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THE INTERDISCIPLINARY JOURNAL OF PROBLEM-BASED LEARNING

GUEST EDITORS' INTRODUCTION

Analyzing Interactions in PBL—Where to Go From Here?

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Why a Qualitative Approach to Researching PBL Interactions?

This special issue of IJPBL, *Interactional Research in Problem-Based Learning: Gaining Emic Perspectives*, directs both theoretical and practical lenses to examine *inside* problem-based learning (PBL). A founding premise is that, with the increasing uptake of PBL as both a curriculum component and overarching curriculum design (Lu, Bridges, & Hmelo-Silver, 2014), it is timely to re-consider *how* we understand *how* students learn in an inquiry-led approach such as PBL. Indeed, the repetition of “how” in the previous sentence is central to this special issue’s focus on interactional research. The majority of research on PBL to date has focused on knowledge-based outcomes addressing *why* PBL is useful to (in the majority, successfully) justify its adoption as a pedagogical approach. Early comparative studies drew strong attention to differences in learning outcomes between PBL and conventional or direct instruction curricula. Many of these reported successful implementation in terms of students’ self-directed learning behaviors (Blumberg & Michael, 1992), long-term retention of content (Norman & Schmidt, 1992), and diagnostic performances (Schmidt et al., 1996). Ensuing studies have continued to examine, discuss, and reveal the effectiveness of PBL curricula (e.g., Colliver, 2000; Hartling, Spooner, Tjosvold, & Oswald, 2010; Hmelo & Lin, 2000; Newman, 2003; Norman & Schmidt, 2000; Prosser & Sze, 2014).

What has struck us as somewhat ironic is that, although the fundamental ontological and epistemological underpinnings of PBL re-situate our conceptualization of knowledge to a *process-driven orientation*, the majority of the body of PBL research has focused on gathering and conducting psychometric analyses of knowledge products or self-reported

participant perceptions (e.g., Hendry, Ryan, & Harris, 2003; McParland, Noble, & Livingston, 2004; Prosser, 2004). Our motivation for this collection, therefore, was to build upon this solid research base through qualitative investigations researching ethnographic, interactional, and discourse-based orientations, examining how students and their facilitators engage and learn within the PBL process. A key moment in the history of this form of in situ analysis of PBL was the 1996 American Education Research Association (AERA) exercise and ensuing special issue of *Discourse Processes* (Koschmann, 1999), where five researchers from different theoretical perspectives analyzed the same 6-minute video excerpt of a PBL tutorial. The application of research lenses from ethnomethodological traditions, cognitive ethnography, sociocultural analysis, and semiotics illuminated both layers of complexity and possibility for PBL research. The 2000 edited collection by Evensen and Hmelo-Silver, with its historical forward by Barrows, saw this new research direction in medical education as moving from a focus on “knowledge acquisition and the problem-solving advantages of PBL” toward exploring “self-regulation and group participation” (pp. 4–5). Working from a constructivist perspective, the collection drew on multiple methods, including ethnographic approaches to video analysis, “to find ways into the psychological processes and sociological contexts that constitute the world of PBL in medical education” (Evensen & Hmelo-Silver, 2000). At the same time, Hak and Maguire (2000) noted that research largely neglected the issue of participants’ actual activities and learning processes in PBL, which they called the “black box” of studies on PBL. Evensen, Salisbury-Glennon, and Glenn’s (2001) qualitative study further opened this black box by adopting a situated action research case study to investigate how six first-year medical students’ self-regulated their learning in their first semester of a PBL curriculum.

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Hmelo-Silver and Barrows's (2006, 2008) video analyses of facilitation in situ has since become seminal in illustrating *how* facilitators work within the PBL learning process. Further qualitative studies using, in many cases, recordings of PBL tutorial interactions have sought to gain an emic view of constructive, self-directed, and collaborative learning processes across a PBL cycle (Yew & Schmidt, 2009, 2012), facilitation strategies (Aarnio, Lindblom-Ylänne, Nieminen, & Pyörälä, 2014), group dynamics (Imafuku, Kataoka, Mayahara, Suzuki, & Saiki, 2014), knowledge-building processes with technologies (Bridges, 2015; Savin-Baden et al., 2011), and silence in interaction (Jin, 2012; Remedios, Clarke, & Hawthorne, 2008). Two edited collections led by Bridges and colleagues (Bridges, Chan & Hmelo-Silver, 2016; Bridges, McGrath & Whitehill, 2012) indicated the growing body of ethnographic, discourse-based studies and introduced interactional ethnography as a new approach to address issues of interdisciplinarity and scalability. This small but growing body of research since the 1990s has led to new directions in PBL research and contributed to our understanding of the relationship between cognitivist knowledge-building processes and sociological orientations to learning through interactions. However, there remains an ongoing need to capture the lived experiences of individuals and groups in PBL. As Evensen and colleagues (2001) noted over a decade ago, "It is interesting that the process of PBL allows for the social correction of students' scientific misconceptions through the group dialectic" (p. 674). Tracing this sociocognitive interplay has remained a shared fascination for a small group of PBL researchers, so, in 2015, we decided to build a collection of qualitative studies that could update the field and provide new, emic perspectives of PBL. In doing so, we also sought to provide a platform for expanding and integrating current qualitative international scholarship on PBL across both K-12 and higher education contexts. This international collection, therefore, presents new research across these contexts and from three countries and a region: Australia, the United Kingdom, the United States and Hong Kong.

We open with Maggi Savin-Baden's synthesis of a body of qualitative research on student engagement in higher education since 2000, from which she proposes a set of generic transdisciplinary threshold concepts. She also challenges us to regain lost ground in defining higher education in a world of change and argues that this new conceptual framing can support students and facilitators in recognizing and managing key interactional moments, or "portals," which offer transformational opportunities but are also the key moments where students become stuck in the PBL process. This new conceptual framing, founded upon an interactional evidence base, affords new insights into learning in PBL that moves from purely epistemological framings to wider sociological

considerations of learner identity. In an age where we are taking great efforts to bound and constrain curricula, her argument for this reframing has the laudable goal that curricula "should be spaces for meddling with."

The remainder of this special issue is delineated into (a) three studies in higher education (i.e., Hendry; Skinner, Braunack-Mayer, and Winning; and Almajed, Skinner, Peterson, and Winning), (b) two studies in K-12 contexts (i.e., Svihla and Reeve; and Schettino), and (c) a closing systematic review of qualitative research in PBL by Jun Jin and Susan Bridges to establish new topics and approaches of investigation. The study by Gillian Hendry employed discursive psychology, an approach used to examine the management of psychological issues in talk and text, for a fine-grained microanalysis of students' in situ accounting for personal mobile phone use during PBL. Specifically, his conversation analysis of five extracts, chosen from an extensive corpus of videos, illustrates what actually happens in group interaction when a student starts to use his or her mobile phone and how the use of this mobile technology impacts group dynamics in PBL settings. A qualitative study by Vicki Skinner and colleagues explores students' views of social practices with respect to quietness and dominance in groups. They provide a deeper understanding of how group roles and functions are negotiated and developed in the given contexts. Moreover, their ethnographic investigation of PBL groups in practice notes the dual nature of silence that can have either generative or negative impacts on learning and social interaction in PBL tutorials. Similarly, Abdulaziz Almajed and colleagues adopt a constructionist interpretive approach to examining collaborative learning, specifically in the area of case-based discussions in a dental education. Their study reinforces prior assertions as to the generative and productive nature of sociocognitive "knowledge conflicts" in inquiry-based group discussions.

The two studies undertaken in K-12 contexts in the United States provide a rich description of students' and tutors' engagement with learning activities in PBL settings. Vanessa Svihla and Richard Reeve reveal an agentive process of students' learning in a problem-framing activity within project-based instruction settings at a U.S. charter school. Their emic analysis of student-teacher interactions, field notes obtained from participant observation, and students' learning artifacts demonstrate how teachers support students to take ownership of and frame problems, and, thereby, how students engage as "designers of problem" over time. The study adds to our knowledge about students' learning experiences in problem framing from a perspective of "insiders." In her study, Carmel Schettino used a relational approach to narrative analysis to examine interactional aspects of adolescent female students' mathematics learning within a new feminist pedagogic approach that

she terms “relational problem-based learning (RPBL).” After examining multiple layers of student and staff discourse, she constructs I-Poems to identify developing empowerment and agency in mathematics learning using this form of PBL.

Finally, we close with Jin and Bridges’s review of qualitative research in PBL in medical and health sciences education, which highlights future directions relevant to many disciplines and educational contexts. Specifically, they recommend that qualitative research in general, and the small but growing number of interaction-focused studies in particular, can contribute to more textured understandings in the areas of PBL facilitation, assessment, and the new impact of educational technologies. Methodologically, they indicate a trend toward video analysis, the adoption of introspective protocols such as stimulated recall, and longitudinal qualitative studies using discourse-based analytic approaches. Finally, they note the expanding horizons of qualitative research in PBL in the health sciences spatially (Asia, Middle East, Africa, South America) and recommend expansion of these research perspectives into PBL in both higher education and K–12 contexts.

Conclusion

Given a shared interest in researching learning interactions in PBL in Asia, our aim of this special issue of IJPBL is to provide a platform to both expand international perspectives and integrate current qualitative scholarship with a particularly sharp focus on the interactional dimension of learning in PBL. Included studies investigate learning in PBL from the perspectives of collaboration and group dynamics, facilitation and agency, gender and identity, and conceptual growth in knowledge co-construction processes. In assembling this work, we have argued that, although reasoning and problem-solving processes are central to PBL (Barrows & Tamblyn, 1980), the social dimension and lived experience of these aspects have not been explored sufficiently. We trust that in expanding the work in this field, this special issue has contributed to providing more rigorous evidence to afford valuable insights into student learning in PBL as it is co-constructed through dialogic, interactional processes.

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