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## New Approaches to Problem-Based Learning: Revitalizing Your Practice in Higher Education

Sofie M. M. Loyens

Erasmus University Rotterdam, [loyens@fsw.eur.nl](mailto:loyens@fsw.eur.nl)

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# THE INTERDISCIPLINARY JOURNAL OF PROBLEM-BASED LEARNING

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## BOOK REVIEW

### New Approaches to Problem-Based Learning: Revitalizing Your Practice in Higher Education

Sofie M. M. Loyens (Institute of Psychology, Erasmus University Rotterdam, the Netherlands)

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The book *New Approaches to Problem-Based Learning: Revitalizing Your Practice in Higher Education* is divided into three parts: the first part addresses stakeholders designing problem-based learning (PBL) initiatives, the second part focuses on students using PBL to enhance their capabilities, and the third part describes issues related to the sustainability and building capacity in PBL initiatives. The final chapter shares insights on how the authors wrote the book or, in other words, how they applied PBL to the process of writing about PBL.

The first part of the book, “Stakeholders Designing Problem-Based Learning Initiatives,” consisting of eight chapters, describes the process of designing problems as well as points of attention in this process (e.g., making interconnections of concepts across PBL modules), the persons (i.e., stakeholders) who should be involved in this process (i.e., students, practitioners, and employers), and the tools that can be employed in the design process (e.g., multimedia and role play). Chapter 1 reiterates what PBL is about: “students learning, not teachers teaching” (p. 4). Different roles are described (e.g., tutor, chairperson) as well as different approaches to structure the PBL group discussion (e.g., Seven Jump or CAPRA). Chapter 2 gives various examples of what a problem in PBL can entail: a scenario, a story, a dilemma, a lived experience, and the like. The authors explain that the word *trigger* better captures the meaning of the problem in PBL, since the problem is the starting point of students’ learning and hence triggers their learning process, as well as interest (e.g., Rotgans & Schmidt, 2011) and motivation. As the authors state, problems need to “move learners from satisfaction with current identities to a desire to explore other identities” (p. 22). Indeed, PBL has recently been proposed as a method to facilitate *conceptual change* (Loyens, Jones, Mikkers, & Van Gog, 2014). The authors highlight a five-step approach for problem design using different media and provide a problem design template

and concrete tips on open-access resources. The use of online digital tools provides endless opportunities, particularly as we begin to consider PBL implementations across different countries (Lajoie et al., 2014). Chapter 3 makes a case for designing PBL problems in multidisciplinary groups in order to find a right balance concerning a problem’s complexity and structuredness. Previous research has already highlighted the importance of problem difficulty (Jonassen & Hung, 2008). Inclusion of workplace experts in problem design prevents problem designers from including inappropriate issues and is a way to ensure that problems are authentic and relevant with respect to students’ future professional practice. Developing PBL problems in a multidisciplinary team can even have the extra bonus that PBL skeptics become enthusiastic about PBL, which is crucial in order to achieve as broad a basis as possible for PBL. Chapter 4 discusses the role of students in problem design, and they are labeled as *essential partners*. Two formalized student engagement initiatives are discussed: Peer Mentoring (i.e., support from a higher-year student in, for example, campus orientation and exam revision strategies) and Peer Assisted Study Sessions (i.e., for challenging courses, led by a higher-year student). Further, the authors describe the Student Intern Programme at their university in which students are recruited to work with academic staff on the development of PBL.

Chapter 5 deals with the issue of interconnections among PBL modules and the role students can play in this respect. The authors acknowledge that students do not automatically and/or proactively integrate what they have learned and that PBL educators should be cautious that the knowledge students acquire is not tied to the problem at-hand, but transferable to other contexts. A first area in which interconnections can be established is problem design. Different approaches can be used in this respect, such as the order in which problems are presented to students. For example, when advanced

problems build on more simple or basis problems, students are guided to see the interconnections. Besides problem design, other strategies for encouraging interconnections between concepts are the role and sequence of learning resources (e.g., which status is given to lectures) and by making interconnections part of the assessment (i.e., testing for interconnections in exams as well). Chapter 6 describes different tools to spice up PBL problems and the authors explain how experience in the medical domain with various problem types can be beneficial for other fields, since PBL in medical education has the additional goal of developing professional practice skills. Three types of problems are discussed: video-based problems, role-plays, and compare-and-contrast problems. For each type, the authors discuss what the goal of this particular type of problem is, what additional activities/goals these types of problems entail, and empirical evidence from the research literature. The perspectives of employers in problem design are central in chapter 7 and the authors argue that “many of the transferable skills that employers seek are a by-product of PBL initiatives” (p. 89). Research on employers’ perceptions of PBL graduates is scarce, but the authors describe a case study and put emphasis on the design of realistic (i.e., directly obtained from the professional practice, see also chapter 3) problems. Chapter 8, the final chapter of this section, addresses the evaluation of PBL initiatives. Since PBL is proposed as a student-centered instructional method in which students have an active role, assessment should also provide an active role for students and hence, self-assessment is deemed important (Papinczak, Young, Groves, & Haynes, 2007). The authors describe different methods for evaluating PBL initiatives (e.g., focus groups, end of session evaluations, reflective journals, surveys).

The second section, titled “Using Problem-Based Learning to Enhance Capabilities (Chapters 9–14), assumes a student perspective with a focus on what PBL can bring students. The first concept that comes into mind in this respect is knowledge, which is described in chapter 9, although the authors frame it as “dialogic knowing,” since aside from gaining knowledge during the tutorial sessions, students also learn about social relations, shared control, and co-elaboration. Undoubtedly, dialogic knowing has consequences for the tutor as well, since they need to let go of their role as a knowledge transmitter, while students need to assume the role of knowledge constructors. Tutor development programs should therefore be an essential part in every PBL initiative. Chapter 10 discusses students’ information literacy and calls for the involvement of librarians in PBL curriculum design. Given the prominent role of self-directed learning during the self-study phase of PBL, research has demonstrated that PBL students give indeed evidence of greater information literacy (p. 134). But also before and after the self-study phase, the PBL process can

bring both challenges (e.g., understanding how information is structured) as well as benefits (e.g., stronger understanding of the importance of different types of information sources in choosing information) to bear with respect to information literacy. Chapter 11 is dedicated to reflective practice through PBL. The authors argue that students’ reflective practice should not only focus on knowledge, but also on feelings and actions. Reflection can be stimulated in the tutorial sessions by asking questions (e.g., How can you argue for what you just said?), but also by making use of portfolios that can make students’ thoughts, feelings, and beliefs about learning and professional roles visible and available for further reflection. In chapter 12, the principles of design thinking are revealed, which implies “the generation of many ideas and the selection of really good ideas from the many generated” (p.160). In other words, divergent and convergent thinking come into play in design thinking. Important in this process it that the judgment of ideas only happens at the very last in order to not disturb the creative thinking process. The chapter describes several very concrete exercises that can be used in class to stimulate design thinking.

The final chapters of part two, chapter 13 and 14, discuss assessment. Chapter 13 starts by stressing that assessment, activities, and curriculum objectives should be in line with each other. As Belland, French, and Ertmer (2009) have pointed out, the stated promise that PBL produces the target outcomes of deep content learning, increased problem-solving ability, and increased self-directed learning (Hmelo-Silver, 2004), has led to many studies focusing on these outcome variables. Results, however, have not been unequivocal. The authors present a very comprehensive table on page 175 in which they provide different assessment tools for varying skills or learning outcomes (e.g., for the assessment of self-directed learning skills, reference lists within assignments can be used). The authors also discuss recent innovations in PBL assessment of which online templates for case delivery, reflective essays, and student products (e.g., information leaflet) are examples. The Triple Jump assessment method described in chapter 14 was developed to assess problem-solving skills. The method entails both a problem-analysis and problem-solving exercise that assess the application of knowledge. The “three jumps” (i.e., encountering and defining the problem, self-directed learning, and the synthesis and feedback stage) show great overlap with the PBL method (problem pre-discussion, self-study, and reporting phase; Loyens, Kirschner, & Paas, 2012) and seems therefore very suitable to assess skills in a PBL environment.

Chapters 15 to 20 constitute the third part of the book, “Sustainability and Building Capacity in Problem-Based Learning Initiatives,” and address several (practical) issues for teachers and/or educators who are considering implementing PBL in

their program. Chapter 15 tells the story of Flinders University adopting a PBL approach. The chapter gives an overview of the resources needed both in the initial phase (e.g., problem material, tutor guides, tutor recruitment and training) as well as in the maintenance phase (e.g., ongoing tutor recruitment and monitoring, systems for quality assurance such as a regular review of all PBL problems). The authors also share the challenges they encountered in their program, such as tutor dropout, but also provide solutions to overcome those such as the employment of sessional tutors. Tutoring is also central to chapter 16 in which the theoretical dimensions of PBL tutoring are discussed. As explained here, a PBL tutor is a guide on the side instead of a sage on the stage. However, a good tutor is inevitable for a good tutorial session, since students sometimes need to be stimulated to activate or to be made aware of their prior knowledge. Reflection is also mentioned in this chapter as a crucial process for ongoing tutor development: reflection of the tutor him/herself on how the tutorial sessions went, reflection based on comments of a colleague invited to the tutorial meeting, and reflection on feedback received from students. Chapter 17 lends insight on the challenges that teachers new to PBL can face, among which the shifting role from lecturer to tutor, students' access to resources, and the alignment of assessment with the PBL method. The authors also state that the scale on which PBL will be or is implemented (i.e., a single course or a full program) can also be determinative for the challenges faced. Chapter 18 details the role of technology in PBL and introduces the digital native student, born from the beginning of the 1980s, who grew up with ICT and stand in contrast to their teachers who are digital immigrants. The authors argue that "PBL is an ideal learning context in which to develop and maximize the benefits that learning technologies can bring to the quality and dynamism of student learning" (p. 243). In online PBL, the tutor becomes "a meddler in the middle." The authors further describe several tools (e.g., blog with group access, e-portfolio) that can be used to add to PBL, since technology can be enriching. The final two chapters of this book, chapters 19 and 20, deal with the application of PBL to the supervision of PhD candidates (chapter 19) and the writing of a book (chapter 20). Both chapters describe experiences and insight into the processes involved in supervising PhD candidates and writing. Both activities require social and collaborative efforts as well as "triggers" to initiate and motivation and interest to finish them.

In sum, this is a useful handbook for educators who would like to know more about PBL, its value, and its implementation. Having studied in a PBL environment in Maastricht and working in a PBL program at Erasmus University Rotterdam for the last 13 years, I still learned a lot from this book. The authors state on page 4 that "experienced PBL practitioners need to refresh, revitalize, adapt, and keep looking at new

ways of using PBL in higher education" and I believe that this book gives useful tools for doing so. To give a concrete example in this respect, I very much liked the idea of recording the date of the last case/problem review in the tutor guides to make everybody aware of the currency of the case/problem (p. 208). Since PBL advocates the skill of staying up to date in one's knowledge domain, educators should practice what they preach and set the example themselves in keeping cases/problems up to date.

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**Sofie M. M. Loyens** may be contacted at [loyens@fsw.eur.nl](mailto:loyens@fsw.eur.nl).