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# Scottish Higher Education Enhancement Research (SHEER) project

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Phase 2

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## Introduction

This report offers an overview of the second phase of an initiative concerning the research and development of teaching and learning in Scottish universities. This initiative, Scottish Higher Education Enhancement Research (SHEER), has generated a novel programme of research based on partnerships between:

- a Scottish Educational Development Unit
- one or more Higher Education Academy Subject Centres
- new member(s) of teaching staff in a Scottish university.

Four projects across six universities were involved in this partnership model:

1. Participatory action research for education development  
Ferne S. and Smith K.
2. Focusing reflection on the teaching of maths and history  
Macdonald J., Crighton S.A., and Black A. Open University
3. PBL in practice: listening to the lecturers  
MacAndrew S., Walsh L., Lantz C., Morton C., and Oduyemi K.
4. Enhancing educational development for new academic staff through the inclusion and comparison of disciplinary pedagogies  
Comber D. and Walsh L.

Within are details of the key issues and findings emerging from each of the projects within this programme. Full project reports can be found at [www.heacademy.ac.uk/aboutus/scotland/educationaldevelopment](http://www.heacademy.ac.uk/aboutus/scotland/educationaldevelopment). The final part of the report draws out general lessons deriving from the programme as a whole.

## I. Participatory action research for education development

Fernie, Scott and Smith, Karen

This project involves a strong partnership model based on action research. The research centres on student engagement in postgraduate education and includes a new member of academic staff, an education developer and the Academy Subject Centre. Importantly the locus of research attention has been the teaching and learning of the subject and this has proved more fruitful than a generic teaching and learning approach. In particular, rather than position academic colleagues as students on a teacher development programme, this project positions them as fellow scholars, offering a more comfortable context for exploration into teaching enhancement. In the researchers' view, this cross-fertilizing of disciplinary or subject based research with research into its teaching and learning has the potential to yield impressive results:

*The breadth of possible research expertise to be drawn upon by academics in the community as they turn their research gaze upon academic practice would be nothing short of breathtaking in the possibilities for exploring, explaining and developing academic theory and practice within higher education. Indeed such a critical enquiry-led approach to understanding academia is, as argued by Rowland (2008) and Barnett (2000), essential for the development of higher education. (Fernie and Smith, 2008:34)*

Through a variety of pedagogic moves to increase learner engagement (games, essay surgeries, group discussion, etc.) the project has been able to define what makes a powerful learning environment for masters students. This definition may vary depending on the subject in hand, though this project has produced insights that can be applied generally. There is very little work that addresses a pedagogy of masters teaching that is mindful of the need to think about the transition between undergraduate to postgraduate; this project has made an important contribution in this area, having gathered student experience data which exposes strong affective and study skill issues associated with this transition. The research further considered the experiences of international students who comprise a significant number of recruits onto masters courses in the UK. This project also highlights the intimate link between teacher enthusiasm and student engagement, insisting that if teaching is experienced as fun for the teacher, then this will communicate to the students.

Finally, this research project has suggested to the educational developer that teacher development programmes might need to be more inquiry based at the site of the subject colleagues are teaching.

## 2. Focusing reflection on the teaching of maths and history

Macdonald, Janet, Crighton, S.A. and Black, A. Open University

The following extracts from the researchers' reports summarise the aim of this project:

*This project assesses the potential for enhancement of the teaching practices of distance tutors by encouraging extended reflection on the teaching of mathematics and history. Our project used an initial workshop followed by contributions to a wiki to support an online community and to provide space for the sharing and development of resources.*

*We made use of threshold concepts and troublesome knowledge as a stimulus for discussion on the learning of the subject, in the hope that these ideas might serve to inspire staff to talk about their subject and the difficulties they encounter in teaching it, whilst remaining firmly embedded within the context and meaning of the discipline taught.*

In Open University style this project translated to the research context its teaching practice of combining some face to face with online learning, exposing the benefits as well as the drawbacks of doing so. In the end, participation in the Wiki did not achieve the volume and breadth of discussion hoped for and the face to face sessions proved more helpful. Finding the time to contribute to discussion on the Wiki proved the main obstacle.

Ambitiously, the project set out to test the ideas of threshold concepts and troublesome knowledge. These ideas taken together are best described as a theory of difficulty which requires the investigator to think about what is key for mastery of a subject and to explore associated issues concerning attempts at such mastery. Usually, research into this field requires an investigation with both teachers and students but this project showed the benefits of using this theory of difficulty as a starting point for developing tutors' reflections on the teaching and learning of their subject. Colleagues from the relevant Subject Centres were involved in these discussions.

Rightly the project concludes that the research undertaken reveals the benefits of getting tutors to think about 'troublesome knowledge' (which is a central part of threshold concept theory). Some Subject Centres have embraced this point of departure (for instance GEES ran a dedicated conference on threshold concepts – see [www.gees.ac.uk/pubs/planet/p17/gc.pdf](http://www.gees.ac.uk/pubs/planet/p17/gc.pdf) for a brief summary of threshold concept theory) and clearly tying in the tutors' exploration with Subject Centre colleagues promises to focus the latter on what resources, events, etc, can be helpful to the teaching and learning of the difficulties of the subject.

### 3. PBL in practice: listening to the lecturers

MacAndrew, Siobhan; Walsh, Lorraine; Lantz, Caprice;  
Morton, Crawford; and Oduyemi, Kehinde

This research project explores academics' perceptions of problem based learning (PBL). A loose definition of PBL is used to embrace inquiry based pedagogies more generally. It is a common misconception that PBL activities are designed to solve problems as opposed, for instance, to problem setting. It was clear from some of the academic perceptions that this misconception is widespread, as was the notion that PBL is a classroom technique rather than a pedagogic and cultural practice that needs to infuse a programme rather than a single element of it. PBL is felt by its adherents to require a clear understanding of its distinctive aims and processes; it also requires particular skills of facilitation alongside the design of appropriate trigger materials. Further, there emerged from the teachers' views an ignorance about the existing research (from randomised control trials (Newman) to narrative inquiry (Savin-Baden) into the effectiveness of PBL in its more precise form. From these observations, it seems clear that the champions of PBL in the sector have not succeeded in defeating common sense generalisations about the important features and distinctive aims of it.

Academic teachers wanted evidence *specific to their discipline* which they felt to be distinctive both in content and processes of inquiry. The researchers also identified a difference in providing evidence of the efficacy of PBL depending on a subject or discipline's vocational dimension. It was felt that those subjects that are clearly associated with a profession such as medicine contrasted with subjects like sociology which had no clear vocational direction. In terms of graduate employability, the researchers argue that the gap between vocational and non-vocational subjects must be addressed in PBL.

It also became clear that Subject Centres have yet to play a strong role in commissioning and making publicly available the trigger materials that are essential to successful PBL teaching, learning and assessment. The former LTSN Generic Centre did commission a PBL site covering all the disciplines but this is no longer available, suggesting that the Academy has the potential opportunity to fill this gap.

Key insights emerging from this project were:

- i. The promising connections between PBL/IBL and PDP in that both require a reflective process.

- ii. The strong connection between PBL/IBL and employability (generating skills of criticality, problem setting, working in teams, etc.)
- iii. The enduring tension in curriculum design between knowledge bulk and process skills
- iv. The variation in teacher stances and its bearing on facilitation skills for PBL/IBL. This research generated seven approaches which capture the essence of what a lecturer does when they sit down to devise a task. The seven approaches have strong potential as a framework for training workshops in which staff identify their favoured approach, comparing this with other approaches and exploring their value.
- v. The value of involving academic colleagues in cross disciplinary inquiries and conversations that heighten their ability to connect with understandings beyond their subject area.
- vi. The need for Subject Centres to explore and, where possible, define the distinctive qualities of their subjects (and their graduates) for PBL models and to generate appropriate materials so that educational developers can make use of them alongside more generic teaching and learning resources. Further, materials generated by Subject Centres must address employability issues for *all* subjects and disciplinary areas.
- vii. There needs to be more exploration into student experiences of PBL: does it enhance conceptual understandings as well as subject content? declarative as well as procedural knowledge? Does PBL deepen thinking or develop learner confidence?
- viii. If PBL results in *different learning*, the researchers ask, what is the best way to devise novel forms of assessment to capture this difference and which can address students' and employers' needs?

#### 4. Enhancing educational development for new academic staff through the inclusion and comparison of disciplinary pedagogies

Comber, Darren and Walsh, Lorraine

*This pilot study investigates the perceptions of staff concerning the degree to which educational development opportunities offered through in-house Postgraduate Certificate programmes in HE Learning and Teaching (or equivalent) should utilise discipline-specific pedagogies to enhance the provision of new lecturing staff.*

*Findings suggest that there are preconceptions about the notion of generic programmes such as PG Certificates, often held by senior staff in universities on the basis of second hand information and hearsay rather than direct engagement.*

Very usefully, this project captures the enduring tension between generic and specific teacher development opportunities. It unravels the important distinction between real disciplinary differences in teaching and learning and felt differences. The point of the Subject Centre Network is not so much about these real differences (though there are some, e.g. the teaching and learning of architecture has distinctive features compared with the teaching and learning of history) but about offering cultural access to a realm of teaching and learning practices for academics who identify most naturally with their own discipline(s).

The research team gathered rich testimonies from senior academics about their perceptions of generic teacher development courses. As indicated in the quotation above, this revealed some very prejudiced views. In a community of professionals that normally respects evidence informed opinions, many of these views were based on preconceptions, prejudice and hearsay. That said, the project team took seriously the gulf between senior academics and educational developers, honourably accepting that fair or unfair, these views (prevalent across the sector) present a serious challenge to educational development units.

A key impetus for disparaging or diminishing generic courses came from the perception that they squander time that could be otherwise deployed for raising the

research reputation of the individual and the department. Senior academics who will be judged by RAE ratings are under pressure to prioritise research ahead of teaching quality and this project usefully flushed out the ways in which this diverts attention away from teaching concerns. There was a sense in many of the testimonies gathered that these concerns lurk in the background, with busy senior academics wanting to address them but finding little time or support to do so.

Another important finding from this project concerned the ways in which academics other-ise academics from disciplines other than theirs (often making ill-informed judgements about them) and educational developers (who, it could be said, other-ise academics sometimes as 'naughty children'). On the positive side, however, the project showed how putting academics from different disciplines in the same space to explore teaching and learning allows for valuable cross-fertilisations to take place. This left the team to conclude that while the discipline is an important 'home' for academics, there is much benefit in travelling and visiting other homes to gain insights into effective teaching and learning activities.

Given the centrality of the subject to the academic, the relevant Subject Centre has an enormous role to play. This project's inquiry into supportive materials from Centres and available to new academics revealed that there is no shortage of them; moreover the Centres quality assure their materials, albeit in different ways. However, securing the active engagement of academics with these materials remains a challenge. One problem centres on accessibility and ease of navigation towards the right materials. Some Subject Centres prepare packs for new lecturers and this practice is recommended by the team. Encouraging new staff to seek support from their Subject Centre is obviously beneficial and opportunities for future development and stronger engagement exist. These might include e.g. generic courses of teacher development welding Subject Centre engagement into their assessment processes to encourage new academics access and evaluate materials available from their relevant Centre, attend discipline-specific new lecturer workshops etc.

Bearing in mind the importance of cross-disciplinary encounters on the one hand and engagement of academics through the disciplines on the other, this project concludes that more thought from educational developers and Subject Centres needs to go into accomplishing a balance between the two.

## 5. General lessons

Taken together, these projects offer very valuable lessons and ways forward for Subject Centres, Educational Developers and academic teachers:

1. There needs to be more active engagement between educational developers and Subject Centres, perhaps with the latter (like that of maths) offering modules on the teaching and learning of their subject. The Subject Centres offer rich resources to underpin teacher development, but can they be more focused? Perhaps some should clearly address particularly troubling (or threshold) concepts within the discipline with supportive materials about the best ways of encouraging mastery. Finally, SHEER project findings suggest that there are potential benefits to staff and the institution for educational developers to strategically link their programmes to active Subject Centre engagement.
2. Action research and threshold concept research offer a strong partnership and inquiry based model for developing academics. These methods connect an academic's research curiosity into his/her subject with research curiosity into its learning and teaching. In contrast, many teacher development courses offer a 'broadcast model' in which theories and practices from education are transmitted to new academics (learning cycles, styles, constructive alignment, etc.) - at least in some of the core modules. SHEER highlights the benefits of a more organic research based approach to teacher development.
3. The SHEER programme has surfaced the benefits of a focus on the difficulty of the subject and the importance of restoring centrality to the teacher's views about this. The student-centred movement has been an invaluable way of getting academics to think about what they are requiring their students to do and how the students are experiencing learning but, arguably, it has removed attention away from tutor experiences. This project reminds us that curriculum inquiry and development is advanced by a focus on the challenges and difficulties of the subject and appropriate materials and strategies for their mastery.

4. The SHEER programme has also surfaced the importance of the disciplinary cultures within which subject exploration takes place. As one of the researchers writes: 'engagement with the discipline is much more than simply following a subject and that it is precisely through engaging with the wider aspects of what we understand as the discipline that students are exposed to and learn the language, traditions and nuances that help them to move from the position of passive observer to novice practitioner in a community of practice'.
5. The SHEER programme has shown the benefits of a strong partnership model between educational developers, the Academy and academic staff. This model is worth replicating in the rest of the UK and perhaps a third programme could include undergraduate researchers working alongside the project team.



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