Four years of problem-based learning: a student’s perspective

Gabriella von Döbeln

Summary
After four years as a student in a medical school using problem-based learning I still find it an excellent way to learn. Group work has developed my personal skills and abilities. Learning how to obtain knowledge on my own has given me independence and confidence. Motivation to study has been encouraged by early clinical experience. Training in critical thinking has been further enhanced by in-depth studies. Medical education at the University of Linköping has developed over the years and a contributing factor has been students’ involvement in designing the medical training. There are benefits and disadvantages with problem-based learning, but on the whole it is an enjoyable and fruitful experience.

Keywords: problem-based learning, education

I am a fifth-year medical student at the University of Linköping, Sweden, where the curriculum is based on problem-based learning (PBL). Coming almost straight from high school where students are ‘spoonfed’, to a university where students are expected to set their own learning objectives and then find their own way of reaching the goals they have set themselves, is not an easy transformation, but it has definitely been worth the effort. I have grown in self-confidence, learned to be more critical and have become more humble in the realisation that seldom is there something known as the truth. I find PBL a rewarding way to learn and it is certainly an interesting and enjoyable way to gain knowledge. It has not always been easy though, and sometimes I have cried out in desperation “can’t anyone tell me exactly what I need to know and how to obtain it?”

Learning in small groups
An important part of the learning process takes place in small groups. Groups of six to seven students identify learning objectives by discussing clinical scenarios. Between two to seven days later, when everyone in the group has tried to find solutions to the problems raised, group members meet again and discuss their findings (figure 1). Since they are consulting different sources they often come up with several different answers. I hope I have become more tolerant through this process, understanding that there are many different ways of looking at problems and that I do not necessarily have the (only) right answer. The group members will probably have different experiences, different ways of approaching problems, different ways of putting their ideas forward, and trying to find a common way of working can be a challenge when there are totally opposite personalities in the group. Frequent, ongoing evaluation by group members helps to prevent small problems from developing into big ones. Furthermore, evaluation involving all group members helps students to learn how to give and receive criticism. The composition of the groups changes every 20 weeks which is usually enough time to get the group to work effectively.

The tutor’s role in small-group learning
Occasionally, it is quite difficult to get the group to work efficiently. The group might get stuck and the students may not know what went wrong. The tutor is trained to interpret group dynamics and can give a hint on where in the process of discussion the group was unable to make progress. Another aspect of the tutor’s

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Figure 1 Learning processes in PBL: flow chart
role is to guide students when they might be off the track as it is quite easy to be side-tracked and get into a discussion which is not relevant to the problem of current interest. During my medical training I have had several tutors, some more skilled than others. A possible trap for tutors is to interfere too much and not allow students to solve problems in their own way. It is not easy being a good tutor, and since groups are quite small, a large number of tutors are needed.

**Resources for learning**

Students visit the library frequently and books are one of the resources I use the most. Many books are written in a traditional way, i.e., subdivided into anatomy, histology, embryology, etc. Studying a whole organ system, including the psychological and sociological implications, therefore requires students to look in several books or articles. This can often seem time-consuming, especially in the beginning when one does not know where to look. Since there are many students there may not be enough relevant books in the library. One way to get around this difficulty is to have a set of course reference books available to students. Most students at Linköping also buy one book in every main topic. Drug companies in Sweden are a good resource for obtaining useful and novel books.

Laboratory work is another way of learning. This might consist of learning, for example, how to use an electrocardiogram, what to look for in urine sediment, how to culture bacteria, and the dissection of human bodies. None of these activities is compulsory, but many students find the practical experience useful. At Linköping, more advanced students are often involved in teaching. Since they have recently been in the same situation they remember the difficulties and questions that arose. It is popular to become a student teacher, and a good opportunity to learn more about a particular subject.

In the PBL curriculum at Linköping (figure 2), lectures are just one of many

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**Figure 2** Overview of the undergraduate medical programme at Linköping University

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<tr>
<th>PHASE 1</th>
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<th>PHASE 2</th>
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<th>PHASE 3</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>TERM 1</td>
<td>Man and society: multiprofessional education 10 weeks</td>
<td>Skin and locomotion 10 weeks</td>
<td></td>
<td>Endocrine system 3 weeks</td>
<td>Circulation and respiration 9 weeks</td>
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<tr>
<td>TERM 2</td>
<td>Nutrition, digestion, metabolism, neural and hormonal regulation 14 weeks</td>
<td>Renal system, reproduction and foetal development 9 weeks</td>
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<td>Blood and immune system 5 weeks</td>
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<tr>
<td>TERM 3</td>
<td>Circulation and respiration 6 weeks</td>
<td>Infection and immune system 3 weeks</td>
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<td>TERM 4</td>
<td>Skin, locomotion, nervous system and sense organs 7 weeks</td>
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<tr>
<td>TERM 5</td>
<td>Elective 3 weeks</td>
<td>Nutrition digestion 5 weeks</td>
<td></td>
<td>Blood and immune system 5 weeks</td>
<td>Renal and reproductive medicine 5 weeks</td>
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<tr>
<td>TERM 6</td>
<td>Internal medicine 6 weeks</td>
<td>Integrated internal medicine-surgery 6 weeks</td>
<td></td>
<td>Dermatology and infectious diseases 3 weeks</td>
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<tr>
<td>TERM 7</td>
<td>Surgery 5 weeks</td>
<td>Integrated internal medicine-surgery 4 weeks</td>
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<td>Anaesthesiology intensive care 2 weeks</td>
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<td>TERM 8</td>
<td>Ophthalmology, oto-rhino-laryngology and neurology 15 weeks</td>
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<td>Family medicine 3 weeks</td>
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<td>TERM 9</td>
<td>Psychiatry 9 weeks</td>
<td>Geriatrics 3 weeks</td>
<td></td>
<td>Internal medicine 3 weeks</td>
<td>Family medicine 3 weeks</td>
</tr>
<tr>
<td>TERM 10</td>
<td>Paediatrics 6 weeks</td>
<td>Gynaecology and obstetrics 6 weeks</td>
<td></td>
<td>Dermatology infectious diseases 3 weeks</td>
<td>Family medicine and child psychiatry 3 weeks</td>
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<tr>
<td>TERM 11</td>
<td>Elective 10 weeks</td>
<td>Community medicine 7 weeks</td>
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ways of learning. Typically, there are five to seven hours of lectures each week. They are designed to give an overview of a subject, or they may be used to clarify ideas that are difficult to grasp from other sources.

Occasionally, problems arise that are very difficult to solve. In a university hospital, there will almost certainly be someone with a special interest in that area who can help to find a solution. At Linköping, the specialists have commented that students make insufficient use of them as a resource. Students, however, feel that specialists are often too difficult to contact.

Another way for students to learn is through informal discussions when ideas and opinions are exchanged with fellow students. I find this a particularly useful way to learn.

At Liverpool University, a new undergraduate medical curriculum is currently being designed and implemented and will be put into practice in 1996. I have had the opportunity to come to Liverpool as part of a three-month exchange programme and one of the many things that has impressed me in the new curriculum is the programme of computer-aided learning. I believe that the use of hi-tech multi-media in medical education will be a very valuable tool in the future, mainly by making information more easily accessible to students.

Early clinical experience

At Linköping, students meet patients from their very first day at medical school. Many find that the opportunity to see patients early in the course makes studies less theoretical and more relevant. An important part of clinical training at Linköping is training in communication skills. Students are videotaped when seeing a patient and the experience is then evaluated by fellow students, a general practitioner and a behavioural science tutor. For the first two and a half years this group meets every second week. I cannot say that it was much fun at the beginning, seeing my own clumsiness on the TV-screen. Now though, I feel that evaluation of my behaviour with patients has been an important part of my medical training.

Research in undergraduate training

I find in-depth studies a good way of gaining experience of research and it has definitely increased my critical thinking. At Linköping there is not much time set aside for research, which means that students have to do it alongside their basic training. Since time is something students are often short of, in-depth studies can sometimes feel like a burden, although many students appreciate the benefits of early research experience.

Assessments

Students at Linköping are examined twice yearly. Examinations normally consist of written and oral assessments as well as skill tests. The examinations aim to test understanding and application of knowledge rather than recall of details. In order to take examinations students must have shown that they can relate to patients. This ability is assessed in the communication skills training and after each clinical attachment. In addition there are three ‘phase’ examinations that occur after one and a half and two and a half years, and also at the end of the medical course. Students are video-taped while taking a history and making an examination of a patient. Together with the student, a general practitioner and a basic scientist review the video-tape. Interpersonal skills, physical examination skills and understanding of signs and symptoms are assessed. The first two-phase examinations also include an information search in the library. For this, the student defines a problem and after three to four hours of searching, the findings are presented to examiners. Of course, studies are more intense just prior to an exam but the way we are assessed encourages me to study throughout the year, not just by ‘cramming’ before exams.

The student’s voice

I soon got fed up with all the evaluation forms we had to fill in after lectures, labs, exams, at the end of term, etc. Later, I understood how crucially important it is to give feedback to people designing the course. As a result of this feedback, lecturers that are not effective teachers may be replaced. Despite the high costs involved in some learning sessions, for example, the use of professional patients, these have been retained because students consider them to be very valuable. At Linköping, students form an important part of various groups involved in designing the medical training. Since students are the ones to learn, it is
important that they take part in decisions about what and how they are going to learn, and how they are to be assessed.

'A bit harder, but a lot more fun' it said in the information I received before I started my medical training. Since I have not studied at a traditional university, I cannot tell whether PBL is more difficult or not. What I do know is that I have really enjoyed my studies, even though, in the early years of my course, I experienced a lot of frustration and anxiety, mainly through wanting to know exactly what was required for examinations. Looking back, I can see that my anxiety has decreased. In its place I have gained the confidence to know that if there is something I do not know, I can always find it out for myself.

I much appreciate the help I received from Glennys Parsell, Lecturer in Healthcare Education, and Professor John Bligh at Liverpool University Medical Education Unit, with the preparation of this article.

Medical Anniversary
JOHN HUNTER, 13/14 FEBRUARY 1728

John Hunter (1728–93) was born at midnight at Long Calderwood, East Kilbride, near Glasgow, son of a farmer and youngest of a family of 10. He died a world famous surgeon scientist on 16 October 1793 in London. Clift wrote that it was “the same day, and perhaps hour, that the unfortunate Marie Antoinette, Queen of France, was beheaded in Paris”. In September 1748, John joined his brother William, a successful obstetrician, in London, and in turn became anatomist, skilled dissector, army surgeon, surgical tutor, surgeon to St George’s Hospital, venereologist, and prolific and successful author.

His name remains evergreen in the Hunterian Museum of the Royal College of Surgeons of England and the Hunterian Society of London. – DG James

Courtesy of the National Portrait Gallery