

## **PBL and Creative Processes**

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### **INTRODUCTION**

Problem Based Learning (PBL) is a pedagogical approach that encourages those who take part in its processes to act both as supportive change agents working in collaboration with colleagues, and also as individuals to use their creativity in finding solutions to practical problems. The process of questioning the issues and finding novel solutions using the creative spirit are also challenging for those who teach and deliver PBL based curriculum, and poses some fundamental questions.

The aim of this special issue was to uncover both theoretical, philosophical, pedagogical and aesthetical aspects of the contradictions and interactions between the collective and the individual in creative learning processes. To this end we need to view the learning process from a variety of different angles, for example, the individual student vis-à-vis group processes, as a personal journey, as a collective journey, and to obtain the insider perspectives of those who teach PBL, and their relationship to professional business partners and studios from real world settings. For example, is it possible to teach creativity as process pedagogy in formal classroom settings, especially within the context of PBL pedagogy?

Are we inhibiting individual creativity at the expense of consensual and collaborative group work problem definitions and solutions? Furthermore, in the design process there are always many ways and solutions to solve the same problem, so how can we be sure that we choose the right concept to finding the optimum solution to practical problems? What is the role of PBL in this context?

How do space, form and materiality impact upon PBL and creative processes? What can we learn from the flow and conflict in the PBL process and how can we improve both the aesthetic and pedagogical aspects of PBL education? The papers and the themes that we

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suggested for this special issue were eclectic, and the submissions received reflected the innovative use of problem-based classroom practice.

The foregoing is exemplified by the *Charlotte Lindvang and Bolette Becks* shared musical journey that uses musical concepts to explore the connection between creative process and social communication and how within PBL group activity social interplay can hinder creativity. As they say sometimes the travel is intense and dramatic, sometime lyrical and flowing, sometimes stationary for a while. The PBL process is a place where you experience new landscapes and learn new skills; it is also a process of common creation and understanding.

*Lindvang and Beck* turn to Damasio's book "Descartes error" and conclude that 'it is an advantage when the presence of emotions and feelings can be integrated in a balanced way in the PBL group work [and] in PBL it is important to be aware about how thinking and feeling are intertwined and that the balance between thinking and feeling influences the communication and the process'. Furthermore, they say 'Creative processes can be described as third order knowledge, characterized by dedication and absence of control. In the music improvisation the participants do not control what will happen, they open up their minds and they follow the music as it appears'. *Lindvang and Beck* quote Lars Qvortrup (2004) who presents a theory inspired by Gregory Bateson whereby knowledge is categorized as first, second, third and fourth order knowledge. First order knowledge is factual knowledge where knowledge can be accumulated as precursor to reflection on action. Second order knowledge is reflexive knowledge; it is knowledge about knowledge. On this level we can choose adequate methods and use our factual knowledge to solve concrete problems i.e. reflection-in-action. Third order knowledge takes the form of creativity, where we see things in a new and intuitive way (not-yet-embodied-knowledge). Fourth order knowledge (also called "world knowledge") represents the social evolution of knowledge.

The theme of group experience is also a concern of *Ole Pihl*. Here he explores the contradictions between the individual and the group of architecture students. He explores the hidden realities of the PBL-based creative process, and the exploration of artistic progression and intuition within group work. He focuses upon dialogical consensus, this being a central theme to PBL practices, and the evocation and expression of space, form, and materiality. You could argue that any kind of learning process is creative, it becomes more complex when we discuss creative educations as architecture, art and film, here we go beyond words and enter a world of complex images, where each project has a multiplicity of solutions, so how do you decide when you are alone, or in a PBL group, how do you decide what is the best solution? *Ole Pihl* suggests a range of methodological tools based on the study and findings of four different student cases from Department of Architecture and Design at Aalborg University. The focus of his investigations being focused upon the interplay between the individual and the group within the creative process.

*Virginie Servant, Gera Noordzij, Emely Spirenborg and Maarten Frens* also focus upon creativity within the PBL process. They advance the notion there is a need to educate individuals to be “creative” and “innovative” workers. This they take forward in their findings of the assessment philosophy of creative thinking. They take us through a journey of their PBL process and assessment strategy, whereby they describe the *Thinking in Possibilities* assessment philosophy, which build from a basic understanding to creative argumentation these being: foundational knowledge questions; application questions; and constructive argumentation. They explain how an open PBL environment balances between the group and the individual. They note that ‘Unlike written exams, coursework pieces are prepared at home throughout the block. These assignments assume that students have acquired the foundational knowledge of the relevant disciplines during the PBL meetings and self-study, and therefore aim for a creative application of the course’s methods and concepts to situations of a students’ choosing. Here, they can demonstrate that they can play with the materials of the course, following their own interest beyond the point, where the discussions in the PBL meetings stop’. This they claim is where problems provide openings to a particular topic, which students can follow if they want to do so in order to discover more than their PBL self-study will allow. This they can do so by presenting their self-chosen assignment titles to their tutor. The students have two weekly PBL meetings with the group and their supervisor. Writing they claim is an absolutely truly creative process that demands a precise interaction between control and play. Writing is indeed a “Blind” art, the image is only in the eye of the beholder and each reader creates his/her own image, and when we discuss our different interpretations new meanings emerge.

The theme of creativity, and knowledge-creation is continued by *Ann Charlotte Thorsted, Rie Bing and Michael Kirstensen* who relay their account of play between the small group of students and their supervisor with the PBL process. This dynamic makes a departure into the implicit teacher-student relationship that is predicated upon a more holistic, trustful, sensitive, open, creative and collaborative dynamic. This lead hen to ask thee central questions concerning the PBL process: What can a more playful approach bring into a PBL learning space? What influence can play have on learning, an on student-to-student and student-supervisor relationships and collaboration? Why did students find that this enhanced a learning that differed from earlier experiences? What was play had mediated? They go on to challenge the traditional PBL approaches, these being regarded as a problem solving approach to learning; their central thesis rests upon play as entrance to knowledge creation or what they call Play and Problem Based Learning, this being a playful, experimenting and intuitive approach.

This they claim engenders a community of play, where students gained confidence and courage to let of their desire to be in control; they engaged with the world more authentically and intuitively, central to the development they claim to create creative students. But to be

creative: ‘Intuition requires that we dare to put ourselves at stake, let ourselves be absorbed by the moment and through this get access to the world of our existence, not only as a matter of reaching certain facts or conceptual understandings, but also to let life itself impress us’. This they claim shows a change in the relationship between themselves and their supervisor that engendered trust, and allowed a more personal side to come forward leading to more honest and open dialogues between teacher and students.

*Cameron Richards* looks at the tensions of reconciling individual and collective aspects of innovative problem-solving; this being the role of PBL as a key focus in the creative process. His recognition of the fast-changing complexity of moderns day challenges is explored via curriculum and assessment design to support authentic problem-based learning for authentic policy challenges of sustainability; posing the question of wicked problems and policy builders of the future. This is articulated in his description of the design of problem-based learning project task in sustainable studies, this being outlined in terms of three stages and what he calls corresponding parts of their project write up, namely: the identification of a rationale; a critical breakdown of the selected policy issue or challenge; the design of a proposed solution. As he notes this requires ‘a systematic alignment of the distinct if ultimately axes of human knowledge-building’, which culminated as part of an e-portfolio assessment framework supported by a range of supporting individual reflections and activities. This is culminated by the “enneagrammatic” formula of integrated, optimal, and sustainable problem-solving that ‘serves to exemplify the possibilities of an integrated systems approach to problem-based learning as well as the generic problem-solving process in every aspect of both social and natural domains of human knowledge.

*Säde-Pirkko Nissilä and Esa Virkkula* make a comparison as to how musicians from a music conservatory education programme, and engineers who were participating in a trainers for trainers course, approach the practical and abstract solutions to problems; the former using the seven step PBL approach, the latter the 635 PBL problem-solving approach to explain their conceptions of change management at their levels of competence. Whilst both groups used different approaches, they conclude that in both cases process were based on planning and stating the aims and goals by joint planning and reflection, and the recognition of skills. It was also observed that expert dialogue led to the ‘demonstration of the problem as work processes’. Furthermore, when comparing the two groups there were more similarities than differences despite the differing approaches adopted, whereby both groups acted ‘systematically and creatively’. They conclude that the successful implementation of PBL ‘lies in designing a learning environment that stimulates students towards constructive, self-directed, collaborative and contextual learning’.