Courses for tutors in problem-based learning. Current challenges at four Swedish universities

Helen Setterud[a,*], Madelaine Johansson[b], Gudrun Edgren[c], Gunilla Amnér[c], Elisabeth Persson[d], Ulrika Segersten[d], Lars Uhlin[e] and Marie Lidskog[a]

[a]*Faculty of Medicine and Health, School of Medicine (ILU), Örebro University;* [b]*Centre for Academic Development (PIL), Örebro Univeristy/Linköping University;* [c]*Centre for Teaching and Learning, Faculty of Medicine, Lund University;* [d]*Educational Unit for the Study Programme in Medicine, Faculty of Medicine, Uppsala University;* [e]*Unit for Medical Education, LIME, Karolinska Institute/Linköping University*

The key role of the tutor in problem-based learning (PBL) is to help students become self-regulated learners. Tutors need training to acquire the necessary facilitating skills for this task. The aim of this article is to describe and discuss how PBL tutor training is currently arranged at four universities in Sweden: Linköping University, Lund Medical Faculty, Uppsala Medical School and Örebro School of Medicine. Moreover, we seek to analyse how the content and format of the tutor training courses correspond to the desired skills and competencies for PBL tutors described in the literature. We draw especially on work coming out of three pioneering universities for PBL: McMaster University, Canada; Maastricht University, The Netherlands; and Linköping University, Sweden. One aim has been to construct a framework for analysis that uses categories specifying the knowledge base, capabilities and skills to support students' learning processes which characterise the full-fledged PBL tutor. For this framework, we have used the following categories: *Knowledge of PBL and pedagogical theories, Personal traits, Student-centeredness, Ability to handle group processes, and Subject knowledge.* We collected descriptions of the course design and content from the four universities, and assessed to what extent these categories were represented within the courses. Our results show that all categories inform the course content at all four universities, though the design varies between courses. In summary, we show that the four PBL tutor training courses are all designed to enable participants to experience PBL first-hand both as members of a tutorial group and as tutors. They all also include a theoretical base and offer opportunities for discussion and reflection with peers; however, there are some differences in design between the courses. According to participants, all four courses provide good preparation for the tutor role. Yet, we see a need for the programmes to organise continuous educational support for tutors after they have started their work with groups of students.

Key words: Courses for tutors in PBL, Educational Development, Problem-based Learning, Learning by doing, Reflection

INTRODUCTION

The authors of this article all have extensive experience of arranging courses for tutors in problem-based learning (PBL). We know each other from the Swedish PBL network, and have there identified a need to discuss if and how our courses meet participants' needs for preparation for their

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task as tutors. We believe that such a discussion can be of interest for others who are running or developing similar courses or other teacher training programmes within higher education. In Sweden, the Faculty of Health Sciences in Linköping pioneered by introducing PBL for all health professional study programmes in the 1980s. Since then, PBL has been implemented to varying degrees within, for instance, psychology, environmental science and engineering teaching at Linköping University. During the 1990s, the Medical Faculties in Lund (speech therapy, physiotherapy, medicine and later audiology, occupational therapy and biomedicine) and Uppsala (mainly medicine and nursing) introduced PBL in their curricula. In Uppsala, PBL groups in medicine were first limited to the sixth and seventh semesters (internal medicine) out of eleven, but used throughout the curriculum from 2006. In 2011, Örebro University Medical School started a new medical programme taught entirely as PBL.

PBL and the tutor

PBL was developed in the context of medical education in North America in the late 1960s and was soon seen as a relevant and appropriate teaching-learning format for all health professionals (Barrows & Tamblyn, 1980). One goal was to educate competent doctors that were prepared to handle clinical problems. Another goal was to manage the curriculum overload that was common in medical schools at the time. By using authentic, ill-structured and work-life related scenarios as the starting point for learning, it was expected that the most relevant learning issues and material would be covered by the students and that deep learning would be achieved. During the years, PBL has been applied in different settings, not only medicine, and its effectiveness as a pedagogical method has been subject to an ongoing debate. The rich diversity of implementation and design of PBL has made it difficult to evaluate whether PBL is 'better' than other pedagogical models (Svinicki, 2007; Hartling, Spooner, Tjosvold, & Oswold, 2010; Donnér & Edgren, 2010).

In PBL, students are trained from the very start to tackle problems that are authentic but information-poor in a stepwise sequence of activities, the so called Seven-Jumps (Schmidt, 1993). In summary, the work on a PBL scenario/case can be seen as three main steps: opening session in groups (in turn consisting of different steps), individual studies, and discussion/end phase. A tutor supports the students and facilitates the process by posing questions that stimulate reflection as well as in-depth elaboration on information and suggestions for problem solving (Chan, 2014; Moust, 2010; Roberts, 2010; Silén & Uhlin, 2008). The students get used to work out and phrase their own learning goals, to search relevant information and to construct and reconstruct valid knowledge. In PBL, students are expected to take major responsibility for their own learning and develop approaches as self-directed learners. This pedagogical model also emphasises the value of interactive and collaborative learning (Moust, 2010; Taylor & Miflin, 2008). According to Biggs (2003), PBL is a good example of a pedagogical model that is constructively aligned. In small groups, students are presented to real-world problems, designed and adjusted to their expected level of knowledge and experience. They are guided by a tutor in the process of putting theory into practice. Biggs concludes that 'There is alignment all the way through, from objectives through teaching method, to assessment: all involve focusing on students doing what they should be doing, solving professional problems'.

In the Swedish context, the core concepts of PBL correspond closely to the Swedish Higher Education Act (Chapter 1, §8 and 9) which emphasises that students during their higher education shall develop competencies such as the ability to make autonomous and critical assessments,

'gather and interpret information at a scholarly level', solve problems and deal with 'complex phenomena', issues and situations. In addition, the Act specifies that students shall develop communication and collaborative skills to meet real situations in their future professional lives.

The role of the PBL tutor is primarily to be a facilitator who supports students' learning and group processes. Roberts (2010) states that while much has been written about the role and experiences of the students and lately about facilitation within PBL, very few studies focus on tutors' own experiences of their role. Our literature review shows that this still seems to be the case, and furthermore, that little has been written about PBL tutor training courses specifically.

In our literature review, we found several aspects of the tutor function relevant for our purposes here. De Grave, Dolmans, & van der Vleuten (2001) identify critical incidents that may occur in tutorial groups according to students. Most common are lack of elaboration, lack of interaction and unequal participation. The authors state that a tutor needs training in handling such situations. Other studies show that students perceive that the tutor's performance and competence have implications on group productivity and learning effectiveness, as well as on group dynamics. This in turn correlates to students' achievement in assessment (Dolmans & Wolfhagen, 2005; van Berkel & Dolmans, 2006). Chng, Yew, & Schmidt (2011) have studied what impact the tutor's subject-matter expertise, social congruence and cognitive congruence had on students' learning. They concluded that even though all three competencies are important for students' achievements, social congruence had the most positive effect on learning in all phases within PBL groups. This suggests that the tutor has an important influence on the learning climate of the group. Roberts (2010, p. 53) writes that teachers need to be trained in order to be prepared for the important task as PBL tutor. He also poses the question of whether tutor competencies can be taught or whether the capability to facilitate is 'naturally inherent'.

The role as PBL tutor challenges many teachers to take a different perspective on teaching and learning, and to develop new teaching skills to be able to function as PBL tutors. Williams, Alwis, & Rotgans (2011, p. 512) state that it should be of great value not only to focus on the 'dos and don'ts' of facilitation within the tutor development programmes, but also 'a focus on tutors' beliefs about learners, the psychological and emotional aspects of learning and communicating with adolescent learners'. Ho (2000, p. 30) describes that contemporary research 'shows that university teachers hold personal conceptions of teaching that are related to their teaching practices and also to the learning of their students'. In accordance with, for example, Ramsden (2003), Ho also describes that 'genuine improvement' regarding how teachers think about teaching and learning has to start with teachers' own conceptions and beliefs about key pedagogical issues. The pioneer in the development of PBL, Howard S. Barrows (1928-2011) stated that it is difficult to describe exactly the skills needed by a PBL tutor, though the key role is to help students become self-regulated learners. He quoted old oriental philosophy to illustrate this: 'Give me a fish and I eat for a day; teach me to fish and I eat for a lifetime.' (Barrows & Tamblyn, 1980, p. 105).

As described in the literature, the tutor plays a very important role as facilitator of student-learning processes in PBL-based education. Therefore, tutor training that includes opportunities for practicing being a tutor, experiencing occupying the student position and reflecting on learning issues together with colleagues and educational developers is commonly mandatory for new PBL tutors in Sweden and internationally (Koch et al., 1993; Des Marchais & Chaput, 1997; Moust, 2010).

In this article, we describe and discuss how tutor training is currently arranged at the abovementioned four universities in Sweden: Linköping University, Lund Medical Faculty, Uppsala Medical School and Örebro School of Medicine. We proceed to analyse how the content and format of the PBL tutor training courses correspond to the desired skills and competencies described in the literature.

METHOD

Framework for analysis

Initially, we searched for appropriate ways of analysing the Swedish PBL tutor training courses by drawing on a comprehensible description of the most important competencies of a PBL tutor. We found it fruitful to choose research artcles from three pioneering universities: McMaster University in Canada where PBL was founded (Barrows & Tamblyn, 1980), Maastricht University, The Netherlands, where PBL was first introduced in Europe (Schmidt & Moust, 1995; De Grave, Dolmans, & van der Vleuten, 1999; De Grave, Dolmans, & van der Vleuten, 2001; De Grave, Moust, & Hommes, 2003), and Linköping University in Sweden where PBL was first introduced in Scandinavia (Silén, 1996; Silén, 2006). From these sources we then developed a category scheme based on recurrent themes, which we, according to our own experiences as PBL tutors, agreed upon. The categories specify the knowledge base, capabilities and skills to support students' learning processes desirable of a PBL tutor.

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Knowledge of PBL and pedagogical theories
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- ability to reflect on his/her attitude towards PBL
- insight into and knowledge of different learning theories
- insight into and knowledge of PBL

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Personal traits
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- being able to reflect on his/her attitude towards students
- having self-knowledge of and insight into his/her role as tutor

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Student-centeredness
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- being committed to supporting students' learning and their lives in an authentic way
- being able to communicate in the language used by students

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Ability to handle group processes
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- having knowledge of group processes
- being able to create a good learning climate
- being able to support students to cope with insecurity
- having focus on the students and on what is happening in the group
- helping students to evaluate their work by stimulating reflection
- asking questions
- challenging students, for instance, to test new hypotheses

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Subject knowledge
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- knowledge of the subject-matter discussed by students
- knowledge of the context (for instance, the curriculum)

Data collection and analysis
In order to investigate the current design of PBL tutor training courses in Sweden, we collected information of course design and content from the four universities studied. From these data, we constructed a descriptive text for each course and also collated an overview in a table for clearer comparison between the four courses. During the construction of data presentation, we adjusted the table as well as the descriptive texts until we found a balance in level of detail for the four settings.

The data were then analysed using the framework for analysis described above. For each sub-category the data was analysed to assess whether and, if so, how each category was represented in the courses. The results were discussed among the authors to reach consensus.

ANALYSIS OF THE PBL TUTOR TRAINING COURSES
In this section, we present the key elements of the PBL tutor training courses at the four universities. In Table I, an overview of the courses is shown, highlighting similarities and differences in design. The descriptive texts are shown in Appendix 1.

General description
All the courses aim to introduce participants to PBL and group processes in PBL, and to prepare them for the role as PBL tutor. The courses last for three (Lund, Uppsala and Örebro) to four (Linköping) scheduled days of training, and also require additional time for individual study. The focus is on experiencing what PBL is, thus 'learning by doing', where participants act as students as well as tutors in PBL group sessions. In addition, all courses include self-studies and individual assignments, and some also include lectures (Linköping and Uppsala). The number of participants varies from 6-7 (Uppsala), 10-20 (Lund), 12-18 (Örebro) and 16-24 (Linköping). The number of participants is planned so that one or more small group(s) corresponding to the size of a regular PBL group can be formed.

Common to all courses is the heterogeneous groups of participants with different views on teaching and learning, as well as different conceptions of PBL. As many Swedish university teachers have attended courses on learning and teaching in higher education, this category can be expected to be familiar with principles of teaching in higher education as well as educational concepts such as constructivism and contextual and collaborative learning. However, many of our course participants are PhD students or post docs with no pedagogical training. Furthermore, many have a primarily clinical or research background, with little or no teaching experience, or may be more used to subject-based teaching, where the teacher has full control over the subject matter and literally transmits it to students. For those, the first encounter with PBL may evoke uneasiness and distrust of the model. Yet others have experienced PBL as students, which often means that they feel comfortable with this way of letting students take control of their learning, with the teacher as a guide. For them the challenge is instead to change perspective, from that of a student to that of tutor. It is also relevant to note that not all participants that join the courses intend to become tutors. In the newly started School of Medicine at Örebro University, the course is mandatory for anyone with a central faculty leadership position on the programme. It is also common for directors of hospital clinics to attend the course to learn more about the students that they will meet in their organisation. At the Faculty of Health Sciences at Linköping University, for instance, the course is mandatory for all prospective associate professors, irrespective of whether or not the person will later act as tutor.

Course evaluations from all four universities studied reveal that participants highly value the possibility to discuss with colleagues. In accordance to the findings of Williams, Alwis, &

Rotgans (2011), course participants also appreciate the 'learning by doing' design for learning about PBL and group facilitation.

After the courses, some form of continuous educational development is provided by all universities, though not always on a regular basis.

Analysis according to our category scheme
'Knowledge of PBL and pedagogical theories': Since PBL is both a pedagogical philosophy and an educational model, a theoretical approach is important during the tutor training courses. Also, only a small number of course participants have undergone pedagogical training. At Linköping and Örebro the course participants, among other learning activities, work with theory on PBL for their individual written assignments. At Lund, PBL theory is mainly included in the case-based discussions, whereas at Uppsala theory is discussed after role-play and also highlighted during the final scenario.

Within all four courses, achieving a self-reflective perspective by participants on their own attitudes and experiences is crucial. At Linköping, for example, participants work with a scenario about thoughts and expectations of students and tutors before a tutorial meeting. They are then moved onto meta-reflections on these matters in a PBL group with peers. At Lund, one way of ensuring a reflective approach is for each participant to write a reflection on either their own experiences of being a tutor or on what they have learnt from a colleague after interviewing her/him, or joining the colleague's PBL group. Uppsala uses, among other things, video-recorded role-play sessions, where different aspects of the process as well as tutor performance are analysed. An example from Örebro is the continual reflection on and scrutiny of the tutor role within the group after all group work. Furthermore, on all the courses, participants are challenged to manage difficult situations that may occur, and reflect upon possible tutor interventions together with peers and experienced tutors. At Lund this exercise also includes a panel of students. All courses use literature to further explore learning theories as well as theory on PBL and group processes, to help participants deepen their understanding of the role of the tutor. To further support learning, the literature is discussed at seminars where participants have prepared themselves by reading and reflecting on key theoretical works and concepts. In three out of the four courses, they are also asked to write an individual assignment. In two of the courses, at Lund and Örebro, learning outcomes explicitly state the importance of being able to reflect on and discuss the tutor role.

'Personal traits': All four courses support participants' ability to reflect on their attitude towards students and get insight into their roles as tutors by continuous meta-reflection on upcoming situations experiences from the PBL group sessions. These discussions are conducted with peers and course coordinators. Furthermore, all courses include aspects on theory of PBL and group processes, and highlight the importance of reflections on the tutor role, as a way of enabling continuous professional development.

'Student-centeredness': Being committed to supporting students' learning and their lives in an authentic way and developing an ability to communicate in the language used by students (that is, social congruence) are issues that participants reflect on during the courses. No less important is the ability to communicate at a theoretical level that is understandable for students. Student-centred education is emphasized in contemporary educational theory, and PBL is a

good example of such an approach. The participants apply theoretical perspectives on student-centred and student-active learning activities such as PBL group sessions, seminars, lectures and literature studies. In terms of the 'ability to communicate in the language used by students', this competence is not possible to develop and train in our courses since the PBL groups in the courses consist of peers rather than students. The ability to communicate with students is therefore more a subject for reflection and discussions than practice during the course itself. However, the encounter between teachers on our courses may well influence teacher identity and authenticity even if this is not addressed explicitly. The experience of being a group member during the course exercises may give some insight into students' situations, thereby favouring reflection on how to act as a tutor to facilitate students' learning.

'Ability to handle group processes': By basing the course design on active-learning methods, all course participants get the opportunity to, in some sense, 'live through' the process. They also read about PBL group processes, and in some cases (for instance, at Örebro) reflect upon group processes in a written assignment. By this design, the course participants experience different ways of intervention; for example, how, and when, to ask questions as a tutor. They also get the opportunity to focus on group processes and get support to reflect on what is happening and of alternative ways of handling different situations. In all the courses described in this study, discussions of and reflections on evaluation of group processes, as well as students' own learning processes, are central. The ability to challenge students to test new hypotheses is trained during small-group activities, and is also in focus during discussions and lectures. The possibilities to support students to cope with insecurity is discussed on all the courses and is in some sense also trained due to the fact that several course participants are themselves insecure regarding PBL as a learning philosophy and educational model, a situation that must be handled during the courses. An activity much appreciated by the course participants is the role-plays that are part of the tutor training courses at Linköping, Uppsala and Örebro. The course participants at Lund handle the training of critical incidents by discussions of examples, where also a student panel comments on these discussions and this is a much-appreciated part of that course.

'Subject knowledge': This category is by force of circumstance not covered in depth in tutor training courses, but is touched upon to a bigger or lesser extent. At the Medical Schools at Uppsala and Örebro, authentic scenarios borrowed from the undergraduate programmes are used, which in themselves offer examples of actual teaching material. Furthermore, in Örebro, some time is spent on presenting the medicine programme, intended learning outcomes for programme units, as well as a number of guidance documents available to tutors. At Linköping, representatives from different programs using PBL discuss comparable matters with participants so that they learn more about the context in which they will work. At Lund and Uppsala, tutors are later supported in this understanding of the larger teaching context by colleagues within the different programme units where the tutors will be assigned the role of PBL tutor. This is also the case for Linköping and Örebro, since the few contextual examples presented on the course itself are not sufficient.

In summary, we conclude that all categories listed, including the different aspects on these, are being subject to course content at all four universities studied. In our analysis, we found no categories in addition to those mentioned in the literature operating in any of the courses.

Tabell 1. Table I. Overview of Tutor Training Courses at Four Universities in Sweden.

Univeristy	Linköping	Lund	Uppsala	Örebro
Unit responsible	Centre for Educational Development (Didacticum)	Faculty of Medicine (Centre for Teaching and Learning/Med CUL)	Medical School (Educational Unit for the Study Programme in Medicine)	School of Medicine (Medical Education Unit/ PELU)
Courses held since	1980s	1990s	2004	2010
Course name	Introductory Course in Problem-based Learning (PBL) and Group Tutoring	Problem-based Learning	Course for Tutors in Problem-based Learning (PBL)	Course for Tutors in Problem-based Learning (PBL)
Programmes on which tutors will work	Medicine; preclinical and clinical, Psychology, The IT-programme, Environmental Science, Physiotherapy, Speech Therapy	Biomedicine, Medicine, Hearing Therapy, Occupational Therapy, Physiotherapy, Speech Therapy	Medical programme, occasionally Nursing, Biomedicine and Veterinary Medicine	Medical programme, lately also occasionally Chemistry
Participant background	Professionals as above, in some courses also external participants.	Professionals as above and from other subjects as Biology, Engineering and Psychology.	Mainly Medicine, but also preclinical and clinical teachers as well as som medical students.	Mainly medicine, Health Sciences and Natural Sciences.
Motives for attending the course	Becoming a Tutor. Manadatory to become Associate Professor at the Faculty of Health Science	Becoming a Tutor	Becoming a Tutor	Becoming a Tutor. To understand PBL. Manadatory for faculty with leading positions in the programme
Number of participants per course	16–24	16 (10–20)	6–7	12–18
Length of course	4 days	3 days	3 days	3 days
Scheduled hours	26 hours	15 hours	17 hours	20 hours

Univeristy	Linköping	Lund	Uppsala	Örebro
Additional work	16 hours for inidvidual assignment	5 hours for individual assignment	3-4 hours for individual assignment	4 hours for individual assignmnet, 2 hours for observation of an 'authenic' PBL-group
Main areas of th course				
Theory on PBL	Lecture and assignment (see below)	Case-based discussions	Role play follow-up, part of the final scenario	Assignment (see below)
Small-group work			Learning by doing	
Group processes	Discussions, lecture, scenarios	Case-based discussions	Discussions, lecture, final scenario	Discussions
Reflection/Metacognition			In all parts of the course	
Student perspective	Own experience, participants who are students	Own experience, student panel	Own experience, participants who are students	Own experience, student panel
Tutor perspective			Own experience, course coordinators' experiences	
Critical incidents	Reflection during the tutorial session, role play	Examples discussed	Role play, final scenario	Role play
Scenario used	Constructed by course coordinators; concerning PBL and group processes	Constructed by course coordinators	Handed in by participants, authentic scenarios from the subject area they will work in; final scenario on PBL-group dynamics and tutor role	Mainly from School of Medicine, i.e. authentic scenarios
Individual written assignment	Based on participant's own question related to PBL as well as to literature, discussion seminar	Based on experience and literature, discussion seminar	None, but individual studies shared at end/discussion session of course scenario	Based on literatur, shared with peers, discussion seminar
Continuous Educational Development	Tutor meetings are organised at the programme level	Occasional workshops	Tutor meetings held occasionally, mentoring system introduced 2010	Workshops, scheduled meetings for peer learning

DISCUSSION

The aim of this article is to describe and discuss how PBL tutor training courses are arranged today at four universities in Sweden and to analyse how the content and format of the tutor training courses correspond to the desired skills and competencies described in the literature.

Overall, we see many similarities between the four tutor training courses. All courses focus on learning by doing, with many opportunities of own experiences of group sessions and subsequent reflection at a meta level. All courses use literature as an important resource for knowledge. Participants come with different views on teaching and learning, as well as different conceptions and earlier experiences of PBL, and this provides a challenge for the course coordinators while also triggering fruitful discussions. Another challenge for course coordinators is negotiating the various impacts of participants who have been more or less forced to attend the course, some of whom may be either indifferent or even hostile to the concept of PBL, at least initially. It is, however, our experience that in many cases these more or less unwilling participants, by the end, express a positive view of both the concept and the course. The participants appreciate the active learning format with discussions with peers, experienced tutors and in some cases students.

Common to all new tutors is the need for time and space to explore their own beliefs about how we learn, to get insight into different theories of learning, and to understand the key elements of PBL. Furthermore, they need opportunities for reflecting on how we could hence teach in a way that is in line with current knowledge about how we learn. This is categorised as 'knowledge of PBL and pedagogical theories' and 'personal traits' in our study. The tutors' personal attitudes towards PBL need first to be exposed, and the tutors' views of the role of students as well as of the tutor, may need to be challenged. It is well known that norms, beliefs and values will influence how tutors' act in particular situations and thereby have consequences for students' learning (Taylor & Miflin, 2008). All tutor training courses studied spend plenty of time on reflection after participants' experiences of group work; this in order to provide space for verbalising attitudes and views. This is in line with the view by Bowman & Hughes (2005) that tutor training programmes may benefit from a focus on tutors' beliefs about learners, the psychological and emotional aspects of learning as well as the ability to communicate with adolescent learners. In the groups, the heterogeneity of participants' background as well as attitudes is the driving force of a good learning experience. One central aspect brought up in all courses is the importance of being true to oneself as a tutor. That is to say, for the purpose of a good learning experience for one's students, one needs to adopt a tutor style in line with one's personality. This is one underlying reason why so much time is spent on reflecting on participants' own experiences in situations that occur within the group sessions and on discussing rules for collaborative group work.

Tutors need to develop self-awareness and reflective skills, and become aware of what it means to be a reflective tutor, as discussed above. How then do the courses enable this? Our study shows that this is managed in several ways: primarily, by designing scenarios which promote reflective discussions, by assessing participants' performance as small-group tutors during the course, and last but not least, by providing opportunity for reflection related to the role-play sessions. The focus on reflection in these four courses in Sweden is in line with what is highlighted by research internationally. In a study from Maastricht University, concerning major trends in research on the tutor role, Dolmans et al. (2002) state that developing tutor skills should be done through faculty development strategies that stimulate reflection.

Since self-directed learning plays such a prominent role in PBL, tutors also need to acquire specific skills to support a constructive learning environment and to be able to challenge students. During the four courses, tutors are trained to acquire such skills, but they also need training with real-life students to be able to act in ways that support learning processes and group interactions. Furthermore, a highly relevant aspect of a tutor's skills is the ability to handle critical incidents that may occur in tutorial groups. De Grave et al. (2001) have identified that the most common critical incidents according to students are down to lack of elaboration by the tutor, lack of interaction between students and between students and the tutor, and unequal participation. The authors state that a tutor needs training to be able to handle such situations, which also is the case for all courses we have studied.

Today, in Lund as well as in Örebro, students participate in the courses to give their views on what they need from tutors and how they perceive different actions taken by tutors. Students have previously been invited to courses in Linköping, while today the opportunity to discuss with students is possible due to the fact that in almost every course some of the participants have experiences of studying in a PBL curriculum. In Uppsala, students are commonly participants, though in the present course set-up, student participation is not guaranteed. The opportunity to discuss the tutor role with students has a strongly positive impact on participants. In all four courses, most often there are a few participants with experiences of being former students in PBL. Hence, the student perspective is brought up in all courses in one way or another.

We have earlier specified that it is important for tutors to have knowledge about the subject discussed by students, as well as the curriculum, so that they understand how the PBL group sessions are arranged together with other learning activities such as seminars, lectures, skills training etc. to contribute to students' learning. These matters refer to the category 'Subject knowledge'. The possibilities and the need for including these aspects in the tutor training courses vary between the four universities. At Uppsala and Örebro, a majority of participants will act as tutors on the medical programmes. Therefore, authentic material from these programmes is used, which entails a learning experience *per se*. In contrast, Linköping and Lund train tutors who will later act in a great variety of programmes, and consequently the possibility to use programme-specific material is limited. For all tutors, the continuous support from the programmes on which they will be teaching is highly significant.

The tutor training courses at the different universities are all evaluated either orally at the end of the course or both orally and by an anonymous questionnaire. The contents of these evaluations are used by the course coordinators for continuous course development. In addition, other forms of evaluation have been carried out at some of the universities. Course participants appreciate a 'learning by doing' design to learn about PBL and group facilitation, in accordance with the findings of Williams et al. (2011). In 2010, the tutor training course in Uppsala was evaluated by a questionnaire sent to 250 tutors of which 100 replied (Persson & Hoppe, 2010). The main findings were that the course outline was considered relevant as preparation for the tutor role, that feedback from students during PBL group session evaluations can be valuable tools for continuous professional development, and that there was a need for more support from course directors or peers. Therefore, mentorship by experienced tutors was introduced from 2010 in Uppsala. In a report from Lund (Donnér & Edgren, 2006) and in Bachelor of Science (Harangi, 2011) and Master of Science (MSc) theses (Karlsson, 2014) from Linköping and Uppsala respectively, medical students' views on PBL, as well as on the role of the tutor, have been studied and problematised. The results show that the students find the tutor important for the quality

of their work, both for the group processes and the in-depth studies of the subject matter, and they are not fully satisfied with the support they get. The students request well-trained tutors and as the universities included in these studies already offer tutor training, further training and continuous development of tutor training skills may be needed. In 2013, an MSc thesis by Harangi focused on the tutors' perspective. One finding was that being involved in a PBL group motivated the tutors themselves to continuous educational development as they wanted to support the PBL groups in a professional way.

We found that most participants, after a few days' course, describe that they feel prepared enough to be able to function in a group of students. However, we are also aware of that the term 'learning by doing' fits very well into how tutors capture a more solid base to work from, after having interacted with different student groups. The educational idea of PBL may be understood in various ways by different individuals, and different interpretations of ideas deserve respect (Taylor & Miflin, 2008). It may take time for tutors to feel comfortable in acting as facilitators. New tutors often feel insecure about their role and are strengthened when they have the possibility to meet other tutors, as well as educational developers, and discuss different aspects of PBL tutoring. It is not only desirable for the tutors themselves that they have opportunities for exchanging experiences with other tutors, for discussing difficulties encountered in groups, and for further reflecting on their role as tutor, in workshops or other fora (see, for example, Moust, 2010, on how such sessions may be arranged), this type of training and support is also highly significant for the continuous educational development of the organisation.

We have used research from three pioneering universities to analyse to what extent the four studied PBL tutor training courses focus on the competencies needed by tutors. It can be argued that the competencies needed by tutors may have changed over the years. We believe that the fact that a new study, specifying what tutors see as good facilitation, in many ways correspond to the competencies we chose, strengthens our result (Chan, 2014).

In summary, we show that the four tutor training courses studied are all designed to offer personal experiences of what PBL is, a theoretical base and opportunities for discussing and reflecting with peers, though there are some differences in design. According to participants, they become prepared for their role as tutors. Yet, we see a need for the programmes to organise continuous educational support for tutors, after they have started their work with groups of students.

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APPENDIX: DESCRIPTIONS OF THE COURSE DESIGN AND CONTENT FROM
PBL TUTOR TRAINING COURSES AT FOUR SWEDISH UNIVERSITIES

Linköping University
Madelaine Johansson and Lars Uhlin

At Linköping University, PBL was implemented in all programs at the Faculty of Health
Sciences in 1986. This shift in pedagogy put a great demand on introducing staff to PBL and
training of tutors. From the start, introduction to PBL for teachers/clinicians and training for
those becoming PBL tutors has been mandatory. Different activities and courses were mainly
organized within the Faculty (Kock et al., 1993). During the 90s several other programs at the
university started with PBL which called for joint courses at the university level. From the late
90s till today, PBL courses are open to all staff at Linköping University, nowadays organized by
Didacticum (formerly the Centre for Education and Learning).

Learning outcomes: After the course, participants will
- *be able to explain the basic theoretical foundations of PBL*
- *have the basic skills for successfully tutoring PBL groups*
- *have a good understanding of how different learning activities support students'*
  learning in PBL-based education (for example, tutorial work, resource activities, semi-
  nars and lectures)
- *have a good understanding of the significance of group processes in tutorial work*
- *be able to use different tools to support students' learning in tutorial work*
- *have a good understanding of the various applications of PBL at Linköping University*

Since the autumn semester 2013, this introductory course consists of six full days: four spent
on campus and two for individual study and writing of the course assignment. The first day is
devoted to an introduction to PBL and related learning theories. It also includes a lecture on
group processes. In Linköping, the seven jumps have been arranged in a so-called PBL circle,
containing nine steps. This PBL circle is discussed in depth to get insight into the learning ratio-
nales for the different steps and also as a preparation for day two when the participants get the
opportunity to work interactively as tutors and tutorial members within this course setting. The
scenario which they work through is made up of a description of the thoughts and expectations
of students and tutors before a tutorial meeting. The tutorial session ends when the group has
formulated a number of questions. During the afternoon, representatives from different pro-
grams using PBL at Linköping University present and answer questions. Course participants
also have time for individual studies related to their tutorial work within the course. Day three
consist of tutorial work related to the last phase of the problem solving process; discussing and
applying new knowledge as well as evaluating, and the afternoon is dedicated to role play and
evaluation. During the final day of meetings, day four, participants attend seminars in which
their individual course assignments are discussed. They are then given a selection of evaluation
documents for different purposes related to tutorial work. The day and the course are ended by
an oral evaluation and participants are also asked to respond to an electronic course evaluation.
Course participants at Linköping are learning PBL by doing PBL. The design of using PBL
learning activities, such as tutorials, seminars, lectures, role plays and individual work, has

been practiced since the very beginning in the 1990s. During tutorial sessions participants get to experience what it is like acting as both tutors and observers with the purpose to get the opportunity for practical training as well as metacognitive discussion and reflection. It is clear from previous course evaluations that this design is deeply appreciated and experienced as highly supportive of the learning process.

Faculty of Medicine, Lund University
Gudrun Edgren and Gunilla Amnér

Problem-based learning was introduced at the faculty of medicine in the 1990s in order to create opportunities for students to be more active learners and to prepare them for working in and leading teams. Some 20 years later many course participants have personal experience as students in PBL-programs. The content of the course has developed accordingly.

Learning outcomes: on completion of the course, the participants shall be able to
   - *explain the learning principles for PBL*
   - *use 'the seven steps'-structure in a group*
   - *discuss the role of the tutor in supporting the students' learning and the development of the group, based on existing frameworks and theories*

The course is designed so that participants work in small groups starting from problems or assignments using prior knowledge in the group. In this way the participants work through: learning taxonomies and theories; group functioning; process and structure; evaluation and feedback; the role of the case in PBL; challenges for the tutor in PBL. The problems used to initiate group discussions vary. The start of the course is a session where participants activate prior knowledge of and opinions on PBL. A film that has been produced at our faculty is used to start discussions on both process (seven-jump) and the role of the tutor. Course participants practice this by being students in a PBL-group that works through the seven jumps. When teaching PBL we use cases with a content unrelated to PBL and to the participants' own disciplines, since this makes it easier to discuss the various elements of PBL. Learning taxonomies and theories are introduced through a case whereas group functioning draws on participants´ own experience of working in groups. Challenges for tutors consist of incidents in PBL-groups. The groups of participants are to present how they would deal with these incidents if they were tutors and a panel of students responds to the suggestions. Each session ends with reflections and the course leaders can answer remaining questions. The first two days of the course ends with an oral evaluation to practice giving constructive feedback. The initial session on prior knowledge and opinion is returned to and if needed revised.

   After the first two days the participants have an assignment to be reported in the final day of the course. The participants can chose to write a reflection on their experience of being tutor or join a colleague who is a tutor. Another option is to interview tutors about their experience and reflect on their practice. The written assignment should be based on relevant literature. The presentations on the third day of the course are followed by a discussion facilitated by a course leader, thus giving opportunities to rehearse what was brought up during the first days. The course ends with a written anonymous evaluation.

   The participants appreciate that they have had opportunities to be active during the course and been able to learn by doing. The also appreciate the presence of the students very much.

Medical School, Uppsala University
Elisabeth Persson and Ulrika Segersten

Since the beginning of the 90s, PBL-like sessions were used in the 6th and 7th semesters (internal medicine year). In 2006, a new curriculum with more student-activity was started. An important change was the introduction of small-group and case-based work with a tutor, in each group, and throughout the curriculum. Initially, the term PBL was not used, and the set-up is slightly modified from what is common in PBL. The 'step-model' is similar to the seven jumps, but the brainstorming is somewhat more controlled and the tutors have more specific instructions for the subject content than usual. The term PBL has been used more frequently in later years.

The first 3-day tutor course was introduced in 2004. As common for all tutor training courses, it aims at *giving practical training as well as theoretical background to PBL and group dynamics*, though we do not use explicit learning goals. Nowadays, about ten courses are given each year. The course coordinators are themselves experienced in PBL-tutoring and/or working with group dynamics.

The course starts with an introduction, led by the course coordinators, where the set-up of a PBL group session is introduced and common rules for collaborative group work are discussed.

The seven participants of each course form a group and take turns acting as tutor as well as being group members and the scribe, i.e. experiencing both tutor and student perspectives. The group works with the first steps in start sessions of PBL-cases (as used in the Medical School curriculum or designed specifically for the tutor training course) on subjects that the tutor in action is familiar with. All role play-sessions are video-recorded and a few minutes from each session will be shown and discussed directly after the session. Different aspects of the process will then be high-lighted by the course coordinators, e.g. the importance and value of the steps in the step-model as well as the role of the tutor for both group dynamics and in-depth subject elaborations.

Considering group dynamics, a lecture is given by a psychologist (one of the course coordinators). The last PBL-case in the course will be worked upon in full, which means that both start session, self-studies and an end session of the case will be performed, in opposite to the above described role plays where only a start session is exerted. The PBL-case is about a dysfunctional group and tutored by the psychologist, and all the participants constitute the group. The learning objectives of this case should include PBL as a philosophy/theory, the role of the tutor and how group dynamics, the step model and the rules for collaborative work can be used by the tutor in order to facilitate the PBL-sessions.

After the PBL-case closure the course finishes with remaining questions and discussion with all course leaders, followed by an oral course evaluation.

In 2010, the tutor training courses were evaluated (Persson & Hoppe, 2010) and the main findings were that the course outline is considered relevant, and that student feedback from group session evaluations can be valuable tools for continuous professional development but that more support from course directors and peers was requested, why a mentor programme was started.

School of Medicine, Örebro University
Helen Setterud and Marie Lidskog

The Medical School at Örebro University started January 2011, with a curriculum entirely based upon PBL. Initially, Maastricht University supported us in educating PBL tutors, and since September 2011, the courses are arranged by educational developers at the programme. Courses are mainly held at Örebro University, and since 2013, also in Karlstad and Falun, since some of our students do their clinical placements there.

Learning outcomes: on completion of the course, the participants shall be able to
- *act as PBL group tutors in the Medical Programme*
- *reflect upon the role of a tutor and discuss these matters with colleagues*
- *describe the principles of PBL for students or colleagues lacking former experience on PBL*

The course is based on experiential learning; participants learn about the different steps and aspects of the PBL-process through experiencing PBL; by being a member, a chairman, a script or a tutor in a PBL-group. The experiences are explored in discussions after each phase of the process. The first section of the course is one and a half day long. After a short presentation of the participants including their experiences of PBL and of tutoring, we introduce the medical curriculum, to illustrate the context. In order to introduce the process and the different roles in the process, we show a film of a PBL group session, and reflect on it. Then, we form groups that work together through all steps in the process. A course coordinator acts as facilitator/ tutor, which offers the participants an experience from a student perspective. The group sets up a contract for common rules for collaborative group work, in line with what is done when new student groups are formed. The group works with a first scenario following the seven jumps, and finish by setting up learning goals. Day one ends with time for individual studies. Day two, the group discuss their questions and learning goals and evaluate their work. After reflection, an authentic PBL-scenario in medicine is presented and one of the participants acts as tutor, thus turning the focus to the tutor perspective. We then show examples of a variety of scenarios used in the programme.

Course day three takes place after 1-2 weeks. To stimulate a deeper theoretical reflection on learning in PBL, all participants prepare a short reflective paper based on literature, and discuss these at a seminar. This last day also include more role-plays, focusing on problematic situations that can occur in the PBL sessions, with participants acting as tutors. We also invite students to come and answer questions. Some time is spent on practical issues such as details on when tutor groups are scheduled, how many hours one tutor will be allocated for, scheduled meetings with other tutors for continuous educational development etc.

The course includes a visit in a real PBL-group on the medical program. This gives an opportunity to meet and see students and their tutor in action. The course ends with an oral evaluation in group, after which participants respond to a paper-based, anonymous evaluation.

Participants appreciate the active learning format with peer learning in group discussions, and especially the role plays, focusing on critical incidents. They also feel secure when having the possibility to discuss with students, as well as experiencing an authentic PBL group session.