

PBL guide

Handbook of problem-based learning for
students and teachers at the Faculty of
Medicine and Health Sciences



Our vision

It is the vision of Linköping University to be “a university of international standing – where people and ideas converge and develop”. One way of fulfilling this vision is to attract and educate students and PhDs about the development of a sustainable society in a changing world.


The Faculty of Medicine and Health Sciences aspires to lead the development of teaching methods for healthcare students, and to educate professionals so they will be well-equipped to meet future challenges and changes within healthcare. In fulfilling this vision, the teaching approach used will be based on the latest theories and research in education and learning.

Core values

The educational profile encompasses a common, problem-based and student-centred approach to teaching and learning. This approach stimulates and supports the development of professional expertise in the student, which comprises critical thinking, independence and an ability to collaborate. The work procedures challenge the student to take responsibility for learning in an active and independent manner, in which they formulate questions, seek knowledge, and assess and evaluate the knowledge gained in dialogue with their peers. The students study together, both within a specific professional programme and across programme boundaries. They do so in order to learn with, about and from each other, and to gain experience of collaborative working. The role of the teacher is to support the students in their learning. The educational profile can be summarised in seven principles:

Principles for PBL

1. Learning is an active process that depends on an experience of relevance and meaning.
2. Students and teachers are co-owners of the learning.
3. Students take responsibility for their own learning.
4. The teacher challenges and supports the students' learning.
5. Work in tutorial groups is the central learning activity.
6. Reflection and evaluation are necessary for learning.
7. Assessment is used both to support learning and for certification.



1. Learning is an active process that depends on an experience of relevance and meaning.

The first principle requires students to take an active approach to their learning. The learning process takes its starting point in scenarios based on real situations that lead to the individual study subjects becoming integrated, and enabling theoretical concepts to be understood in context. Understanding theoretical concepts in context creates relevance and meaning, which supports learning and develops understanding suitable for the future professional role.

2. Students and teachers are co-owners of the learning.

Students are expected to actively formulate their learning needs, based on their pre-understanding relative to a certain object of learning. Thus, the route to the learning outcomes of a course may be different for different students and groups. The relationship between the object of learning and the students' interpretation of current learning needs shapes a shared ownership of the learning task between students and teachers, which builds on mutual flexibility and trust.

3. Students take responsibility for their own learning.

A student-centred approach is based on the idea that the students can and will identify their own needs for knowledge. Students' understanding of the relevance and meaning of the acquired knowledge is a driving force and a fundamental requirement for the students to take responsibility for their own learning. The students have a responsibility to continuously evaluate the content and focus of their learning process, in order to calibrate their learning in relation to the intended learning outcomes.

4. The teacher challenges and supports the students' learning

The educational working methods are designed to give students an opportunity not only to understand, but also to manage the situations they will face in professional life, and to develop their own learning. The working methods also involve individual teachers taking different roles, such as supervisor, resource, lecturer, expert, etc., in different contexts. Independently of the working methods and roles adopted, the approach of the teachers, the questions they pose and the other interventions they make are designed to challenge students to enter into dialogue and undertake active processing of their learning, through a critical examination of arguments and sources of knowledge.

5. Work in tutorial groups is the central learning activity.

Work in tutorial groups means that students repeatedly learn together through dialogue and collaboration in small groups under supervision. The students build on the common knowledge and experience of the group, to formulate shared questions and learning goals. In tutorial groups, students learn to understand their own knowledge relative to that of others, and in this way they develop an investigative and critical approach to knowledge. Meetings of tutorial groups also give the students an opportunity to practise generic skills, such as communication, collaboration and leadership.

6. Reflection and evaluation are necessary for learning.

Reflection is a component of the students' responsibility for their learning. Reflection allows the students to gain an overview of their learning and in this way to become conscious of it. An awareness of what one has learnt and how this has occurred deepens understanding. Reflection is a resource for lifelong learning.

7. Assessment is used both to support learning and for certification.

Formative feedback is intended to support the learning process. This is particularly important when working in tutorial groups in order for the students to obtain help with identifying areas in which they need to continue development. **Summative assessment** is carried out in association with examinations, and determines whether the student has achieved the learning outcomes. Feedback, from both formative and summative assessment, needs to be forward-looking, and must have a clear relationship with the content and working methods of the course.

Tools for learning

Work in tutorial groups is a central activity in problem-based learning. A variety of supportive tools are suggested to facilitate problem solving, collaboration and learning, not only in tutorial groups but in all learning settings. These tools may constitute starting points for conversation and work, and they may aid in the support and evaluation of the various processes that interact during learning. The examples of tools presented in the PBL Guide are intended to be used by students and teachers in their day-to-day work.

Group contract

A group contract is used as a team-building tool to enable students to get to know each other through discussion, negotiation and compromise, and to discuss and clarify the various preconditions for collaboration in the group. A contract can be used in all forms of groups and is particularly useful for tutorial groups. The contract is decided by the students at an early stage of the course. It is intended to illuminate the expectations the students have of each other in relation to the way in which they learn with, about and from each other. The contract may specify the structure of the work, including factors such as the disposition of time, and it may designate various roles and functions, such as chairman/moderator, secretary or observer. The group contract makes it possible to reflect on how the work in the tutorial group and its supervision contribute to developing knowledge.



The lifebuoy

The lifebuoy is intended to support the process of the tutorial in its initial phases, just like a swim ring when learning to swim. When you know how to swim, you don't need a swim ring. The lifebuoy is an aid to establishing a common way of working with problem-solving, learning and collaboration in the tutorial group. The lifebuoy consists of core questions that the students pose in order to create a systematic way of working in the scenario. The processing is also dynamic, which means that it may be necessary to move between the core questions several times during the process.

The first core question leads to the students becoming oriented towards the subject of the scenario, and what appears to be central for them to understand. The next core question leads the students to discuss the associations that the scenario stimulates, and what they already know. Ideas and suggestions for in-depth study are sorted and set in order of priority. The group then agrees about their existing learning needs, and the knowledge that is to be gained before the next meeting.

After independent study, the tutorial group meets again to discuss in general how the new knowledge answers the group's questions. This knowledge is then used to illuminate the problem in the scenario. In conclusion, the group is asked to summarise and evaluate what the members have learnt and relate this to previous scenarios, the course learning outcomes, and further learning needs that have become apparent during the discussions. Finally, the way in which the group has worked and the quality of collaboration within the group are evaluated.

What is our understanding of the scenario now?

What was central to understanding the scenario? How is the scenario related to the learning outcomes of the course? Are there any further learning needs? Evaluate the problem-solving activities that have taken place and the collaboration.

What do we already know?

What associations does the scenario stimulate?
Sort any ideas and suggestions, and formulate them as problem areas. Select relevant areas to study in more depth.



What have we learnt?

Discuss how the knowledge that has been gained answers the questions that the group formulated.
Assess sources and arguments.
Highlight the problem in the scenario.

What do we still need to know?

Formulate the learning needs in the form of common and individual questions that are to be answered and discussed at the next meeting.

Individual reflection

Reflection is important for learning. As preparation for the tutorial, write a summary of what you have read and learnt from your reading. This document presents how the student has collected and understood knowledge, as preparation for the coming discussions. The text is shared with members of the tutorial group and the supervisor. An awareness of the development of the other students, the way in which they use sources and their reflections support the work necessary to summarise and collate the individual contributions into common knowledge in the tutorial group. Individual reflection documents can also be used by both students and teachers to provide feedback.

The students design their reflection independently and without constraints. Some questions that can be used as support:

- How did I choose between different sources of knowledge?
- How can I formulate in my own words what I have learnt?
- How can I respond to the learning needs of the group?
- Which new questions arose?
- Is there anything I would like to discuss with the group in more depth?

Tutorial group discussions

Conversation as exploration

It is central to the work of tutorial groups that each student develops an understanding of his or her own knowledge relative to that of the other members. This requires that the group functions as a group, with a common objective. Discussions in the tutorial group take different forms and cover different topics, depending on the purpose. Most of the group discussions should be directed towards applying an analytical and professional approach based on facts. This requires that the members conduct an exploratory and critical discussion of their own knowledge and that of the others. The drawing illustrates the various natures of tutorial group discussions: they may be professional or private, superficially descriptive or deeply analytical. The tool is used to support evaluation of how the discussions in the tutorial group promote learning.



Evaluation of tutorial groups

An evaluation of the work of a tutorial group is carried out by the students and their supervisor based on three central processes that interact: problem-solving, learning and collaboration. The purpose of the evaluation is to develop the work of the tutorial group and bring about progress. It is intended to be carried out together and at regular intervals by the students and their supervisor. The questions below can be used as a basis for the evaluation.

- Was the management of the scenario successful/ unsuccessful?
 - Base the discussion on, for example, the lifebuoy and the students' individual reflections.
- How did the work of the group contribute to learning?
 - Base the discussion on the course syllabus and study guide.
- Did collaboration function satisfactorily?
 - Base the discussion on the agreements stated in the group contract.
- Has the group received feedback and support from their supervisor?



Self-assessment of work in a tutorial group

Problem-based learning is based on the students taking responsibility for evaluating the content and focus of their own learning process, and being able to identify their need for further knowledge. This requires that the students take an active approach to their learning. Self-assessment can be used in addition to, or as an alternative component of, the work in tutorial groups. Self-assessment is intended to stimulate students to reflect upon their ongoing learning process by examining the following statements:

- I establish my own objectives for learning, in addition to those of the group.
- I contribute to hypotheses and explanations when dealing with the scenario.
- I contribute to the progress of work in the group.
- I present arguments to support and justify my ideas in the group, using my own words.
- I summarise the main points of the group discussion.
- I reflect upon my own learning based on the work in the tutorial group and my own objectives.
- I connect new knowledge to my previous understanding.

Assessment of tutorial group work

A student-centred approach is based on a conscious decision to view the student as a future colleague and co-worker, with the ability and desire to communicate and participate in the learning process. The student has the ability to identify learning needs, seek relevant information and discuss the knowledge acquired in a dialogue with fellow students and teachers. Against this background, work in tutorial groups is primarily to be seen as a working method in which active participation contributes to the development of knowledge and skills. The tools focus on the conditions required for tutorial group work to support the learning process in a formative manner. They may also constitute the basis for a summative assessment.



This PBL Guide contains an overall description of how the visions, core values and principles of problem-based learning interact and support the pedagogical profile of the Faculty of Medicine and Health Sciences, Linköping University. The guide also describes a set of teaching tools for students and teachers.