Chapter 11
Technology: A Reflective Tool for Professional Development

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ABSTRACT
The focus of this chapter is how technology is used as a reflective tool for professional development. Specifically, the chapter addresses the utilization of an electronic data management system, coupled with reflective practice, to improve teaching and learning in a college classroom. Instead of utilizing only a traditional Teacher Evaluation Questionnaire (TEQ) for feedback at the end of the semester, the instructor entered scores for each element on twelve assessment rubrics as fields in the electronic data management system. Scores were collected and analyzed over multiple semesters in order to make improvements to instruction. Evidence of higher scores on assessment rubrics followed course revisions.

INTRODUCTION
As a form of personal and professional growth, reflection is referenced in the literature as a best practice technique for teachers and students alike (Bataineh, Al-Karasneh, & Al-Barakat, 2007; Lee & Breitenberg, 2010; Quinton & Smallbone, 2010; Rodriguez-Valls, 2010). Reflection, though complex and exigent, is a form of self-assessment that is a requisite part of the learning process, not only in the classroom, but also in our daily lives (Chen, 2010; Cheung, 2009; Nickel, Sutherby, & Garrow-Oliver, 2010; Sung, Chang, Yu, & Chang, 2009). Reflection, in essence, is understanding consequences of past actions in order to gain new perspectives (Fiddler & Marienau, 2008; Grierson, 2010; Grossman, 2009; Johnsen, Pacht, van Slyck, & Tsao, 2009). For students, reflection fosters various levels of cognition necessary for self modification (Grossman, 2009; Lavy & Yadin, 2010; Quinton & Smallbone, 2010); and, for teachers, reflection is essential, along with the integration of theory and practice, to improve teaching and enhance student learning (Kramarski & Michalsky, 2010; Rodriguez-Valls, 2010; Runhaar, Sanders, & Yang, 2010; Sutherland, Howard, & Markauskaite, 2010).
In a college setting, instructors are usually required to collect data once a semester to reflect on their own instructional practices. The data are usually obtained with a Teacher Evaluation Questionnaire (TEQ) or similar instrument. Although beneficial, the data may not provide the instructor with enough information to make changes to specific lessons or instructional goals. The questions on the TEQ's are usually general and meant as an overall evaluation of the semester. Therefore, the focus of this article is how technology and reflection are integrated, as a form of best practice, to improve teaching and learning in the college classroom. Specifically, the article addresses the utilization of an electronic data management system, coupled with reflective practice, as a professional development activity for the instructor.

The Rationale

The rationale for using an electronic data management system as a lens for reflective practice in the college classroom came as a result of compiling data and writing state and national accreditation reports for teacher preparation programs. Evidence is required to document how a teacher preparation program meets state and/or national standards. The electronic data management system was initially designed to serve as a technical infrastructure for unit assessment in order to analyze data about applicant qualifications, candidate proficiencies, program quality, unit operations, and competence of graduates. Although teacher preparation programs typically include competencies related to professionalism, planning and instructional strategies, assessment and evaluation, and classroom management, there are also specific competencies, depending on the area of certification, needed for accreditation (NCATE Standards, 2007).

Using an electronic data management system proved to be successful for analyzing and reporting data (Blake, Head, & Hughes, 2007; Brooks-Young, 2003) for program and unit reviews at the university level; therefore, why couldn’t instructors utilize it to analyze candidate learning in their own classroom -- as a form of reflective practice and professional development.

The Course

A graduate course in the School of Education at Duquesne University, Introduction to Teaching, was used as the pilot for data collection. Introduction to Teaching is the first course in a graduate program of study for teacher candidates seeking early childhood, elementary, and/or secondary certification. Content in this course was aligned with the conceptual framework of the School of Education (SoE), the Interstate New Teacher Assessment and Support Consortium (INTASC) standards, and the Pennsylvania Department of Education (PDE) standards. Initially, specific types of data were collected and analyzed by the instructor for accreditation purposes; however, the types of data collected in this course were revised to include all candidate assessment rubrics, not just elements needed for accreditation. Eventually, the collection and analysis of data served as a professional development activity for the instructor, who integrated technology and reflection as a form of best practice to improve teaching and learning.

Assessment Rubrics

Assessment rubrics from Introduction to Teaching, along with candidate profiles, provided data for the electronic data management system. The twelve performance-based and judgment-based assessment rubrics included an article review, a classroom management plan, a teaching experience, a teaching reflection, a teaching philosophy paper, an overall evaluation of a candidate’s knowledge, skills, and dispositions, and six lesson plans (presentation model, direct instruction model (Table 1), concept model, cooperative learning model, problem-based learning model, and discussion model). In addition to the twelve
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