ESRC Teaching and Learning Research Programme

Project Proposal for

ENHANCING TEACHING-LEARNING ENVIRONMENTS IN UNDERGRADUATE COURSES

Good teaching is open to change: it involves constantly trying to find out what the effects of instruction are on learning, and modifying that instruction in the light of the evidence collected.

(Ramsden, 1992, p. 102)

CONTEXT AND PURPOSE

1. This proposal is designed to explore ways of strengthening the teaching-learning environments experienced by students taking undergraduate courses, so as to enhance their achievement. It will build on existing research into teaching and learning in higher education, by extending the range of disciplinary perspectives being used and relating them more directly to the professional knowledge of academic staff in contrasting subject areas and in different course and institutional contexts. By working collaboratively with departmental partners, ways of enhancing the system-wide capacity for research-based practice will be explored and disseminated.

2. The contexts and conditions of teaching and learning within universities and colleges in the UK have been changing radically over the last decade. Many more students with widely differing backgrounds and levels of achievement are now entering higher education. The range of courses being offered has been substantially extended, and modularisation has changed organisational and degree structures in most institutions. The influx of students, together with the increasing use of technology-based and resource-based learning, have produced marked changes in methods of teaching. The advent of the Institute for Learning and Teaching in Higher Education (ILT), and of the Generic and Subject Teaching Centres, is giving much greater prominence to the importance of effective teaching, while substantial funding has also been provided to encourage innovative teaching and the dissemination of 'good practice'. There has, however, been no equivalent expenditure on research to investigate these rapid developments. The research base for such studies has, in fact, been much reduced, just at the time it was most needed.

3. The context of higher education also affects the nature of research designs. In schools, there is much more control over a relatively homogeneous curriculum (by government and local authorities) and over the pupils (by teachers), so that the direct effects of general changes in either curriculum or teaching methods can, at least in principle, be evaluated. In higher education, departments, staff and students alike have much greater autonomy. Institutional managers cannot require departments or staff to take part in a research project, while staff have only limited direct influence on learning through their teaching methods. Students are expected to spend a substantial amount of time outside classes working on learning materials and assignments, either on their own or with other students. It is thus not just teaching methods, but the whole teaching-learning environment which affects students' engagement and achievement. And while some generic principles of 'good teaching' in higher education are clear, diversity in curricula, student intakes, modes of study and disciplines require context-sensitive teaching approaches. Recent research does suggest, however, that teaching-learning environments can be described in terms of the *constructive alignment* between educational objectives, students' interests and prior knowledge, methods of teaching, learning resources, and assessment procedures. These can be investigated to see how mutually supportive the various components appear to be. This principle is the basis of our planned interventions, allowing us to take full account of contextual variations across institutions and subject areas. The project will develop

adaptable data-gathering tools and analytic frameworks for use by staff in reviewing and enhancing the influence of teaching-learning environments on the engagement, motivation and achievement of students.

EVIDENCE FROM PREVIOUS RESEARCH ON TEACHING AND LEARNING

4. While there has been extensive research over the last decade into teaching and learning in higher education which has substantially influenced the procedures for quality assurance, there remain important limitations to be overcome. The most important need is for research which more fully mediates between the research community and academic staff to provide evidence for research-based teaching. To achieve this, the research will have to take much more account of the marked changes in the contexts within which academic staff work, the increasing use of technology in teaching, learning support, assessment and course organisation, and the differences across academic and professional subject areas.

5. In developing this proposal, four interrelated strands have been identified: teaching and learning environments; engagement and approaches to studying; assessment and outcomes of learning; and pedagogical change and academic development. The final strand draws on the other three, and makes use of them in exploring the most effective forms of communication to teachers, managers and policy makers.

6. Here, a necessarily concise review is presented of previous research across the four strands, designed to explain and justify the main concepts and theories that will provide the starting points for the investigation. The references cited are listed in Annex **A**, while Annex **B** provides additional conceptual background on teaching-learning environments.

Teaching-Learning Environments

7. The ways in which the nature of teaching, assessment and 'powerful learning environments' (de Corte, 1995) influence the quality of learning have been demonstrated in a wide range of studies in both schools and higher education. In schools, the influence of constructivist theories of learning has pointed up the importance of providing a rich array of experiences and materials out of which students can develop their own conceptual understanding (Phillips, 1995). There has also been an emphasis on providing authentic learning tasks which mirror experiences in the real world, a view which now has substantial support from cognitive psychology (Schank, 1999). A recent large-scale study by a research group from Harvard developed a conceptual framework through collaboration with teachers. Their *Teaching for Understanding* framework was developed from theoretical ideas derived from educational and cognitive psychology (Perkins, 1992, 1998), but was tested and refined through discussions with teachers. Its emphasis was on providing a coherent curriculum focused directly on enhancing engagement of pupils and fostering understanding (Wiske, 1998). In this scheme, each component of the learning environment is focused on the main objective – improving the level of understanding reached by the pupils.

8. In higher education, developments in thinking about the nature of teaching-learning environments which encourage and support high quality learning can be found in the R & D literature, stemming in particular from the work of Ramsden (1981), Hounsell (1984), and Trigwell and Prosser (1991). Conceptual frameworks developed by Entwistle (1987, 1992, 1998) (see Annex **B**) and Biggs (1993, 1999) indicate how students' pre-existing abilities and skills, in interaction with the teaching and departmental context they experience, influence their ways of learning and studying and, through those, the quality of their learning outcomes. Research findings have demonstrated how differing approaches to teaching affect approaches to studying (Trigwell, Prosser & Waterhouse, 1999) and have indicated why 'good teaching' encourages engagement and reflection through which conceptual understanding develops (Denicolo, Hounsell, and Entwistle, 1992; Anderson, 1997; Prosser & Trigwell, 1999). The effects of students'

perceptions of assessment procedures on ways of studying are also well-known, with multiple-choice or short-answer questions being less likely to encourage high quality learning than essay-type or problem-based forms (Thomas & Bain, 1984; Scouller, 1998). Similar effects have also been found with students' perceptions of other aspects of their learning environments, derived from a series of studies using questionnaires (Ramsden & Entwistle, 1981; Meyer, 1988, 1991; Wilson, Lizzio & Ramsden, 1997).

9. While most of this research has concentrated on more readily observable aspects of the teaching-learning environment, other studies have pointed up the importance of how students perceive the quality of departmental climates, staff-student relationships, and peer group morale – the emotional experience of the learner (Morgan & Beaty, 1997; France & Beaty, 1998; Beaty, Dall'Alba & Marton, 1997). The overall notion of environment must thus be seen as applying at different descriptive levels. It has to cover variations in institutional and departmental climate, teaching-learning and assessment strategies, diverse student populations (Watson and Taylor, 1998), and communication and interaction between individuals, all of which influence the quality of both the experience of higher education and the achievements of students.

10. Biggs (1999) has taken up earlier ideas from research in schools to stress, as in the Harvard 'Teaching for Understanding' framework, the importance of planning a coherent teaching-learning environment, and one which allows students to construct their own understandings, in line with constructivist ideas. The set of principles he has established has been labelled *constructive alignment*. He suggests that teachers write course objectives explicitly based on defined levels of understanding, and then devise activities and forms of assessment which demand conceptual understanding. This is not 'spoon-feeding', as it is reliant on the independent thinking of the student. It is, however, designed to eliminate the dysfunctional consequences for students in course settings where the components of the teaching-learning environment are not properly aligned. Biggs' model (1993, 1996) also incorporates the importance of relating objectives to students' prior knowledge and experience; it will thus be essential to extend the notion of constructive alignment to include harmonisation with the students' intentions and the mix of their abilities. This notion also has to take account of providing appropriate modes of delivery for part-time students and those studying through flexible, open-learning and self-study materials. With such extensions, the principle of constructive alignment offers a valuable conceptual basis for a generalised form of intervention that nevertheless retains the essential flexibility to cover the diverse range of subject areas and institutional contexts.

11. Looking at research from a quite different theoretical perspective brings out the importance of disciplinary differences. Becher (1989, 1994), for example, used the metaphor of 'academic tribes' maintaining their territories to explore how disciplines tackle epistemological questions, types of evidence, and means of generating and expressing arguments. He also looked at the ways in which disciplines give identity to academics, order their activities, and control resources. A central thrust of his portrayal of disciplinary cultures is that "the ways in which particular groups of academics organise their professional lives are intimately related to the intellectual tasks on which they are engaged." (Becher, 1989, p.1). There are also marked differences between disciplines in the time spent on teaching (Smelby, 1996), the types of learning goal prescribed (Cashin & Downey, 1995), and accepted attitudes and approaches to teaching (Stark & Lowther, 1988). The lack of such disciplinary specificity in much of the existing research has seriously weakened its plausibility for academic staff, making it essential to take into account within our own research.

12. While it is important to stress the impact that disciplinary differences have on teaching and learning within higher education, teaching practices are also mediated by the educational ideologies and the conceptions of teaching held by individual academics (Trowler, 1998; Prosser, Trigwell & Taylor, 1994). Moreover, the structures, ethos, norms, student populations and resources of individual institutions of higher education have general effects on teaching, and on the opportunities for pedagogical change and academic development.

Engagement and Approaches to Studying

13. The concept of *approaches to learning and studying* has had a marked impact in Britain on thinking about teaching and learning in higher education. In their influential study, Marton and Säljö (1976) reported a marked difference in how students went about reading an academic article. Some students sought to understand it for themselves (*deep approach)*, while others were more concerned with memorising specific information (*surface approach*). The idea of a deep approach is central to the purposes of TLRP, as it implies a quality of engagement with the task which leads to the high levels of conceptual understanding required at least in the later stages of degree courses. The intention to understand for yourself brings into play important intellectual processes, such as relating and organising ideas, and subjecting evidence to detailed logical analysis, both of which are necessary to achieve deep levels of academic learning.

14. While the early research on approaches to learning was carried out in somewhat artificial settings, the distinction between deep and surface approaches has since been found in most forms of everyday studying (Biggs, 1999; Entwistle, 2000). However, in such contexts another approach becomes important – the *strategic approach* to studying with the intention to obtain the highest possible grades. Inventories measuring these three approaches (and sometimes a fourth – *apathetic*) have shown that the deep strategic approach is most likely to lead to academic success, at least when understanding is being assessed (Biggs, 1987; Meyer, Parsons & Dunne, 1990). In contrast, students who fare less well are generally found to be adopting either surface apathetic approaches (Tait, Entwistle & McCune, 1998) or to have 'dissonant' study orchestrations in which students exhibit contradictory facets of approaches to studying (e.g. combining deep intentions with surface learning processes) (Meyer, 1991, in press; Entwistle, Tait & McCune, in press).

15. These findings have been reported in many studies in a wide range of differing contexts, and yet their limitations, stemming from the way the deep approach has been defined, have become increasingly evident. The origin of the concept lies in the mid-1970s, when teaching-learning environments were very different from now, and student intakes were more homogeneous. Moreover, high quality learning would currently often include additional generic skills sought by employers. There is also research which relates ways of studying to the broader personal context within which students' learning intentions develop (Vermunt, 1996; Beaty, Gibbs & Morgan, 1997), and to students' conceptions of learning (Van Rossum & Schenk, 1984; Meyer & Boulton-Lewis, 1999). The ways in which students reflect on and regulate their learning have also been shown to affect their academic achievement (Vermunt and van Rijswijk, 1988; Pintrich *et al.*, 1991, 1993; Pintrich & Garcia, 1991,1994), while Volet (1997) has shown the importance of 'volition' in studying. She found, for example, that students with 'deep' intentions may not put sufficient effort into their studies to reach high level outcomes. The link between volition and achievement is also supported by research into metacognition and self-regulation, which has examined students' ability to regulate effort and motivation (Wolters, 1998; Pintrich, Smith, Garcia and McKeachie, 1991, 1993)

16. Finally, although the idea of a deep approach has generic validity, the processes used to achieve understanding will be substantially different in contrasting subject areas. The concept will, however, be crucial in our research as a way of describing the differences in the ways students go about their studying. It can be used as an indicator of change in the quality of learning brought about by ensuring constructive alignment within the teaching-learning environment. But to have this function, its definition will have to be broadened to include related elements recently identified, while at the same time adding discipline-specific components of the deep approach and reactions to the most recent teaching methods, learning tasks and assessment procedures.

Assessment and Outcomes of Learning

17. The ultimate test of the effectiveness of any teaching-learning environment has to be the academic

performance of the students. Yet, assessment procedures in higher education often seem to be in conflict with the espoused aims of the course (Ramsden, 1992; Brown *et al.*, 1997), reflecting long-established practices within the subject area, institutional adherence to traditional modes of examining, or the logistical and resource limitations created by very large classes. Constructive alignment opens up promising ways of thinking about pedagogical 'goodness-of-fit' between assessment processes and intended learning outcomes. This last point is important because, as noted earlier, different forms of assessment are known to influence approaches to studying, but empirical studies have largely been confined to comparisons between MCQ/short answer formats and those based on essays or problems. However, in Britain as in many other countries, a sea-change has been underway in recent years in forms and methods of assessment in higher education (Hounsell *et al.*, 1996; Gibbs, 1995; Nightingale *et al.*, 1996; Banta *et al.*, 1996). Diversification has encompassed hitherto unfamiliar forms of written assignment (for instance, portfolios, proposals, journals and logs) alongside the introduction of oral, audio-visual and mixed-mode assignments. It has also involved the assessment of student groups and teams through collaborative presentations and projects, and the involvement of students in evaluating the quality of their own and other students' work (Hounsell and McCulloch, 1999). Yet, despite the scale and scope of this break with traditional practice, and in contrast with the large educational claims often made on its behalf, it is difficult to find any thoroughgoing attempts to investigate the extent of its influence on students' approaches to studying or its impact on learning outcomes (Hounsell, 1998).

18. In the context of the present proposals, the challenges raised in closing this substantial gap in our present understanding are two-fold. Firstly, it will be necessary to devise a means of translating constructive alignment into a practicable approach — one which is both discipline- and context-sensitive and capable of generating findings of more general applicability, while at the same time offering a focus on environments of learning which is not unmanageably diffuse. We propose to resolve this by identifying and then tracking the use of a set of 'marker outcomes' in a range of course settings. This term is used to represent key achievements which most courses in that subject area would require of their students at that stage of the course (see Annex **C**). Introducing this novel strategy in conjunction with the notion of constructive alignment will entail investigating how marker outcomes have been formally articulated in course documentation, translated into course design and communicated to students; what teaching-learning strategies have been adopted to enable students to pursue and attain these marker outcomes; what assessment strategies are used to foster, display and evaluate students' attainment of the marker outcomes ; and how course teams monitor and respond to gaps in the effectiveness of the learning environment in helping to bring about these and other important learning outcomes. It will also be essential to look at examples of students' written work at different levels of outcome, and to discuss with these students how they worked on their assignments. The advice of our subject advisers [see below], together with reference to the work of the benchmarking groups set up by the Quality Assurance Agency (QAA), will be indispensable in pinpointing marker outcomes which almost all courses within a subject area will expect of their students.

19. Secondly, it will be essential to refine ways of encapsulating qualitative differences in the outcomes of learning, building on past work in this area. Research at Gothenburg, for example, showed how to describe an 'outcome space' for depicting qualitative variations in the understanding of texts (Fransson, 1977; Wenestam, 1980), and this approach has since been successfully adapted in Britain to delineate differences in first-year students' grasp of key social science concepts (Beaty, 1987) and final-year students' forms of understanding in the course of exam revision (Entwistle & Entwistle, 1992). The most extensive, and the most practical, work on describing learning outcomes has, however, come from Biggs through his SOLO (Structure of Observed Learning Outcomes) taxonomy (Biggs & Collis, 1982; Biggs, 1999). This describes five distinct levels of understanding which map closely on to other research findings, and can be applied across subject areas and to everyday assessment tasks. This framework could be used to guide discussions with colleagues about the levels of performance they expect for 'marker' outcomes in their course or module.

Pedagogical Change and Academic Development

20. The final strand of the project will need to accommodate the complex change processes through which the wider higher education sector, institutional missions, disciplinary cultures and individual staff interact to foster or impede educational development and its dissemination within and between institutions. Recent research has shown the wide differences which exist among institutions, and among academic development staff, in how pedagogical change is conceived and implemented. Land (1999), for example, has described a range of orientations adopted by educational developers to effect change in their respective institutions in the light of how they interpret the strategic 'terrain' in which they find themselves practising, and the varying interests of particular stakeholders. Different conceptions of the change process were found to be important determinants of practice as was the perceived need to work 'with the grain' of disciplinary cultures and discourses.

21. In discussing the nature of institutional change, Elton (1998) has warned against the embracing of deceptively transparent, simplistic cause and effect models in hierarchically-managed systems. Birnbaum (1988, 1989) suggests an approach in which the institutional system as a whole is goal-directed, but its common purpose is not driven from the top, but through countless individual decisions at a variety of levels. This would seem particularly appropriate for organisations with highly diverse disciplinary practices. Such an approach appears more accommodative of innovation and, according to Elton, is less likely to produce chaotic side-effects.

22. Van Driel and his colleagues (1997), as well as Dill (1999), have argued that change is more likely to occur through activities which are already necessary parts of everyday teaching and administration. These can then be used as a vehicle for systematic attempts to disseminate new ideas and practices, and to reflect on them. Change in teaching and learning within disciplinary communities is seen by Webb (1996) as a hermeneutic process, essentially dialogic and dialectical - a learning conversation. Yet, organisational tensions and constraints may impede any such conversations. Gornitzka (1999) draws attention, for example, to two potentially conflicting influences on change in academic departments. The first is 'resource dependency', which emphasises the influence of the wider higher education environment and counters notions of self-directed and autonomous academic organisations, pursuing their own ends. The second stresses the survival value of conformity to powerful disciplinary norms, often operating in opposition to resource dependency.

23. These perspectives provide helpful insights into change processes in higher education and useful ways forward in the development of strategic frameworks for justifying and disseminating ideas about high quality learning environments and teaching practices across disciplines and institutions. The ultimate success of the proposed project will depend on outlining practicable change and dissemination strategies which take account both of disciplinary cultures and of particular configurations of opportunities and constraints in given institutional and course settings. An investigation of the feasibility and effectiveness of different change strategies is thus integral to the research design.

THE PROPOSED STUDY

Overall Strategy

24. Given the autonomy of institutions, faculties/schools and departments in higher education, and the pressures under which colleagues are working, a complex research design is inevitable to avoid unacceptably high levels of involvement being called for from any group of staff or students. The need to confer with departmental partners and subject advisers before finalising arrangements inevitably constrains full specification in advance of the arrangements for data collection and analysis, and a provisional outline is therefore presented here.

25. The overall intention is to explore the applicability of the concept of constructive alignment in investigating the extent to which teaching-learning environments encourage the active engagement of

students, and deep approaches to studying, in achieving high quality outcomes of learning. Evidence would be sought from a variety of course settings, including those using new technology. The process will involve departmental partners in a shared analysis of their current policy and practice in relation to students' approaches to studying and academic attainments. Thereafter, there would be negotiation of interventions designed to improve the effectiveness of teaching and the quality of learning outcomes. Through this collaboration with departmental partners, and drawing on the expertise of the subject advisers and international consultants, robust conceptual frameworks will be formulated which will be subject- as well as context-sensitive. The various outputs of the project will be brought together and diffused by means of an integrated dissemination strategy (§ 40ff below) which combines web-accessible resources with printed materials and collaborative workshops and seminars. The aim will be to assist those responsible for modules, courses and programmes of study to monitor, review and enhance the efficacy of teaching-learning environments by deploying data gathering and analytic tools which are evidence-based and have clear conceptual underpinnings.

Project Phases

26. The work of the project will be undertaken in three broad phases. The starting point of the **first phase** (Year 1) will be an extensive review of the literature, supported by discussions with international consultants and subject specialists. In parallel to this work, departments publicly identified as having high quality teaching will be surveyed. After that, negotiations will take place to identify departments, whatever their teaching ratings, willing to be involved in the main study. A website will be established and linked not only to the TLRP website, but also to those being established by the ILT and by the Learning and Teaching Support Network. Pilot work with a small number of course organisers or module leaders will take place, and interviews with staff and students will begin the process of expanding and redefining ways of describing perceptions of teaching-learning environments and approaches to studying. There will also be discussions with subject advisers about which 'marker' outcomes of learning are most likely to be effective across departments, and how best to interpret and adapt the SOLO taxonomy to first and final year work in each subject area.

27. The main activity within the **second phase** (mainly Years 2 & 3) would be discussing, implementing and evaluating the interventions within the sample settings. Our provisional conceptual frameworks would be used to guide the direction of the interventions, but the specific changes would have to be negotiated with departmental partners. Depending on the start times of the modules/courses included there might be an opportunity for an iteration of constructive alignment during this phase, but even if that were not possible, the whole intention is that the process of constructive alignment would become self-sustaining. In this phase, we will also develop working versions of questionnaires describing perceptions of staff and students of the teaching-learning environments provided in specific courses or modules, and also discipline-specific versions of approaches to studying inventories. Departmental partners will be actively involved in discussing 'marker' outcomes and identifying first- and final-year student work on which levels of outcome can be agreed within the emerging generic framework. In a sub-sample of settings, there will be follow-up studies of students to discover how approaches to studying change both over time and in relation to different teaching-learning environments. Interviews will also try to link differing approaches to studying to qualitatively different outcomes of learning, and to different modes of assessment. Within this sub-sample, there will also be observations of teaching and learning to clarify the nature of the teaching-learning environments being provided. Data from the questionnaires will be analysed and the results fed back to departments, together with information from interviews and observations, as a basis for discussing and agreeing possible actions designed to optimise constructive alignment within their teaching-learning environments. Equivalent data will be collected after these interventions in the specific courses/modules involved, and these will again be discussed with departmental partners.

28. During the **final phase** (mainly Year 4) the questionnaires and inventories devised in the previous phase would be adapted so as to be suitable for independent use by course organisers and module leaders, and form part of the set of tools for self-review which the project will provide. The materials will be piloted and field-trialled in settings previously not included in the study, before being discussed with project partners and representative end-users. This phase will also involve investigating ways of encouraging pedagogical change and examining different models of academic development. In particular, it will examine barriers to change within contrasting institutional settings to guide our dissemination strategy. Interviews will be held with institutional managers (Pro-VCs with responsibility for developing teaching strategies and Directors of Quality Assurance), Heads of Department and staff within academic development units. Thereafter, this final phase would be chiefly be concerned with communication and dissemination of the key outputs of the project, exploiting electronic and more conventional modes of communication and addressing the needs of a range of key user-groups, within and across subject areas.

Research Questions and Contributory Data

The following research questions arise from the review of the literature in relation to the main purposes of TLRP. In each of these, the nature of the data to be used as evidence in considering them is indicated.

29. *What indications of constructive alignment or other common features can be distinguished across the teaching-learning environments provided by departments publicly identified as having high quality teaching?*

    The published descriptions of such departments' teaching will be examined and supplemented by telephone interviews and additional documents provided by the respondents.

30. *How can the ideas of constructive alignment, deep approaches to studying, and high level outcomes of learning be integrated within conceptual frameworks in forms which are subject-sensitive and take account of contextual variation?*

    Existing frameworks will be used as a starting point, supplemented by reviews of research in cognate areas, by the analysis of the environments provided by highly rated departments, and through discussions with international consultants and subject advisors.

31. *What do staff and students perceive as the main characteristics of the teaching-learning environments provided in specific modules or courses which facilitate or hinder effective and high-quality learning?*

    Interviews with staff and students will provide the main initial source of data, leading to the construction of questionnaires and inventories. Analysis of these instruments will allow the exploration of the relationships between perceptions, approaches to studying and academic performance in contrasting areas of study.

32. *To what extent are staff willing to make use of conceptual frameworks incorporating constructive alignment to modify teaching-learning environments and how are such changes perceived to affect approaches to studying and the quality of learning outcomes?*

    Interviews with staff and students together with analyses of the inter-relationships between inventory measures of students' perceptions of the teaching-learning environment, approaches to studying and levels of marker outcomes as well as academic performance in the individual course settings. Analyses of these data would then be considered in relation to the complete set of descriptions of the teaching-learning environments then available and the emerging conceptual framework. Case studies would also be constructed to explore the experience of changed environments, based on the development of students' approaches to studying in contrasting settings and disciplines, supplemented by the observations of teaching and learning situations in a series of specific contexts, including those using computer and

information technology.

33. *How can the outputs of the project be used to best effect to support practitioners in reviewing and enhancing the quality of their students' learning, and to help forge organisational strategies and policies which promote the effective management of change?*

Discussions with institutional and departmental managers, project partners and advisers will be taken into account. Consultation with Subject Teaching Centres and representatives of subject and professional bodies with major gatekeeping roles in educational change, will be combined with piloting, field-testing and fine-tuning of a range of project outputs, to suggest strategies for change.

Sampling of Subject Areas, Departments and Institutions

Selection of subject areas

34. The subject areas chosen will have substantial student intakes and be typical of the range of disciplines and professional areas. Initial considerations suggest the inclusion of History (largest humanities intake), Media/Communication Studies (humanities with vocational outlets), Economics (one of the largest social science disciplines also contributing to Business Studies), Biology (a large science discipline which also provides inputs into medicine and allied subjects), and Engineering (an applied science taught in most institutions in comparable forms). UK-wide enrolments for these subject areas are shown in Table 1.

Table 1 *Total number of undergraduate students enrolled in the subject areas*
(as at December,1997 - from HESA, 1999).

Subject area	HESA categories included	N full-time	N part-time
Economics	Economics	15, 234	664
Media and Communications	Communication studies, media studies, publishing, journalism.	11, 367	1,060
Engineering	General, civil, mechanical, aeronautical, electronic, production, chemical, and other engineering.	72,478	13, 304
History	History, economic and social history, history of art, history and philosophy of science.	22,449	7,197
Biological Sciences	Biology, botany, zoology, genetics, microbiology, molecular biology, and biophysics, biochemistry, other biological science.	42, 997	2,647

Selection of institutions and departments

35. The initial pilot work would involve identifying some 20 departments known to be highly rated for their teaching. The main sample would be a more representative set in terms of teaching ratings, and would be drawn from at least seven institutions, chosen to include research intensive, pre-1992, and post-1992 universities, and at least one further education college with undergraduate courses. It will

also be important to include degree programmes with contrasting levels of entry and with different modes of delivery, including flexible learning. Since local knowledge and contacts will be important as well as accessibility for the research team, it is intended that these institutions will form clusters around Edinburgh, Durham and Coventry. Departmental partners will be identified as having a current commitment to teaching development. It is intended to work in some five contrasting settings from each of the five subject areas (making 25 partners in all). It would clearly be unmanageable, however, to start with the full sample. During the first phase, therefore, both the number of settings and the number of subject areas will be progressively increased until the full sample is reached in the second phase.

36. The main unit of analysis will be the module or course unit. Teaching-learning environments will be defined in relation to one first-year and one final-year course/module. It is recognised that the data collected from these course settings may not be comprehensive in every case, due to differences in the capacity and readiness of departmental partners to contribute to all strands of the project. Negotiations with departments, schools or faculties, however, will seek to ensure sufficient variation across institutional and disciplinary contexts for all the major analyses envisaged.

37. No negotiations will be held with individual institutions or departments until funding has been approved and we can provide detailed information about the conditions and funding of their involvement. All students and staff from whom data is sought will be informed about the nature and purposes of the project and the uses to which findings will be put. Confidentiality of all data collected will be guaranteed by limiting the identifying criteria which are made public.

Data Collection Instruments

38. Besides the semi-structured interview schedules which will be produced as appropriate for individual and focus-group interviews, there will be a series of questionnaires and inventories developed specifically for the project. A questionnaire will be designed to collect systematic descriptions of teaching-learning environments in terms of their observable features. Inventories for staff and students will be designed to indicate, separately, staff and students' perceptions of those environments, and students' approaches to studying within each subject area. Most of these instruments will be based on pre-existing versions developed by members of the research team, but modified and extended to take account of other research, subject area specificity, and changes in the general context of higher education.

Interventions

39. In a collaborative exercise such as this project, the term 'intervention' cannot carry its usual sense of an imposed innovation. Rather it represents the agreed conclusions about what changes might be desirable and practicable to achieve constructive alignment between the various components of a given teaching-learning environment, in its institutional context. There are already indications in the literature of how a conceptual framework and its contributory research findings might lead to research-based interventions in course design and implementation (see the work of Eizenberg discussed in Annex **B**). The subject-specific frameworks being developed within the project would be used to guide discussions about the meaning and implementation of constructive alignment within the various course settings. The effectiveness of the interventions would be judged in terms of the perceptions of the staff and students, the assessment results, and the quality of work being produced in relation to the marker outcomes.

Analytic Procedures

40. The data collected will be varied, coming as it will from documentary sources, observations of teaching and learning, group and individual interviews, informal discussions, open-ended and pre-coded questionnaires, and inventories. The team has extensive experience of dealing with all these kinds of data and is confident of being able to handle them effectively. Interviews and discussions will be tape-

recorded, where acceptable to the respondents. In preparing for the analyses, voice-recognition software will be used to aid transcription of interview notes, pertinent verbatim quotes, and any field notes relating to the specific context. Qualitative analysis software will be used to organise the material collected prior to analyses designed to focus on each of the relevant research questions. Finally, the quantitative data will be submitted to a variety of techniques of multivariate analyses to explore the underlying relationships, including the possible use of multi-level analysis to tease out course-specific effects from those relating to individual students.

OUTPUTS, COMMUNICATION AND DISSEMINATION

Project Outputs

41. The project will yield the following outputs, communicated to target user-groups by means of an integrated communication and dissemination strategy [see below]:

- Conceptual frameworks for each of the five subject areas integrating research findings with 'good practices' to provide guidelines for improving teaching and learning environments. From the research findings, ways of developing equivalent frameworks for other subject areas would be indicated.

- A generic framework for capturing and analysing qualitative differences in outcomes of learning across five subject areas, which would also have wider applicability. Examples of marker outcomes would be used to focus attention on the need to be clear about qualitative levels of outcome, in addition to quantitative indicators of success.

- Evidence on the contribution of constructive alignment to improving student engagement academic performance, and on the relationships between perceptions of context, approaches to studying and learning outcomes.

- A set of research-based tools for self-review and course development, designed to enable course organisers and module leaders to evaluate and review the efficacy of a given teaching-learning environment in optimising high-quality learning.

- Guidelines for implementing effective pedagogical change in differing institutional and disciplinary settings.

Communication and Dissemination

42. The project will institute a coherent and systematic communication and dissemination strategy across its three main phases. An initial priority will be the establishment of a project web site, linked both to the TLRP web site and to the Learning and Teaching Support Network (LTSN) which is currently being established by the Higher Education Funding Councils under the aegis of the ILT. (The project proposals have been shared with Dr. Cliff Allan, LTSN Director-designate, who has expressed his firm support for active collaboration between the project and the Network). The LTSN consists of twenty-four Subject Teaching Centres (STCs) and a Generic Teaching and Learning Centre, and particular emphasis will be put on links to the five STCs which most directly match the project's five sample subject areas: Art, Design and Communication; Bioscience; Economics; Engineering; and History.

43. The project's web site, the availability of which will be widely publicised through professional bodies and national organisations, will include: information about the work of the project; regular progress reports; an interactive discussion forum (using WebBoard software) for enquiries and comments; and, as the project evolves, drafts of working documents, instruments and resource materials, together with information about seminars and conferences through which the work of the project is being promulgated.

44. From midway through Phase Two of the project (when the project begins to generate the outputs

summarised above in forms appropriate for wider diffusion), communication and dissemination will broaden to include interactive workshops, seminars and videoconferences, in the first instance in the relevant sample subjects, and subsequently extending in Phase Three to practitioners and academic managers in other subject areas. There will also be evolving efforts to share and explore the findings by various means with other key potential user-groups, including senior institutional management, educational developers, members of relevant professional associations and national advisory bodies, policymakers and the educational research community. The project team is firmly committed to a partnership approach, and the communication and dissemination strategy will be devised, developed, delivered and monitored in consultation with departmental and institutional partners, subject advisers, TLRP coordinators, LTSN/ILT teaching centres, and other relevant parties. Opportunities for appropriate collaborative inputs (e.g. to materials, publications, seminars and conferences) will actively pursued wherever feasible.

THE PROJECT TEAM AND ADVISERS

45. The project team would be made up of the research team, subject advisers and international consultants.

The Research Team

46. The proposed research team, as the accompanying CVs indicate, brings together a very substantial range of expertise in research into teaching and learning in higher education, drawing on a variety of disciplinary perspectives. And although members of the team share an interest in qualitative differences in learning and teaching in higher education, there is also a common interest in combining quantitative and qualitative research methods in productive ways. The team is also used to working together: there has been regular interchange and collaboration between colleagues in the three project centres and with a network of mutual contacts in several countries, including Scandinavia, Australia, Hong Kong, South Africa and the USA.

47. As far as the principal research themes of the proposal are concerned, the relevant research expertise which the team is able to deploy is substantial and broadly based, encompassing approaches to studying (NE, CA, VMcC, EM, HT, GC); conceptions of learning (LB, EM); engagement and motivational orientations (LB, NE, HT); perceptions and experiences of teaching-learning environments (CA, NE, DH, EM, HT, VMcC); student and staff experiences of assignments and assessment (KD, DH, RL, VMcC); conceptions of teaching (NE, HT); analysis of learning outcomes (LB, DH); evaluation of small- and large-scale innovation (CA, KD, RL); and educational development and the management of change (LB, GC, DH, RL).

48. Also well-represented across all three project centres is a strong track- record of achievements in academic and educational development in a variety of professional domains — i.e. working not only with individual staff but with course teams, department, faculties, academic support services and institutional managers; and including involvement not only within institutions but in cross-institutional and sector-wide collaborative developments (e.g. for organisations such as the CVCP, COSHEP, HEFCE, SHEFC and SEDA). Complementing these strengths is a substantial pool of expertise in managing and leading academic departments and centres, R & D projects and dissemination initiatives (LB, NE, DH, EM, RL).

49. Appointments would be made to the post of research administrator in Edinburgh, half-time secretarial posts in Durham and Coventry, and a research associate in Durham. There would also be a part-time post in Edinburgh to assist with the communication and dissemination strategy.

Subject Advisers

50. To allow us access to disciplinary advice (and so help us better to understand the nature of disciplinary differences emerging from the work with our departmental partners), we shall appoint advisers in each

of the five subject areas. Dr Simon van Heyningen, Vice-Provost of the Faculty Group of Medicine and Veterinary Medicine at the University of Edinburgh and the University's Director of Quality Assurance, has agreed to be the Subject Adviser for Biology. Dr. van Heyningen was the Lead Assessor in the Scottish Teaching Quality Assessment of Cellular and Molecular Biology and has also been a Subject Specialist Reviewer in this area in England. He has been involved with a number of local and national teaching projects in this area including establishment of criteria for 'Graduateness' and initial preparation of benchmarking in the Biosciences. Professor Harry Dickinson will be the Subject Adviser for History. He is the Richard Lodge Professor of History at the University of Edinburgh and has been an auditor for Academic Audit and Continuation Audit, and an assessor for the History Teaching Quality Assessment exercise in Scotland. He is a member of the QAA subject benchmarking panel in History, and has been closely involved with the piloting of the Academic Review scheme for which he will be a reviewer. The intention is to appoint senior academics of equivalent expertise and eminence in their field to the remaining three subject adviser positions.

International Consultants

51.   Given the focus within our study on constructive alignment, it would be helpful to draw on advice from Professor John Biggs, and also from Dr. David Perkins of the *Teaching for Understanding* project. It is anticipated that they would be asked to visit Edinburgh on two or three occasions to discuss the progress of the project, with a particular focus on the emerging conceptual framework. They would also be invited to comment by e-mail on working papers. We would also seek to discuss our work with colleagues from Australia (including Professors Michael Prosser, Keith Trigwell and Elaine Martin) whenever international conferences presented opportunities for face-to-face meetings.

Project Management

52.   The co-directors of the research team will be Professor Entwistle and Dr. Hounsell. Noel Entwistle will act as the overall director for the first two years, with Dai Hounsell taking over for the final two years. The faculty has agreed that Professor Entwistle will be allowed to take sabbatical leave during 2001-2, which will allow him to spend half of his time on the project. A similar sabbatical arrangement is currently being negotiated for Dr. Hounsell for 2003-4.

53.   Each strand of the project will have a single coordinator, but will also involve other members of the team, as indicated below.

- Professor Entwistle will coordinate Strand A on 'Teaching-learning environments', working with Dr. Tait, Velda McCune, and Dr. Anderson (who will be particularly concerned with disciplinary distinctiveness). Professor Entwistle will also have responsibility for developing the conceptual frameworks in conjunction with the international consultants.

- Professor Meyer will co-ordinate Strand B, 'Engagement and approaches to studying', and take responsibility, with a research associate, for the quantitative analyses of inventories and questionnaires. He will also organise arrangements with institutions in the Durham area and the North-East.

- Dr. Hounsell will coordinate Strand C, 'Assessment and outcomes of learning', and oversee the design and implementation of the communication and dissemination strategy. He will also take responsibility, with the research administrator, for links with institutions in the Edinburgh area.

- Dr. Beaty will work closely with Dr. Cousin in taking responsibility for links with collaborating departments around Coventry and the West Midlands, and will play a leading role in Strand D.

- Dr. Land will coordinate Strand D on 'Pedagogical change and academic development', working closely with Dr. Day.

Value for Money

54.   There will be eight members of the research team who are paid from Higher Education Funding Councils. This will add the equivalent of one and a half full-time experienced researchers to the five full-time-equivalent TLRP-funded staff. Beyond that contribution will be the sabbatical arrangements for the co-directors. Costing this time in the same way as for staff in the proposal (including overhead costs) produces a figure of £350k contributed by the three institutions involved.