The Interdisciplinary Journal of Problem-based Learning

Editor's Introduction

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The issue of 14(1) is the first IJPBL issue that is published in IU Scholarworks under the administration of Indiana University Press. We thank the authors and the readers for their patience as we migrated from the Purdue University Press to the new publisher while in the process of establishing and refining new processes, workflow, and norms.

This issue consists of ten articles covering various aspects of research on problem-based learning (PBL), including investigating the potential benefits of PBL in various domains and contexts, examining the relationships between perceived problem quality and motivation, exploring optimal conditions for using the PBL approach, teachers' readiness and professional development for PBL, and the best practices to foster PBL experiences.

Rehmat and Hartley's (2020) article provided evidence that integrating PBL into STEM disciplines not only fostered college students' critical thinking skills, but also helped them acquire content knowledge. Warr and West (2020) reported that the "Learning and Innovation Skills" interdisciplinary design studio helped to develop interdisciplinary collaboration, creativity, and communication skills.

One of the PBL benefits, which has little been discussed in the PBL literature, was the cultural impact of PBL. The article by Claramita, Prabandari, Graber, and Scherpbier (2020) showed that PBL was a catalyst to the cultural change in a society that is traditionally dominated by the hierarchical, paternalistic communications. Their study showed that PBL was instrumental to helping students change their communication style from one-way communications to two-way communications.

While researchers continue to investigate the effects of PBL, they are also in search of approaches and instruments that can help with valid evaluation, which relies on clearly defining constructs and identifying various components associated with the constructs to be measured and assessed. Thorndahl and Stentoft (2020) conducted a scoping review of the PBL literature to understand how critical thinking is conceptualized to explore the connections between critical

thinking and PBL in different studies. Their findings indicate that there is a plurality of positions regarding the meaning of critical thinking and that how the concept is related to problem-based learning is due to different disciplines or perspectives. The varied positions regarding critical thinking may lead to inconsistent findings about the effects of PBL. Thorndahl and Stentoft's study revealed the necessity of developing clear definitions and identifying theoretical constructs in order to obtain valid and reliable assessment results in PBL.

Tawfik, Hung, and Giabbanelli (2020) explored and compared various inquiry-based strategies and approaches in support of learners' experiences, particularly in self-directedness. Approaches with different levels of self-directedness (e.g., PBL, lecture prior to problem-solving, and case-based learning) have different effects on the following learning outcomes: conceptual knowledge, causal reasoning for ill-structured problem-solving, and students' perception of self-efficacy.

Gomoll, Hillenburg, and Hmelo-Silver's (2020) "Voices from the Field" showcased their co-design of a PBL experience that involved researchers, teachers, students, and stakeholders in the area of human-centered robotics. The research identified three aspects of the PBL that are central to its success: 1) co-design experiences that occurred before and during unit implementation, 2) the use of shared video viewing and analysis both in co-design and with student groups in the classroom, and 3) the bringing of local stakeholders into the classroom to work closely with students. The authors offered a viable model that can be adapted in similar PBL contexts.

Gera Noordzij and Lisette Wijnia (2020) explored the intricate relationships between the quality of problems and PBL experience, specifically with students' achievement goals and autonomous motivation. The study reported that the perceived quality of problems—defined by familiarity, resulting in intended learning objectives, promoting critical

reasoning, and triggering interest—fostered learners' autonomous motivation while the perception of this quality was influenced by students' achievement goals.

Teacher preparation and professional development (PD) for PBL has always been an interesting topic of research. Shuster, Glazewski, and Villa (2020) shared their inquiry-based PD experience through their article on how their workshops met teachers' needs for training in both content and pedagogical areas. The workshop focused on strengthening teachers' confidence, interest in the scientific content, and support for their intention to incorporate scientific content and activities in teaching.

Du and Chaaban (2020) reported a study about teachers' readiness for adapting PBL in Qatar. It showed the challenges encountered by the educators when an innovative approach was introduced to a country that was dominated by the traditional teaching approach and a culture that values authority source of knowledge. Not only pedagogical preparation, but also epistemological preparation, is needed to help educators gain a deeper understanding of the theoretical underpinnings and true values of PBL. The study also indicated the need and importance of understanding contextual factors, such as stakeholders' perceptions, educational policies, and curriculum-based standards.

Servant-Miklos' (2020) article discusses different versions and origins of PBL that have been implemented in different parts of the world, including PBL's original purpose and rationale that arose from some specific and unique social and cultural needs in response to the government's call for educational reform. Examining PBL from the historical, social, and cultural perspective helps us understand why there are different versions of PBL and where the differences or gaps exist. This study makes us wonder if we should try to understand the social, cultural, and historical contexts and focus on the practical implications of PBL instead of distinguishing various PBL models or arguing over issues such as what is or what is not PBL.

This is an interesting collection of articles with diverse topics. I hope you will find them useful and thought-provoking. Please feel free to interact with the authors of the articles you are interested in.