

Raising educational research capacity: a discipline-based approach

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ABSTRACT

Central to the ISL conference has been the attempt to forge productive links between 'teaching staff' and 'educational research/researchers'. We report initial findings of a project conducted by the Learning and Teaching Support Network (LTSN) Geography, Earth and Environmental Sciences Subject Centre that is seeking to develop and strengthen such links, by having specialist researchers support discipline staff to carry out discipline focused pedagogic research projects.

Initial findings include: grounding the research on issues central to the discipline produced high practitioner involvement; and central practitioner concerns in doing such research was more about issues of 'objectivity' and the degree to which such educational research approaches were close to their 'parent' discipline, than competence at particular techniques. The overall conclusion is that specialist researchers working alongside discipline staff to raise their pedagogic research capacity is an effective model.

The ISL symposia have sought to bring "together those who are primarily researchers into learning in higher education and those who are primarily practitioners concerned more pragmatically with improving their practice."

(OCSLD, 2002)

"In general, academics in higher education value research above pedagogy. To approach pedagogy through research 'goes with the grain' of academe ..."

(Yorke, 2000, 124)

Introduction

Since the first Improving Student Learning (ISL) symposium in 1993 (Gibbs, 1994) there have been many changes in the field of higher educational research and development. One of the more significant changes has been a growth of interest in developing the scholarship of teaching, including staff researching their own teaching (Healey, 2000; 2003; Yorke, 2000). This has led to several institutions establishing policies and practices to build the capacity for research in teaching and learning (e.g.

D'Andrea & Gosling, 2000; O'Connell & Renfrew, 2000). A second change has been the greater importance given to discipline-based approaches (Rust, 2001; Healey & Jenkins, 2003). This paper combines these two trends by focusing on the development of pedagogic research capacity within a discipline context.

There has been emphasis in higher education internationally on the need for developments in learning and teaching to be supported by evidence-based practice. In the UK this has been associated with the publication of the Dearing Report (1997), the founding of the ILT (1999), and the establishment of HEFCE's Teaching Quality Enhancement Fund (1999/2000). The establishment of the ESRC Teaching and Learning Research Capacity Building Network (2001) and the emphasis of the third phase of the Teaching and Learning Research Programme (TLRP) on developing research capacity in the areas of post-compulsory education and lifelong learning are further indications of this concern.

Such capacity building may well focus on high-level research with perhaps some focus on disseminating that research to, or even with, practitioners. There is growing interest in developing higher educational research capacity in collaboration with practitioners. This has the strength of ensuring that the research grows out of practice and is likely to shape future practice. However, such research faces the problems of generalisability of local findings and the capacity of classroom practitioners to carry out that research. Arguably one can see such tensions in recent ISL symposia. There is clearly development of high-level research occurring – but the connection to classroom practitioners is perhaps weaker than in the early years of ISL. So general concerns for the ISL 'movement' may well include questions about the effective linkage of high-level research activity with practice-based research and the quality of practitioner based research.

Any concern for quality practitioner based research has to consider disciplinary concerns. Most educational research is generic in character, but to raise the capacity of academics to research their own teaching practices, this needs to be embedded in specific disciplines. It is in their discipline that academics have their principal communities of practice (Wenger 1998). Interest in discipline-based approaches to educational research is international, as witnessed by the activities of the Carnegie Academy for the Advancement of Teaching in the United States and many of the projects funded by The Committee for the Advancement of University Teaching, and its subsequent replacements in Australia. In the UK, the Department for Education and Employment established discipline networks in the mid-1990s. The twenty-four Subject Centres of the Learning and Teaching Support Network (LTSN), funded by the Higher Education Funding Councils, which are now actively supporting educational research, followed at the turn of the Century. However, if the disciplines are going to engage with educational research effectively they will need to learn from and work with generic educational researchers (Healey and Jenkins, 2003).

These trends provide the context for the LTSN Subject Centre for Geography, Earth and Environmental Sciences (LTSN-GEES) programme, begun in mid-2001, to build the capacity of these related subject areas to undertake research into learning and teaching.

Raising research capacity in Geography, Earth and Environmental Sciences (GEES): A case study

Choice of topic

The theme of the research programme is 'Enhancing the quality of fieldwork through pedagogic research'. This topic was chosen for three reasons:

1. *Fieldwork has a central role in student learning in the GEES subjects* - One of the most effective ways to build pedagogic research capacity in a discipline is, we believe, to build that capacity around an issue that is central to the culture, beliefs and practices of that discipline. For on such an issue there is likely to be both intellectual curiosity, a greater willingness to learn from each others' practices, and a concern to act on the results of that research.
2. *The fact that fieldwork is as yet little theorised* - Despite its central and costly role, to shape effective practice there is a lack of firmly grounded general principles on fieldwork pedagogy that are soundly derived from research investigations. This is well expressed by two earth scientists:

"It has long been recognised by Geoscience educators that field based education provides some of the most valuable and enjoyable educational experiences that our students encounter.... but vague beliefs in the value of field-based education are not enough.... There are too few [papers] that analyze the educational rationale behind [field]course design and practice, and fewer still with empirical data" (Winchester-Seeto & Hart, 2000).

Their view reinforces the views of other writers on the subject (Gold et al., 1991; Johnston & Cooke, 2001; Suiter, 2000) about the state of discipline-based pedagogic research and the need to build that capacity around issues of disciplinary concern.

3. *Fieldwork lends itself well to a range of pedagogic research methodologies and techniques.* In developing research capacity in the three disciplines, it was important that we chose an area that allows for an exploration of a diversity of methodologies and techniques in pedagogic research. The research on fieldwork can rest on a number of techniques (e.g. focus groups, in-depth interviews, participant observation, large-scale survey, quantitative analysis of web-based support) to support methodologies within qualitative, quantitative or mixed frameworks (e.g. Cottingham and Healey, 2001). The strengthened expertise colleagues acquire in these research projects can then be applied later to other areas of the curriculum.

Hence the aim of the programme is to develop the capacity of the GEES communities to undertake research into teaching and learning through working together on a series of pilot projects, all concerned with enhancing the quality of fieldwork.

Theoretical framework

We planned from the beginning of the programme that all the projects would adopt a common theoretical framework. We needed one that:

1. Is based around a sufficient corpus of theoretical and empirical research to provide a robust platform for capacity building.
2. Provides those with little or no experience of pedagogic research with a well-developed literature/knowledge base to inform their particular disciplinary practices and concerns.
3. Is applicable to a range of linked projects regarding fieldwork and with the potential to later apply to other learning environments.
4. Has the potential to significantly improve the quality of the student learning.

The theory of constructive alignment, we believe, meets these criteria (Biggs, 1999). This theory examines the 'goodness of fit' between the aims of the course, its assessment procedures, the nature of the learning environment, student cultures and motivations and learning styles and approaches. Drawing together a range of the key research frameworks in higher education, it gives the programme a strong theoretical framework that can then be applied to a range of issues on which the three disciplines need theory to guide practice. Further, a common framework supports newcomers to educational research to achieve the necessary capacity to carry out the research and facilitates effective dissemination (cf Gibbs, 1992).

Methodology and structure

Central to the methodology of the programme is, first, the involvement of members of the GEES communities and, second, the employment of pedagogic research consultants as part of the project team to facilitate raising pedagogic research capacity within a partnership framework. Liz Beaty and Glynis Cousin (Centre for Higher Education Development, Coventry University) were persuaded to play the latter role.

We advertised the proposed programme widely within the GEES communities and organised a day workshop to discuss and plan the work in May 2001. We obtained responses from approximately 60 academics working in higher education and one from a member of staff at the Field Studies Council. This was more than we expected. Of these, about half came to the workshop. A similar number became actively involved in the programme's projects. The remainder were invited to act as reviewers and commentators. A listserv was established to facilitate communication and discussion between the participants. The outcome of the workshop was agreement to focus on four projects. They are:

- Student views of fieldwork
- Fieldwork in the curriculum
- Fieldwork education and technology
- The impact on the learning and teaching experience of the removal of fieldwork from academic programmes in the GEES subject areas.

Finally, an overview group (Learning to do pedagogic research) was formed to handle the research and evaluation of the project as a whole. The pedagogic

research consultants participated in this group alongside colleagues from GEES and the project leaders.

Two subsequent workshops have occurred, the first focused on methodology and research design (two days in September 2001) and the second on data analysis and interpretation (June 2002). A final workshop (January 2003) is planned to discuss publication of the findings, review the lessons learnt and discuss future work.

The remainder of this paper explores the initial findings from the surveys, observations and interviews conducted by the 'Learning to do pedagogic research group'.

Developing capacity – emergent findings

The project is two-thirds into its cycle and the evidence emerging in relation to the research question set by the 'Learning to do pedagogic research group', namely 'How far, and in what ways, has the programme succeeded in developing capacity to undertake pedagogic research in the disciplines?', suggests three conclusions:

1. Strategies for the development of educational research capacity need to vary across the disciplines to reflect differences in disciplinary cultures of inquiry
2. Raising educational research capacity is best encouraged experientially
3. A partnership consisting of subject specialists, educational researchers and internal project evaluators provides a robust model for raising educational research capacity.

Below we discuss each of these issues in turn.

1 Cultures of inquiry and methodology

Once pilot project teams had been formed, members were asked to submit responses to a preliminary research skills audit. From sixteen returned forms we found a spread of knowledge in all research methods from either discipline-based or pedagogic research experiences. Because the subject areas of Geography, Environmental and Earth Sciences involve different cultures of inquiry ranging from the qualitative to the quantitative and from experimental design through to open interviews, this spread did not surprise us. We were aware, however, that the individual respondents would each have different research strengths depending on their subject speciality.

While it is important to avoid over-generalisation, arguably human geographers are more likely to be at home with qualitative research and earth and environmental scientists with experimental, scientific, quantitative approaches. As one project member noted, '*Most of the methods I use in geography research are transferable and relevant*'. Similarly, out of the ten responding to our skills audit indicating experience in experimental design, only one also had knowledge of focus group research or action research.

The audit, though only sufficient in size for indicative findings, was designed to help us to develop a baseline picture about research skills. As the project progressed,

interestingly, questions of validity, objectivity and researcher stance emerged as having greater importance than those of research skills or techniques. Notable for instance was the data we gathered from interviews in which we asked participating colleagues for comments on their levels of confidence in doing educational research. A number of the responses expressed anxieties about the credibility of educational research methodology:

My confidence in performing qualitative research is low... this stems from the fact that I am suspicious of it.

I am very uncomfortable with 'qualitative' approaches as the reason is that they are frequently an excuse for sloppiness to lead to lack of true representativeness.

I am concerned about the objectivity and sample size, etc. My scientific background makes me very conscious of experimental design, error analysis, etc.

(I am) okay on scientific approach, social science methodology approach (is) weaker.

These comments reflect an assumption that educational research is a) unscientific and entirely qualitative; and b) that qualitative research designs are less robust than quantitative research. Although it needs to be acknowledged that pedagogic research is a broad church, embracing many methods and methodologies, the sticking point for these subject specialists identifying with a 'scientific approach' does seem to centre on resistance to the qualitative dimension of pedagogic research. The emergent findings from this project suggest that this resistance, or questioning, is best confronted experientially.

2 Developing pedagogic research capacity experientially

Given that most academics are embedded in particular ways of doing research, in the experience of this project, information and discussions about alternatives are an insufficient basis for prompting cross-disciplinary travels. These discussions need to be supported by opportunities to practice. This section describes the processes by which this project has provided such opportunities and support for practice.

The workshops covered three important phases of the projects, namely:

- formulating research questions and project teams, and presenting a theoretical underpinning
- planning educational research designs
- analysing the data gathered.

The illustrative comments in the last section were made around the time of the first workshop. The following, from the second workshop, reveal less anxiety about educational research methodology. By the end of this two-day workshop, each project group, in collaboration with the educational researchers, had clarified its research question and had developed a research design for its exploration. The

comments below were made against the statement 'What I learnt about educational research was':

It is not as difficult as I thought it would be. Some of the methods (action research, etc.) are respectable and appropriate.

Strengths/weaknesses and appropriateness of research methods.

How in outline educational methodology works.

Maybe it's easier than I thought. It does need to be done in my subject area for educational and political reasons.

Must consider theoretical models and the ways of Biggs.

The 'meaning' behind all sorts of edu-techno terms. How to deal with non-quantitative information.

These responses tell us something about issues of translation from one culture of inquiry to another. Some of the translation is about breaking down jargon and introducing a theoretical underpinning; some is about demonstrating validity and robustness of design; and much, as with many forms of cultural exchange, is about overcoming prejudice. By the time that we came to our workshop on data analysis there appeared to be a deeper engagement with these issues. Some of the evidence from this workshop provides us with the most vivid illustration of the usefulness of our experiential learning framework for such an engagement. Workshop participants were asked to rate their confidence on a 1-5 scale against the following statements:

1. My data will reveal something worth knowing
2. I know how to organise and manage the data
3. I know how to interpret the data
4. I know how to disseminate the findings

Here we limit ourselves to reporting the findings on the third of these, namely the interpretation of data.

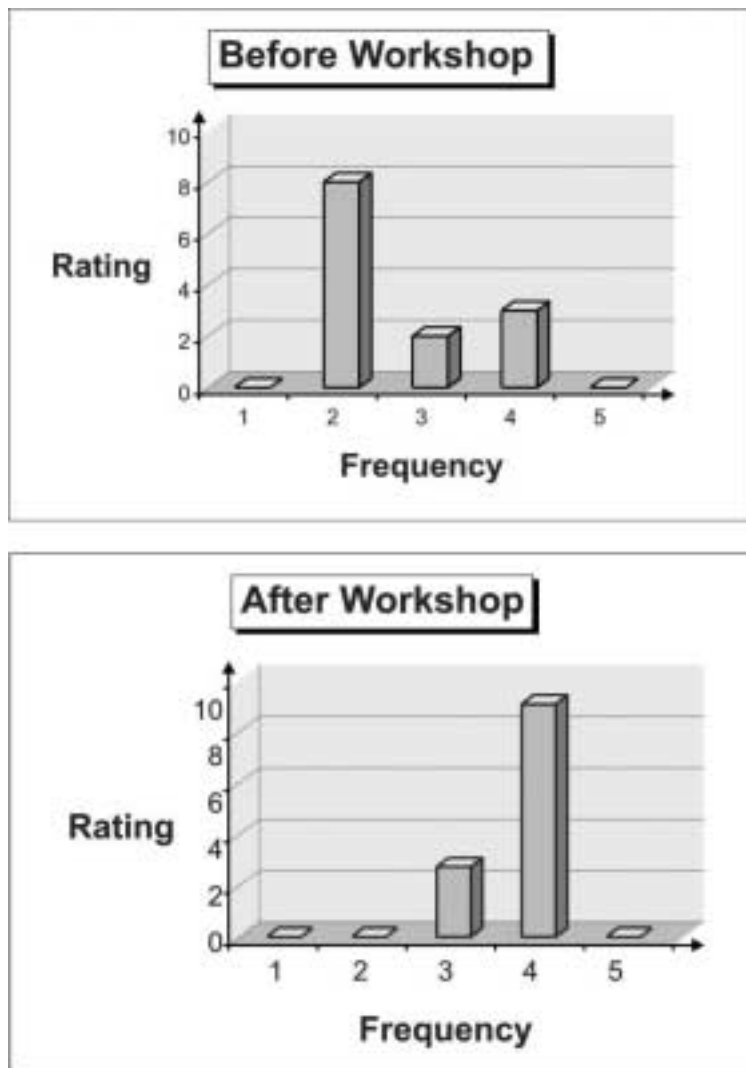


Fig. 1 Participants confidence in interpreting their data before and after the workshop

As Fig 1 shows, after the workshop the confidence of delegates about interpreting their data rose dramatically. While we cannot discount the possibility of respondent generosity within this evaluation, we have two observations to support the trend these findings suggest (ratings for the other statements also exhibited significant growth in confidence).

Firstly, we had participants work with their own qualitative data as the basis of the workshop. Most groups had adopted a mixed method approach, gathering both quantitative and qualitative data, but many project members expressed uncertainty about the status and weight of the latter. Encouragingly, once we had invited them to segment and label their data on the basis of emergent recurrent themes within the spirit of grounded theory (Glazer and Strauss, 1967), those unfamiliar with the procedures of qualitative data analysis began to appreciate the value of their data. In particular, they began to see that quantitative is not the opposite of qualitative. This simplistic dichotomy neglects the attention qualitative analysis pays to the quantitative in the hunt for patterns, recurrences (of silences and absences as well as of the surfaced) and representativeness.

Generally, participants less familiar with qualitative research came to appreciate that objectivity is reinterpreted rather than abandoned in qualitative research analysis. One group, for instance, wanted to interrogate immediately its data for answers to the question they were seeking to answer. They asked why they were being advised instead to set this pursuit aside and to sort their data descriptively; they were happy with the response that it is important to have a procedure that tries to avoid researchers finding what they are looking for because they are looking for it. This explanation chimed with their own understandings of objectivity, to quote from the field notes of one of the pedagogic research consultants:

Issues of objectivity were more appreciated when the principles of bracketing and reflexivity were introduced into the explanations of how data organisation and analysis are approached.

Our second observation supports the final issue we want to discuss, namely the importance of a partnership framework for the development of pedagogic research capacity.

3 Establishing partnerships for the development of pedagogic research capacity

As we have noted, the aim was to use the workshops and the pilot research groups as the basis for the establishment of communities of practice of discipline-based educational researchers. In this context, the role of the pedagogic research consultants was to support the generation of conditions for experiential learning within collaborative groups. For this to happen, the educational researchers need to work alongside the groups as brokers as well as trainers. The brokerage involved facilitating understandings about the cultures of inquiry across the subject specialisms and pedagogic research by supporting practical work with cross-disciplinary teams. In this respect, the following field note extracts from observations of the data analysis workshop are of interest:

There were a number of incidents which suggested the discovery of common ground across research traditions... in talking about validity and qualitative research 'Anne' pointed out that bias is built into any kind of research tradition and cited the cases where different sponsors of environmental research yielded different kinds of findings from the same apparently 'stable' research conditions... 'Ahmed' added to this by talking about the fact that in geology inferences have to be made from the sediments of the past and this has affinities with qualitative depth.

I think it would be a mistake to bill our day as a 'training day' because although it contained those elements, it also facilitated encounters between different paradigms. The strength of this project overall has been in its ability to encourage different disciplinary areas to engage in creative conversations and to develop research partnerships.

Project members' evaluative comments of workshop 2 also supported this view, as one member put it, "I have a refined personal view of its (educational research) interdisciplinary nature".



Fig. 2 A partnership framework for raising pedagogic research capacity

In summary, our framework for developing pedagogic research capacity through a partnership model is expressed in Fig 2. The corners of the triangle refer to the creation of three overlapping activities between the subject specialists, pedagogic research consultants and an overview group, which undertakes insider evaluation research. The partnership between educational researchers and cross-disciplinary groups of subject specialists has allowed creative connections to be made across cultures of inquiry. These connections have in turn opened up colleagues' receptivity to educational research and their confidence in undertaking it. The overview group embeds a reflective dimension to the project as we hope is in some evidence in this paper.

Conclusion

Clearly what we have presented are but the preliminary findings of one research project in one UK LTSN Subject Centre; so we are sensitive to avoid generalising too much from this case study. However, we do set our analysis in the general context of ten years of ISL symposia – whose aim, to bring together researchers into learning in higher education and practitioners, we quoted at the beginning of the paper.

Our approach to bridging the gap between researchers and practitioners, and to developing practice that is more solidly based on educational research, is to:

- ground that research clearly in the needs and interests of practitioners
- work with specific disciplinary concerns that matter to those practitioners
- ensure that such research is methodologically strong by closely involving specialist educational researchers in the project

- establish an evaluation research group for programmes of research to ensure a reflective dimension
- recognise that specialist educational researchers play a key role in supporting discipline-based staff design their research studies and analyse the results, while ensuring that the key researchers and analysts of that research are the discipline-based specialists.

The initial findings from carrying out this project indicate that the degree to which these discipline-based staff feel both comfortable with, and competent at, carrying out such research is shaped by the extent to which these educational research methodologies differ from their 'home' disciplinary research cultures. Moreover, developing such confidence and competence clearly benefits from them researching issues of concern to them and their discipline and the support they receive from the educational researchers.

At this stage, when the research from these different projects is still being written up, it is too early to comment on the quality of the research that is produced. Nor as yet can we comment on whether this approach impacts on student learning. We do, however, believe that the preliminary evidence from this project illustrates well the benefits of one of the original purposes of establishing the ISL symposia, namely of bringing together educational researchers and practitioners.

Notes

- ¹ The other members of the group are: Liz Beaty, Jenny Blumhof, Brian Chalkley, Steve Gaskin, Geoff Robinson and Neil Thomas. Adrian Bromage contributed to workshop 2. The project is funded through a £50,000 grant from the LTSN development fund and is supported by a further £12,000 from LTSN-GEES. The authors of this progress report would welcome comments from readers. Please email: mhealey@glos.ac.uk.

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