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Problem-based learning and management development — Empirical and theoretical considerations

Michael S. Carriger

Welch College of Business, Sacred Heart University, 5151 Park Avenue, Fairfield, CT 06825, USA

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ABSTRACT

Problem-based learning has been used as a learning device in medical school classrooms for some time and has recently been used in the management classroom, since at least 2004. Although theory about the effectiveness of problem-based learning and practical advice about implementing problem-based learning abound, the empirical evidence available to date suggests problem-based learning primarily impacts problem solving and critical thinking skill but not necessarily knowledge acquisition. This paper presents an overview of the prevailing theoretical approach to problem-based learning. Then presents a comprehensive review of the empirical literature on problem-based learning with a focus on its application to the management classroom. Finally, the paper presents an alternative, novel pedagogical theory, Montessorian theory, as applied to problem-based learning, that aligns theory and prevailing research better than the existing theoretical conception. Montessorian theory as applied to problem-based learning can lead to a better understanding of the effectiveness of problem-based learning, focus on more appropriate learning objectives and learning outcomes, and have implications for future research, curricular development, and assessment of learning outcomes in the management classroom.

When we want to develop new, young managers, we put them in a management education program, perhaps through a college of business. Give them their bachelor's degree in management or business. And send them off to get their MBA. We lecture to them, provide all the information and knowledge we deem managers need to know. But fairly recently, within the last 10 years, a new approach to teaching, drawn from experience in medical schools, has been applied in management education; problem-based learning, focused on learner-centric, self-directed learning.

However, despite all the enthusiasm in management academic circles for problem-based learning (see, for example, the October, 2004 issue of the Journal of Management Education, solely dedicated to problem-based learning in the management classroom), the evidence presently available does not support that enthusiasm. There is theoretical support for problem-based learning and much practical advice about implementing problem-based learning, but there is very little empirical support for problem-based learning. And what support exists is mixed at best.

The theoretical support for problem-based learning is primarily found in John Dewey's Constructivist approach to pedagogy (Dewey, 1938). The empirical evidence used to support this pedagogical theory is drawn primarily from the medical education literature, with a fragment drawn from the engineering and management education literatures. Although DeFillipi and Milter (2009) outlined the migration of problem-based learning from the medical school to the management classroom,

E-mail address: carrigerm@sacredheart.edu.

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they provided no original empirical support for this approach to management education. And what little empirical support does exist in the literature, on the whole, provides only mixed support for Dewey's Constructivist theory as applied to problem-based learning.

Rather than dispense with problem-based learning altogether, other theoretical foundations for problem-based learning could be explored. Other theoretical foundations that suggest learning outcomes more in line with what the empirical evidence does support should be considered. One such theoretical foundation is Montessorian pedagogical theory.

This paper presents an alternative, novel pedagogical theory, Montessorian theory, as applied to problem-based learning, that aligns theory and prevailing research better than the existing theoretical conception. Montessorian theory as applied to problem-based learning can lead to a better understanding of the effectiveness of problem-based learning, focus on more appropriate learning objectives and learning outcomes, and have implications for future research, curricular development, and assessment of learning outcomes in the management classroom.

1. What is problem-based learning

The hallmark of problem-based learning is the development by faculty and the delivery to learners of a very specific type of problem … "ill-structured and allow[ing] for free inquiry" (Savery, 2006, p. 13). If this problem is also a real-world problem, the problem motivates learners to identify the core issues presented in the problem, set parameters on the development of a solution, and engage in self-directed learning to solve the problem. The point of self-directed learning in this context is to promote the collection of information by identifying what the learner already knows, what the learner needs to know, and how to fill that gap (Peterson, 2004; Savery, 2006; Smith, 2005). For an example of an ill-structured, real-world problem applicable to a management classroom see Appendix 1.

Problem-based learning "is an instructional (and curricular) learner-centric approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (Savery, 2006, p. 12). In other words, rather than the more instructor-centric approach of lecturing to a passive learner, in problem-based learning, a more active learner engages with an ill-structured problem provided by the instructor (DeFillipi & Milter, 2009; Peterson, 2004). Through the process of engaging with the ill-structured problem, and with tutoring and facilitation by the instructor, the learner learns. Obviously, critical to this approach to instruction is the crafting of the ill-structured problem, and the quality of the tutoring or facilitation by the instructor.

Newman (2005) identifies five overlapping key features of problem-based learning. First, the instructor acts as a facilitator of learning rather than a deliverer of knowledge. Second, the process of learning in a problem-based designed classroom must follow an explicit set of steps. Third, the use of ill-structured, real-world problems must be employed to help contextualize and integrate learning. Fourth, the nature of these ill-structured, real world problems disallows individualized learning and requires collaboration. And, finally, fifth, learner assessment must be driven by the goals and learning objectives built into the ill-structured, real-world problems.

This description of problem-based learning will sound somewhat familiar to faculty in a business school or college used to case-based instruction. However, proponents of problem-based learning go to great lengths to differentiate problem-based learning from other case-based learning approaches. "While cases and projects are excellent learner-centric instructional strategies, they tend to diminish the learner's role in setting the goals and outcomes for the 'problem'. When the expected outcomes are clearly defined, then there is less need or incentive for the learner to set his/her own parameters." (Savery, 2006, p. 16). The primary difference between problem-based learning and case-based learning is the type of problem (or case) presented and the sequence of the presentation of the case or problem and the learning (Savery & Duffy, 1995). In the typical MBA classroom leveraging case-based instruction, a well-defined and constructed case helps learners uncover important elements of the issue at hand, that the instructor deems important (Savery, 2006) and is presented after direct instruction to help test understanding and synthesis (Savery & Duffy, 1995). Whereas in a problem-based learning approach an ill-structured problem is leveraged to help learners determine what the important elements are and then uncover them (Savery, 2006). Case-based instruction is used primarily to demonstrate learning and application of learning from lecture and discussion to the case. Whereas problem-based learning is used primarily to facilitate learning rather than demonstrate the application of learning.

Historically, problem-based learning was first developed and implemented in medical schools (Dochy, Segers, Van den Bossche, & Gijbels, 2003; Hmelo-Silver, 2004) as a means of overcoming both student apathy and boredom and students' seeming inability to apply what they were learning to real-world, clinical situations (Newman, 2005). Only recently has problem-based learning been applied to the management classroom, primarily at the graduate (MBA) level (Bigelow, 2004).

Sherwood (2004) notes that "problem-based learning has great potential for management education" (p. 536). In particular, problem-based learning may have potential to bridge the gap between theory and practice in management and business education. Noting the historical roots of problem-based learning in medical schools, Sherwood (2004) identifies two points of similarity between medical schools and business schools. First, in both medical schools and business schools various problems are the center of attention. And, second, the abstract learning objectives addressed by problem-based learning are similar in the management classroom and the medical classroom. For example, "construction of professionally useful knowledge; development of reasoning and problem-solving strategies; development of self-directed learning strategies; increasing motivation for the learner; and becoming effective collaborators" (Sherwood, 2004, p. 537) are characteristics of both medical and management classrooms.