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## Premises for Changing to PBL

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Although SoTL research provides results documenting the efficiency of problem-based and project-based learning, the process of change at the institutional levels all over the world is slow. Based on research and experience from the UNESCO Chair work all over the world, I point out seven premises for changing to PBL: governance and educational policy, research and political pragmatism, change at institutional and individual level, leadership, implementation, trust in students' learning and global societies. These are premises at very different levels; however, in the global society they all play a role in the process of changing higher education. This essay places PBL in a SoTL framework of inquiry, research, application, and change, and explains that PBL is beneficial for students learning key skills.

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Problem based learning, Project based learning, PBL, Change in Higher education

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## Premises for Changing to PBL

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Although SoTL research provides results documenting the efficiency of problem-based and project-based learning, the process of change at the institutional levels all over the world is slow. Based on research and experience from the UNESCO Chair work all over the world, I point out seven premises for changing to PBL: governance and educational policy, research and political pragmatism, change at institutional and individual level, leadership, implementation, trust in students' learning and global societies. These are premises at very different levels; however, in the global society they all play a role in the process of changing higher education. This essay places PBL in a SoTL framework of inquiry, research, application, and change, and explains that PBL is beneficial for students learning key skills.

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### Introduction

Why is it so difficult to change the teaching and learning in a single classroom in higher education (HE), not to mention classroom change at the institutional level? This question often occurs when I have visited institutions that want to learn about problem-based and project-based learning (PBL), or when I have run a training workshop on curriculum development. Although researchers have studied change processes in education, there are still lessons learn and it is very important to keep the attention on how to establish and retain change to more student-centered learning in higher education (Graaff and Kolmos, 2007).

There are clear research results showing that student-centered learning methodologies like problem and project-based learning (PBL) are much more efficient according to a series of parameters such as:

- 1) The management dimension concerns the financial implications of PBL. Several Danish evaluations show that Aalborg University, compared to other Danish institutions, has the highest retention rates and one of the highest percentages of students finalizing their studies on time. This has an impact on the allocation of resources from governments in many European countries as they move towards a product oriented model based on the number of graduates an institution is "producing." In terms of the quality of teaching and learning, PBL institutions are often ranked higher by students and companies than traditional teaching institutions (Kolmos and Holgaard, 2010; Holgaard and Kolmos, 2009).
- 2) Many authors have addressed students' learning processes and there are studies of students and graduates. Du and Kolmos (2006) explain why there is an improvement of the learning process by participating in team-based communities and by reflecting and experimenting with the practice. From the perspective of educational psychology, there have been several studies on motivation with the unambiguous conclusion that PBL increases students'

motivation for learning (Schmidt and Moust, 2000). This might be the most important finding: that PBL has an impact on the level of motivation. From a theoretical learning perspective, motivation is an important factor in the learning process – and if students are motivated, they learn more (Barneveld and Strobel, 2009).

- 3) In terms of the development of competences and skills, Dochy et al. (2003) have made a review of the literature from the nineties on the evaluations of long-term effects of using PBL. Their main conclusion was that the use of PBL improves the development of transferable skills such as process competence. The impact on knowledge acquisition is missing or not significant. However, PBL students do not acquire less knowledge compared to students educated the traditional way. Several studies come up with the same findings: that there is no significant improvement of knowledge acquirement, but a significant improvement of skills. Faland and Frenay (2005) have conducted an empirical study of a transformation process at a particular institution. Their main conclusion was the same: students do obtain process competences. Schmidt and Moust (2000) have done a review of existing literature and concluded that PBL seems to have an effect on long-term retention of knowledge such as the remembering and understanding of various concepts.

So the research evidence is in place and right now more and more countries aim for outcome based education and competences like in the Bologna process in Europe. An obvious choice would be a more student centered learning methodology such as PBL or other methodologies such as inquiry based learning, active learning, etc. Therefore, it would be expected to see a widespread use of PBL.

Even if theories, research results and experiences point in the direction of student centered learning, the change process is difficult. My research and experience leads me to the formulation of the following seven conditions for changing teaching and learning in higher education.

### **Premise 1: Governance and Educational Policy**

The first and most important premise is the educational policy. Right now there is a positive trend towards student centered learning at the policy level. The Bologna process in Europe stresses that one of the objectives is to aim for more student centered learning and the global trend towards formulating learning outcomes also points in this direction (Leuven Communiqué, 2009; Kogan 2000).

However, institutions should have autonomy to decide their own pedagogies involving all the elements in the curriculum such as outcomes, learning methodologies, selection of contents, and assessment. In order to secure optimal learning efficiency, alignments among all curriculum elements are important (Biggs, 2003). There are many cases all over the world where the government is determining the assessment procedures in different ways. One of these cases - unfortunately – is Denmark, where group based assessment has been abandoned (Holgaard and Kolmos, 2009).

Another issue might be the quality assurance systems that are a necessary part of the globalization process, but also create new challenges in the national accreditation procedures since a list of text books is easier to accredit than learning outcomes and a series of open-ended project reports.

The policy level might be hard to influence. However, we need to create the dialogue in order to open up the possibilities for enhancement of HE.

### **Premise 2: Educational Research and Political Pragmatism**

Change in HE is not necessarily based on research evidence but on the political demands and reasoning such as:

- new demands for learning outcomes,
- creation of a more modern university profile that might attract students,
- decreased resources,
- management and funding issues such as the possibility that PBL might decrease drop-out rates and improve the percentage of students who finish their study on time,
- improvement of the quality of learning for students.

Even if educational development and change seems not to be based on research but on political pragmatism, the change process towards new teaching and learning systems would not take place without research evidence in order to convince both management and academic staff. For moving towards new practice, it is necessary to communicate positive as well as negative implications – but in order to form the basic knowledge for decisions on change, it is also important that researchers address the managers and the political pragmatism and form an informal coalition. At many places staff development centers are the voices of the educational research.

### **Premise 3: Change at Both the System Level and the Individual Level**

If change only is carried out by the single staff member in a single course, the change will not endure and will be too dependent on individuals. Sustainable change will have to be rooted at the course level as well as the system level. The course level represents the bottom-up strategy and the system level is the top-down strategy. Researchers point out that all organizational levels have to become involved if the goal is successful change (Kolmos, 2004; Scott 2003, Graaff and Kolmos, 2007). Bottom-up strategies are not efficient since staff come and go, and the change can disappear. Top-down strategies are not efficient because they create resistance in the system. However, the two strategies supplement each other and make change possible. Therefore, the management level is important as well as the motivation of academic staff running the courses.

### **Premise 4: Motivation, Leadership and Visions**

Why do something new when you have experience with what you have been doing for the last 15 years work? Kotter (1995) stresses the importance of urgency as the first step in a change process. At the management level managers experience the urgency related to resources: lack of students or decrease in the public funding. However, the management level's sense of external urgency does not occur in the classroom – on the contrary, academic staff normally feel confident and satisfied with existing teaching practices. Managers therefore have to establish a process where academic staff analyze the advantages and disadvantages in their own practices, or learn about new educational practices.

Both Kotter (1995) and Fullan (2001 & 2005) mention the importance of vision and the lever of leadership. But Research results show that very often there is a lack of vision in educational change processes (Graaff and Kolmos, 2007). Leadership in HE has become more and more important and there is a trend in the governance of universities towards appointed leaders instead of elected leaders. This also indicates that there is a move from a bottom-up approach to a top-down approach in management and that it might become easier to make decisions, but not necessarily to carry out changes. Vision for the future is a key factor in an institutional change process and it is urgent to involve academic staff in the formulation of that vision in order to create ownership and motivation. Without ownership of the vision, neither the management team nor the academic staff will become drivers for carrying out change.

Research also indicates that there might be a lack of long term planning and too much focus on short term planning. The management level and academic staff will be renewed, but without a vision owned by a majority of employees and long term planning, it might be very difficult to carry through sustainable changes.

### **Premise 5: Implementation Strategy**

Without long term plans, change might run into risk, but without short term plans and a real action plan with activities, resources and time, the change might become endless. Activities in the action plan can include education of change agents, training of academic staff, incentives and resources for change.

There is a need for change agents. If the change starts from the top level, change agents must be found among the involved faculty members. If the change starts from the bottom, change agents must be found in the top. The role of change agents is to motivate faculty and staff and to lead the change process by constantly pushing for visions, pushing for exact plans, pushing for resources, strategies, etc. Each individual change agent should not cover all the responsibilities, but experience shows that drivers are necessary.

An important change agent is a faculty development unit, because it has the expertise and knowledge of other systems and new practices. Training is an important element as it is necessary to establish a new educational practice. Faculty development units have to act at all levels, e.g. to join meetings for heads of departments, study boards, deans, etc. (Kolmos et al., 2001).

Incentives for all types of staff are important and incentives can vary, but there must be some. And there must be resources to fund the change process. PBL systems are not more expensive to run as traditional teaching systems, however the change process needs resources.

### **Premise 6: Trust in Students' Learning and Re-selection of Content**

Academic staff in the traditional course system with lectures do have to reduce the time for lecturing, meaning talking less. From my experience with staff training, this is one of the hardest things for staff to accept – especially because this also involves a re-selection of the content for lectures and the learning outcomes that students are expected to meet. Re-selection of content is part of the formulation of learning outcomes. The re-selection process is not easy and has to be supported by training by

highly competent staff and/or by forming teams of academic staff that teach each other ways to do it.

Academic staff still need to trust that students are capable of learning by themselves and that they have to organize students' learning processes without necessarily telling them what to learn – or even that students are able to learn the fundamental knowledge by student centered learning methodologies. This involves a process of stepping back and reflecting on the expertise role, not as the one who is presenting the solution, but as the one who facilitates and gives possibilities and actually regards the learning process as a research process (Kolmos et al., 2008; Savin-Baden, 2003).

### **Premise 7: Regional and Global Communities as Drivers**

PBL is an educational solution that has become widespread. In most parts of the world, PBL is integrated into courses. More and more institutions choose to develop their educational and pedagogical profiles, and PBL is implemented at a program, department, faculty or institutional level. These types of educational changes are challenging and energy-consuming processes. There are cultural and organizational differences, but the recipe for change is more or less the same: in order to manage institutional change, it is necessary to have both top-down and bottom-up processes, change agents, visions, realistic plans, qualified staff, etc. Therefore, the exchange of international experiences is an important element and it is crucial to establish global and regional networks and societies to facilitate this international learning. These networks, cross institutional and national borders, give the possibility of reflection on our own practices and getting inspiration for further development. The international momentum of SoTL is extremely important in this networking and learning.

There are no guarantees for successful change to PBL. Each change process is unique – and especially the cultural and contextual issues will play an important role. However, I have experienced student centered practices that are more student centered in South America and Asia than in North America and Europe. So there are many “pockets” of advanced practice that can foster inspiration across cultural and national borders. There are many constraints in achieving a successful change process but the strategies to avoid obstacles are to use the global arguments and to focus on possibilities.

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