

## **PBL in Educational Psychology – Potentials and Challenges**

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### **ABSTRACT**

*This article discusses practical and theoretical aspects related to PBL. In the first section of the article, potentials related to professional training of forthcoming educational psychologists following PBL-principles are analyzed. It is argued that PBL constitutes a good platform for creating stimulating interplays between theory and practice. In the second section of the article we discuss some of the theoretical underpinnings in PBL. We discuss whether PBL is prone to a 'form-content-dualism', in which attention is centred on the form (the problem) and less on the content of learning. Afterwards, it is discussed whether PBL potentially leads to an individualization of the learning process. Finally, we discuss whether the PBL-literature primarily tends toward portraying student learning as a matter of acquisition of knowledge, and therefore ignores the ontological and identity-related processes in learning.*

### **SECTION 1: PROBLEM BASED LEARNING**

Problem-based approaches to learning have a long history that at least can be dated back to John Dewey's (1938) work on the relation between experience and learning/education. PBL is thus part of a tradition in which the importance of meaningful and experiential learning is highlighted. Other than the theoretical background in Dewey, PBL is inspired by as different theoretical approaches to learning as the theories of Piaget, Lewin, Negt, Vygotsky, Kolb, Lave & Wenger, Illeris (Kolmos et al., 2004). Although these approaches have different theoretical roots, they all highlight how learning is an active process and how the gaining of experience is an important part of the learning process. Despite the somewhat different

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theoretical roots, PBL in its various forms, thus seems to highlight learning as a student centred activity (Norman & Schmidt, 1992; Fox, 2001; Coffin, 2011).

PBL is a way of teaching in which students learn through facilitated problem solving, and according to most notions of PBL, learning is most fundamentally about providing students with an active role in the acquisition and production of knowledge. In PBL, student learning is centred on the solving of a complex problem that usually does not have single answer (Hmelo-Silver, 2004).

There has been conducted a lot of research on the role of the problem in PBL. Some of the general findings from this research is that a problem should: (1) be authentic; (2) be adapted to student's level of prior knowledge; (3) engage students in discussions; (4) lead to the identification of appropriate learning issues; (5) stimulate self-directed learning and (6) be interesting and relevant (Schmidt et al., 2011: 795).

From being an alternative approach to teaching and learning, PBL has become increasingly popular, and is nowadays used in numerous variants on almost all educational levels and fields (Laursen, 2004). The widespread distribution of PBL also means that PBL can take different forms according to the specific educational contexts, but there still seems to be some common goals or aims in the problem-based curricula. According to Hmelo-Silver (2004: 239-40) these goals aim at students:

1. constructing an extensive and flexible knowledge base;
2. developing effective problem-solving and metacognitive skills;
3. developing self-directed, lifelong learning skills;
4. becoming effective collaborators; and
5. becoming intrinsically motivated to learn.

Ad 1. Basically, the goal of all learning curricula is to have students create an extensive and flexible knowledge base. But the path leading to this goal can take various forms. In PBL, an ongoing discussion is: How much knowledge is needed to formulate or construct a 'good' problem?

If the concept of PBL is taken literally, then learning should always take its starting point in a theoretical or practical problem. But a literal interpretation might lead to a rigid ideology in which all learning - no matter what – starts with a problem. In this context, Christensen's (2004: 94) question: "*Should a 'good' learning process always start with a problem?*" becomes relevant. It could be argued that a prerequisite for working constructively with a problem is a basic knowledge base. So instead of a rigid ideology in which all learning takes its starting point in a problem, the central tenet in PBL is that the construction of extensive competencies goes beyond having students learn the facts of a single domain. Instead student learning should be relevant such that it reflects or exemplifies relevant societal, material and

social structures, which usually involves integrating information across multiple domains and working with exemplary topics and problems.

Ad 2. In PBL, the development of relevant competences includes the ability to apply appropriate metacognitive and reasoning strategies (Hmelo-Silver, 2004). Metacognitive skills are usually conceptualized as an interrelated set of competencies for learning and thinking and include many of the skills required for critical thinking, problem solving, reflective judgment and decision-making. Metacognitive skills further refer to the planning of one's problem solving, and to the evaluation of whether one's goals have been achieved. In other words, the development of metacognitive skills is the process in which students learn to learn.

Ad 3. An important goal in PBL is that students take responsibility for their own learning processes. The PBL-literature advocates that the development of students' self-directed learning can be used to enhance content knowledge and foster problem-solving, communication and critical thinking skills (Ibid.). Schmidt et al. (2011) also refer to research that indicates that students in PBL-learning settings become more self-directed as the years of study progress compared to students who are not in a PBL-curriculum which is often associated with students getting trained at creating solutions to real-world-problems.

Ad 4. Becoming effective collaborators implies knowing how to function well as part of a team. In most PBL-settings, students collaborate in small groups. The benefits of small-group collaboration have been discussed extensively in the PBL-literature (Schmidt et al., 2011). The research indicates that (1) small groups provide a platform for the development of friendships among students; (2) allows for closer contact between teacher and students compared with those possible in a larger class, (3) the regular meetings in project groups motivate students to be diligent in their self-study and to meet the deadlines for work agreed by the group and (4) that students in small groups collaboratively construct a more distributed knowledge base (Ibid.; Ryberg et al., 2010).

The general benefits of engaging in small project groups also have been found to prevent drop-out and might be a reason why students in PBL-curricula graduate at a faster rate compared to students at conventional schools (Ibid.).

The fact that PBL-students become effective collaborators also tends to be highlighted as an appreciated asset when students after graduation apply for jobs.

Ad 5. Finally, an important aim of PBL is that students become intrinsically motivated, meaning that learners work on a task motivated by interests in the learning-topic (Hmelo-Silver, 2004) rather than extrinsic motives as examinations and marks.

PBL holds as a premise that solving theoretical or practical problems is more motivating than engaging in a traditional scholastic learning process. But to be motivating, the problems should provide students with the possibility of applying their knowledge in an appropriate, stimulating and productive fashion. In other words, the character of the problem is supposedly a factor that mediates students' motivation for learning in PBL-curricula.

The abovementioned PBL-characteristics do clearly not capture all understandings and definitions of PBL. De Graaff & Kolmos (2004) describe how many attempts have been made to define the concept of problem based learning and that the actual design of PBL varies considerably from institution to institution. As described, PBL is inspired by as different theoretical traditions as Piaget's constructivism and Lave & Wenger's sociocultural notions of learning. As a consequence, the field of PBL is marked by quite different pedagogical approaches. Our purpose is not to argue in favour of one specific interpretation of PBL. However, throughout the article we tend to criticize notions of PBL that clearly are inspired by an individualistic ontology.

In the following section, we will describe a PBL-based educational program for educational psychologists. On the basis of the description of the program, we will discuss some general aspects related to PBL.

### **EPSW – EDUCATIONAL PSYCHOLOGY IN SOCIAL WORK.**

In the following, we will describe a PBL-based MA-training program for educational psychologists at Aalborg University. Aalborg University was inaugurated in 1974. From the beginning, the problem-based and project-organized teaching (PBL) was part of the university's pedagogical profile. While being innovative the educational strategy at Aalborg University was met with widespread skepticism from the other Danish Universities (Caspersen, 2004). However, the PBL-model became gradually acknowledged. This acknowledgement came from two sides. Firstly, graduate students from Aalborg University (and Roskilde University who also works according to the PBL-principles) were and still are well-received on the labour market. Secondly, the PBL-model has been supported by empirical studies that have documented how PBL affects learning (Norman & Schmidt, 1992; Schmidt et al., 2011).

While Aalborg University still practices PBL, the general status of PBL is that it nowadays is used in numerous variants on almost all educational levels and fields. The widespread distribution of PBL has also contributed to a development of the educational philosophy in PBL.

In the remainder of the article, a PBL-based master degree program for educational psychologists is presented. On the basis of the specific educational program, general aspects regarding PBL are discussed.

Educational Psychology in Social Work (EPSW) is a master degree program at the Department of Communication and Psychology at Aalborg University. EPSW aims at qualifying students for future work as educational psychologists or in social work. The program stretches over 4 semesters and is organized partly in relation to curriculum, partly in relation to tasks and cases collected from social institutions in the nearby area and at a nearby Educational Psychology Service center (EPS).

There are approximately 20-25 students at EPSW each year, and they all have a bachelor degree in psychology.

In the introductory part of the program, the students participate in different workshops in which basic educational psychology methodologies like supervision, testing, coaching and interview techniques are taught. Afterwards, the students are organized in groups of two. Each group gets an authentic case collected from a range of social institutions mainly for residential care for residents with special needs – that is learning disabled, people diagnosed with infantile autism or other pervasive developmental disorders etc. The institutions typically ask for assistance that for example could consist of psychological assessment of a resident in order to qualify their professional work. The students work on these cases with supervision from experienced psychologists and end up writing a report to the institutions.

During this work, all the students at EPSW meet at weekly seminars with two teachers at the university. At these seminars the different groups report on their experiences from the cases. The groups for example reflect on specific problems mentioned by the staff at the institutions, the acts and attitudes of the staff, aspects of the assessed person, the cooperation with the institutions, different interests in the result of their assessments, limits of (their) psychological expertise etc. These topics are discussed partly for supporting the students, while they are engaged in their cases, and partly for relating to theoretical themes and the curriculum at EPSW.

The seminars are thought of as a forum where the students at EPSW can discuss their practical experiences in relation to theory. At the same time, the seminars also contribute to the development of a collaborative team-feeling among the students where they are trained at supporting each other, and in developing their professional competencies, professional identities and personal standpoints while working on their cases. During the seminars, the students are encouraged and expected to engage in and comment on each other's cases. They also experience two teachers who do not always agree during the discussions, which support them in developing their own professional standpoints.

After completing their work on the cases at the social institutions, each group consisting of two students are matched with an educational psychologist from the local Educational Psychological Service-center (EPS). Once again, the students get a case, and they are closely monitored and supervised by the psychologist during their work on the cases. To exemplify, we will shortly describe what such a case typically looks like. Below is an introductory summary of a case that was sent from the EPS to our students:

*“L is a 7-year old boy. L. finds it difficult to concentrate and stay focused in class, unless he finds the tasks interesting. In addition, he is impulsive and has a hard time at turn-taking. To his class-mates, he appears somewhat self-willed and he likes doing things his own way. L expresses that he would like to have more contact with his classmates. He is apparently gifted, his vocabulary is good, and he contributes relevantly to conversations. His relationship with teachers is characterized by the fact that he is often being scolded. He also often gets into conflicts with the other children and he finds it difficult to acknowledge his own share in the conflicts. The school has observed that L. has facial tics. L’s teachers and his mother ask for an assessment that can determine whether L’s behaviour is due to immaturity, or whether there may be other causes that explain L’s behavioral patterns.”*

Like with the students’ cases at the social institutions, the students also discuss their cases on weekly seminars at the university. The dialectics between students’ practice experiences and the discussions at the seminars are seminal to the PBL-inspired ambition at EPSW of combining authentic psychological problems with a theoretical curriculum.

Currently, educational psychology’s field of practice is undergoing what could be termed a paradigmatic shift from an individualized focus on children with problems to a focus on how a systemic, consultative approach extends the possibilities for understanding and acting in relation to problems experienced within schools (Farrell, 2009). The consultative approach to educational psychology practice thus implies working through key adults around the children instead of focusing narrowly on the single child. Another central characteristic of the consultative approach is that the educational psychologist ideally changes from an expert to a process consultant who instead of assessment-based counseling tries to facilitate change through questioning the different practices that the particular child participates in (Farrell, 2009).

In the case above, many of the discussions at the seminars at EPSW were related to the paradox that educational psychologists increasingly are expected to work consultatively. Yet, the specific case formulation asked for a non-consultative service delivery by the educational psychologist.

Many of the discussions at the seminars were subsequently based on this specific problematic, and led to questions like:

- Why is a new theoretical concept like the consultative approach difficult to carry out in practice?
- Why do teachers often ask for individual assessments of students?

## **SECTION 2: DISCUSSION**

From our perspective, the PBL-inspiration in EPSW is evident in that the students are dealing with authentic psychological problems as part of their professional training. This way of organizing teaching and learning holds some very interesting educational possibilities. Among others can be mentioned how the students get motivated by the different cases, how their learning gets structured by the cases, how they get prepared for a job after their graduation and thus more easily avoid a practice shock (Stokking et al., 2003) and how they more easily identify with their future role as educational psychologists. Yet, the PBL-elements in EPSW also triggers questions and reflection that put in perspective some general theoretical and practical issues related to PBL, and the aim of the second part of the article is to discuss some of these questions.

Firstly, we will discuss whether PBL – in spirit of the time – is prone to a form-content dualism in which educational practice is concerned with forms of teaching and learning rather than the content of learning.

Secondly, it is discussed whether PBL potentially individualizes student learning.

Finally, we will discuss how the EPSW-students' learning trajectories are characterized by not only the acquisition of psychological skills, but also a professional identity development. It is argued that the identity constituting part of learning is both a valid and meaningful topic in research on PBL.

### **IS PBL PRONE TO A FORM-CONTENT DUALISM?**

When the students on EPSW are dealing with their different cases two by two, they tend to get completely absorbed by the complexity of the cases. They are concerned with questions like: how do we offer the best professional guidance in the case, which professional methodologies and tools should we apply in the case and how do we write a report that communicates our findings and advice?

These are evidently legitimate and relevant professional concerns that stimulate student learning, but there is also a potential backside to the coin. Some of the students get so

involved in the practical questions in their cases that the general theoretical, curricular and exemplary questions are left almost unattended. They tend to narrowly focus on the problems in their cases, and they are thereby increasing the risk of missing the more general and exemplary learning aspects. The dichotomy between the student's preoccupation with the specific case and practical issues on one hand and exemplary and subject-based theoretical curriculum on the other, at the same time refers to a more general discussion about different tendencies in our educational system. The educational field is constantly being flooded by different methods, technologies and concepts like cooperative learning, learning styles, classroom management, PBL, neuro-pedagogy, brain-based education etc.. Common to these educational concepts is that they tend to promote themselves as having the answers to many of the challenges faced by the educational system (Szulewicz, 2012). Another common characteristic is that the different educational concepts are concerned with *forms* of teaching and learning, rather than considerations on a specific *content*. This potentially leads to a form-content dualism in which possible connections between the form and the didactical content of learning is left unattended (Tanggaard & Brinkmann, 2008). The form-content dualism is for example seen in Björgens (1991) notion of 'responsibility for one's own learning'. Björgen emphasizes how teaching is about fostering responsible students. The aim of teaching thus becomes the development of student responsibility, while less attention is paid on the specific content of student learning (Tanggaard & Brinkmann, 2008).

From our perspective, there are different reasons why it is interesting to discuss whether PBL is prone to such a form-content dualism.

Firstly, a form-content dualism might result in a situation in which the content of a discipline or subject is de-emphasised. Laursen (2004: 67-68) for example points out how various forms of teaching and learning in the project-work in PBL quite often are not functionally integrated. Laursen describes how this tendency is a result of a de-centering of the disciplines because of weak definitions of content in a great part of PBL-teaching. Laursen (2004: 68) also argues that the progression in students' knowledge and competencies generally is too weak, because they often avoid the dull and difficult elements of content. In other words, students tend to avoid difficult theories or subjects when working on their projects. Laursen further draws attention to the fact that many PBL-universities have rather weakly defined contents of studies and few indicators of relevance for the students as points of navigation. This critique has partly been met by introducing more courses with a defined curriculum and with more curriculum-testing exams and in this way describing content as curriculum.

If we once again turn back to EPSW, the students do not choose their practical cases themselves. This also means that the students cannot avoid the difficult aspects in the cases. Likewise, the discussions at the seminars are relating work on the cases to the curriculum of the course, and in this context, an important challenge for the students becomes to demonstrate the exemplary aspects across the cases and hereby combine theory with practice.



Secondly, the form-content dualism can be inexpedient because important didactical and educational questions are reduced to a matter of technique or methodology, which potentially leads to a standardization or manualization of teaching and learning practices. Holst (2010) for example argues that teachers tend to teach in a more standardized and less reflective way when teaching according to a specific technology or concept. But although PBL might not be a concept that standardizes teaching or learning, it still could be termed a 'form-pedagogy' if the learning process necessarily has to start with a problem, or if it focuses on the specific problematic instead of the exemplary dynamic that the problem represents. Inherent in this form is also a potentially rigid standardization of the teaching and learning process. As previously described, Christensen (2004) for example argues that a rigid interpretation of PBL would be to assume that all learning processes should start with a problem, followed by an analysis of the problem, and finally a search for a solution to the problem. Depending on the content of the subject to be learned, the learning process could have another starting point than a problem. If PBL is interpreted too rigidly, Christensen argues that it loses its function as a corrective to practice and instead just becomes a buzz word.

At EPSW, the process is different for different groups depending on their cases so there is no standardized way of working with their problems and at the seminars these different procedures can be reflected upon. The task of combining theory with the practical problems in a way which enriches the understanding of the practical problem is a common task for both students and teachers, who share the responsibility of avoiding dualities of form-content and theory-practice.

Thirdly, the form-content dualism tends to focus more on *how* students learn than on *what* they learn. This point is not necessarily a critique, but rather a reflection on which parts of the learning process that are being emphasized. PBL and other present day learning traditions that more or less draw on constructivist thinking attach great importance to the concept of metacognition in which students are supposed to consciously set the targets for their learning, choose the paths they wish to follow, and evaluate the results of their learning (Kivinen & Ristelä, 2003). As described previously, PBL is inspired by Dewey's work on the relation between experience and learning, but according to Kivinen & Ristelä (2003: 270), the notion of metacognition goes against Dewey's understanding of learning. Dewey emphasized how learning occurs while the pupils are not aware that they are studying. Instead learning occurs because students concentrate on the content of learning or the subject matter they are studying. So, according to Kivinen & Ristela, notions of learning that emphasize the importance of metacognition actually misrepresent or at least have a different conception of the learning process than Dewey's pragmatist notion of learning. Kivinen & Ristela (2003: 371) summarize their critique of the notion of metacognition as follows:

*“Practices encouraging the observation of one’s own learning as an end in itself can basically be seen as a mere rejustification of testing that has traditionally ruled school activities. Instead of the pupils being taught new skills and knowledge, they are trained to monitor their own studies. A gradual improvement in the ability to work independently is quite rightly an aim for education, but it is by no means self-evident that this can be achieved or promoted by intensive concentration on the operative aspects of one’s own thinking.”*

Kivinen & Ristela argue that the desired development of student metacognition potentially leads to a psychologization of the learning process in which students reflect upon their own actions and where they are taught to contemplate their own learning, knowledge and skills (Ibid.).

To summarize, our point is not to downplay the importance of the fact that students in higher education learn to learn. Rather, our point is that a strong emphasis on metacognition potentially leads to ‘a psychologization of the learning process’. This psychologization has as a potential backside, that the students are taught to contemplate the supposed inner operations of their own learning (form), rather than skillfully practicing the content of the discipline.

### **DOES PBL INDIVIDUALIZE STUDENT’S LEARNING?**

The seminars on EPSW are based on a democratic principle that all groups once every two weeks at the seminars present their cases. This is a rather time-consuming, but nonetheless important part of EPSW, because links and discussions between curriculum and practice are made on the basis of the students’ presentations. Usually, the students are very engaged in each other’s cases, but some students get so enthusiastic about their own cases that they do not engage in their peer’s projects. The lack of engagement in peer’s projects is problematic because it threatens the mutual dependency between students, but the lack of engagement is also inexpedient, because an important part of the learning process at EPSW is to discuss and draw attention to the exemplarity and general aspects related to the specific cases.

Again, this observation points to some general PBL-related aspects. Although a great part of student learning takes place in groups and thus is socially distributed, PBL might still potentially enhance individualization of students’ learning. Laursen (2004: 68) for example argues:

*“The individual learning processes are to be supported by “theory-enriched” and problem oriented dialogues integrated in the project work. These dialogues are partly taking place between the students. Unfortunately these dialogues often are time-consuming, difficult to establish and maintain, and although these dialogues play a crucial role for the development of meta cognitive competencies, the student’s motivation to take part in them are generally weak.”*

From Laursen’s perspective, students are either not sufficiently motivated to engage in dialogues, or they primarily want to engage in discussions concerning their own projects. This is especially important in a PBL-learning setting like EPSW, where the groups only have two members. In this context, mutual involvement between students and towards their different projects thus becomes an important prerequisite for a good PBL-learning environment. Following Kraft & Nielsen (2006), such mutual involvement can be difficult to obtain in understandings of learning that emphasize students’ individual experiences. According to Kraft & Nielsen, individualization of the learning process is often a consequence in pedagogies that have individual experiences or individually defined problems as a starting point for the learning process. Kraft & Nielsen argue that such notions of learning are rooted in a humanistic psychological understanding, in which education and teaching are about realizing students’ selves and inner potentials (Ibid). In most cases, learning in PBL-settings namely starts with students defining a problem. Following Kraft & Nielsen, PBL can thus lead to an individualization of the learning process in which students focus too narrowly on their individually defined problems. However, it is definitely debatable whether PBL leads to individualization. For example, most versions of PBL emphasize that problems should be exemplary (Barge 2010). This exemplarity ideally prevents students from working on too narrowly defined problems. Yet, the notion of solidarity does not necessarily prevent the students from only engaging in discussions concerning their own work.

If we turn to EPSW, the students do not choose their own cases. Instead, the cases are authentic cases from the cooperating institutions and the local EPS that are randomly distributed amongst the students. The students are expected to solve the problems that they encounter while working on the cases, and the teaching at the seminars connected to this work aims both at helping the students solving these cases, but equally important, the teaching also draws attention to the general and curricular aspects of the cases. The challenge is to get the students involved in these general discussions and not just in their specific cases. If they engage in these common discussions at the seminars and see parallels across the cases, they profit from their peer’s experiences and a mutual responsibility can evolve. During these seminars the task of the teachers is to constantly shift between discussions of concrete cases and of exemplary and curricular aspects of these concrete cases. In order to avoid the discussed possible individualization in PBL, the seminars are thus instrumental, because they constitute a platform, where the exemplary aspects of problems and cases are highlighted and discussed in relation to curriculum. On these seminars the teachers play an important role in

constantly challenging students' understanding of the content and constantly addressing the exemplarity of the cases.

### **DOES PBL-LITERATURE OVERLOOK HOW LEARNING IS AN IDENTITY CONSTITUTING PROCESS?**

Many studies have compared PBL to traditional programs. The large variation in PBL-practices makes the analysis of PBL's effectiveness difficult. Yet, there is a general lack of convincing research that extensively documents its effectiveness (Norman & Schmidt, 1992; Vernon & Blake, 1993; Wood, 2003). However, a generally accepted finding that emerges from the literature is that PBL produces positive student attitudes (Prince, 2004). From our perspective, the relation between identity development and learning is particularly strong in PBL compared to many other ways of organizing learning environments in higher education. Yet, this relation seems to go rather unnoticed in great parts of the PBL-literature.

One of the most striking aspects related to teaching on EPSW is the professional development that the students go through during the semesters on the program. When the cases are handed out to the students at the beginning of the program, almost all of them react with fear, nervousness and feelings of inadequacy, but three semesters later at the end of EPSW, they feel prepared for a job as psychologists in an EPS. This transformation bears witness to the fact that the students have acquired the needed professional skills to act as educational psychologists. But the transformation also testifies to an impressive growth of identity. It is our claim that this relation between learning and identity formation is very important, but also that it is a rather uncharted territory in the PBL-literature. (However, for example Ryberg, 2007 has treated the relation between identity and learning in PBL). It is important to make clear that while much psychological research treats identity as a static self-concept, we address identity as fluid, dynamic and closely linked to participation in learning communities (Lave & Wenger, 1991; Wortham, 2006). Previously, we discussed whether some parts of PBL could lead to an inexpedient individualization of learning. In this context, it could be objected that our focus on identity formation also individualizes student learning. This is truly a valid objection, but from our perspective Lave & Wenger's notion of identity is so to speak social. From a situated learning perspective, learning is viewed as progress along trajectories of participation and growth of identity (Lave & Wenger, 1991) where participants start as legitimate peripheral and end up as fully fledged members. Methods of instruction are not only instruments for acquiring skills; they are also practices in which students learn to participate in different and often paradigmatic ways (Wenger, 1998). The situated learning perspective thus highlights how learning entails transformation of persons. But this transformation can only take place while the learner participates in socially situated and distributed communities of practice. The understanding of identity formation from a situated learning perspective is thus non-individualist and non-dualistic and focuses on the learning person's participation in communities of practice (Lave & Wenger, 1991).

According to Packer & Goicoechea (2000), the situated learning perspective's emphasis on identity formation in learning also sheds light on how learning is not only an epistemological, but also an ontological practice. In this context, epistemology refers to the systematic of knowing: which kind of knowledge counts as valid and what counts as truth e.g.? Ontology is the consideration of being: what does it mean to be, what is, what exists e.g.?

According to Packer & Goicoechea (2000), ontological assumptions in theories of learning often go unnoticed. Instead, learning is mainly conceptualized epistemologically in terms of changes in knowing. This is for example the case in many constructivist theories of learning where learning is understood as construction and qualitative reorganization of knowledge structures.

In some parts of the PBL-literature, learning is also mainly depicted from epistemological assumptions. Schmidt (2011: 793) for example describes:

*“In PBL, learners are presented with a problem in order to activate their prior knowledge. This prior knowledge is then built upon further as the learners collaborate in small groups to construct a theory or proposed mental model to explain the problem in terms of its underlying causal structure.”*

Another example of the epistemological emphasis in PBL-learning theories is found in Coffin's (2011: 18) description:

*“(...) all PBL curricula are designed on the basis of the learning theory of constructivism where students construct knowledge for themselves.”*

In both quotes above, the relationship between the learner and the environment is taken to be an epistemological one: learning is a matter of the subject coming to better know the world (Lave & Packer, 2008).

Generally speaking, the widespread neglect of ontology in learning theories might lead to a narrow conception of learning, in which learning gets reduced to an individualistic, mental or cognitive activity, and where Lave & Wenger's (1991) notion that learning involves the construction of identities tends to go more or less unnoticed. From a situated learning perspective, learning is a socially situated activity grounded in a social ontology that conceives of the person as an active being. Learners participate in identity-generating activities, and from this perspective, learning is not only a matter of coming to know the world better, but also a process of coming to be (Packer & Goicoechea, 2000). The overall point is that learning both comprises epistemological and ontological aspects, but that the ontological aspects related to learning often go unnoticed.

At EPSW, the students participate in an ongoing and authentic professional educational psychology practice, and hereby participate in identity-generating activities. Learning at EPSW is thus a transformational process that involves aspects of professional identity formation. This is facilitated by two teachers being present and showing different standpoints from time to time, and by creating an atmosphere of open discussions with no one-and-only answer to these. The students are encouraged to make their own opinion on the aspects of professional knowledge and practice debated at the seminars, and this is done in a mutual discussion. In line with Packer & Goicoechea (2000), the student's learning can be seen as both including epistemological and ontological aspects. At ESPW these aspects involve the acquisition and development of professional techniques (supervision skills, interview skills, testing skills etc.), but also the formation of a professional identity through the common experiences at the seminars.

We want to emphasize ontology (identity formation) as a valid and meaningful topic in research on PBL. On EPSW, the student's identity transformations are fairly evident. But it is our contention that identity formation and transformation generally are related to all learning processes. It is even our hypothesis that the identity-formation process is particularly strong in PBL-learning settings and could be emphasized as one of the reasons why PBL-students graduate at a faster rate compared to students at conventional schools (Schmidt et al., 2011). The group-based project work is often mentioned as an important contributor to the positive learning environment in PBL-settings (Ibid.). Yet, Schmidt et al. (2011) mainly describe the benefits of collaborative learning in epistemological terms:

*“It seems that elaboration in a small group not only facilitates the processing of a study text, but also adds to its longerterm memorability.” (Schmidt et al., 2011:794)*

In the same vein, Hmelo-Silver (2004: 246) describes:

*“One assumption of PBL is that the small group structure helps distribute the cognitive load among the members of the group.”*

In these quotes, the groups are presented as ways of organizing student collaboration that enhance individual learning. But the learning processes are mainly described as mentalist or cognitive activities. Likewise, when the social benefits of team work in PBL are pointed out, they are mainly framed in an instrumental way as platforms for developing friendships, platforms for closer contacts between teachers and students or simply as a more motivating way of organizing student learning (Norman et al., 1992; Schmidt et al., 2011). However, from our perspective PBL-environment and student participation in groups have an important

ontological or identity-constituting dimension. In the quote below, Packer & Goicoechea describe how school has a fundamentally relational and cultural character:

*“School has a relational and cultural character without which problem solving, skill acquisition and intellectual inquiry would not occur, and which makes it the site of a search, sometimes a struggle, for identity. When this is ignored we do not adequately understand either the social or the cognitive aspects of schooling, and we cannot grasp the way schools transform children into adults who will live and work in a complex modern society.”* (Packer & Goicoechea, 2000: 239).

If we fully want to grasp learning in PBL we also have to focus on the relational and cultural character (ontological aspects) of the learning environment in PBL. Some of these important relational characteristics are that PBL-students get the chance to frame their learning in relation to self-defined and real world-problems, and that they further collaborate with peers solving these problems. Altogether, this makes up an involving, motivating, transformational and thus identity-constituting way of learning.

## CONCLUSION

In the article, we have described a PBL-based MA-training program in educational psychology. We have described how PBL holds some very interesting educational potential. Among others can be mentioned how students get motivated by working with real-life problems, how their learning gets structured by solving real-world problems, how they get prepared for a job after their graduation and thus more easily avoid a practice shock and how they more easily identify with their future role as educational psychologists.

From our perspective, it is important to uphold the core values that make PBL an alternative to more conventional ways of organizing learning. Yet, we still have to be aware of the challenges related to PBL – some of which are discussed in the article.

We have argued that PBL – in some forms – can be prone to a form-content dualism in which attention is centred on the form (the problem) and less on the content of learning.

We have also discussed how PBL potentially individualizes student learning. Finally, we have discussed how identity-constitution can be very strong in PBL-learning. Yet, PBL-literature tends to ignore these important identity-constituting aspects of the learning process. We have argued that relation between identity and learning should be a valid and meaningful topic in research on PBL.

## References

- Barge, S. (2010) *Principles of Problem and Project Based Learning. The Aalborg PBL Model*. Aalborg University.
- Bjørger, I. (1991). *Ansvar for egen læring*. [Responsibility of one's own learning] Trondheim. Tapir Forlag.
- Caspersen, S. (2004). Preface. In: A. Kolmos, F.K. Fink & L. Krogh (Eds.). *The Aalborg PBL Model. Progress Diversity and Challenges*. Aalborg University Press
- Christensen, J. (2004). Reflections on Problem-Based Learning. In: A. Kolmos, F.K. Fink & L. Krogh (Eds.). *The Aalborg PBL Model. Progress Diversity and Challenges*. Aalborg University Press.
- Coffin, P. (2011). Reflections on Problem-Based Learning Practice at Aalborg University. In: J. Davies, E.d. Graaff and A. Kolmos (eds.). *PBL across the disciplines: research into best practice*. Aalborg University Press.
- Dewey, J. (1938). *Experience and Education*. Macmillan. New York.
- Farrell, P. (2009). The developing Role of School and Educational Psychologists in supporting Children, Schools and Families. *Papeles del Psicólogo*, Vol 30 (1), 74-85.
- Fox, R. (2001). Constructivism Examined. *Oxford Review of Education*. 27 (1), 23-35.
- Hmelo-Silver, C.E. (2004). Problem-Based Learning: What and How Do Students Learn? *Educational Psychology Review*, Vol. 16, No. 3, 235- 265.
- Holst, L. (2010). Inklusionens konceptgørelse – i dagens inkluderende skole er koncepter blevet svaret på inklusion. [Conceptualisation of inclusion – in the inclusive school of today concepts have become the answer to inclusion] *Liv i skolen*, nr. 4.
- Kivinen, O. & Ristelä, P. (2003). From Constructivism to a Pragmatist Conception of Learning. *Oxford Review of Education*, 29(3), 363-375.
- Kolmos, A, Fink, F.K. & Krogh, L. (2004). The Aalborg Model – Problem-Based and Project-Organized Learning. In: A. Kolmos, F.K. Fink & L. Krogh (Eds.). *The Aalborg PBL Model. Progress Diversity and Challenges*. Aalborg University Press.
- Kraft, G. & Nielsen, K. (2006). Et skævt blik på den funktionalistiske pædagogik.[An oblique view at functional pedagogic] In: B. Elle, K. Nielsen & M. Nissen (Eds.). *Pædagogisk Psykologi – Positioner og Perspektiver*. Roskilde Universitetsforlag.
- Laursen, E. (2004). Problem-based learning as a way of organizing and teaching at the university. Some contemporary problems and future possibilities. In: A. Kolmos, F.K. Fink & L.
- Krogh (Eds.). *The Aalborg PBL Model. Progress Diversity and Challenges*. Aalborg University Press.



- Lave, J. & Packer, M. (2008): "Towards A Social Ontology of Learning". I: K. Nielsen, S. Brinkmann, C. Elmholdt, L. Tanggaard, P. Musaeus & G. Kraft (red.). *A Qualitative Stance. Essays in honor of Steinar Kvale*. Aarhus: Aarhus University Press.
- Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- Norman, G.R., Schmidt, H.G. (1992). The Psychological Basis of Problem-based Learning: A Review of the Evidence. *Academic Medicine*. Vol. 67 (9): 557-64.
- Packer, M.J. & Goicoechea, J. (2000). Sociocultural and Constructivist Theories of Learning: Ontology, Not Just Epistemology. *Educational Psychologist*, 35(4), 227-241.
- Ryberg, T. (2007). *Patchworking as a Metaphor for Learning – Understanding youth, learning and technology*. A thesis submitted to the Faculty of Humanities at Aalborg University for the degree of Doctor of Philosophy.
- Ryberg, T., Glud, L.N., Buus, L. & Georgsen, M. (2010). Identifying Differences in Understandings of PBL, Theory and Interactional Dependencies. In: L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. de Laat, D. McConnell & T. Ryberg (eds). *Proceedings of the 7<sup>th</sup> International Conference on Networked Learning*. 2010.
- Schmidt, H.G, Rotgans, J.I. & Yew, E.HJ. (2011). The process of problem-based learning: what works and why? *Medical Education*. 45: 792-806.
- Stokking, K, Leenders, F., De Jong, J. & Tartwijk, J.V. (2003). From Student to Teacher: reducing practice shock and early dropout in the teaching profession. *European Journal of Teacher Education*. Vol. 26 (3), 329-350.
- Szulevicz, T. (2012). Hvis klasseledelse er svaret, hvad er så spørgsmålet? [If classroom management is the answer, then what is the question?] *Dansk Pædagogisk Tidsskrift* 12 (1), 61-67.
- Tanggaard, L. & Brinkmann, S. (2008). Til forsvar for en uren pædagogik. [In defence of an impure pedagogy] *Nordisk Pædagogik*. Vol. 28 (4), 303-314.
- Wenger, E. (1998). *Communities of Practice – Learning, Meaning and Identity*. Cambridge: Cambridge University Press.
- Wortham, S. (2006). *Learning Identity: The Joint Emergence of Social Identification and Social Learning*. London: Cambridge University Press.