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Problem Based Learning in Continuing Education – Challenges and Opportunities

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ABSTRACT

This article presents the PBL model applied at Aalborg University in order to discuss research findings with regard to the educational effectiveness of the PBL model in securing an efficient transfer of learning from university driven continuing education to the context of the workplace. In recent years Aalborg University has seen a progressive PBL development with regard to our many new continuing educational programs. The empirical data applied in the article is collected from two qualitative Ph.D. studies. Drawing on research findings from these studies, we discuss why the PBL model, in spite of the intentions of closing the gap between education and working life, seems to have some important challenges. The discussion concludes by suggesting some pedagogical guidelines for the design of future PBL organized academic activities within continuing education.

The Danish government passed its first reform on continuing education in 1965. Since then continuing education has become an integral part of the Danish labor market and one of the fastest growing industries. Today no country in Europe has a higher percentage of people between 25 and 65 attending public funded educational activities (Eurostat). Even so, Danish Universities have been somewhat reluctant to engage themselves in activities regarding continuing education (Rasmussen, 2012). However, in the year 2000 the Danish government passed the most important reform concerning adult education in recent history with its most important element being a creation of a new system of vocational adult education for all levels of education. Among other initiatives the reform prompted the universities to engage in

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a wide range of educational activities within continuing education. The primary activity is the so called master programs, which is parallel to the *candidatus* level in the ordinary educational system. Apart from these programs almost all universities in Denmark today experiment with new ways of thinking in terms of continuing education, collaborating with companies and organization in order to create academic learning opportunities outside the traditional university auditorium. From the very onset Aalborg University (AAU) decided that activities within continuing education, like all other educations, should be rooted in a Problem Based Learning (PBL) framework. PBL has evolved and proven itself as a valid and quite effective educational strategy within the ordinary educational system. The question at hand is: will PBL prove just as successful when it is employed within continuing education?

In this article we deal with two different programs within continuing education, both located at Aalborg University. Both programs are based upon the principles of problem based project work. With these two cases as our point of reference we will discuss whether a PBL approach is an appropriate didactic strategy in continuing education in order to promote transfer of learning. In our Analysis of the differences between intended and actual learning outcomes we reflect on possible contradictions between the 'seriousness' of work and the 'playful nature' of education. On this point we draw on the concept of 'play' as developed by Gregory Bateson (1972), as well as the distinction between contexts of 'reproductive" – and 'developmental learning'. In conclusion we will also touch upon challenges for PBL as well. Initially we will provide a short introduction to the Aalborg PBL model being the basis for all educational activities at Aalborg University and to the concept of transfer of learning, a concept that is indeed relevant to all educational activities but especially continuing education. With this theoretical point of reference we present our cases based on two Ph.D. studies and discuss their relevance in terms of the presented theory. From this discussion we finish with some concluding remarks regarding the future of PBL in continuing education.

THE AALBORG PBL MODEL AND THE CONCEPT OF "PROBLEM"

PBL was introduced in Denmark in the early 1970s when Aalborg University (AAU) and Roskilde University Centre (RUC) were established. At Aalborg University the more general characteristics of PBL (Savin-Baden & Major, 2004) were transformed into what is called 'the Aalborg PBL Model' (Barge, 2010).

'The Aalborg PBL model' combines *problem orientation* where problems or wonderings appropriate to the educational program serve as the basis for the learning process, with *project organization*, where the project stands as both the means through which the students address the problem, and the main learning context of the students. Hence, the students are expected to "argue for, select, apply, and assess specific theories and methods in regard to their appropriateness for dealing with the specific problem they have chosen for their area of inquiry" (Jørgensen, Strand & Thomassen, 2012; Kolmos, Krogh & Fink, 2004; Kjersdam &

Enemark, 1994; Laursen, 2004; Barge, 2010). A very important aspect of 'the Aalborg PBL model' is the aim to take the problems of the practical everyday life as the study´s point of departure and to consider academic knowledge as a tool in understanding and analysing the problem (Ulriksen, 1997). In the course of developing the AAU model of PBL, the question of which qualities a 'problem' should have in order to fulfil its pedagogical functions, has been much contested. From the beginning the importance of letting the students work with "real problems" from the "real world outside the university" has been underpinned. At the same time others have stressed the point, that the problem should express the students' 'astonishment' or 'cognitive disturbance' in the context of the relevant academic disciplines (Adolphsen, 1992). In other words, a problem should not only be a 'problem' in a pragmatic or technical sense of the word; it should also be an unsolved mystery seen in the perspective of relevant scientific knowledge and understanding. In short, the critique of the PBL model as a strategy for university teaching is that it primarily produces practitioners without a solid and wide spread academic theoretical foundation (Colliver, 2000). Even though recent research rejects this postulate (Schmidt et al., 2009; Schmidt et al., 2012) the challenge of connecting theory without privileging one paradigm at the others expense is an ever present task for teachers and educators.

TRANSFER OF LEARNING

Transfer of learning can be identified as the process in which knowledge is acquired by a person and afterwards transferred from one context to another, across time and circumstances (Laursen & Stegeager, 2011). The concept of transfer is especially relevant in this article since all educational activities are based on an (more or less) implicit notion of learning transfer. This is especially true in continuing education where the ultimate goal is to enhance the working skills of the student. For this reason, an understanding of the concept of transfer and the process is essential for everyone involved in adult education.

In short, transfer can occur when a learner applies what was learned to new situations. Even though this might sound obvious, many people have experienced that this correlation between learning and application is not always problem-free. These problems are generally referred to as *the problem of learning transfer.* This issue was originally addressed in an acclaimed article by E.L. Thorndike and R.S. Woodworth (1901) where they promoted their theory on identical elements. They claimed that transfer is only likely to occur in cases with a high degree of similarity between learning context and application context.

Quite a few other scholars have challenged this position. An early sceptic was C.H. Judd whose article from 1908 promoted another view on the transfer problem. Judd had little interest in the transfer of specialized skills from one setting to a more or less identical setting. Instead his scientific work focused on the transfer of general and abstract knowledge. In his research he demonstrated how subjects used the general understandings of abstract

phenomena such as mathematics and algebra to solve concrete problems in situations with which the subjects had no prior experience. This lead him to postulate that educational activities' primary aim should be to provide students with generalized and abstract knowledge, which could afterwards be applied on problems in varying contexts.

The transfer literature describes this distinction between the position of Thorndike and Judd as the question of specific vs. general transfer (Leberman et al., 2006). The distinction has been the focal point in many pedagogical controversies: "How should you structure your teaching in order for your students to be able to use their learning in other contexts?" In Denmark the vocational schools have to a high degree focused on teaching that promotes specific transfer. Many classrooms simulate the conditions of the working context (restaurant, garage, etc.). Universities on the other hand have always advocated in favour of the importance of teaching of abstract 'decontextualized' knowledge, and have thus promoted strategies aiming at general, complex transfer. This is evident in the way teaching at universities is traditionally structured with focus on lectures and exams centering on abstract knowledge subjects. The rising interest in academic continuing education has thus forced a new challenge upon the universities motivating them to adopt a teaching strategy that promotes specific as well as general transfer. At Aalborg University the answer to this challenge has been problem-based, project organized learning.

PBL AND TRANSFER

As stated earlier, the implementation of PBL as the dominant model of teaching and learning at Aalborg University was based on the assumption that PBL is an effective didactic means for minimizing the problem of learning transfer. Some of the most important assumptions hold, that it is possible to create transfer from PBL organized, academic study programs to the practical world of working life in the following areas:

- The ability to structure ill-structured problems.
- The ability to plan-, organize- and evaluate processes of complex teamwork.
- The ability to select, analyze and use theories, models and research data to accomplish practical tasks (Laursen, 2013).

Multiple studies have shown that PBL is effective in enhancing student learning, compared to traditional lecture-style teaching (Schmidt et al., 2012), but does it enhance transfer as well? Recent studies, primarily within the field of medicine, have indicated that such a connection between PBL and learning transfer might exist. In a study involving 47 students enrolled in a vocational nursing program Mathews (2011) found that problem-based learning enhanced students' knowledge and ability to apply that knowledge. Kennedy (2007) found similar results in her study of students in an advanced pathophysiology course. Both studies compare

PBL with traditional teaching methods and conclude that a problem-based learning approach is superior in order to enhance learning and application of that learning in other contexts.

Research conducted in medical programs with gifted students point out that the problem solving skills developed during PBL-organized formal educational situations are successfully transferred to practical orientated situations. Williams (1993) reports that studies on knowledge acquired in a PBL organized, formal curriculum indicate that skills and knowledge were effectively transferred to work environments. Gallagher, Stepien, and Rosenthal (1992) found that PBL-organized courses improved the students' potential to identify problems in ill structured tasks and situations, compared to more traditional educated students.

Other studies, though not making comparisons with more traditional teaching methods, seem to support the notion that PBL is a legitimate way of teaching for transfer. In this respect Ljung and Blackwell (1996) describe Project OMEGA, a program for at-risk teens that combines traditional instruction with problem-based learning. The authors report positive transfer following enrolment in Project OMEGA for a vast majority of the students. Even though the number of studies focusing on the relationship between PBL and transfer of learning are by no means overwhelming most studies seems to support the thesis that PBL *does* enhance transfer between education and work. But which qualities in PBL might be responsible for this correlation? With reference to Thorndike's theory of identical elements, an argument could be that the solving of practical "real life problems" will enhance the students' abilities to solve similar problems after their graduation. In the same respect PBL should enhance the students' skills when it comes to project-based group oriented tasks. Most of these assumptions are confirmed in a large study from Aalborg University with 4477 graduates (Kandidatundersøgelsen, 2002). In this study students within humanities and the social sciences were asked which competencies they had acquired during their five years at University. The most common answers were the ability to work with problems and the ability to work in a project oriented manner. Others have focused on the cognitive learning basis of PBL. However, the study also found a negative match between the practical demands of working life and the competencies acquired in the context of academic stings, when it comes to the ability to endure working under stress and to handle time pressure, as well as the ability to work independently on an individual basis (Kandidatundersøgelsen, 2002; Laursen, 2013).

In a literature review Schmidt et al. (2011) found considerable support for the idea that PBL is an effective learning strategy within the academic field of medicine as it encourages the activation of prior knowledge in a small-group setting and provides opportunities for elaboration on that knowledge. They also found support for the hypothesis that working with problems create a desire in students to find out more about the topic, which leads to increased concentration, focused attention and a willingness to learn (Ibid.). However, some researchers have pointed out that teaching methods, such as the PBL, which call upon a high degree of independent student work requires a high level of competence among students. If these

competencies are not present these methods might end up being counterproductive and directly obstruct the intended learning outcome (Kirschner, Sweller & Clark, 2006). Snow & Lohman (1984) suggests that students, depending on their level of competence, will benefit differently from either a more or less structured pedagogical structure. Thus, high-ability learners will benefit from a loose didactical structure that allows the students' to shape and control their direction of learning. Low-ability students might reach better learning outcomes when the teaching is more structured and controlled by the teacher. On the other hand, these hypothesis are contradicted by research showing that Aalborg University and Roskilde University are way ahead of the more traditional lecture based universities in Denmark when looking at completion rates for student with a non-academic background (Thomsen, 2005; Schmidt et al., 2009) found that a PBL curriculum decreased dropout rates as well as completion time for medical students.

As the research presented above shows, some arguments can be made supporting the claim that in fact the Aalborg PBL model does enhance both learning and the transfer of learning. Yet it is worth noticing, that most of the mentioned studies were made within the ordinary educational system since studies of PBL in adult education is almost non-existent. With this in mind it seems relevant to ask, whether the same connection between PBL and transfer of learning can be found within continuing education? The following two cases seek to elaborate upon this question.

MASTER IN LEARNING PROCESSES – WITH SPECIALIZATION IN ORGANIZATIONAL COACHING

At Aalborg University the first Master educations were established in 2001 almost immediately after the passing of the reform on continuing education. The Master in learning processes was one of the first pedagogical oriented Master Programs. It was launched in February 2001 and has existed ever since. In 2008 a specialization in Organisational coaching was added. This specialization has managers and consultants as its primary market segment. Like all other Master programs it is a part-time education. The students attend the education throughout four semesters corresponding to one year of full-time study. The education is based upon the principles of PBL. Each semester has a specific thematic framework, which the students use to frame projects in real time using their own work environment as the setting for experimentation and learning. The students can work alone or in project groups. The primary educational idea is that learning should unfold in the interaction between the theoretical oriented classroom and the production oriented workplace (Willert et al., 2011).

The research project was carried out as a qualitative study where 19 graduates[1] from the first two classes were followed throughout their two years of studying. They were thoroughly

[1] The classes are rather small. 36 students enrolled at the Master Program during the two years, and the research project comprises all the students that actually did finish within scheduled time.

asked to submit their expectations in terms of expected outcome prior to the educational start and to evaluate the education as well as their own learning when finishing two years after. Furthermore, their Master theses were included as examples of the PBL activities undertaken by the students[2]. Finally, one year after graduation a semi-structured interview was conducted with the former students in order to inquire into their perception on topics such as what they had actually learned, how they had strived to apply this learning in the daily work and their view on different didactic approaches applied by the Master program in regard to the transfer process[3]. In this paper we will only touch upon a few selected aspects, concerning the relationship between PBL and transfer of competencies between education and work.

Table 1 - Thesis Overview

Title	Number of students	Problem formulation	Empirical or theoretical thesis	PBL in own organization?
Professional Coaching concerning multi complex tasks in elderly care	1	How can learning processes related to professional team coaching within a nursing team for the elderly be described and understood?	The student has conducted team coaching in two nursing teams. Followed up by interviews.	
Coaching as a tool for change – Observation of my own learning, as part of a professional management development process	1	How can I as a coach, inspired by the remembering conversations in narrative theory and on the basis of Niklas Luhmans idéologie frame a room for reflection that can help my client to gain increased insight and knowledge about what is hiding in a particular experience that has been seminal in her management practices.	The student has conducted one coaching conversation with a manager followed up by an interview.	Yes – student is a private consultant
Successful organizational change - How to combine bottom-line results with increased ability to create change?	2	Based on a concrete change project in organization XXX, we want to discuss dilemmas and opportunities in combining elements from theory E and O.	Action research project with a HR team in a large Danish company	Yes and No – One student is an employee in the organization the other is not.
From Expert to Novice - A metaphor for the transition from employee identity manager identity	1	Objective 1: To identify unique situations that indicates development of leadership identity. Objective 2: To investigate the relationship between the narrative inspired structure	Action research – Student conducting a leadership development program in her own organization.	yes

[2] See Table 1

[3] The 19 interviews were tape recorded and fully transcribed. Afterwards the interviews were read and scored for specific themes. 57 different themes were identified (½ 2). The average number of themes in each interview was 23. The analysis is divided into three parts: Before they started their education, during their educational years, and after they finished the education. The analysis is both deductive and inductive as it draws upon the theory of transfer but also seek to locate new information hidden in the data material.

		and methodology of the training course, and the participants' experience of leadership identity development.		
The inquiring hand	1	My didactic model, the inquiring hand, has its genesis in my teaching practice. In this thesis I will theoretically examine how my model can help to create an exciting and involving teaching environment. Furthermore I will test how the students respond to the model.	Experimental study. The student teaches two classes at elementary school with subsequent interviews with the class teacher who observed the teaching classes.	Yes – student is a private consultant working with school teachers
A locally based action research project at XXX school	2	How can concrete and perceived differences between employees at XXX school be trasnformed into collective learning thereby supporting the school's vision?	Action Research Project – working with the management team of the school as well the teaching staff.	Yes and No – One student is an employee in the organization the other is not.
Is it possible to turn on the lights? - A study on the possibility that leadership based coaching can initiate learning in the nurse's daily working life.	1	Can I through a deliberate change in my leadership practice increase the learning possibilities for nurses at my department?	Experimental study. The student imposes change in her way of conducting group meetings. She records these meetings on video followed up by interviews with 6 employees.	Yes
If coaching is the answer - What is the question?	2	How can the power relation between an employee and a manager conducing leadership based coaching be describer? And what kind of impact may the introduction of leadership based coaching have in the organization?	Video recordings of coaching conversations between a manager and an employee followed up by subsequent interviews.	Yes –The students are managers in the organizations in which the research is undertaken.
Manager selection I organization XXX	1	Is the choice of the managers to be promoted, based on future needs, or do the organization tend to choose a leadership profile that more or less reproduce the past? How is this selection process conducted in practice? And do the managers who make these decisions of promotion have the necessary competencies?	Observations from the student's own work as an HR consultant. Semi-structured interviews with four managers in the organization.	Yes
Transfer - from coaching conversation to organizational practice: Return on Investment.	1	What kind of learning takes place in coaching? How can the coach support this learning? How can the client transfer the insights from the coaching conversation into his or hers daily life?	4 coaching sessions with a manager. Followed up by a semi-structured interview. Team coaching of a group of social workers followed by a semi-structured interview of three employees.	No - The research project is about coaching managers and employees within social day care, but the student is

				actually employed at a school that educates social workers.
The appreciative sports club	1	Based on Axel Honneths theory of recognition, the thesis ask whether it is possible to develop an appreciative micro-culture in a traditional Danish sports club?	A focus group interview involving different members (coach, board member, etc.) of the sports club	No.
Project on the development of communication skills in an organizational context	1	How can LP-coordinators develop skills in relation to the LP model	Action Research involving a group of LP-coordinators from different schools	No, but the student works with the LP-model at her school.
How language-games frame a coherent continuity of care.	2	What characterizes the current cooperation across sectors in the psychiatric practice? Can leadership based coaching enhance cooperation between sectors in their efforts to establish and coordinate a coherent continuity of care for the mentally ill?	4 interviews – 2 in the municipal sector and two in the psychiatric sector.	Yes
Organizational learning - An analysis of the link between organizational learning and coaching	1	How can coaching improve organizational learning?	Theoretical thesis	No
Can a renewed concept for staff development interviews help develop the relational skills of the employees in XXX?	1	Can Otto Scharmer's Theory U constitute the foundation for manager facilitated staff development in the service industry through the renewal of the traditional staff development interviews?	Experimental design, with inspiration from action research.	Yes

Table 2 – Themes in interview

1.1 - Demands for new qualifications	2.1 - Relationship between education and work	3.1 - Learning and personal development
1.2 - Organizational involvement	2.2 - Theory-practice linkages	3.2 - Specific learning effects
1.3 - Personal development request	2.3 - Bridging the gap between education and work	3.3 - Bringing the education into practice
1.4 - Education as a fringe benefit and attempts of employee retention	2.4 - PBL activities	3.4 - Job change
1.5 - Manager involvement	2.5 - Organizational barriers for PBL	3.5 - Change of job function due to their own initiative
1.6 - Personal preparation prior to the program start	2.6 - The many hats	3.6 - What do the students manager know about the education

1.7 - Need to develop working skills	2.7 - Organizational commitment to the study process	3.7 - Colleagues' perception of change in students way of doing work
1.8 - Uncertainty about role and ability as student	2.8 - The pedagogy of the education helps bridge the gap between education and work	3.8 - What is the most important thing you learned?
1.9 - Education provides new career opportunities - CV optimization	2.9 - Specific and general transfer	3.9 - Continuing or ordinary education
1.10 - Experiencing strain due to lack of education	2.10 - Increased knowledge provides greater security and courage	3.10 - The learning diminishes with time
1.11 - Education as severance	2.11 - Transfer promoting factors at work	3.11 - To learn is a change in identity
1.12 - prioritization of the academic field	2.12 - Near transfer	3.12 - The title provides new opportunities
1.13 - Searching for a reflexive space	2.13 - Research oriented approach supports daily practice at work	3.13 - Improved skills at delegating
1.14 - The educational structure fits well into a working career	2.14 - Far transfer	3.14 - The academic perspective opens one's mindset
1.15 -Major life changes as a reason to start training	2.15 - Collaborating with other students on projects	3.15 - Uses training in daily work
1.16 - Education is required to move upwards in the organizational hierarchy	2.16 - Changing manager during the education obstructs PBL work	3.16 - Changing manager after the education reduces transfer
1.17 - Agreements on work / training time	2.17 - Serious / non-serious context	3.17 - Lack the support from the Master Program provided in relation to apply knowledge in practice
1.18 - Self payment	2.18 - Theory as opposed to practice	
1.19 -Education as part of recruitment agreement	2.19 - The education as a haven in a busy working life	
	2.20 - To combine work, education and personal life	
	2.21 - Changing job during the education	

WHAT KIND OF PROJECTS DO THE STUDENTS ENGAGE THEMSELVES WITH?

Each semester the students engage in problem based project work, the project being a self-defined intervention carried out in their own organization (Willert et al., 2011). Data documenting the interventions are brought together in the writing of a project report used in the assessment of the students. In this way the Master program seeks to produce a robust transfer of knowledge and competencies between the educational room and the organizational context of the workplace by forcing the students to apply their learning on real world problems in their organization and afterwards reflect upon the process from a theoretical standpoint.

As can be seen from Table 1, most students engage in problems that are part of their everyday working life, which they try to solve in new ways based on their academic learning. For example, one student who was a manager set out to develop new ways of conducting staff development interviews. Throughout the four semesters she experimented with different methodological approaches, transforming the organizational setup from a traditional way of doing things to a much more innovative and collaborative style, engaging her employees in designing structures to enhance and monitor their professional development. In this way the problem-oriented work promoted by the Master program fused with the daily work life of the

students. This may be why the majority of the students report that participating in PBL activities is learning enhancing. However, at the same time the introduction of PBL activities within continuing education poses some challenges for the students; therefore, we will touch upon two of these challenges: group work and the problem with opposing roles.

Even though the students praise the PBL work style, many report that group work is quite hard when combined with the stress of a normal working life. At the same time group work forces some of the students to conduct their project work in another organisation than their own. For some this can be liberating. They report that this helps them to set aside the more or less implicit demand concerning return on investment when initiating change project in their own organisation. In this respect they are free to focus on their own learning. While almost all the students recognize this feeling of "freedom-to-learn" some students report problems with making the proper connections between the project performed in another organisation and their daily work. The project becomes somewhat of a distraction, something you do when you are not doing what you are paid to do – your work. Perhaps this is one of the primary reasons why less than half of the students have chosen to work in groups on their final thesis[4]. Besides these problems some students report that doing project work in their co-students organisation makes the learning experience somewhat artificial. The interaction between classroom and workplace more or less vanishes, making the student feel more like traditional students in the ordinary educational system than employees engaged in continuing education.

It seems the "Aalborg PBL Model" poses some challenges for the students since group work at worst risks "widening" the gap between the educational room and the work space thereby decreasing the transfer process. On the other hand doing PBL work in your own organisation is not free of problems either. Even though the majority of the students prefer to carry out the project work in their own organization almost all students mention that the strategy induced challenges as well. The primary problem is too many different roles. Since the students hold positions as managers or consultants they are typically expected to uphold quite dominating roles at their workplace. Some report difficulties combining this position with the much less authoritative position as a student working to solve a problem in order to pass an exam. This dilemma can lead to questions such as "How will my employees react to me when I confront them as a "not-knowing" student. Another problem is that the students as managers are paid to increase the output of the organization. This may result in an unwillingness to engage in problems that are not guaranteed to succeed that can make the PBL work less challenging and inspiring.

As seen above PBL in continuing education poses some challenges for the students – challenges that are not found in ordinary university educations. Overall, it has to do with the question of which context (school or work place) should play the dominating role in

[4] The final thesis covers a self-imposed theme and the students are free to work in groups or by themselves.

continuing education. A theme we return to in our discussion. First we turn to another important topic in the transfer of learning discussion.

WHAT KIND OF LEARNING IS FOSTERED THROUGH STUDENTS PBL WORK?

All the respondents experienced difficulties when asked to describe exactly what they learned through their educational activities and how this learning enhanced their performance as leaders or consultants. Even though the students through project-based work, obtain an opportunity to enhance their working skills, it seems as though their learning is a complex process where development of ordinary working skills in many ways is intertwined with personal development. These two styles of learning become somewhat inseparable, which makes it hard for the students to talk about their learning without talking about their personal growth. When the students in the interviews were asked to describe what and how they had strived to transfer the knowledge acquired through their PBL activities they tended to refer to their learning as abstract, non-taught skills such as, greater patience with complex processes; enhanced willingness or courage to delegate tasks to employees; and increased ability to cope with complex and diffuse situations. Overall the interviews indicated that almost all of the respondents perceived their learning as inseparable from their ever-changing identity. A phrase from one of the interviews illustrates this point:

Respondent: It is because, when I look back on what I have been doing as a manager, but also upon my actions as the man that I am, the Master education has in some way infected all my daily activities. It is a part of me when I sit and negotiate with suppliers, or talk economics. It can be seen in my approach to leadership, in my efforts to motivate and manage people, in my ambition to try and understand what people think and believe, and to cope with the still increasing complexity of organisational life. It may well sound like a very huge thing, but actually it is just that it is part of me being a manager. It has become an integral part of me. Therefore I think you could say that I wear my education all the time.

The analysis of the interviews shows that it is quite difficult to spot evidence of direct knowledge transfer. Many of the interviewees report that the biggest changes provoked by the study activities are not a change of skills connected to their working life, but rather personal or dispositional developments, a development in the organisation of the self, which is to be considered as a side effect rather than an explicit and primary objective for the study program. When asked to mention transfer enhancing activities in the educational setup, many students suggest that the problem based project work has helped them to bridge the gap between an academic context and working life. Even so, it cannot be said that problem based project work is a flawless didactic tool for continuing education. Like any other pedagogical approach problem based project work has some limitations and challenges. In the Master program one

of the biggest challenge is to make the classroom and the work place converge, without one of them dominating the other. Other educational initiatives try to overcome the transfer problem caused by opposing context by moving the classroom out of school and into the production room. However, as we shall see in our second case this does not solve every single problem regarding transfer in continuing education.

FACILITATED WORK BASED LEARNING

The idea behind Facilitated Work Based Learning (FWBL) is to transform Problem Based method of educating students at Aalborg University into a practice-oriented method for continuing education of highly educated employees working in practise (Fink & Nørgaard, 2006; Thomassen, 2009). Two FWBL courses conducted in collaboration between two software engineering companies and AAU form the empirical foundation of this case. Two to four employees participated in each of the two cases. The duration of the FWBL course was approximately nine months and the engineers participating all had university degrees. The empirical data consists of 15 qualitative interviews conducted with employees, facilitators, project managers, and administrative staff from the university several times during the courses along with four tape recordings of meetings and learning activities (Thomassen, 2009)[5].

The objectives of FWBL are:

- To provide knowledge to busy employees within the industry without necessarily having to spend time on participation in traditional courses.
- To integrate knowledge directly and make it immediately applicable in the job functions of the employee.
- To plan tailor-made learning which matches the qualification needs of the company
- To apply the pedagogical model of Aalborg University – the problem based and project organised way of learning.
- To ensure that the course of learning as far as possible is related to a development project relevant to the company. (Nørgaard & Fink, 2004: 2)

The FWBL course is centred on work related problems that the employees find relevant and interesting. The FWBL course takes place in the company when the employees find it

[5] In the Ph.D.-thesis (Thomassen, 2009) the analysis of the empirical data was inspired by Giorgi´s (1992; 1994) phenomenological method of analysis. The 15 interviews and the four meetings were tape recorded and fully transcribed. The transcripts were read in order to get an overview and re-read in order to discriminate "meaning units" relating to the researched phenomenon. The analysis is divided into two parts. The first part contains four chapters due to the fact that four types of participants participate in the FWBL-courses. The analysis is inductive as it is based on "meaning units" and not due to predefined concepts or theories. In the second part of the analysis John Dewey´s pragmatic thinking was applied as the theoretical approach in order to gain further insight.

relevant, which requires a high level of flexibility within the FWBL structure. Hence, the idea is to offer a FWBL course designed and conducted according to the specific needs and requests of the participating employees.

A university teacher possessing extensive knowledge about PBL, and the subject dealt with during the FWBL course, is affiliated as facilitator. A high level of responsibility is placed on the shoulders of the facilitator both in regard to teaching and facilitator competences, but also in regard to flexibility, because the FWBL course follows the learning processes of the participants´ (Fink & Nørgaard, 2006). Hence, it is not possible to design and plan the FWBL course in detail on beforehand.

A profound disagreement concerning the relation between work and continuing education appeared during the analysis of the two cases. FWBL is based on the argument that continuing education and work related problem solving can be integrated, thereby transcending the distinction between work and continuing education, whereas the participants and the project managers perceived continuing education and work as two different types of activities. This difference created much frustration and many misunderstandings throughout the FWBL-courses, and a recurring question asked by the participants was "how can work and continuing education be integrated?" The reason why this question was asked time and time again can be traced back to another general tendency within the cases, namely the difference in objectives between the companies and the university. The companies were highly focused on problem solving which is exemplified by a quotation stemming from an interview with one of the project managers.

> (…) My need [as project manager] is, that my software developers understand a specific problem and that they can solve the problem (…) the university is more focused on the learning process, which I am not in this course, absolutely not. The objective is to acquire some basic knowledge. (Thomassen 2009:112)

The below quotation stemming from an interview with the administrative staff exemplifies the difference in objective as it is

> (…) not that they [the participants] have solved a concrete problem, the goal is that 2-30 engineers have learned to use a new software development method. (…) The objective is that they have learned something, which they can use is future development projects. (Thomassen, 2009:138)

In general the FWBL courses had difficulties in gaining a legitimate position in the companies which lead to FWBL being placed on the side-line after a short period of time: it was perceived as an activity of low importance. A number of reasons caused this to happen.

First, as the quote below exemplifies the companies' insisted that FWBL should provide their employees with skills that had direct and immediately correspondence to their work assignment, whereas the facilitators and the administrative staff perceived FWBL as the basis for some kind of meta-learning, helping the participants to comply with future tasks.
Second, from the companies' point of view the facilitator was not a person supporting learning processes, but a consultant knowing how to solve the problem. As one of the project managers explained:

> I expected that it was more than supervision because we received new knowledge from the outside via a person who knew the problems and worked within the area, so we expected more or less to receive the answer (…) I had expected to receive some clear statements saying "do this and do that," because based on experience this is what works. (Thomassen, 2009:114)

Third, because the problem solving processes in the companies changed very fast, the need for facilitation suddenly occurred. This made it difficult to obtain compliance between the participants´ work and the FWBL course, despite the objective of creating a flexible program. Hence, the employees were left to solve the problems on their own, making the facilitators seem useless.

> "(…) as when we get a problem and the project is running, then I have to solve it now. Then I cannot wait until next week or next week again, because maybe I must hand it in next week (…). In one way or the other I must find the answer to my problem". (Thomassen, 2009:102)

Fourth, the FWBL course was placed on the sideline because the participants expressed difficulties in understanding the idea behind FWBL. At the end of the course one of the participants stated, "I still do not really know what it is all about, and what would have been the right thing to do" (Thomassen, 2009:101).

All in all the cases exemplify that despite the good intensions of integrating work and continuing education via a PBL inspired method a number of difficulties occurred. It especially became apparent that what should have been the strength of the method, namely the close connection to practice, at the same time became the main problem. The logic and the objectives within the companies squeezed out the opportunity for learning as the time and space for reflection was only present to a limited extent.

PBL, TRANSFER, AND AUTHENTICITY

A recurring discussion within continuing education is how to establish a strong relation between practice and education in order to enhance the level of transfer. The cases outlined above are examples of two different didactical approaches to this problem.

Despite the fact, that the Master program and the FWBL program in many aspects are different they do have one very important aspect in common. Both approaches were founded on the argument that it is possible to create a strong pedagogical relation between work and education by letting students try to solve real life problems from their own practice. Hence, both approaches are based on a belief that in order to be *effective* continuing education must make the students working life an integral part of the educational activities.

A recurring discussion within continuing education is whether the educational activities should take place in a classroom or in the company. Fundamentally the discussion is about how the transfer distance between education and working practices can be reduced. Once again the two approaches have applied two different strategies. The Master program upholds the classic differentiation between education and workplace, but tries to shorten the gap by insisting on the students performing learning interventions in their own organization in order to be able to reflect upon these interventions in the educational context afterwards. On the other hand the FWBL program aims at minimizing the distance between the educational room and work context, by presenting the theory and methods in a workplace setting making a direct application of the theories and methods to the employees' work assignments.

Based on the fact that both approaches have real life problems as a core element one might expect transfer to be unproblematic; however, as outlined in the case descriptions this is not the case. In the first case (Master in Learning) there seems to be little doubt that the students have learned something, but it is difficult to find evidence about exactly which kind of learning has been transferred from the context of education to the work situation. In the second case (FWBL) the students have definitely not learned what they should have learned, according to the intentions of the educators. However, they might have succeeded in solving the actual task.

To further analyse the differences between intentions and actual learning outcomes in the two cases we need to reflect on the 'seriousness' of work and the "playful nature" of education. This distinction is the result of our reflections upon an important question raised by our analysis of the two cases: "What happens when problems, stemming from the students own organizational life, in some way becomes "too real" to provide them a proper context for learning processes?" In his article "*A theory of Play and Fantasy"* Gregory Bateson (1972) introduces the distinction between "serious" and "non-serious" contexts. In this article he puts forward that in participating in "playful activities" we refer to fragments of what we could

describe as "serious activities". Bateson proposes that we use these fragments as models for playing, perceived as a "non-serious activity", i.e., pieces of behaviour that imitates the forms of serious activities, but at the same time marks an important difference from these. A "nap" (play) is not the same as a "bite", and this distinction is an important one, but at the same time "the nap" entirely borrows its meaning from the real thing that is "the bite." Still the nap while simulation the bite at the same time communicates that we are not in a "biting context", that is "we are just playing". The relationship between the none-serious context (play) and the serious context is an important learning arena since it calls for a double transfer relationship: First, from the serious context to the game: Can we recognize the seriousness of the "play"? Play only makes sense if it is similar to and thus refer to the corresponding serious situation thus playing the game helps us understand the going around of "the real world". And secondly, from the game to the serious situation: play can often be seen as an exercise in preparation for seriousness. That is we can practice in a "safe" environment the skills we later need in "real life". An important point is that this practicing is only effective in that the participants in the "play" contextualize[6] this playing activity "as if" it was a serious situation – well aware that it is not. When these thoughts are translated into the context of education, it becomes clear that continuing education need to balance and find its way in the tension field between the educational room (as a playful or non-serious context) and working life (as a serious context). A maneuver with many built in challenges. To be effective educational activities must simulate the outside world, and the feedback that students receive would in some way be simulation of "real world feedback". But the students must be able to interpret this feedback as stemming from the playful context in order to be able to use it for learning purposes. We see that in fact the educational practitioners is in the "napping business" and not the "biting".

Bateson's distinction between serious and none-serious situations is important as it clarifies some of the qualities of an educational setting. The none-serious educational context can in some ways set the fantasy and inspiration of the participants free, as the setting is perceived as a safe and therefore a pleasant and motivational enhancing learning environment. At the same time every educational activity must balance in the space between serious and none-serious activity. Simulating the real world without being perceived as an altogether none-serious activity[7] since it is this "as if" quality that makes the transfer of learning occur.

In the FWBL case the project manager clearly focuses on problem solving in a very exact and pragmatic sense. In order to make the operations effective it is crucial, as he puts it, that "my

[6] The term "contextualize" can be described as a subjective classification of the context. The context is in this text understood as our surroundings - in other words, our environment (an all-encompassing understanding of the context concept, which Keiding & Laursen (2005) has criticized for lacking analytical power because of the conceptual over inclusion). Contextualization is in this respect, the active process of people ascribing subjective meaning to certain stimuli or artifacts thereby reducing the context infinite potential of meaning.

[7] A problem seen in many team building activities (in Denmark known as the so called "rabbit killing courses") in which we see that the context and the conditions of learning varies in such profound ways from the organizational activities the course aim to enhance, that learning transfer seems at best to be very limited.

software developers understand the problem", that is, understands it as the manager does, and then again as quickly as possible develops the same understanding of the problem. This is work as a serious matter. However, from an educational PBL standpoint, it is important that the students spend much time and effort on trying to define the problem in question, "playing" with different ways of seeing and understanding it. This might also be a good idea in a strictly working life context, often resulting in brilliant and most effective ways of solving the practical problem, - but the *time pressure*, so crucial for this context, does not allow this playful approach.

In the Master education case the problem and project was related to broader, developmental tasks (making a certain organizational change happen over time) which often gave place to experimentation. "Giving place" here refers to two important aspects: *time* and the *consequences of making mistakes*. If the consequences of making mistakes, working with "serious" working life problems in an educational context is grave or even fatale, and if the time pressure does not allow reflections on possible alternative ways of understanding the problem and seeing the world, as well as an on-going reflection on the steps of action as the project unfolds, then the 'seriousness' of the authentic problem run the risk of becoming too overwhelming for the students, in order to succeed on the learning tasks. One the other hand some students complained that the Master program was uninterested in the seriousness of their working life in that the educators stressed that good academic projects does not equal successful projects. These students felt that the education did not respect the opposing serious logic of the workplace forcing them to choose between logics removing meaning from their study activities: "We only do this because the education tells us to, not because there is an organizational need for our intervention".

CONTINUING EDUCATION PLACED BETWEEN OPPOSING LOGICS

In the previous section we made a distinction between the 'serious' nature of work, compared to the 'playfulness' of education. Both cases provide good examples of, what we in reference to the PBL model have called, "solution orientated" problems; likewise, both deal with 'real problems' of the work sphere, while at the same time the two programs hold quite different positions on the playfulness-seriousness dimension. This is due to the fact that it is possible to find both zones of playfulness as well as zones of seriousness *inside* the work sphere. As pointed out by Argyris (1992) and Ellström (2002) there are two different spheres dominated by two different types of logic included in the context of work. (Laursen, 2011; Willert et al., 2011; Helms Jørgensen, 2008). In one sphere, mistakes are allowed, or at least not considered to be fatale in their consequences. Time pressure is not the all-encompassing issue, and doubts, risk taking, conflicts and experimentations are as such allowed. This is the context of *developmental learning* (Ellström, 2002). In the other sphere it is important to acquire a high level of efficiency, which means that the decisions must be taken and carried out in a context

of strong, mutual understanding of how to perceive and define the situation and the related problems. This is the context of *reproductive learning*

Zones of reproductive learning are 'serious' due to the fact that it is usually fatal to make (too many) mistakes in this context. While in zones of developmental learning this 'reality principle' is to some degree suspended, for a shorter or longer period of time. In this perspective the concept of 'play' is quite accurate when trying to describe important qualities of zones of developmental learning. Still, it is important to remember that the primary objective of developmental activities is the solution of real work related problems, and that these activities are exposed to the same kind of pressures and intimidations as seen in the FWBL case. With this in mind, it seems evident that the 'solution orientated', 'real life' problems of the two cases refer to two different spheres and logics. In doing so, the FWBL case presents the construction of a conflict between the reflective nature – as well as the playfulness of education confronting the logic of reproductive learning, where doubts and playful imaginary reflections are reduced to a minimum. In the Master program, the problems and tasks of the students refer to the sphere of developmental learning, which is more in harmony with the learning logic of education. At the same time it might be hard to define what the exact result of developmental learning processes might be and how the students benefit from these learning processes in their professional lives.

Quite often companies tend to ignore the perspective and importance of developmental learning, while educational systems often tend to ignore the importance of reproductive learning, especially in continuing education. (O'Reilly & Tushman, 2008; Aylward et al., 2003). The ambition to integrate the students' working life in the educational activities can be seen as a way of trying to manage this field of tension between logics. But, as we have noticed earlier, the activities of 'play' are often redefined as 'serious business'. The 'nap' is so easily transformed to a 'bite', and due to this transformation, the learning outcomes are heavily reduced. The two studies demonstrate how difficult it is to combine the two opposing logics in one integrated process of educational intervention. In the FWBL program the logic of reproductive learning dominates throughout the entire project, leaving no room for learning and more experimental developmental learning. In the Master program the boundaries between contexts are much clearer making the learning situation easier for the student to understand as a context for self-directed action; however, as we have seen this comes at the price of transfer reduction.

DIDACTIC PRINCIPLES FOR ACADEMIC CONTINUING EDUCATION

In this article we have tried to answer the question: can PBL be a way to enhance the learning transfer in continuing education? As this article has shown the implementation of PBL based teaching models brings no guarantee for transfer of training. In our opinion the ambition of bringing academic educations into working life through problem solving activities is

sympathetic in its intentions as well as promising on a more practical level since continuing education (inside or outside the university) focusing entirely on general transfer is bound to run into trouble (Baldwin & Ford, 1988; Aguinis & Kraiger, 2010). Still the foundation of the university is and has always been complex and abstract or generalized knowledge. In our opinion universities should not try to simulate or copy the teaching done by other more practical oriented institutions. Universities need to focus on their own strength! At the same time they cannot run the risk of becoming irrelevant in the eyes of the labour market. Therefore, they need to find ways in which their expertise – abstract and complex knowledge – can be used in educational contexts aiming at developmental orientated learning processes as well as more reproductive oriented ones. This leads us to the following concluding points regarding PBL as a transfer enhancing strategy in continuing education:

1. If the universities attempt to embrace the logic of the productive system they risk losing focus on what the university does best thereby ending up teaching something which the university knows very little about: production in an organizational context. This is not the same as saying that continuing education in an academic context should ignore praxis. Instead we must continue to strive to find ways in which praxis and the class room can enrich one another. Therefore, we propose that in order to conduct successful and effective continuing education the academic paradigm should play an integral part in every university driven PBL project. Respecting the logic of the organizational system is not in opposition to insisting on promoting academic knowledge as a valuable educational asset.

2. When making "real problems from the working life" the point of departure for the use of PBL in continuing education, it is crucial that a distinction is made between reproductive- and developmental learning contexts, as they demand different qualities of the university system. The university system often has quite a lot to offer to both types of context and also to the reproductive orientated learning processes, but naturally the knowledge of 'experienced professionals' here will often be more substantial than the knowledge of the average university teacher, and the teaching programs should be outlined in respect of this fact.

3. In PBL organized, continuing education it is important that the *time structure* of the educational process shows a reasonable match with the time structure of the relevant working processes. Educational projects with lots of time to reflect, read books and discuss the problem at hand might serve as excellent frames for 'developmental learning'; however, often they ought to be combined with processes where the students are trained to use the acquired competencies in the context of a more realistic time structure. As we noticed in the FWBL case a lot of 'real working life problems' simply does not fit as a context for university teaching, because the time pressure does not allow more analytical reflections.

4. When *projects* following the Aalborg PBL Model are carried out as 'real life experiments' trying to handle 'real life problems', as we have seen in the two cases, it is important that they make room for experiments, fantasy, reflections and mistakes. On the other hand, the 'playfulness' of the developmental learning must not lead to a situation where the students consider the projects as pure "virtual games" (Kaplan & Haenlean, 2009). To avoid this, it is necessary to introduce a proper quality of realism or 'authenticity' in the educational project. That is: the products and the working processes ought to resemble 'business as usual' for the area in question. Academic PBL activities in continuing education should be structured in a way to make a greater rate of comparability between the character of the PBL projects and the kind of activities which students' are to engage in, during their professional lives. And finally, the projects ought to have some kind of 'real consequences' in working life.

CONCLUSION

In this article we have presented the Aalborg PBL model that is the pedagogical basis for all educations at Aalborg University. This includes our expanding activities within continuing education. We have presented two research projects that in different ways illustrate the possibilities and problems with problem based project work. In both cases the basis for the educational activities are students engaged in working with 'real life' problems in their own organization, but in both cases we see that the PBL activities wind up in a struggle of authority between the seriousness of the working condition and the playfulness of the educational context limiting the students possibility of transferring knowledge from education to work life. This leads us to propose several statements about PBL in academic continuing education. Further research should validate these propositions by testing their use in action in order to show that continuing education resting on these propositions in fact is transfer enhancing.

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