

THE UNIVERSITY *of* LIVERPOOL

Guide to Problem Based Learning

from the School of Medical Education
University of Liverpool

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This is the tenth version of this guide. It will certainly need improving. Please send any comments to
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Introduction

Problem-based learning is used, to a greater or lesser extent, in most medical and dental courses.

We are very proud of the way in which problem-based learning has been integrated into our courses at Liverpool. There are many sources of information about problem-based learning - many you will find in the library—but you can always ask students in other years—or your personal or PBL tutor.



To get the most out of PBL you will need to think carefully about what you already know—and be prepared to spend plenty of time finding things out—and thinking them through. There are plenty of sources of information to help you (plenaries, HARC, clinical and community skills, academic staff, books, journals, the internet, patients...)—so make good use of them !

This booklet is written as a simple user guide, to help guide you through the first few weeks.

What is problem-based learning (PBL)

Different universities use PBL in different ways. Here in Liverpool we are using it to

- help you to develop your learning strategies,
- give you a solid grounding in the various disciplines which will inform your future practice, and
- help you develop into an independent, self-motivating professional.

This takes several years and like most things in life, will not always come easily. We will give you whatever support we can, and provide whatever resources we can, but it is your responsibility to identify what you need to know.

To support you in the first few years of the course, you will be allocated to a PBL group. You will meet three times per fortnight with between 6 to 8 other students, together with a trained PBL tutor. The role of the tutor is NOT to provide you with the "right answers", it is to make sure that the group is using the PBL process properly.

How the PBL tutorial works

The PBL tutor will not teach you—that is not their role during PBL.



All PBL tutors are experts in their field, but that is not necessarily medicine. They are also all trained, and update their training regularly. They will guide you through the PBL process, particularly in the

early days.

The PBL tutorial has four main objectives

- to activate **and articulate** your prior knowledge
- to help you to apply that knowledge
- to help you identify what you don't know
- to identify the group learning objectives

Most modules last two weeks, and you will usually meet on the Monday of each week, and the Friday of the second week. That gives you chance to identify what you need to know, find something out, check back with the others to refine your ideas, and then hopefully bring everything together at the end of the module.

For the first year or so you will need to follow a fairly rigid pattern to be sure that you address all of the issues a particular case brings up. The pattern we use is a variation of the "Seven-Step" technique developed in the University of Maastricht (with school leavers over many years). For details of this approach please see the back page.

The *Liverpool* model

The best way of looking at this for those of us in Liverpool has been devised by Dr.Maudsley in our Division of Public Health (Maudsley G (1999) *British Medical Journal* 1999; 318: 657-661.)

- *Look for phenomena requiring explanation*
- *Investigate prior knowledge and experience*
- *Volunteer shared learning objectives*
- *Explain the essence of the case scenario*
- *Reflect and evaluate*
...pool

Look for phenomena requiring explanation

How?

- Spend considerable time brainstorming
- Keep to brainstorming 'rules' (if you think it say it (BRIEFLY); do not judge, apologize for, discuss, justify suggestions; write all suggestions down verbatim even if they appear to be overlap; do go back through the trigger material after a short break thinking about something else)

Why?

- to be creative and open-minded about what might be important in a clinical situation, before getting too focused
- to learn from other people's suggestions
- to think about issues from lots of different angles

...so that you work together and do not miss key features to research, act upon, etc.

Investigate prior knowledge and experience

How?

- Spend considerable time activating 'prior knowledge' (i.e. what you already know about anything that has been highlighted) – now is the time to discuss the brainstorming suggestions, not during brainstorming

Why?

- to make sure that you & the group recognize what you all know & what you need to find out to understand the scenario
- to show that everyone has something to contribute (and not just from books) whether from school, college, personal experience, etc.
- to practise communicating key concepts out loud

...so that you do not keep saying that you know something, yet cannot actually explain it out loud

...so that you realize that you are not the only person who does not know something

Volunteer shared learning objectives

How?

- From the learning gaps that you have identified, sort out what it is that you as a group should be able to do when you return next time: outline x, draw y, discuss the role of x related to y, compare & contrast a, b & c

Why?

- to make sure that the group's learning tasks are clear (and everyone researches every learning objective)

...so that you have a learning plan and know whether you have succeeded in keeping on track by the next session

Explain the essence of the case scenario

How?

- Come back to the group ready to explain what you now know, still do not know, can illustrate, how you know it, and WHY it is RELEVANT at all to this case scenario... all WITHOUT NOTES
- Use evidence, critically appraising yours & other people's assertions
- Synthesize what you now know with the scenario

Why?

- If you really 'know' it (have not just "made notes on it"), you should be able to communicate it and its clinical relevance, and provide evidence/arguments to support/challenge assertions
- The PBL session is for testing out what you know in a safe environment and challenging assumptions

...so that you keep rehearsing what you know in a clinical context (making it easier to recall later on) and keep improving critical thinking

Reflect and evaluate

How?

- Reflect during the session on how you are contributing and adjust accordingly (...if you have not said a word, why not? ...if you have not shut up at all, why? ...if you are lost, speak up!)
- Spend time at the end of EVERY session debriefing on how the process went (things that went well, not so well)

Why?

- While most of the session focuses on 'content', you need to check that the educational process remains on track and prevent complacency
- There may be things about the group dynamics, tutor's role, etc. that need adjusting
- Everyone needs to have his/her 'say' and difficult dynamics should be discussed (but the evaluation should focus on different things each time)

...so that people have the chance to explain their concerns/behaviour and suggest ways that he/she/the group/the tutor could do better next time

Roles within the group

The tutor is there to help, but the functioning of the group is the collective responsibility of the group itself. We suggest that each group elects a Chairperson to keep an eye on the time, and make sure that everyone is pulling their weight. You will probably also want to elect a "scribe" or "clerk" to make sure that things get written down on the board or flip chart. Everybody in the group should take the role of Chairperson and scribe at least once, so you will probably want to take it in turns week by week or module by module. The learning objectives need posting on Blackboard, so the group should decide who is responsible for doing that.

"Ground Rules"

Your PBL tutor will guide you through your first tutorial. You will want to introduce yourself to your colleagues, swap telephone numbers and so on. But you will also need to establish some ground rules, to make sure that you all get the most out of the PBL process. The list below is not exhaustive, but you will probably like to consider

- Always be on time
- say whatever is on your mind
- there is no such thing as a stupid remark
- it is important to articulate your thoughts
- express your opinions if they differ from the consensus
- silence implies acquiescence

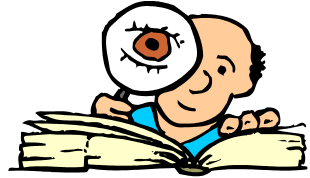
Your PBL tutor is the person to help you decide how the group should function, they are trained and experienced in making PBL work.

Four Themes

So that you can be sure that you are covering all aspects of a particular case we recommend that to think in terms of the four major curriculum themes.

Structure and Function

- Biology and pathology
 - structure of the cell
 - cell cycle
 - replication and division
 - control of menstrual cycle
 - anatomy of male pelvis and reproductive system



Individuals, Groups and Societies

- The psychosocial dimension of behaviour
 - making decisions about conception
 - medication and self-medication
 - lifestyles
 - illness behaviour



Population Perspective

- Epidemiology and public health
 - concept of health and disease
 - concept of probability
 - 7-pointers for population perspective
 - how the NHS works
 - concept of clinical iceberg



Professional and Personal Development

- So what does this mean to ME
 - individual autonomy
 - responsibility of GP
 - role of professionals in health care
 - patients charter
 - talking to patients
 - how do I feel about this?



Myths and Reality

By now you will realise that there is some tension between people who are teaching and studying medicine in the “traditional” manner, and those who have developed their curricula to embrace the recommendations of “Tomorrow’s Doctors” (GMC,1993, 2002). When responding to any criticisms/worries it is worth remembering that it is a method employed throughout the world, including Harvard in the USA, McMaster in Canada, and Maastricht in the Netherlands. It has been used for over 30 years in medicine, and many more years than that in other subjects. We have used forms of PBL in our faculty in Liverpool for over 20 years, and since 1996, the whole medical curriculum at Liverpool has included considerable elements of Problem Based Learning. Students have graduated from our programme, and have been received very favourably by the hospitals we serve.

Further Reading

Don't necessarily believe what I've written here. Look on the web - you can start surfing from the School Homepage <http://www.liv.ac.uk/sme>

Of course you could hone your IT skills and just use medline with “PBL” as the key word, and see just how much has been written about the subject.....

Acknowledgements

We are lucky in Liverpool, that we have an enthusiastic and supportive curriculum team, which includes many students. I am also lucky that I have been to several Universities, here and abroad, where PBL is being or has been introduced. I am deeply grateful to all of my colleagues, but most especially our students, who keep me on track.

David Taylor 2006

The Seven Steps

1. Clarify

This should take very little time. It is simply a matter of making sure that everyone understands all of the words that are used in the written case.

2. Define

This is more important than you might think. It means *define what the problem is about*. There is usually a very strong clue in the study guide.

3. Analyse

This takes most of the time and can not usually be done in less than about an hour. Talk about the case together with all of the other members of the group. Work out what you already know about the various components of the case, see how concepts link together. Most groups find this easiest to do with a "Mind-Map" or "Concept Map". Challenge yourself and each other to explain how things work and why you think what you think. It is essential that you do not just say "We did that in the last module." or "We did that at A-level." You only can only activate your prior knowledge by articulating it. In other words, don't say *that* you know, say *what* you know. Don't be afraid to say something "naïve" or "stupid", this is a safe environment in which you can learn from each other.

4. Sift & Sort

After an hour or so, you should have a lot of information on the board. Work out which concepts are linked, and which you as a group feel you need to focus on. Remember that you should address each of the four themes (see earlier in this booklet) in every case.

5. Identify Learning objectives

When you think about what you have talked about during the tutorial you will realize that there are several things that you need to find out. Remember though, that you have only four or five days between tutorials, so the learning objectives should be manageable. They should be framed as concise and precise questions. **MAKE SURE THE GROUP OBJECTIVES ARE POSTED ON BLACKBOARD!**

6. Go and learn

Everybody in the group should research all of the learning objectives. Use all of the resources at your disposal, and try to understand what you are reading. It will take quite a lot of time, and it will be quite hard work. At first you will find it difficult to work out how much depth you need to go into. Talk to your fellow group members and to your other friends on the course. Whatever you learn should be put into the context of the case you are studying.

7. Come back and talk

You should try to do this *without reading your notes*. It is quite a difficult skill, but it is the best way to find out if you really understand what you have been reading. If you are confused or make a mistake someone else in the group will help - just as we expect you to help them when they are stuck.

Remember, if you have any problems with PBL, how it works, making it work for you, or whatever, talk to your PBL tutor about it. If you don't feel able to do that, then talk to either your personal tutor, or me (David Taylor, dcmt@liv.ac.uk, 0151 794 7450)