortgage Laws in Europe
- Rhetorical Tropes in English Judicial Literature
- Identifying mechanisms of photocapture of proteins
- Speech and literacy skills: What are the links?
- Managing Research Projects
- The initiation of insulin in type 2 diabetes: a case study approach
- Women's experiences of complementary and alternative therapies for menopausal symptoms: secondary analysis of qualitative data
- States of Blue: American Writing on Depression

Projects funded at Brookes:

In 2006/07, 15 projects were funded as follows:

- Relating primate distribution between habitats to fruit production in the Peruvian Amazon
- Comparative analysis of the behaviour and conservation of purple-faced leaf monkeys in Southern Sri Lanka
- Mapping the invisible: parallel practices
- Of sex, silence and misrepresentation: cut figures in ethnographic museums
- Human-environment interactions on Exmoor: perspectives on stakeholder conflict in the use of the national park
- A history of infanticide legislation in Britain and the USA, 1600 to present
- Indexing European historical literature in the field of forensic medicine
- Comparative study of e-democracy initiatives in UK local government
- Transition to first-time fatherhood: teenage fathering
- Integration of Eastern European migrant workers into the British labour market
- Taking due account of religion in sentencing
- Investigating the relationship between autonomic cardiac regulation, aerobic fitness and control of blood glucose
- The effect of treadmill exercise on gait parameters in unilateral amputees
- Assessment and improvement of physical activity levels in patients with neuromuscular conditions
- Optimal safe exercise for people with MS

Appendix 4

Student involvement to the end of June 2007

| Type of involvement | Students at Warwick | Students at Brookes | Students at other HEIs | Total students | Notes |
|------------------------|---------------------|---------------------|------------------------|----------------|--|
| Academic Fellowships | 836 | 845 | 30 | 1711 | Number of students impacted by Academic Fellowship projects |
| URSS | 101 | 16 | | 117 | Total number of students funded (some collaborating on projects) |
| Small Grants Fund | 46 | | | 46 | Total number of students funded (some collaborating on projects) |
| Student projects | 60 | | | 60 | Total number of students involved in various types of project |
| Learning Grid sessions | 50 | | | 50 | Number of individuals who have attended the sessions |
| Admin/Committees | 5 | 3 | | 8 | Total number of students on our committees, some for one year only |
| Research | 217 | 671 | | 888 | Respondents to questionnaires; attendance at focus groups |
| | | | | | |
| Total | 1315 | 1535 | 30 | 2880 | |

Appendix 5: Financial information

Capital funding

Our capital funding was used principally for the refurbishment of two learning spaces: the Reinvention Centre at Brookes, and the Reinvention Centre at Westwood (on the Warwick campus). Further details on each of these projects can be found in the main report. The remainder of the capital allocation was spent on office accommodation, the Centre's minibus, the equipment for the existing Learning Grid facility, and a number of smaller start-up costs.

We did encounter some problems with unforeseen delays during our building and refurbishment (mainly due to the discovery of asbestos in the building at Brookes, which needed to be removed, and mistakes made by one of our contractors in laying the floor), and overall we felt that the timescale for spending the capital allocation of funds was too short, given the complexities of undertaking any building work and given the fact that university procedures involve time-consuming tendering processes etc. This was accentuated by the fact that we were simultaneously starting up a number of other initiatives related to our stated aims, such as Academic Fellowships, committee networks and so on. We would have appreciated a 'year zero' to the project in order to work on our capital and building projects before starting the work of the Centre proper.

Recurrent funding

This was divided into separate budget headings according to the plan submitted in our original funding bid. Over the course of the first two years we have been obliged to re-think some of the amounts under each category and (with HEFCE's permission) to reallocate some of the funds within each heading. The principal changes were:

- That the travel budget at both institutions was felt to be too small (funds were re-routed from the administration budget where costs had been slightly overestimated). Given the collaborative nature of our Centre and the importance of interacting with the HE community, we did not wish to restrict our travel.
- That the salaries budget needed to be increased. This was due to three main factors: the Higher Education Framework Agreement and subsequent job evaluation process which resulted in some mandatory pay increases; the promotion of our Director from Senior Lecturer to Reader, which was a direct consequence of the success of the Centre; and the necessity of employing an extra member of administrative staff, also a consequence of the Centre's success.
- That dedicated funding streams for student and/or project funding should be set up, with funds re-routed from our 'General' budget heading. It was felt that funding for these core activities should be separated and ring-fenced.

We did experience some underspend of the recurrent funding at both institutions in our first year, due in part to the concentration on capital spending detailed above, and in part to the Academic and student funding streams taking slightly longer than envisaged to establish. However, spending moved back on track in Year 2 once the various schemes were up and running, and we are confident that it will remain so in future years.

Please find following details of expenditure at both institutions for Year 1 and for Year 2 up until the end of June 2007.

Financial Summary – Year 1

The Reinvention Centre finances are split into Recurrent and Capital and each are considered separately.

Recurrent

The figures for the first year show the following:

| | Warwick | | Oxford Brookes | |
|------------------------|----------------|----------------|----------------|----------------|
| | Budget | Actual | Budget | Actual |
| Staffing | 143,006 | 122,370 | 91,909 | 76,304 |
| Academic Fellowships | 35,000 | 14,913 | 35,000 | - |
| Travel | 1,250 | 2,963 | 1,250 | 1,346 |
| Evaluation | - | 1,268 | - | - |
| Administrative Costs | 10,000 | 2,585 | 10,000 | 1,413 |
| Governance | 1,500 | 606 | 1,500 | 2,073 |
| General | 30,000 | 15,554 | 30,000 | 5,862 |
| UG Student Fellowships | 7,500 | 8,665 | 15,000 | - |
| Contingencies | 1,500 | - | 1,500 | - |
| Indirect Costs | 33,200 | 33,200 | 24,900 | 24,900 |
| Total | 262,956 | 202,124 | 211,059 | 111,899 |

There were underspends at both institutions in the first year and these funds were allocated to future years' budgets.

Capital

The figures for the first year show the following:

| | Warwick | | Oxford Brookes | |
|--------------------------|----------------|---------------|----------------|----------------|
| | Budget | Actual | Budget | Actual |
| Office Accommodation | 47,100 | - | 237,000 | 126,704 |
| Reinvention at Westwood | - | - | - | - |
| Telephones | 1,680 | - | - | - |
| Workstations | 8,225 | 5,714 | - | - |
| IT Equipment | 6,580 | 7,911 | - | - |
| Student Drop in Facility | 60,000 | 39,884 | 10,000 | 9,843 |
| Other | 40,415 | 12,404 | - | - |
| Minibus | 30,000 | 31,461 | - | - |
| Total | 194,000 | 97,374 | 237,000 | 136,547 |

The underspend on capital for Warwick was allocated to the budget for the Reinvention Centre at Westwood for completion in Year 2

Financial Summary – Year 2

The Reinvention Centre finances are split into Recurrent and Capital and each are considered separately. Figures are correct to the end of June 2007.

Recurrent

The figures for the second year show the following:

| | Warwick | | Oxford Brookes | |
|------------------------|----------------|----------------|----------------|----------------|
| | Budget | Actual | Budget | Actual |
| Staffing | 139,288 | 122,472 | 102,403 | 102,551 |
| Academic Fellowships | 40,078 | *26,331 | 45,760 | *15,133 |
| Travel | 8,000 | 3,721 | 1,232 | 2,002 |
| Evaluation | 5,000 | 324 | - | - |
| Administrative Costs | 3,378 | 4,738 | 1,732 | 2,000 |
| Governance | 2,432 | 480 | 1,344 | 1,400 |
| General | 24,220 | 22,302 | 62,558 | 62,501 |
| Collaboration Fund | 2,600 | 1,300 | - | - |
| Small Grants Fund | 6,868 | 6,348 | - | - |
| UG Student Fellowships | 12,000 | 14,155 | 29,930 | 24,310 |
| Contingencies | 3,038 | 4,919 | - | - |
| Indirect Costs | 34,030 | 34,030 | 25,523 | 25,523 |
| Total | 280,932 | 241,120 | 270,482 | 235,419 |

* The "Academic Fellowships" budget has been fully allocated at both institutions, but the funding has not yet been paid out in its entirety due to most the projects still being in progress.

Capital

The figures for the second year show the following:

| | Warwick | | Oxford Brookes | |
|--------------------------|----------------|----------------|----------------|----------------|
| | Budget | Actual | Budget | Actual |
| Office Accommodation | - | - | 426,453 | *253,060 |
| Reinvention at Westwood | 210,087 | 210,087 | - | - |
| Telephones | - | - | - | - |
| Workstations | 1,180 | 1,180 | - | - |
| IT Equipment | - | - | - | - |
| Student Drop in Facility | - | - | - | - |
| Other | 15,359 | 15,359 | 53,000 | 53,206 |
| Minibus | - | - | - | - |
| Total | 226,626 | 226,626 | 479,453 | 306,266 |

* Capital funding at Brookes is fully allocated but has not yet been paid out in its entirety due to contractor delays.

Appendix 6: What they say about us

During the past two years we have received feedback on the Centre and its activities from a number of different sources. Some of this feedback is included in the main document, but other representative examples include the following:

“The Students’ Union has always been incredibly excited by and supportive of the work of the Reinvention Centre. Since its launch we have been constantly involved in it. The Education Officer sits on both the Management and Steering Committee. This has been a very welcome opportunity for the official student representatives to have a direct involvement with supporting the promotion of undergraduate research.

Many students have enjoyed much support and encouragement from the Reinvention Centre. From the student feedback we receive, through the Academic Representation Committee and through the SSLC structure, the Students’ Union Officers are very excited about the continued development of the Reinvention Centre space at Westwood.

The Students’ Union looks forward to working with the Reinvention Centre in the future, and we hope to work together on projects to spread the ethos of the centre into all areas of undergraduate study at Warwick. It is so important that undergraduates are stimulated and encouraged to take on their new subject areas, to research them independently, and to reinvent their spaces and topics constantly. We wish it every success in the future and look forward to a relationship of continued collaboration to improve student opportunities.”

Brian Duggan
President
University of Warwick Students’ Union

“I really want to thank you for organising the workshop on Tuesday so thoughtfully and efficiently. It is already having ripples beyond those I anticipated—my students say that it really changed their ideas about what HE could do and they want to tell their peers. One of them is now thinking that he wants to do a PhD that considers how popular education insights can be brought to prisoner education and the others think that they and their peers should have more of it at UCE! They want to lobby the new VC to see if we can reinvent space fit for our purposes.”

Joyce Canaan, UCE, writing of the ‘Student as Producer’ workshop in February 2007.

“[Thank you for showing us] the splendid examples of innovative teaching and learning space. You’ve set us a high benchmark to reach for in the brief for our new estate and given us lots of positive food for thought.”

David Miller, Director of Estates Development, Glasgow School Of Art, after visiting the Reinvention Centre at Westwood

Appendix 7: Copy of article from the *Independent* newspaper

The Reinvention Centre featured in two articles in the Independent newspaper on 11 January 2007. Copies of these articles may be found at the following web addresses.

Universities: The Learning Mould is Smashed

<http://education.independent.co.uk/higher/article2141963.ece>

Leading Article: Learning to Move with the Times

<http://education.independent.co.uk/higher/article2141953.ece>

Appendix 8: Reinvention Centre staffing diagram

The Reinvention Centre

For Undergraduate Research

