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Transforming PBL Through Hybrid Learning Models

Timely Challenges and Answers in a (Post)-Pandemic Perspective and Beyond

Scholkmann, Antonia; Telléus, Patrik K.; Ryberg, Thomas; Hung, Woei; Andreasen, Lars Birch; Kofoed, Lise Busk; Christiansen, Nanna Limskov Stærk; Nielsen, Stine Randrup

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PBL 2021

INTERNATIONAL CONFERENCE

TRANSFORMING PBL THROUGH
HYBRID LEARNING MODELS
– TIMELY CHALLENGES AND ANSWERS
IN A (POST-)PANDEMIC PERSPECTIVE AND BEYOND

AALBORG UNIVERSITY, AALBORG, DENMARK
AUGUST 17-19, 2021

Transforming PBL through Hybrid Learning Models

– Timely Challenges and Answers in a (Post)-Pandemic Perspective and Beyond

Edited by Antonia Scholkmann, Patrik Kjærdsdam Telléus, Thomas Ryberg, Woei Hung, Lars Birch Andreasen, Lise Busk Kofoed, Nanna Limskov Stærk Christiansen, Stine Randrup Nielsen

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PBL 2021 International Conference, August 17-19, 2021

Transforming PBL through Hybrid Learning Models – Timely Challenges and Answers in a (Post)-Pandemic Perspective and Beyond

All PANPBL conference proceedings are available at: <http://www.panpbl.org/conferences/>

The PBL 2021 conference proceedings will be officially launched two weeks before the conference. The PBL 2021 International Conference is hosted by Aalborg University in collaboration with the PAN-PBL Association of PBL and Active Learning and the PBL Future Research Initiative at Aalborg University. The conference will be held in conjunction with the IRSPBL 2021 conference. The PBL 2021 International Conference will be held as a virtual event which has been organised after its postponement in 2020 due to the COVID-19 pandemic and international restrictions imposed to control the spread of the disease.



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WELCOME BY THE ORGANIZING COMMITTEE

Dear participants at the PBL2021 International Conference (online),

A very warm welcome from the Organizing Committee.

Who would have thought that, when the first call for papers for our event was published in the summer of 2019, we would meet in a very differently looking world two years afterwards? The Corona pandemic has challenged the educational world. PBL practitioners and researchers alike were called upon to bring forward their knowledge, experience and creativity in designing and implementing solutions to digitally supported pedagogies.

In a way, the PBL and active learning community has held huge resources here – a deep understanding of the cognitive, motivational, emotional and social implications of the learning process. Extensive experience with the orchestration of self-directed and student-centered approaches as well as a long-standing engagement in exploration and enrichment of learning scenarios by digital possibilities. However, the challenges have been considerable as well: how do we maintain engagement amongst students in a time of physical and therefore also social distancing? How do we create places and spaces for group work and meaningful interaction in the digital sphere? And not to forget, how do we keep the relationships alive between the university-ecosystem and the rest of the world, in which the problems our students are working on have their arena?

The PBL2021 International Conference is intended as a space and place to bring together PBL practitioners and researchers to share our insights and experiences around the powerful approaches of PBL and Active Learning. Under the conference title ***Transforming PBL Through Hybrid Learning Models*** we want to invite all participants to share, watch, listen to, discuss and engage with the insights and experiences from both the Corona-period and from PBL and active learning practices in general. With three outstanding keynotes and almost 100 contributions in various formats we hope the conference will provide a rich (digital) environment for this. The proceedings certainly are a testament to the richness and breadth of the topics and insights the PBL and Active Learning community has to share.

The conference would not have been possible without the willingness to collaborate with us. We would like to express our gratitude to the PAN-PBL Association of PBL and Active Learning for entrusting us with the hosting of the 11th conference in the successful conference series, and for being excellent collaboration partners throughout this journey. Difficult decisions, such as the postponement of the conference, had to be made and we were extremely glad to have the PAN-PBL board with us on these decisions at all times.

From an Aalborg University perspective, the planning of the conference has been a cross-faculty/cross-department initiative connected with the PBL Future research project, headed by Prof. Anette Kolmos. We would therefore also like to thank Aalborg University and our faculties and departments for being willing to host the conference and for their generous financial support. There are several colleagues who were willing to dedicate their time to the conference as well: as members of the Scientific Committee throughout the submission and review process, and as chairs in our various sessions over the next three days. We would like to thank all of you for making this conference possible through your engagement.

Also, an incredible team of assistants has worked backstage to bring this event to life, both within Aalborg University and at our collaboration partner Morressier. Specifically, Stine Randrup Nielsen, Nanna Limskov Stærk Christiansen, Josefine Kristine Schou Jakobsen and Natalie Alisa Spaabæk Baliti must be mentioned here – thank you for the huge efforts you put into organizing the event and the proceedings.

Last but not least, we would like to thank all of you, the participants of the PBL2021 International Conference for being part of this event and for sharing your knowledge and experiences.

Antonia Scholkmann, Thomas Ryberg and Patrik Kjærdsdam Telléus

Organizing Committee PBL2021 International Conference.

WELCOME BY THE PAN-PBL ASSOCIATION

Dear PBL2021 participants,

On behalf of the PAN-PBL Association of Problem-Based Learning and Active Learning Methodologies, it is my pleasure to welcome you to the PBL2021 International Conference, co-organized by Aalborg University.

The PBL Conference series has had its origin in the year 2000, when Samford University in Birmingham, Alabama, USA, organized the first meeting, aiming to explore the use of PBL in undergraduate learning. Since then, the conference has been held bi-annually and altogether ten times, at the following universities and countries: University of Delaware, USA (2002), Instituto Tecnológico de Monterrey, México (2004), Pontificia Universidad Católica del Perú (2006), Universidad de Colima, Mexico (2008), Universidade de São Paulo, Brazil (2010), Universidad Autónoma de Occidente, Colombia (2012), Universidad del Bio-Bio, Chile (2014), Universidade de São Paulo, Brazil (2016) and Santa Clara University, USA (2018). In 2019 we organized the PBL2019 Immersive Virtual International Conference.

We are thankful to Aalborg University for hosting the 11th conference of this series. Aalborg University is an international reference for the development and diffusion of the Problem-Based Learning paradigm, and well recognized as an innovative and state-of-the-art higher education institution. Working with their professors and staff has been remarkable and a rich experience for the PANPBL Board and our community.

The COVID-19 pandemic has affected the whole world, recently, promoting changes in all dimensions of human life, and also, specifically, in the way we understand science and the processes of teaching and learning. The conference theme - *Transforming PBL through Hybrid models – timely challenges and answers in a (post)-pandemic perspective and beyond* - encourages us to think about a re-invention of education. We expect that the conference will foster powerful contributions to the educational world, and the practice of teachers and professors worldwide.

Thank you all for being part of this conference at this historical moment. Thank you for supporting the PBL2021 International Conference and for sharing your innovative and challenging experience on PBL and other active learning methodologies.



Prof. Dr. Ulisses F. Araujo

PAN-PBL Association President

University of São Paulo, Brazil

Transforming PBL through hybrid learning models

– timely challenges and answers in a (post-)pandemic perspective and beyond

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Education management PBL and active learning



DESIGNING PROBLEM-BASED LEARNING FOR BLENDED PROGRAMS: THE COLLABORATION AMONG PRACTITIONERS AND RESEARCHERS

Mario Giampaolo, Loretta Fabbri & Maria Ranieri

ABSTRACT

The background for this contribute is provided by a reform promoted by the Italian Ministry of Education concerning the preparation of educators. In December 2017, indeed, the law 205 established for the first time that educators are required to possess an academic title and invited departments and schools of education to organize mandatory intensive programs to train professionals already working in the national educational system with no bachelor's degree in educational sciences. Different Italian academic institutions tried designing a program potentially meaningful for workers in terms of both topics and teaching approach.

In order to develop the program, researchers in education at University of Siena and University of Florence involved representatives of cooperatives and associations in the field of education as "insiders" of the professional contexts. This collaboration allowed researchers to intercept data that emerged from the experience, especially those situated problems, that academic researchers were not able to collect differently. In this frame the co-design of the program represents the opportunity to share knowledge that is close to the professional problems that educators live (Shani, Guerci, & Cirella, 2014).

The developed core contents have been implemented in a six modules blended program. Each module starts with a face- to-face session, involves participants in online activities and ends with a second face-to-face session. The modules include each two on-line activities designed following a model of Problem Based Learning (PBL) that will be presented in this contribute.

KEYWORDS: problem based learning, blended program, in training educators, collaborative research

TYPE OF CONTRIBUTION: Practice-based abstract

PRESENTATION FORMAT: Experience demonstration

THEORETICAL FRAMEWORK OF THE MODEL

PBL is a learner-centered approach that allows students to apply theories and skills to an authentic problem and develop possible solutions. Since 1980, when this approach was first proposed in the Mc Master Medical School in Canada, different authors described its characteristics (Hmelo-Silver, 2004; Savery, 2006). The



following models of PBL inspired the one presented in this paper. In the authentic Problem Based Learning (aPBL) (Barrows & Wee Keng Neo, 2010). students apply what they already know with the aim to comprehend and solve a problem, while recognizing the information they need. Using a variety of resources from different disciplines, new knowledge related to the problem is acquired through self-directed learning process. New knowledge is structured by problems, facilitating the recall and the application in future problems. A similar approach characterizes the Delisle’s model of PBL (Delisle, 1997). It consists in a logic process that allows students to analyze and solve the problem. Students connect themselves with the problem, analyze it, make a task and evaluate it.

The third model that composes the theoretical framework is called the Dutch model and was developed during the ‘70s of last century at the University of Limburg in Maastricht (Savin-Baden, 2007). The model presents seven steps that begin from the analysis of a problem to arrive at the individuation of contents that need to be studied or that have to be collected. As different models of PBL have been developed for face-to-face learning, so several approaches have been designed for on-line learning. Different models of online PBL are briefly described in the table below (Table 1).

Table 1. Types of online problem-based learning adapted from Savin-Baden, 2007, p. 31.

Type of online PBL	Description
Single module online at distance	This typology is designed as 1-12 week stand-alone modules developed for a specific focus.
Single module blended (campus and distance)	This typology provides flexibility and support, but also develops self-direction in inquiry.
Blended program	This typology is a full degree program with a focus on students’ support during face-to-face seminars.
Content management systems (CMS) for PBL online	This typology is a content management system developed to support PBL

From the theoretical framework reported, different characteristics have been used to design the model presented in this contribute. As in the face-to-face models, students share and apply to the problem their previous knowledge in a discussion forum and then acquire new knowledge in a self-directed process consisting in reading provided learning resources or searching for others autonomously. Moving forward, through the steps of our model, they realize one or more tasks related to the solution of the problem. Finally,

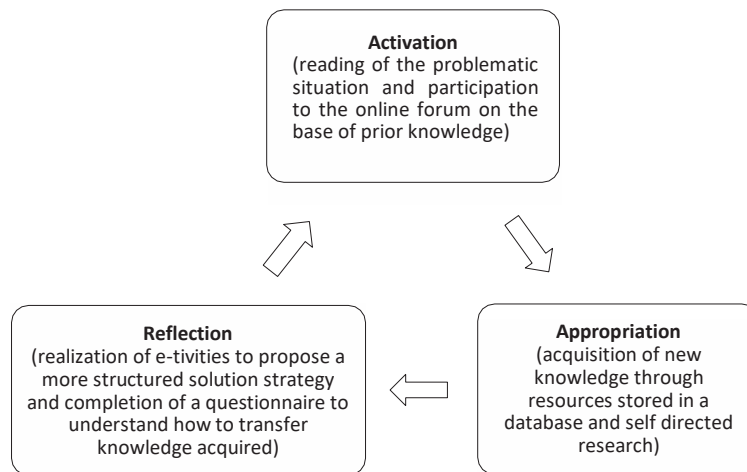


the model has been implemented in a content management system to offer participants a blended experience. In the next paragraph an in deep description of the model and its implementation is offered.

THE PBL MODEL DEVELOPED FOR THE PROGRAM

The PBL model developed for the program consists of three phases (figure 1). The first is called “activation”. Students read a scenario that presents a challenge for the reader or ask for the solution of a problem. In this phase students are invited to use their prior knowledge, discuss the problem and share their understandings. In the second phase called “appropriation”, students engage themselves in a self-directed learning process. They can access the resources provided by the teacher or they can find new material autonomously. The third phase called “reflection” allows the students to return to the initial problem on the basis of the new information gathered. They have to propose more structured solutions of the problem and understand how to transfer what they have learned in their professional context.

Figure 1. The problem-based learning model used in the program.



Researcher applied the model to a Moodle learning content management system using resources and activities of the platform. In the activation phase learners read a scenario using the resource page, then they have the opportunity to share their previous knowledge related to the story with other colleagues using the activity discussion forum. In the forum each participant has to write a brief post and comment at a minimum of two other participants’ posts. In the appropriation phase it is possible to deliver participants files, external links, and videos related to the core contents of the module or to give them the possibility to search academic databases or the web to find other learning resources. In this second case, once found the resources, participants had to explain their significance posting in a second discussion forum. In the reflection phase, the model is implemented through an e-tivity, a form to complete, that gives learners a structure to propose



a possible strategy to challenge the problem and finally the activity feedback to reflect on how to apply what they have learned in their work context.

PROFESSIONALS AS PROBLEM-BASED SCENARIO CREATORS

After having presented the model, it could be interesting to describe one of the on-line learning activities that participants had to achieve during the program. In the activation phase students could read a brief introduction to PBL and its characteristics. At the end of this reading participants receive the task to write an authentic scenario on the base of their professional experiences and of new resources collected in the second phase. To deal with this challenge and to understand better what PBL is, students autonomously search resources to deeply comprehend the elements needed to write a scenario. Once found interesting materials, participants have to link these in a discussion forum and write a post about the significance. After this self-directed research, participants started the third phase in which, reflecting on their work experiences and on the resources found, they could write a scenario.

An elderly mother with cognitive impairment, 3 children, two of whom with psychiatric disease. One of the children had a violent reaction after that the educator explained to him his duties for the umpteenth time...

Marina B.

Marco is a boy who presents psycho-physical problems, hypersensitivity and a strong insecurity in the relationship with his father, a severe and very authoritarian figure...

Francesco B.

At the end of the program, more than 100 scenarios have been submitted by the participants and most of these will be used to realise new PBL activities in the future editions of the program.

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