Summary of Research Results

The aim of the Project on the Effectiveness of Problem Based Learning (PEPBL) is to investigate what forms of Problem Based Learning produce which effects for which students in which contexts.

The project included two empirical research studies on the effectiveness of Problem Based Learning.

The first was a Pilot Systematic Review of the Effectiveness of Problem Based Learning that was completed in collaboration with an international panel of teachers/researchers in the field. The report of this study is now available in hard copy and as a PDF file. The PDF file can be downloaded from the project website http://www.hebes.mdx.ac.uk/teaching/Research/PEPBL/index.htm

This type of review provides a very powerful form of evidence as only studies of the highest quality are included. The results suggest that based on these high quality studies we cannot be confident about the effects of Problem Based Learning on any of the effects measured. There are a number of limitations to these studies. Firstly they do not describe in detail the intervention that is called 'Problem Based Learning in their study (there is by no means agreement on what Problem Based Learning is or is not). Secondly they all feature the education of health professionals and the majority were in undergraduate medical programmes. Thirdly they were all carried out in North America or Europe.

What is clear is that the pilot reviews' findings confirm that there is an urgent need for a multidisciplinary international systematic review of the effectiveness of Problem Based Learning.

The second study is a randomized experiment that compared the process and outcomes of Problem Based Learning compared to the 'traditional' approach in a continuing education programme for nurses. this study was run with colleagues from Middlesex university. Qualified nurses from local hospitals who applied to attend these programmes were randomly allocated to follow either a Problem Based Learning Curriculum or a traditional curriculum that comprised mainly of teacher centred activities such as lectures.

It is important to recognise that the design and implementation of Problem Based Learning and of the research is complex as are the results. Interpretation and generalisation is therefore quite complex and difficult to summarise briefly. It should also be emphasised that this is one, albeit high quality, study of one particular form of Problem Based Learning in a particular context.

The study results suggest that a substantial proportion of students did not like Problem Based Learning. 94% of students in the traditional (non PBL) curriculum completed the programme compared to 59% in the PBL curriculum. For those that did not complete the programme PBL was an important contributing factor to their decision to withdraw from the programme.

Students struggled with PBL throughout the programme and their dissatisfaction was evident early on. They complained that they were not being 'taught', that the teachers did not know what they were doing etc. What seems to be the issue is that students did not like the uncertainty of learning through the PBL process, the fact that they had to expose what they did not know in order to able to identify what they needed to know and that they had to 'work' between teaching sessions. This is coupled with a disjunction between what they expect to happen and what happens in PBL - they came to be 'taught' by an expert i.e. to sit and listen. This dissatisfaction persisted right through to the completion of the programme. Those PBL students who completed the course did however recognise the value of 'doing it that way' - however they still did not enjoy the PBL approach.

There was also reasonable justification for concluding that Students in the control curriculum were more likely to perceive that the educational programme had changed their practice. There is a similar level of warrant for concluding that students in the experimental (PBL) curriculum rated their performance in practice higher than students in the control (SGL) curriculum.
There is some evidence that PBL may be mediate a tendency for student's approaches to learning/ studying to worsen during an academic course but this mediation does not appear likely to produce 'important' effect sizes.

The results also suggest that PBL does not make a big difference to students performance in the workplace according to their manager, nor does it make the students themselves more likely to teach their colleagues or get involved with practice development.

The key question is of course how we interpret the findings.

One argument is to say that this was only one form of Problem Based Learning and its implementation could be improved. Another argument is that there was something special about the student group. I think the students were not particularly atypical of this group but there is no doubt that we need to replicate the study with different teachers in different contexts

Another argument is that the measures used were not sensitive to the effects of PBL. This may be true also but is something that has been taken into account in the interpretation of the findings above. Where the validity and/or reliability of the instruments does meet a high enough standard the results have been interpreted as inconclusive.

Putting the two studies together and looking at other high quality evaluative studies, I think a pattern emerges. Where rigorous study designs and methods are used, the outcomes are contradictory and/or where they do favour PBL the effect sizes are small and do not exclude the possibility of no effect.

Is it possible that despite its strong theoretical underpinnings PBL does not produce the effects we are looking for? I think there is a reasonable case for arguing that most implementations of PBL take place in a socio/ professional/ context that in effect has not changed.

It is certainly the case that whatever the rhetoric Nursing Cultures in the UK are hierarchical, that the expert is somebody who knows the answers and the emphasis is on 'doing' not 'thinking'. Problem Based learning theory does not say very much at all about the institutional context as its focus is on what happens in the classroom and the assumption appears to be that the 'wider world' supports the aims of PBL or at least is benign in its influence. Whilst there may be support on paper from Education authorities and professional bodies this cannot be assumed to mean that this reflects the values, beliefs and cultures of a whole country, profession or group.