

2014-05

Developing Preservice Teachers' Assessment Literacy: A Problem-Based Learning Approach

Koh, Kim

University of Calgary

Koh, K. "Developing Preservice Teachers' Assessment Literacy: A Problem-Based Learning Approach". 2014. In P. Preciado Babb (Ed.). Proceedings of the IDEAS: Rising to Challenge Conference, pp. 113-120. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/50598>

Downloaded from PRISM Repository, University of Calgary

DEVELOPING PRESERVICE TEACHERS' ASSESSMENT LITERACY: A PROBLEM-BASED LEARNING APPROACH

Kim Koh

University of Calgary

The changes in the provincial achievement assessments reflect the government's initiatives to provide every child with the opportunity to master core subject areas and contemporary competencies. The success of these initiatives requires Alberta teachers to be competent in using authentic assessment and assessment for learning (AfL) strategies. Assessment curriculum in preservice teacher education plays a pivotal role to prepare student teachers to become assessment literate. Using Lee Shulman's signature pedagogies, this paper aims to discuss the rationale for and the benefits and challenges of adopting a Problem-based Learning (PBL) approach in an assessment course taught at the University of Calgary.

INTRODUCTION

Since the inception of the 21st century learning outcomes by the Partnership for 21st Century Skills (2002), curriculum frameworks in many educational systems around the world have shifted to a balanced focus on mastery of core content knowledge and contemporary competencies such as critical thinking, problem solving, creativity and innovation, communication, collaboration, self-directed learning, and information and technological skills. This set of competencies is deemed to enable students to thrive in a competitive global knowledge economy. According to Rotherham and

Willingham (2009), it is important that the contemporary competencies are taught intentionally and effectively to all students. Every child in the 21st century school context should have an equal opportunity to learn and master these competencies, which will enable them to succeed in life, career, and citizenship. Hence, there is an urgent need for deliberate and collective efforts to redesign curriculum, assessment, and teacher training programs, with an eye towards the infusion of the contemporary competencies to the teaching of core subjects.

In line with the global curriculum reforms, the province of Alberta has launched *Inspiring Education* at the systemic level. Students across Alberta schools are expected to master literacy, numeracy, and a range of competencies designed to enable them to become engaged thinkers and ethical citizens with an entrepreneurial spirit (Alberta Education, 2011). The vision of *Inspiring Education* has led to two key initiatives: curriculum redesign and student learning assessments. However, the success of these initiatives at the systemic level requires all Alberta teachers to be competent in using authentic assessment and assessment for learning (AfL) strategies. The assessment literature has consistently pointed out that teachers' lack of assessment literacy is largely due to inadequate preservice training in the area of educational assessment (Mertler, 2003; Stiggins, 2002; Volante & Fazio, 2007). Hence, assessment curriculum in preservice teacher education plays a pivotal role to prepare student teachers to be assessment literate. When they move into their teaching careers, they will be able to implement good assessment practices to promote student learning of the competencies as desired by Inspiring Education.

Typically, didactic whole-class lecture is a predominantly used pedagogical approach with large undergraduate classes in higher education institutions. Such a didactic approach places students in a passive role in learning and minimizes their ability to develop higher-order thinking skills and other essential competencies. Similarly, the extant literature on assessment has clearly shown that traditional assessment methods such as standardized testing and summative examination are not effective to

Koh

promote students' mastery of higher-order competencies. Such traditional approaches to instruction and assessment are not only detrimental to student learning at the K-12 levels, but also ill-suited to the education of creative professionals who need to develop new knowledge and continually further their own understanding.

This paper aims to discuss the rationale for and the benefits and challenges of adopting a Problem-based Learning (PBL) approach to prepare student teachers at the University of Calgary to be assessment literate. Contextualizing within the framework of signature pedagogies (Shulman, 2005), the PBL approach to the teaching of the assessment contents and practices to student teachers is deemed to promote their professional competence in three key areas: intellectual, technical, and moral. Preliminary findings from this innovative practice will also help assessment instructors and BEd program administrators to reflect upon and to improve the pedagogy for the teaching profession in Alberta.

SIGNATURE PEDAGOGIES AND PROBLEM-BASED LEARNING

Lee Shulman (2005) defines signature pedagogies as “the types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions” (p. 52). The novices are often instructed in critical aspects of the three fundamental dimensions of professional work – to think, to perform, and to act with integrity. Learning to teach requires new teachers and student teachers not only to think like a teacher but also to act as a teacher (Darling-Hammond, 2006). It is essential that the design of curriculum and assessment in teacher education programs is informed by the three dimensions of signature pedagogies. In Shulman's (2005) article, he has not defined a particular type of teaching to be the signature pedagogy. Over the past two decades, a variety of instructional approaches have been used as signature pedagogies across different disciplines and professions. Problem-based learning is one of the most commonly used instructional approaches and has been touted as the signature pedagogy of medicine and nursing.

PBL approach is becoming widely used across a considerable range of disciplines and professional areas in higher education. It was originated by Protagoras and Aristotle. The approach became popular when it was used as an alternative pedagogical approach to train physicians at the School of Medicine in McMaster University in 1969 (Barrows & Tamblyn, 1980). It has subsequently been taken up in many other areas of professional education such as law, nursing, pharmacy, social work, engineering, and business and management. As a learner-centered approach, PBL enhances students' higher-order competencies by engaging them in critical thinking, complex problem solving, communication, collaboration, and self-directed learning. Typically, students work in groups first and then individually to solve contextualized, ill-structured problems as the primary pathway of learning. The problems are complex and rooted in real-world situations. In addition, they must be current and reflect a typical problem encountered by the professionals in the field. For example, a teacher must know how to strike a balance between formative and summative assessments in view of the current assessment for learning movement. The presentation of problems through real-world scenarios creates authentic learning opportunities for students to understand the relevance of underlying knowledge and principles in their future professional practice. A critical feature of PBL, that is group learning, facilitates not only the acquisition of knowledge but also important dispositions such as sharing of information, communication skills, teamwork, problem solving, independent responsibility for learning, and respect for others. These competencies correspond to the moral dimension of signature pedagogies and are deemed to prepare students adequately for their future professions.

Assessment in Problem-based Learning

Although assessment is widely recognized as one of the most powerful influences on the learning approaches and behaviors adopted by students, it has not been given much attention in PBL. Some educators have misconstrued PBL as an assessment method. Conventional assessment methods are considered at odds with PBL approaches used in professional courses and higher education to develop

students' professional competence. Biggs (1999) stresses the need to realign curriculum objectives, teaching and learning activities, and assessment tasks in PBL. This is especially so where the intention is to encourage deep, rather than surface learning. Further, he notes that: "The essential feature of a teaching system designed to emulate professional practice is that the crucial assessments should be performance-based, holistic, allowing plenty of scope for students to input their decisions and solutions" (Biggs, 1999, p. 210). This implies that the use of authentic assessment tasks is essential for promoting student learning and mastery of professional competence in the contexts of professional courses and higher education.

The following four features of authentic assessment (Wiggins, 1989) suggest a close alignment between authentic assessment and PBL: First, authentic assessment tasks are designed to be truly representative of performance in the field. The tasks are contextualized, complex intellectual challenges involving students' own research or application of knowledge in messy, ill-structured tasks. As such, they provide ample opportunities for students' learning styles, aptitudes and interests to serve as a source for developing higher-order competencies. Second, explicit performance criteria and standards as in the form of well-developed rubrics are openly shared with students and others in the learning community. Third, self-assessment plays an important role in developing students' capacity to evaluate their own work against standards; to revise, modify, and redirect their efforts; and to take initiative in monitoring their own progress. Such formative assessment practice promotes students' self-directed learning because students take responsibility for their own learning. And fourth, students are generally expected to present and defend their work to a real audience. This will help enhance their communication skills.

THE RATIONALE FOR REDESIGNING AN ASSESSMENT COURSE USING PBL

In 2014, the course was redesigned by the author using the PBL approach. Student teachers enrolled in the two-year BEd program were divided into small groups and each group had its own facilitator. To

develop student teachers' assessment literacy, the contents of the assessment course provide student teachers with rigorous training and support in five key areas: (1) How to strike a balance between formative and summative assessments; (2) Designing, selecting, and using assessment tasks with high intellectual demands; (3) Designing high-quality rubrics; (4) Implementing effective assessment for learning strategies; and (5) Sound grading and reporting practices.

BENEFITS AND CHALLENGES OF PBL IN THE ASSESSMENT COURSE

Through some informal conversations with instructors and student teachers who have just completed the assessment course, the benefits of using a PBL approach to design the course contents and materials are clearly evident. In each assessment topic, the problem is contextualized in real-world situations and exposes student teachers to the contemporary assessment issues around the world and in the province. The readings and resources provide good support to student teachers in their group investigation and creative solutions of the problems. In general, student teachers are able to make meaningful connections between what they learn in the course and what is required in their teaching professions. Such authentic learning has increased their motivation to learn the course contents and materials within a short framework. Our adoption of PBL in the delivery of the course has enabled student teachers' mastery of both assessment content knowledge and professional competence, which are much needed for their future teaching professions. The real-world, complex problems and highly intellectual authentic tasks help develop student teachers' higher-order competencies such as critical thinking, real-world problem solving, creativity and innovation. In addition, a tight coupling between student-centered PBL approach and formative assessment has fostered collaboration, communication skills, and self-directed learning. Student teachers' demonstration of these competencies supports the rationale for using PBL as signature pedagogy in the assessment curriculum at the preservice teacher training level.

Two challenges that we have encountered in our adoption of PBL are as follows: First, facilitators' lack of understanding and experience in PBL, which makes it difficult for them to facilitate the PBL

Koh

process; and Second, student teachers' time constraints as they are taking three courses simultaneously and may be unsure how to balance between group collaboration and self-directed study.

In short, the use of PBL, authentic assessment, and formative assessment in the preservice assessment course has demonstrated good instructional and assessment practices to student teachers. We are hopeful that they will be able to transfer what they have learnt to their professional practice. Further, we assume that the course contents and innovative practices used in the course have improved their levels of assessment literacy to some extent. This will need to be verified by some empirical data collected in another study.

References

- Alberta Education (2011). Framework for student learning: Competencies for engaged thinkers and ethical citizens with an entrepreneurial spirit. Alberta. Retrieved from http://globeclassroom.ca/userfiles/Alberta_Framework.pdf
- Barrows, H., & Tamblyn, R. (1980). Problem-based learning: An approach to Medical Education. New York: Springer.
- Biggs, J. (1999). Teaching for quality learning at university. Buckingham: SRHE/Open University Press.
- Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, 57(X), 1-15.
- Mertler, C. A. (2003). Preservice versus inservice teachers' assessment literacy: Does classroom experience make a difference. Paper presented at the Mid-Western Educational Research Association annual meeting. Columbus, OH.
- Rotherham, A. J., & Willingham, D. (2009). 21st century skills: The challenges ahead. *Educational Leadership*, 67(1), 16-21.

- Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus*, 134(3), 52-59.
- Stiggins, R.J. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan*, 83(10), 758-765.
- Volante, L., & Fazio, X. (2007). Exploring teacher candidates' assessment literacy: Implications for teacher education reform and professional development. *Canadian Journal of Education*, 30(3), 749-770.
- Wiggins, G.P. (1989). A true test: Toward more authentic and equitable assessment. *Phi Delta Kappan*, 703-713.