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Book Review

Problem-based Learning into the Future: *Imagining an Agile PBL Ecology for Learning*

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Problem-based Learning into the Future: *Imagining an Agile PBL Ecology for Learning*

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Problem-based Learning into the Future presents a much-welcomed proposal for the future of problem-based learning (PBL). The authors, Dr. Megan Yih Chyn A. Kek and Dr. Henk Huijser, are well-known researchers in the field of higher education development, in particular student learning and development, curriculum design, and academic development. At the beginning of the book, the authors acknowledge the existence of a fairly robust knowledge base concerning the pedagogical and practical aspects of PBL, as well as the impact of PBL on university students' teaching and learning. Therefore, the authors instead focus on an area that has received scant attention in the PBL literature: feasible approaches to teaching and learning that might be imagined in yet-to-be-defined universities of the future. They propose an "agile PBL ecology for learning" model that can respond to the super-complex and dynamic environment of the future. As they detail in the book, the authors ground their model on a robust theoretical basis, as well as on previous empirical research. In terms of curricula and pedagogy, the authors base their envisioned approaches on Bronfenbrenner's (1979) ecological model of human development, while aligning them with more recent thinking, such as Ito et al.'s (2013) connected learning model of education, Siemen's (2005) connectivist pedagogy, and Hatano and Inagaki's (1984) model of adaptive expertise. In terms of PBL, they chiefly draw on the ideas of Dr. Howard S. Barrows as well as Savin-Baden's (2014) new PBL constellations for the twenty-first century.

The ecological and connected conceptions of learning are, of course, not particularly novel. The ecological perspective on learning has been proposed even in previous PBL-related research as a framework for curricular design (Barab & Roth, 2006). Further, previous studies have addressed the development of higher education curricula from the perspective of learning ecosystems (Rasi, Hautakangas, & Väyrynen, 2015). Problem-based Learning into the Future contributes to this discussion in a number of ways. First, it places emphasis on promoting the development of students from a holistic viewpoint. The authors communicate this emphasis through the "way-of-being" concept, which encompasses the human being as a whole in terms of thinking, feeling, and doing. In higher education contexts especially, the cognitive aspects of learning have dominated the research, leaving the affective aspects relatively under-researched (Hakkarainen, 2011). This holistic emphasis connects Problem-based Learning into the Future with competency orientation to teaching and learning, which has become a key focus of the educational debate in PBL and beyond; it has also shifted attention from the development and assessment of students' cognitive abilities to more complex ability constructs related to real-world contexts (Müller, Schäfer, & Thomann, 2017).

Second, the book is unique because it points out that agile PBL is everyone's business. The authors' central argument is that "there is no one person, nor the teacher, who is responsible for educating students. Rather, it is everyone's responsibility, including the students, employers and wider social networks inside and outside the university" (p. 8). Reminiscent of the proverb "it takes a village to raise a child," this argument forms the core of the agile PBL ecology for learning model. The book does an excellent job of capitalizing on this notion within the university context by considering collaborations between academics and non-academics in co-designing, co-implementing, and co-evaluating agile PBL. For instance, the authors underscore that the budget needs to be aligned with agile PBL requirements. In another

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example, they explore how during the staff recruitment phase the human resource department needs to understand the specific competences of agile PBL teachers.

The book is divided into three parts. Part I begins with the essentials of PBL and problems identified in the literature. This is followed by the authors' vision of the future: a four-layer agile PBL ecology for learning model. Parts II and II then elaborate upon the different layers of the PBL model.

Part I: Imagining Agile PBL in a Changing World for Learning

Part I, "Imagining Agile PBL in a Changing World for Learning," opens with Chapter 2, which revisits the basic concepts relating to PBL, such as authenticity, student-centeredness, small group collaborative learning, self and peer assessment, and skilled tutors. The discussion draws from the late Dr. Howard S. Barrows. Next, the authors outline their agile PBL model for connected learning. Based on Bronfrenbrenner's (1979) ecological model, their agile PBL model consists of four interrelated layers—micro, meso, exo, and macro systems—that are interdependent and feed into each other. At the very core of the model, in the micro systems, are PBL students' relationships with their teachers and other students. Meso systems concern university students' relationships with their families, workplace, hobbies, peers, social networks, and other informal groups. Exo systems are systems by which students are influenced but in which they do not participate directly. These systems include academic staff's professional development, student support, research and scholarship of teaching, and quality and continuous development of teaching. The fourth layer (macro systems) represents the "wider world," including systems such as technologies, governments, non-governmental organizations (NGOs), and legal systems.

By outlining the agile PBL model and its four layers, the chapter thus nicely sets the stage for the subsequent parts and chapters. Chapter 3 addresses the very core of the agile PBL model: the students. Specifically, it examines a new generation of students and the twenty-first century skills they need to navigate in an increasingly complex world. As part of this discussion, the authors critically question the "digital natives" and "digital generation" discourses by citing research demonstrating a great variation in terms of students' access, usage and skills, and preferences with respect to digital technologies. The authors also highlight the need to design a technology-supported agile PBL environment for the next generation of learners, asserting that this challenge requires both a whole-of-curriculum and whole-of-institution worldview.

Part II: Imagining an Agile PBL Curriculum for Learning

Part II, "Imagining an Agile PBL Curriculum for Learning," builds on the agile PBL ecology for learning model presented earlier, discussing its first two layers: the micro and meso systems. Chapter 4 explores how curriculum design in an agile PBL context might appear from the authors' perspectives, especially with respect to twenty-first century learning outcomes, interdisciplinarity, and the problems that students explore. The central argument is that a paradigm shift from disciplinarity to interdisciplinarity is taking place, and an agile PBL curriculum should be co-designed by interdisciplinary design teams ideally including academics, students, employers, and partners outside the university. Chapter 5 considers yet another key element in the authors' envisioned PBL ecology micro system: assessment. The central argument suggests there is a pressing need for a paradigm shift from the "assessment of learning" to "assessment for learning" (Boud, 2007). The chapter argues that the traditional, testing-oriented assessment practices are too limited in scope to prepare students for future learning or to help them operate and make a difference in the super-complex and dynamic environment of the future. In line with the holistic perspective of the book, Chapter 5 envisions assessment for learning, which promotes students' skills, competencies, and dispositions (way-of-being) to formulate problems, propose ideas or hypotheses, search for information, and engage in problem-solving. As in the case of curriculum design (Chapter 4), the assessment process (assessment design, actual assessment) ideally involves academics, students, employers, and partners outside the university. For instance, this could mean that partners outside the university provide students with feedback on their products, problem-solutions, or ideas. While Part II presents a strong review of the recent thinking around assessment, interdisciplinarity, and PBL problems, readers may note that the chapter could even have explained—or more precisely, imagined—in more detail the possible involvement of employers and/or partners outside the university in the curriculum design and assessment practices of the future.

Part III: Imagining an Agile University for Learning

In Part III, "Imagining an Agile University for Learning," the authors turn their attention to the third layer of the agile PBL ecology for learning model: the exo system. Its central premise is that the overall university environment, along with its key actors—the teachers, professional staff, administrators, and managers—must be interconnected and must adopt a whole-of-university approach to be able to support the development of students as whole individuals. I believe this part is very important for multiple reasons. First, the

chapter adds to the previous PBL research concerning the pedagogical and practical aspects of PBL by providing a more holistic perspective to curriculum development, teaching, and learning. Chapter 6 also focuses on students and their support system. It examines student development and engagement, primarily drawing on the key concepts of student identity development and life transitions, which have been explored in the student development literature. As in the case of other chapters, the chapter underscores that the agile PBL ecology for learning is concerned with the development of students as whole individuals, encompassing their personal, professional, and disciplinary identities. For instance, the authors argue that agile PBL teachers need to recognize students' life transition stages with their specific issues and challenges in order to teach and engage students as whole individuals.

Chapter 7 turns the reader's attention towards the academic teaching staff. The starting point is the authors' acknowledgement that "the agile PBL teacher" forms a central element of their proposed approach to PBL. The authors join the ongoing academic quest for the essential qualities of a good teacher in terms of PBL and beyond, as well as practical suggestions for educators to excel (e.g., Schmidt & Moust, 1995; Korthagen, 2014). They present the characteristic roles, qualities, skills, competencies, as well as the PBL-related beliefs and conceptions of an agile PBL teacher—and how these can be promoted in continuing professional development. According to the authors, "Agile PBL teachers must also have knowledges, skills, competencies, values and attributes that are expected of their students!" (p. 136). As part of this discussion, they further argue that professional development must include collaborating with peers, colleagues, and partners outside the university. In line with the ongoing discussion on the key competencies of teachers, the authors also highlight the importance of integrating technology into teaching practices, describing it as a key aspect of the agile PBL model. The chapter does an excellent job of offering insights into the various dimensions of the human being as a whole, which again are important in order to be or become an agile PBL teacher. However, considering the authors' strong emphasis on interdisciplinary team teaching and collaboration with multiple stakeholders elsewhere in the book, I found it a bit surprising that neither of these ideas was listed among the suggestions regarding the knowledge base of an agile PBL teacher. As the authors themselves note, "PBL is still too often applied by single teachers in their courses" (p. 71); therefore, discussing an interdisciplinary team that teaches and collaborates with multiple stakeholders would have been useful for the readers. Perhaps the authors could have discussed the characteristics of interdisciplinary PBL "teacher dyads" or teams, in addition to focusing on individual teachers.

Chapter 8 discusses quality of curriculum design through agile curriculum sustainability and continuous improvement from a whole-of-institution implementation viewpoint, drawing on the idea of the "learning organisation." The authors address three key aspects that contribute toward the sustainability of an agile PBL curriculum: implementation and transition, sustainability and renewal, and evaluation and continuous improvement. For instance, with regard to implementation and transition, the chapter helps the reader to understand the various key features such as legal issues, governance, financial matters, transparency, and communication that need to be considered when implementing an agile PBL curriculum. The central argument is that to benefit fully from agile PBL, besides adopting the whole-of-institution approach, stakeholders outside the university must be involved, and in doing so, financial responsibilities need to be agreed upon. Finally, Chapter 9 deals with future research on agile PBL; the discussion addresses the argument that evaluation and data collection on agile PBL is essential considering that the curriculum is continuously renewed and updated. The authors further argue that even if research and scholarship are situated in the exo system of the proposed agile PBL ecology for learning model, research should inform and be informed by all parts and actors within the ecology. In this chapter, I found the notion of students as partners in learning and research to be especially important. This means that students' research skills need to be built into the agile PBL curriculum and that they need to be co-researchers in PBL research.

Conclusion

In summary, the book presented and comprehensively discussed the authors' vision of a four-layer agile PBL ecology for learning model. Only the fourth layer, that is, macro systems, did not receive much attention; a more detailed exploration may have been left for future work by the authors and the PBL community. In line with the ecological and connected conceptions of learning, this book is an excellent resource for everyone interested in taking responsibility for the learning and development of university students, including university students themselves (postgraduate and undergraduate students of education, educational technology, and psychology), their teachers and employers, researchers, and the wider networks inside and outside the university. Through this book, the authors aim to offer a starting point for a dialogue. I believe the authors will be successful in this goal: the book is bound to generate inspiring discussions on whether and how

to make this feasible utopia a reality. Besides imagining the future and offering a starting point for such a dialogue, the authors also provide the reader with fairly practical advice on, for example, ways to support student development and engagement (Chapter 6) and how to be an agile PBL teacher (Chapter 7). The arguments advocating that interdisciplinary team teaching and education are everyone's business were particularly inspiring. On the other hand, the book raised a host of questions concerning the possible implications of the agile PBL ecology model for the teaching and research practice: How can we refine or redesign our PBL models to better accommodate interdisciplinary team teaching, collaboration with multiple stakeholders, and students as co-researchers? What are the fragile elements of agile PBL? Undoubtedly, the discussions around agile PBL and, particularly, its practical implementations can be expected to continue due to the inspiring ideas presented in this book.

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