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Editor's Introduction

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Editor's Introduction

M. M. Grant and P. A. Ertmer

We are proud and excited that IJPBL continues to be an outlet for diversity. In this issue, there are four articles situated within the contexts of higher education and K-12 teacher professional development that address the disciplines of medicine, engineering, health sciences, and in-service teacher professional development. Moreover, three of the articles represent international settings; that is, two are from Canada and one from Dublin, Ireland. While this issue is not intended to be an extension of our previous issue, within this Volume 6, we now have 11 articles from around the world that represent six countries and four continents (for more international perspectives, review Volume 6, Issue 1 at http://docs.lib.purdue.edu/ijpbl/vol6/iss1/). Clearly, problem-based learning continues to be a valuable instructional strategy for many situations and circumstances.

In a unique investigation, the work by Bédard, Lison, Dalle, Cote, and Boutin, "Problem-based and Project-based Learning in Engineering and Medicine: Determinants of Students' Engagement and Persistence," examines both problem-based and project-based learning approaches in higher education with medical and engineering students. Their research looks at broader curricular implementations of PBL approaches within different disciplines at the Université de Sherbrooke in Canada. The focus of their research considers student engagement, which they liken to "curricular engagement," that is sustained during the students' programs, and persistence, which is "a student's conscious choice to pursue a learning activity." Surprising to the researchers, student engagement and persistence were most highly related to the characteristics of stress, regardless of the discipline. Bédard et al., however, remind us that stress itself is neither positive nor negative. Instead, the effects of stress are determined by our reactions to it. As Bédard et al. state, "It is the manner in which one deals with it which may be the problematic."

Two articles published in this issue, while in different and varied contexts, note and highlight similar collaborations, findings, and implications. Cusack, O'Donoghue, Butler, Blake, O'Sullivan, Smith, Sheridan, and O'Neill in "A Pilot Study to Evaluate the Introduction of an Interprofessional Problem Based Learning Module" emphasize the interdisciplinary

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development of content for health science students. Representatives from nursing, physical therapy, radiography, and medicine contributed to the discussion and development of an elective module using problem-based learning. In their findings and implications, Cusack et al. emphasize the role of administrators in sustaining innovative practices, such as the interdisciplinary module they implemented. Similarly, Asghar, Ellington, Rice, Johnson, and Prime report their experiences with interdisciplinary K-12 teacher professional development in "Supporting STEM Education in Secondary Science Contexts." In this research, the authors implemented a five-day workshop over five months to secondary teachers across Maryland. Like Cusack et al., this curriculum was also collaboratively designed—this time by math education, science education, and engineering faculty. In addition to the teacher's role, school culture, state assessments, and teacher accountability, Asghar et al. also underscore the role and value of administrators in supporting and sustaining teacher change for problem-based learning.

Finally, in "Examining How Middle School Science Teachers Implement a Multimedia Enriched Problem-Based Learning Environment," Liu, Wivagg, Geurtz, Lee, and Chang report a deep and rich case study of how 10 middle school teachers implemented technology enriched problem-based learning environments in science classrooms. Their findings confirm teachers' motivations for adopting and implementing problem-based learning in their classrooms, such as its ability to meet curricular requirements, the match with teachers' pedagogical beliefs, and its engagement of students. In addition, Liu et al. provide some comparative cases, or pairs of teachers for us to consider. These pairs' descriptions, combined with in-depth details of their practices feature the challenges and successes teachers face when integrating problem-based learning with their pedagogical beliefs and classroom cultures. Across the ten teachers, we see a variability in how problem-based learning was implemented and how these implementations may have ultimately impacted the teachers' successes with problem-based learning.

These articles, across contexts and countries, accentuate the challenges to implementing problem-based and project-based learning, as well as sustaining these initiatives. Students and teachers are expected to accept changes to their roles and responsibilities in student-centered learning environments such as these (Grant & Hill, 2006). In the article by Bédard et al., it is evident that the students' responsibilities and learning processes were related to their perceived stress. In the articles by Asghar et al. and Liu et al., how teachers implemented problem-based learning was representative of their beliefs about their roles and responsibilities for teaching. This results in variability of implementations and successes, as depicted in Liu et al.'s cases. In addition, administrative supports are needed to champion and sustain innovations (Grant, Ross, Wang & Potter, 2005; Silvernail & Lane, 2004). In the articles by Cusack et al. and Asghar et al., the implications of their findings explicitly demonstrate the needs for administration to understand the value of

implementing innovative curricula and to support these. Together, these articles present a diversity of contexts and implementations while continuing to explain, corroborate, and verify findings that should ultimately impact future implementations.

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