Learning to Learn through Supported Enquiry
Literature review

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Review area and issues

This review will focus on key themes in the literature learning to learn through supported enquiry. It has examined:

1. What approaches to E/PBL are being undertaken in UK HE?
2. What have we found out about how learners and teachers learn through engaging in enquiry?
3. What questions remain?

Given the wide range of literature reviews already undertaken in this field, particularly within problem-based learning, a valuable function of this review would be to highlight a small number of thorough and rigorous studies which currently exist, in order to complement the University of Surrey's project to identify examples of creative and innovative teaching. This review will focus on identifying approaches to E/PBL which have been implemented and evaluated over a period of time. Like other areas of pedagogic research, E/PBL suffers from a growth in the number of publication descriptions of practice but little serious research (e.g. Helle et al, 2006 reviewing project based learning). This makes it difficult to make meaningful recommendations from the literature. This review will identify evaluative studies which have used robust methodologies from which we are able to generalise and make recommendations.

Review methodology

This literature review adopted meta ethnography, which in short is a literature review and qualitative systematic review that enables comparison, analysis and interpretations to be made that can inform theorising and practising about E/PBL. Noblit and Hare (1988) have argued that through interpretation and by acknowledging researchers as interpretivists, it is possible to recover the social and theoretical context of research and thus reveal further noteworthy findings. Although meta-analysis has developed considerably in medicine and health research, it
remains rare amongst educational researchers and developers. Furthermore, meta-
analysis remains rare among those using collaborative and interpretative inquiry, and few researchers have undertaken an integration of findings from these kinds of studies.

**Stage 1: agree the review questions and inclusion criteria**

The review questions guided the subsequent collection and selection of studies to be included in the review. Given the specification of the project brief and the time constraints, one of the first tasks of the project team was to establish criteria for the work to be included in and excluded from this review.

Recent developments in approaches to teaching and learning have led to new inquiry into how these methods affect the staff who employ them. This trend, coupled with new developments in interpretive and qualitative methods, provides a rich vein of possible lenses to add to understanding. Yet to date few researchers have integrated findings across qualitative studies that have explored E/PBL in the UK.

The inclusion criteria were agreed alongside the review questions.
Table 1. Inclusion and exclusion criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Include studies</th>
<th>Exclude studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Topic</td>
<td>Relationship between EBL and context.</td>
<td>Training General approaches to teaching and learning</td>
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<tr>
<td></td>
<td>Relationship between EBL and discipline</td>
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<tr>
<td></td>
<td>Ways in which learners and teachers learn through engaging in enquiry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How can EBL be defined and distinguished</td>
<td></td>
</tr>
<tr>
<td>2. Location</td>
<td>Approaches to E/PBL in UK</td>
<td>Approaches to EBL worldwide</td>
</tr>
<tr>
<td>3. Level</td>
<td>Undergraduate and taught masters</td>
<td>Doctoral, pre-HE</td>
</tr>
<tr>
<td>4. Date</td>
<td>Conducted 1996 or later</td>
<td>Conducted prior to 1996</td>
</tr>
<tr>
<td>5. Focus</td>
<td>Staff and/or learner experience</td>
<td>Outcomes</td>
</tr>
<tr>
<td>6. Design</td>
<td>Using a qualitative design Using a quantitative design</td>
<td>Relying on interviews, focus groups, online discussions, observations. Quantitative questionnaires, surveys.</td>
</tr>
<tr>
<td>7. Embedded</td>
<td>Data from established implementations of EBL</td>
<td>Data from pilot or first implementations of EBL</td>
</tr>
</tbody>
</table>

Stage 2: searching and database creation

The following collections were searched using the search terms ‘enquiry/inquiry based learning’ and ‘problem based learning’.

- CEEBL
- CILASS
- AURS
- SCEPtE

Academic Search Elite (through EBSCO Host) – returned 133

ASSIA (Applied Social Sciences Index and Abstracts) – returned 0
AMED (Allied and Alternative Medicine Database) & CINAHL (Cumulated Index to Nursing and Allied Health Literature) together - returned 43
ERIC, BEI and AEI – returned 94
The Cochrane Library (The Cochrane Database of systematic reviews, the Cochrane controlled trials register, the York database of abstracts of reviews of effectiveness) – returned 79
Ingenta - returned 76
BIDS (Bath Information Data Service) returned 17
EMBASE (European version of MEDLINE) returned 23
PsychLit (psychology and related disciplines) returned 12
SOSIG (Social science information gateway) returned 5
Sociological Abstracts (sociology and related disciplines) returned 28
Arts and Creative Industries (ACI) Hub. - returned 10

In addition to standard searching methods, several other approaches were used; including scanning bibliographies of original and review articles for other suitable studies, hand searching, reviewing Listservs and other relevant mailing lists, consulting with experts in the field and searching the Cochrane and Campbell Collaboration networks.

Publications identified through the search were entered into the Endnote database. Each paper was allocated keywords and evaluated against the inclusion criteria. The set of keywords was initially derived from the research questions with subcategories and descriptors being built up as we included more documents in the database. These keywords enable searching of the Endnote database for the relevant literature on each research question and within each subcategory.

The final database comprised 107 papers of which 20 satisfied the inclusion criteria in Table 1. Table 2 shows the topics covered by the papers in the database.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Number of papers allocated this keyword (n=107)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student experience</td>
<td>36</td>
</tr>
<tr>
<td>Staff experience</td>
<td>21</td>
</tr>
<tr>
<td>Group work (inc. group dynamics, working as a group, group composition)</td>
<td>20</td>
</tr>
<tr>
<td>Tutor’s role (inc. facilitator’s role)</td>
<td>16</td>
</tr>
<tr>
<td>Knowledge development</td>
<td>13</td>
</tr>
<tr>
<td>Assessment</td>
<td>12</td>
</tr>
<tr>
<td>Review</td>
<td>9</td>
</tr>
<tr>
<td>Adaptation (inc induction, early stages)</td>
<td>8</td>
</tr>
<tr>
<td>Responsibility (for own learning)</td>
<td>8</td>
</tr>
<tr>
<td>Skills development (including critical thinking)</td>
<td>8</td>
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<tr>
<td>Curriculum planning (curriculum design)</td>
<td>8</td>
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<tr>
<td>Self direction (self-reliance)</td>
<td>7</td>
</tr>
<tr>
<td>Organisational issues (i.e. the organisation of the course, environment)</td>
<td>7</td>
</tr>
<tr>
<td>Library (inc lit searching skills, access to and use of learning resources)</td>
<td>7</td>
</tr>
<tr>
<td>Workload</td>
<td>6</td>
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<tr>
<td>Anxiety (uncertainty)</td>
<td>6</td>
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<tr>
<td>Online</td>
<td>6</td>
</tr>
<tr>
<td>Institutional issues (inc. culture)</td>
<td>4</td>
</tr>
<tr>
<td>Reflection (on how much learnt, meta-cognitive development)</td>
<td>4</td>
</tr>
<tr>
<td>International students</td>
<td>4</td>
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<tr>
<td>Teacher beliefs</td>
<td>4</td>
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<tr>
<td>Attendance</td>
<td>3</td>
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<tr>
<td>Gender</td>
<td>3</td>
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<tr>
<td>Trigger</td>
<td>3</td>
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<tr>
<td>Communication</td>
<td>3</td>
</tr>
<tr>
<td>Discipline</td>
<td>3</td>
</tr>
<tr>
<td>Interprofessional learning</td>
<td>3</td>
</tr>
<tr>
<td>Mature students</td>
<td>2</td>
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<tr>
<td>Teacher knowledge</td>
<td>2</td>
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<tr>
<td>Peer teaching</td>
<td>2</td>
</tr>
<tr>
<td>Prior knowledge</td>
<td>1</td>
</tr>
<tr>
<td>Motivation</td>
<td>1</td>
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<tr>
<td>Dyslexia</td>
<td>1</td>
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<tr>
<td>Readiness</td>
<td>1</td>
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<tr>
<td>Retention</td>
<td>1</td>
</tr>
<tr>
<td>Access to IT</td>
<td>1</td>
</tr>
<tr>
<td>Methodology</td>
<td>1</td>
</tr>
</tbody>
</table>
Stage 3: analysis and synthesis

We used annotations, maps, tables and grids to identify and connect studies with the key themes. For example mapping of methods, concepts and findings was undertaken as presented in Table 2 and 3 in order to illustrate how analysis moved beyond mere summary, and are included in the Endnote Database.

Table 3 Mapping of methods, concepts and findings

<table>
<thead>
<tr>
<th>Methods, Perceptions and Concepts</th>
<th>Article 1</th>
<th>Article 2</th>
<th>Article 3</th>
<th>Article 4</th>
<th>And so on . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Setting</td>
<td></td>
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<tr>
<td>Methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Notion of validity</td>
<td></td>
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<tr>
<td>Positioning of researcher</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Themes and concepts</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Method of analysis
We analyzed data by interpretative comparison and inductive analysis. Rather than just starting with raw data, we began with predetermined themes and descriptions that the original authors had chosen to include. Indeed, it is unusual in meta-ethnography to reinterpret the original data.

It is important to note that there were a number of studies we had wanted to include but the lack of data in the article made this impossible (for example Cockerill, 1996; Burgess and Taylor, 2000, Braye et al 2003; Singh Cooner, 2005). Alternatively there were studies that we assumed it may be possible to include but on analysis had to be excluded as they were too wide ranging and the focus was not centrally on the teaching approach of E/PBL, eg Norton (2004). Thus we argue that this is not an interpretative study since there was also a lack of thick description. Ultimately this review is more easily located as a form of meta-ethnography, not as clearly located in interpretivism as we would have wished. In practice data were interpreted through:

1. Reading the studies to determine common themes
   These initial themes were:
   a. Tutor roles
   b. Student experience
   c. Assessment
   d. Learning through collaboration
   e. Understanding of curriculum

2. Synthesizing data
   Data were then synthesized whilst exploring in more depth the above themes and examining, for example, types of disjunction, perceptions of approaches and role change for staff and students.

3. Developing third-order interpretations
   The third order categories added something that went beyond the mere comparisons of the findings of all the studies. These third order interpretations emerged from sub-themes that revealed a subtext that was not apparent in the initial common themes; the overarching themes being identified as
1) Role expectation
2) Forms of disjunction apparent for staff and students
3) Learning through collaboration
4) Notion of curriculum

Table 6. Cross-Study Analysis, Synthesis and Interpretation of Data

<table>
<thead>
<tr>
<th>Overarching concepts/themes</th>
<th>Second order interpretations</th>
<th>Third order interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor role</td>
<td>Teacher transition</td>
<td>Role expectation</td>
</tr>
<tr>
<td></td>
<td>Expectations and experiences</td>
<td>- staff of themselves</td>
</tr>
<tr>
<td></td>
<td>Disjunction</td>
<td>- students of themselves</td>
</tr>
<tr>
<td></td>
<td>Tutor approaches</td>
<td>- role expectation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- relationship with peers</td>
</tr>
<tr>
<td></td>
<td>Development of capabilities</td>
<td>Forms of disjunction for staff and students</td>
</tr>
<tr>
<td></td>
<td>Gender differences</td>
<td>- Avoidance</td>
</tr>
<tr>
<td></td>
<td>Disjunction</td>
<td>- Lurking</td>
</tr>
<tr>
<td></td>
<td>Role change</td>
<td>- Over engagement</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td>- Hovering</td>
</tr>
<tr>
<td>Student experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impact of assessment</td>
<td>Learning through collaboration</td>
</tr>
<tr>
<td></td>
<td>Forms of assessment</td>
<td>- Pedagogical positioning</td>
</tr>
<tr>
<td></td>
<td>Changing assessment</td>
<td>- Perceptions of knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning through collaboration</td>
<td>Student perspectives</td>
<td></td>
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<td></td>
<td>Changes in view of knowledge</td>
<td></td>
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<td></td>
<td>Power and control</td>
<td></td>
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<tr>
<td>Understanding of curriculum</td>
<td>Relationship between theory and practice</td>
<td>Notion of curriculum</td>
</tr>
<tr>
<td></td>
<td>Understanding of approach</td>
<td>- Understanding of approach</td>
</tr>
<tr>
<td></td>
<td>Relationship between PBL and EBL</td>
<td>- Relationship between PBL and EBL</td>
</tr>
<tr>
<td></td>
<td>New formulations of PBL and EBL</td>
<td></td>
</tr>
</tbody>
</table>
Findings

Role expectation
The complexity of being a learner and teacher in E/PBL constantly seemed to challenge those in a number of studies to question what it meant to 'be' a learner/teacher in these kinds of spaces, not only in terms of portrayal and presentation, but also in relation to pedagogy and action.

Staff expectations of themselves
Students in some studies suggested that there was a credibility gap between the portrayed role of tutors within the theoretical model of E/PBL and the realities of their practice as facilitators. This suggested that even though tutors spoke of wanting to devolve power to the students, in practice they were either not prepared to devolve it or not capable of doing so. Staff in other studies realized this of themselves, as exemplified in Savin-Baden (2000), who presented the findings of a longitudinal study that used collaborative inquiry to explore tutors’ expectations and experiences of being problem-based learning facilitators. The findings indicated that tutors’ pedagogical stances influence not only the ways in which they operate and affect the problem-based learning teams, but also impact on the student learning experience. Savin-Baden located four approaches:

1. Reproductive pedagogy: In this domain tutors see themselves as the suppliers of all legitimate knowledge, since anything less will result in inefficiency in their role as tutor, and risk and failure for the students.

2. Strategic pedagogy: Tutors here offer students different learning strategies, but these are all within the remit of what is acceptable to the authorities, (institution, tutors, and profession).

I find myself during the feedback sessions giving, tending to give more information than I did initially. Again just filling in gaps where I could see that they had missed something in what they went out to look at, and asking them, "Did you think about . . . ?" whatever it is. "Do you know anything about it?" "If you do, tell me what you know about it, and if you don't know anything, is it something that is important to you? Do you want to know about it?" And, for instance, in the last one, one of them had focussed in on one particular method
of feeding. So I said to her when she had finished, "Why didn't you do it?" [the other type]. "I hadn't got time to look at it as well." So I then asked the others what their experiences were, and we had a discussion about it (p. 104).

3. Pedagogical autonomy: In this domain tutors offer students kinds of learning opportunities that will give them a means of meeting their own personally defined needs as learners while also ensuring that they will pass the course.

4. Reflective pedagogy: Tutors here see their role as enabling students to realize that learning is a flexible entity and to understand that there are also other valid ways of seeing things besides their own perspective. Tutors thus help students to see that knowledge is contingent, contextual and constructed and understand themselves and their students as reflexive projects. For example, the tutor here found it difficult to discuss PBL separately from her perspective on life and saw students engaging with learning as a life-process. She explained:

   By the end of the second year the students say, "It's beginning to make sense, it's beginning to fit together with theory and the practice, I know what you're on about now, I can see that." As it were, the penny has dropped, and you can see the knowledge being used to underpin practice and to question practice. And also similarly, certainly half way through the third year, the students that have made it, they're using practice to question—as a relative form of theory (p. 105).

Furthermore, Wilkie’s chapter (Wilkie, 2004) presents some of the findings of a qualitative study that aimed to explore the espoused and actual conceptions of facilitation adopted by a group of nursing lecturers on an undergraduate nursing programme that utilised problem-based learning. Wilkie found four approaches to facilitation, namely

1. Liberating supporter: this approach was characterised by minimal facilitator intervention and promotion of self-directed learning, with the focus on content acquisition. For example:

   My role as a facilitator is, well, it's really prompting the group to look at the trigger. To try to get them clarify what was in the trigger that they
needed to look at. I tended to turn it back on the group . . . trying to get
them to look at things in a different way. (James, lecturer, adult branch,
first year of the study) (p. 85)

This approach was also evident in Hutchings and O’ Rourke’s study (2006b), as one
facilitator explained:

PBL promotes personal research….the student becomes more familiar with the
multifarious resources at their disposal, such as e-journals and databases.
There is the opportunity to support one another in the research and explore
different avenues of information. The whole experience becomes one of
interchange where students share opinions, research and experience in order
to achieve an end result (p. 6).

2. Directive conventionalist: this group of facilitators retained control of both the
material to be learned and the method by which students were expected to learn.

My biggest concern, I think, was, I just, I felt that I wasn’t free to just
facilitate, that I really felt that it was far too active and far too directive,
for my own comfort. They were asking lots of questions, and I was just
throwing them some back. Instead of saying, “yeah, you probably
should be looking at this,” or, “maybe you should be varying things,” or
whatever, you know. I just said, “whatever you think’s appropriate.” I
tried to take a back seat, right from the beginning. (Gordon, lecturer,
mental health branch, interview, first year of the study) (p. 86).

3. Nurturing socialiser: the approach was student-centred, nurturing and supportive
with an emphasis on socialising students into ‘good’ standards (as defined by the
facilitator) of nursing practice. For example:

It’s not so much about teaching them the hip bone’s connected to the
thigh bone stuff, but more about the essence of nursing, about being
with people. This caring, nurturing empathy that makes people feel
valued. That’s what we need to get across. (Karen, interview, third year
of the study) (p. 88)
4. Pragmatic enabler: this approach developed with experience as facilitators recognised that one style of facilitation did not meet the needs of all student teams and that the problem-based process was affected by factors such as student characteristics, the nature of the problem, frame factors and the amount of dialogue

The group are perfectly capable of dealing with the issues without me having to prompt them at all. I don’t know if it is because I started out better, or if it is the personalities that are in it. (Gordon, interview, third year of the study.) (p. 89)

However, staff across many studies spoke of the role confusion they experienced and their difficulty in managing their role, which is explored later under the section on disjunction.

*Students’ expectation of themselves*

Self-validation of their own capabilities was a theme that was common in many studies. Additionally, staff realised that they could use E/PBL to engender in students an ability to assemble discrete skills and knowledge, in ways that enabled them to draw on and develop their own abilities.

Relationship with peers

Some students wondered about the value that E/PBL had been to them as individuals and they resented the losses of their time and opinions through committing themselves to the group. However, this was not the case for the majority, since most students were overwhelmed by the learning that occurred through others and valued the opportunity to share information and experiences. For example, in Barrow et al (2002) students argued:

You come back and you’ve got to have it done (other members agree) otherwise you’re letting everybody down (p. 59).

Further students in the study by Bebb and Pittam (2004) argued

I think initially IBL was very hard to get used to because you’re used to sitting in class and listening to someone lecture you and tell you what to do and when to do it. Then you come into IBL and it’s – ‘what do you think it should be’, and
you think, ‘well you’re the teacher’ – so it did take a lot of getting used to. (p. 146).

However, one study raised interesting cultural concerns. Haung, 2005 undertook an exploratory study of Chinese international students’ perceptions of their PBL experience in tourism-related courses at universities in the UK. The findings suggested that the students found the PBL more interactive than their old learning style, and allowed them to learn on their own. However, some negative perceptions were also expressed. In particular, the students had a large psychological obstacle when it came to debating a subject with their lecturers. For example, one student explained:

I am happy to discuss problems with my team mates. However, I did find that I had a huge difficulty when arguing with my lecturers, especially when they were wrong about some issues. I think this is a problem that most Chinese students in the UK would have (p. 41).

Students also did not seem to trust the material that they had researched for themselves. Yet across the studies the approach would seem to help students to debate issues and concerns in ways they had been unfamiliar with in earlier learning experiences, as exemplified by a student in the study by Bebb and Pittam (2004):

It’s hard enough during presentations to stand up there and strut your stuff as it were, but to actually, I mean right down to, ‘God is my spelling right’ or ‘Am I pronouncing this properly’, so we gave up on the whole situation. … We just find it better; we’d rather get into a full blown discussion and battle it out that way, as a debate (p. 149).

For others they felt this equipped them to be ‘good nurses’ for the future:

In my group we call it DIY not IBL, because it’s do-it-yourself, you go out and find the information yourself, and for some people that works, but … you have to be very self disciplined to find this information out. Personally, I feel if I want to be a good nurse then I need to read around the subject a lot more than just to pass an exam (p. 150).
These examples illustrate how pedagogy in E/PBL is continually changing and both this and the pedagogy of E/PBL are mutually shaping and changing each other. Students' experiences were similar in the study by Hutchings and O'Rourke (2006a) who gathered qualitative student response data from the implementation of EBL methods in third-year English Literature courses. Five main issues emerged: general anxiety about the introduction of innovatory methods; group dynamics; the absence of a familiar framework; continual pressure; and the rigidity of conventional PBL methods. In this study students valued the collaboration and one student explained:

> Peer feedback lends itself to PBL. The nature of PBL is that we are all working together so we get to know each other really well so you wouldn’t be too shy in saying ‘listen, mate, that bit was really good but you could improve on that bit’. You wouldn’t feel any qualms with that because we all know each other, it’s not as if we’re dealing with strangers and we wouldn’t have known each other if it wasn’t for the style of the course and the group work (p. 5).

Similarly Reynolds et al (2006) found that use of enquiry-based learning and problem-based learning in a human resource management undergraduate programme had a significant role to play in the development of independent learning, teamworking skills and the acquisition of deeper knowledge. Data indicated that students valued and enjoyed working in teams, even though tensions were reported, for example:

> I built a sound relationship with my fellow course mates, which I feel is extremely helpful and important as it allowed us to help each other out in other modules (p. 364).

Perhaps more importantly though, students found that working through E/PBL had been an effective way of learning and they believed they had gained a deeper understanding of the topic than they had in other lecture-based learning.

**Forms of disjunction apparent for staff and students**

Staff and students often encounter barriers in E/PBL. It seems there is little to guide educators or students to enable them to recognize these barriers to learning and the often resulting sudden arrest in progress. The very nature of disjunction means that
managing it presents a challenge to the individual, which in turn may result in
disjunction being seen as something negative, undesirable and as a barrier rather
than a gateway to learning. However, there were trends across the studies. For
example, disjunction did not necessarily always result in the displacement of identity,
(in the sense of a shift causing such a sense of disjunction that it resulted in a cost
personally and pedagogically, and hence has a life cost), but rather in a shift in
identity or role perception, so that issues and concerns were seen and heard in new
and different ways. Although disjunction occurs in many forms and in diverse ways in
different disciplines, it does seem to be particularly evident in curricula where E/PBL
has been implemented. In many of the studies there was a general sense of
development initiative group consisting of health lecturers and lecturer practitioners,
and set out to evaluate qualitatively how learners and teachers felt about the
introduction of an enquiry based learning (EBL) approach to education. Teachers felt
more doubtful and discouraged than learners. Furthermore, several concerns were
raised over the ability of EBL to establish a foothold in a curriculum more noted for a
pedagogical stance on learning. For example, staff argued:

Sometimes it becomes the blind leading the blind, because we haven’t had any
preparation for these roles and, sometimes you say “Am I doing the right thing
or not for the students?” (Health lecturer A: focus group 1) (p. 25).

“They [students] do not see the link between the EBL trigger and the module
content, and so you wonder, ‘Why am I doing this?’” (Health lecturer H: focus
group 1) (p. 25).

However, students were also clearly stuck:

“Everyone has been lost and it hasn’t been explained at all well at the beginning
of the course and at the beginning of the module. We are dazed by this and
confused, because it is explained and interpreted differently (Student Nurse C:
focus group 3) (p.26).

Students were also stuck in a study by Biley (1999). In this study qualitative data
were collected from undergraduate student nurses (n = 45) who were
participating in a problem-based learning programme of education. A category that was labelled ‘creating tension’, which consisted of two sub-categories, namely ‘making the transition’ and ‘remembering the aims’ emerged from the data. Making the transition highlighted the difficulty in moving to problem-based learning from more traditional methods of education, whilst remembering the aims described an emphasis on the importance that students place on knowledge acquisition:

Lunging into completely unstructured sessions was frightening (p. 589).

Most of the questions that arise remain unanswered due to the brief period …allocated. Interesting aspects of the scenario cannot be thoroughly investigated due to the lack of time (p. 589).

Further, a study by Barrow et al (2002) evaluated the reiterative PBL approach in a Nursing undergraduate programme using multiple methods of observation, focus group interviews and a questionnaire. Findings revealed an overall positive student experience of PBL. However, many students found PBL initially stressful due to the deliberately ambiguous nature of the scenario and the requirement upon students to direct their own learning. This was also evident in Huang (2005) and Reynolds et al (2006). The tutor role was unclear to some students, while others found the facilitative approach empowering. Students in particular seemed to experience initial generalised disjunction:

But I remember there was about a month when we didn’t know what we were doing – just sat there. Yeah … (others joined in) … we just sat there (p. 58).

This sense of general disjunction was also apparent in the study by Carey and Whittaker (2002, p665). It was difficult in many of the studies to locate the form of disjunction as so little rich description was presented in the papers. However, in some studies it was possible to locate different formations of disjunction:

Avoidance
In this situation staff and students adopt mechanisms that will enable them to find some way of circumventing the disjunction. In a study by Darvill (2003) that explored 20 diploma student nurses and their lecturers' experience of undertaking PBL, one
student reported a sense of disjunction whereby the student avoided engaging with the disjunction by asking the group to tell her what to do:

In one of the groups two students appeared to display tensions with the PBL process, particularly on the first session. They displayed anxiety about the process itself, what they were supposed to be doing, the amount of work they had to do and the amount of time to do it in:

The chair appears to be displaying anger. She appeared to be very directive, not listening to the group. Anger at the work to do. “I’ve only got one day;” another student acts as chair as she is becoming angry trying to sort it out. Student says are we going to share this work out? The previous chair says: this is doing my head in, just give me something to do and I’ll do it [field notes] (p. 76).

Avoidance also occurred in the study by Hutchings and O’Rourke (2006a), but even before the module began! One student explained:

A lot of people were nervous because it was something new and we didn’t know quite what was going to happen and a few people dropped out before it started because it was the last semester so they didn’t want to take any risks (p. 3).

and another set of students argued:

Different groups had different ways of working and you were able to learn from seeing how other groups were operating (p. 3).

All of us hold a key to loads of information. We are all sources of information as much as the bookshelves and the tutor. It taught me how to work with others (p. 3).

One of my fears was either that some people would do nothing and that you would have to do loads or that some people would completely take over and you would be left behind. But the first problem established dynamics and I
learnt when to be quiet and when to ask questions of the quieter people and make sure they contributed. I think we all recognised different characters (p. 3).

You have responsibility to the whole group, not just yourself. Everyone has to pull together (p. 3).

Lurking
The notion of ‘lurking’ implies that silence and watching are inherently bad, whilst at the same time raising questions about what counts as learning in E/PBL and who decides. There were few instances of students or staff discussing the position of those who remained silent, even though anecdotal evidence suggests that this remains a problem for many. The study by Morris and Turnbull (2004) considered an IBL Nursing course where students in later years were used as teachers to first years. Their findings indicated that students did not like taking on the role as teachers and tended to lurk rather than engage with the issues about their own responsibility in the learning process.

Over engagement
Few staff in the studies spoke of over engagement, but many students did. There was often a sense of blame attached to this; blaming the E/PBL for taking up too much time and demanding more of them, in the sense that not to over engage would mean a sense of loss or missing out on something. For example, students in the study undertaken by Biley (1999) argued:

I can see myself spending days in the library under piles of books working through the guidelines and having great difficulty getting any other work done (p. 589).

And

There is such a lack of time and a lot of pressure to acquire knowledge (p. 589).

By contrast, over engagement for staff emerged because of their need to maintain control and power over the learning. Staff were aware of their over engagement
which arose from a strong sense of being stuck, but found it difficult to resolve. For example, a staff member remarked in Savin-Baden's (2004) study:

> I insisted they come back at the end of the day to tell me what they were doing because there was something in me that couldn’t let go and yet I was saying to myself all the time ‘this is their choice, what they learn is up to them’ and there’s something inside me also saying ‘it’s your responsibility, it’s opting out that’ and it can be seen as opting out (p. 230).

**Hovering**

This is where students and staff who became stuck tended just to sit with the disjunction and wait for something to move; they did not postpone other activity but ignored the stuckness with a view that it would probably shift at some stage. This sense of hovering was evident in Wilkie’s (2004) study where staff were not always confident about which role to play as facilitator. Thus they often watched and waited and tried to be guided by the process of the group. For example:

> Sometimes it feels as if I’ve got it right … sometimes it doesn’t. It just doesn’t feel comfortable. I think that ultimately, you’ve got to be flexible… to go with the students. Let them go if they can, help them to get there if they can’t. I don’t think one size fits all. (Meg, lecturer, adult branch, interview, second year of the study) (p. 87).

The issue of concerns over time illustrates an over emphasis on knowledge acquisition at the expense of process (possibly as part of the implied curriculum as located in the tutor pedagogical stance) and reliance of students developing criticality to engage with knowledge differently.

**Learning through collaboration**

The reconstruction of what counted as E/PBL pedagogy seemed to be one of the most troublesome issues to manage. Changes in perspective, particularly the shift away from some knowledge necessarily being foundational to other knowledge, resulted in the breaking down of artificial boundaries within the discipline and in breaking down barriers across disciplinary areas.
Pedagogical positioning

Across the studies it became apparent that staff realised that it was the questions they asked students and the way knowledges were managed that enabled or prevented the development of criticality in students. For example, the purposes of problem-based learning were clearly misunderstood by students in the study undertaken by Biley and Smith (1999) who explored perceptions and experiences of undergraduate nursing students. Focusing on the students themselves, the ethnographic study explored how undergraduate nursing students (n=17) managed and made sense of a PBL programme. Fieldwork and ethnographic interviews revealed the students’ perceptions of the purpose of PBL and further issues that were of concern were identified and labelled. These were the uncertainty of functioning without a clearly delineated educational structure, perceptions of knowledge acquisition, the understanding of group interaction processes, and the role of the facilitator. For example, they cite students’ comments:

There should be clear guidelines, a syllabus or something, to let you know what’s expected (p. 1207)

Most days I leave the class and think ‘What have I learned today?’ The answer’s usually ‘Nothing really’ (p. 1208).

Further there was confusion over the role of the PBL facilitator:

I don’t see how he is much different to a teacher, he directs the sessions as if he were. He moves us on if he thinks it’s irrelevant and holds us back if we think it’s irrelevant (p. 1208).

Thus, although the authors argue for PBL as a curriculum philosophy rather than as just a teaching approach, there is clearly some curriculum disjunction occurring between what has been implemented theoretically and what is occurring in the practising of the curriculum. This is clearly an area that would bear further exploration.
Yet in contrast the study by Miles indicated that students valued and utilised the opportunity to work collaboratively. Miles (2005/6) evaluated a recent initiative within the MEd in Special and Inclusive Education programme, at the University of Manchester’s School of Education. In October 2005 students were provided with an opportunity to carry out collaborative research tasks in four Manchester schools, all of which were involved in the ‘Manchester Inclusion Standard’. Miles argues:

The students said they needed to take time to listen to each other’s experiences and perspectives. All groups reported that they had learned to respect each other’s opinions, and one group in particular had enjoyed their “disagreements”. In addition to learning about teamwork and action research, they had also experienced cross-cultural learning, “It was very creative and there was good cooperation”. Some students said that “it took time to get used to each other”, but that they “learnt a lot from each other” (p. 9).

Furthermore, the study by Reynolds (2003) explored initial experiences of interprofessional problem-based learning and compared male and female students’ views. She found that most students were positive that PBL contributed to both personal learning and team-working skills. However, women expressed rather more trust in the information provided by other students, confirmed greater enjoyment in taking responsibility for their own learning and had more positive views about working with students from another course. In their qualitative comments, more women made reference to enjoying the social aspects of PBL (such as group work, support and collaboration). The gender differences were not substantial but those that were observed support previous researchers’ arguments that women are more inclined to be ‘connected learners’ who value the social aspects of learning contexts. The findings overall suggested that PBL made a positive, well-received contribution to learning during an interprofessional module. For example (p. 40)

PBL links the work we are doing about physio movements to real situations. It also allows us to explore case studies and discuss them with the OTs and practise our evaluation skills which we will need to employ on clinical placement. It also helped us to make use of books and the Internet to research the case. (Male physiotherapy student)
I liked the chance of getting to know people better in my seminar group, and the chance to find out more about a patient’s illness in depth. (Female occupational therapy student)

We learnt more about OT and physio roles; got to know the people in my group better, and learnt more about the condition that the case study client suffered from. (Female physiotherapy student)

I’ve made friendships that will continue. (Female occupational therapy student)

Perceptions of knowledge
Staff believed that the course redesign process towards problem-based learning made them reconsider their pedagogical stances and their views about the nature of knowledge. Students began to realise the value of the knowledge they brought to the course, the value of collaboration, and accepting that peers also had important, and often previously disregarded forms of knowledge, to share. Three studies indicated this, in particular Johnson (2005), who explored students’ views of interprofessional education and revealed both positive and negative experiences, relating to the quality of facilitation and group dynamics. Students were more comfortable with the enquiry-based learning approach than at level 1, but many were unable to relate the module to clinical practice and expressions of professional rivalry emerged. For example:

The module was useful for reflective practice, learning how to talk in front of colleagues, giving feedback and gaining confidence (p. 217).

Yet some students felt that interprofessional education was not relevant to practice and that some disciplinary areas dominated the learning.

Notion of curriculum
There seems to be relatively little understanding of how E/PBL might be constituted, how they might be mapped or seen differently, and the impact that such spaces are having on the nature of higher education. For example, the provision of information for students, the structuring of learning, the development of teams and learning materials such as problems and triggers, and the changing in patterns of communication.
**Relationship between PBL and EBL**

There was a sense that there was a subtext of control in many of the studies and a tendency to shift to more ordered and structured forms of E/PBL. Many of the arguments about the adoption of EBL over PBL related to issues of ordering and flexibility but this did not seem to be apparent in the subtext evident in the articles. For example, it seemed that for both staff and students the notion of an ordered curriculum was something that was seen as scaffolded and structured, but there was relatively little recognition that in fact such safety suggests stability and control by staff for students. Thus there was a sense of disjunction across many of the studies located.

The study undertaken by Bebb and Pittam (2004) explored the experiences of first-year nursing students in an IBL 'whole-curriculum' strategy for preregistration nursing education, primarily to avoid the possibility of educational dissonance within a mixed methodology approach. An evaluation strategy was put in place to provide stakeholders with information about processes and outcomes. The key issues identified concerned adaptation to the IBL process and learning within small groups. What was interesting about this study was the location of IBL as being different from PBL, but in a rather un-theorised and dislocated position. For example, the authors argue:

> Although there are many similarities, IBL differs from pure PBL in its use of a wider, more flexible range of learning methods, including both group discussion and resource sessions, and in its promotion of a broader scope of investigation. In this sense, IBL may be better suited to nursing education in that nursing problems are often more contextually complicated and include a greater emphasis on social and emotional issues (p. 142).

This would seem to illustrate many of the difficulties inherent in arguing for IBL or EBL as opposed to PBL which largely ignores the range of models of PBL that have been in operation since the mid 1980s. This stance is also taken by Hutchings and O’Rourke (2006b) who argue:

> ‘that Enquiry-Based Learning methods are conceptually appropriate for Literary Studies courses when adapted to meet the local needs of the discipline
We defined our procedures in these essays as Problem-Based Learning in order to highlight the conceptual basis of the learning method and because we removed all the conventional frameworks of courses, including reading-lists and syllabus (except as defined by the course title). Thus the problems themselves were the sole drivers of the learning. However, Enquiry-Based Learning is a more flexible and appropriate term, and can readily include forms of Problem-Based Learning.'

Much of what often appears to be argued for is a shift in the conceptualisation of a 'problem' towards the notion of a 'question' or 'issue,' something that was dealt with comprehensively in a study by Taylor (1999) and later work by Savin-Baden (2000). However, in the study by Reynolds et al (2006), one student comment illustrated a useful delineation:

Problem-solving = coming up with an answer. EBL = learning through research. PBL = learning by applying to a context (p. 363).

*Development of capability*

Although it was apparent in a number of the studies that students and staff experienced conflict in the relationship between theory and practice, many students in the study by Barrow et al (2002) considered that the application of theory to practice had been valuable:

…skills you could see yourself using on the ward … it’s all very relevant and I quite enjoyed it because it’s actually relevant to nursing, making our own decisions, which is what we’re doing on the wards (p60).

However, the study by Darvill (2003) indicated that undergoing PBL as a teaching and learning strategy had positive outcomes for the students. Prior knowledge was utilised in knowledge development in relation to the problem and was seen as beneficial. Students reported that they felt more confident and used the knowledge gained to care for patients’ cultural needs in practice.
“Theory sessions increased knowledge and subsequently personal confidence in abilities. This resulted in much more thorough plans of care particularly relating to the ‘cultural dimension’ [Student-diary summary] (p.76)

The development of student capability was also apparent in the study by Carey and Whittaker (2002), which explored community practitioner students' experiences of PBL. The study was completed as part of an extended evaluation of a core module included in a post-registration community specialist practitioner programme. Data were collected via a self-completion questionnaire. The findings identify issues relating to the learning process and its influence on the knowledge gained. They illustrate that whilst the journey taken to acquire new knowledge had been difficult for students, they had benefited from the opportunity to learn with others. For example, the authors argue:

In particular, the participants acknowledged that they discovered how they could learn from the difficult experiences they had encountered, as well as from the experience of sharing knowledge and working together. Furthermore, they indicated that they were then able to apply this new knowledge to their own practice situations, as illustrated below.

Through having a real scenario we have shared real experiences.

It addresses things that couldn’t come across in a formal lecture . . . finding out what people do and taking it back . . . and thinking I’ll use that (p.664)

An interesting approach to develop capability was undertaken by Morris and Turnbull (2004), who used student nurses as teachers in inquiry-based learning. They argue that there is a paucity of literature exploring the use of undergraduate student nurses as peer teachers and therefore explored the viability of using student nurses as teachers in an inquiry-based nursing curriculum. The findings suggest that student nurses were uncomfortable with being used as teachers, often questioned the intrinsic worth of this approach as a developmental tool, and considered the responsibility for teaching the content of resource sessions to lie with nurse educators. Thus the strategy of using student nurses as teachers may be appropriate in some circumstances but requires further research, considerable support and
continual evaluation. Whilst some students valued this and felt it developed teamwork, many students experienced disjunction and felt they should not be responsible for developing other students’ learning.

Assessment
There are relatively few articles that have explored assessment in E/PBL. Savin-Baden (2004) explores assessment in the context of problem-based learning (PBL) at three different levels. Firstly, it examines the position of assessment in the current system of higher education and, secondly, it examines students’ experiences of assessment in problem-based programmes. The article draws on research into PBL that explored staff and students’ experiences in four different disciplines, and it is argued that many forms of assessment still largely undermine collaborative learning and team process in PBL. However, what was apparent was the disjunction that emerged for staff (as mentioned above) and the impact on student experience of the PBL curriculum. For example, one student remarked:

At the end of this degree this course won’t actually have counted towards my degree, which is a pity because it’s probably one of the courses I shall learn the most in. It doesn’t really reflect what I’ve learnt in that respect. It’s the one I’ve learnt most in and yet I’ll be scoring higher on other courses where I know less in real terms. In that respect it doesn’t help my academic success (p. 228).

And there was also an awareness that helping fellow team members could affect how students won marks:

At the end of the day we all want to learn but we all want to get a good degree as well, so I mean, all of us are playing that game to some extent of, you know, where do you draw the line between wanting to learn and wanting to get a good degree? None of us want to end up in a situation where we all know a lot and all end up with a third, you know (p.228).
Questions remaining

1) Is there curriculum disjunction occurring between what has been implemented theoretically and what is occurring in the practising of the curriculum?

2) What are the forms of disjunction in PBL and EBL and the extent of cross over between different approaches to E/PBL?

3) What are the ways of improving the relationship between learning and assessment?

4) Is EBL really more flexible, or are people just disenchanted with early medical models of PBL having not engaged in the newer (1990s) versions?

5) Are PBL/EBL/IBL useful delineations?

Conclusion
This meta ethnography has highlighted the complexities of the various understandings and research into E/PBL in the UK and has raised a number of questions and areas for further research. What was found to be particularly useful about the research method was the examination of issues, methods and concepts across the studies. Meta-ethnography such as this afforded an opportunity not only to compare studies and the themes identified by the authors, but also to construct an (always contestable) interpretation. However, the difficulty with this approach was the tendency to privilege similarity (and sometimes difference) because the process of sense making across studies tends to focus on ordering and cohesion rather than exploring conflicting data sets and contestable positions. The diverse yet overlapping themes indicate a need for considerable further research in E/PBL, particularly in the UK, where qualitative studies into tutor roles, student experience, assessment, learning through collaboration and understanding of curriculum are to date the most prolific. Yet issues of context, difference, learning approach, understanding and impact of innovation, along with notions of identity and improvement are areas that remain relatively unexplored.
Recommendations for future research

1) A worldwide study undertaking interpretive meta ethnography of this sort would give a greater understanding of curricula that use E/PBL and the split of inquiry as a central organising principle.

2) Different criteria for inclusion and exclusion and different methods of evaluating research based upon different philosophical stances in relation to research can only add to the existing body of research, directing and developing new ways to know and understand.

3) Further studies on the five ‘questions remaining’:

- The extent to which there is curriculum disjunction between theory and practise
- Whether there are different and similar forms of disjunction in EBL and PBL
- How might assessment be improved to match the form of learning more closely
- Whether there are in fact any significant differences between models of PBL and EBL (see for example, Appendix A) and if so what, for example, are the strengths and weaknesses
- Are PBL/EBL/IBL useful delineations, or would a generic term such as pedagogies of inquiry or research-led learning be more useful?
**Appendix A  Comparison of forms of active learning**

<table>
<thead>
<tr>
<th>Method</th>
<th>Organizational knowledge</th>
<th>Forms of knowledge</th>
<th>Role of Student</th>
<th>Role of tutor/teacher</th>
<th>Type of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem-based learning</td>
<td>Open ended situations and problems</td>
<td>Contingent and constructed</td>
<td>Active participants and independent critical inquirers who own their own learning experiences</td>
<td>Enabler of opportunities for learning</td>
<td>Development of strategies to facilitate team and individual learning</td>
</tr>
<tr>
<td>Enquiry-based learning</td>
<td>Open ended situations</td>
<td>Contingent</td>
<td>Active participants, independent inquirers</td>
<td>Guide to situation management</td>
<td>Management of situation through enquiry</td>
</tr>
<tr>
<td>Project-based learning</td>
<td>Tutor-set, structured tasks</td>
<td>Performative and practical</td>
<td>Completer of project or member of project team who develops a solution or strategy</td>
<td>Task setter and project supervisor</td>
<td>Problem-solving and problem management</td>
</tr>
<tr>
<td>Problem-solving learning</td>
<td>Step-by-step logical problem-solving through knowledge supplied by lecturer.</td>
<td>Largely propositional but may also be practical</td>
<td>Problem-solver who acquires knowledge through bounded problem-solving</td>
<td>A guide to the right knowledge and solution</td>
<td>Finding solutions to given problems</td>
</tr>
<tr>
<td>Action Learning</td>
<td>Group-led discussion and reflection on action</td>
<td>Personal and performative</td>
<td>Self-advisor who seeks to achieve own goals and help others achieve their’s through reflection and action</td>
<td>A facilitator of reflection and action</td>
<td>Achievement of individual goals</td>
</tr>
</tbody>
</table>

(Adapted from Savin-Baden and Major, 2004)
References


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