

The Use of Technology to Improve Assessment of Pre-Service Teacher Learning Outcomes

Scholarship of Teaching and Learning

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Abstract:

This project will systematically investigate the potential for an electronic portfolio to enable a cross-program standards-based assessment system for pre-service teachers of their lesson plans in three high-need areas: providing rigorous level of content, including students with disabilities, and teaching students who are English language learners.

The Research Team will gather qualitative and quantitative data to compare the assessment practices of student teachers who have used a hard copy portfolio with those who have used an electronic portfolio. In addition, we are piloting processes and products that inform the MDOE revisions to the state-wide assessment system that we will share with them during their site visit to campus in October, 2009.

Slight shift in focus of grant.

We began the grant by examining the current assessment practices across several courses, and shifted the focus of the grant based upon what we learned. We moved more quickly than originally anticipated towards changing assessment practices of the 3 faculty involved in this research.

Initially we had planned to increase the types of feedback students received in their education courses—instructor, peer, self and reflective.

Instead, we assessed lesson plans in high-need areas: providing rigorous levels of content, including students with disabilities, and teaching students who are English language learners. The rubric was aligned with state, professional and department standards.

We investigated the “value-added” for students when they receive feedback on their lesson plans from experts in each of the 3 high-need areas.

Two additional faculty are ready to participate this coming fall with using the electronic portfolio as part of the overall program assessment process.

In June we hosted the annual Chalk and Wire Users Conference and learned much from our colleagues across the country.

So far, we've submitted an application for a small \$5000 grant from Chalk and Wire to continue our work this coming year while we prepare ourselves for a larger assessment change grant after all the data has been analyzed. And, we have submitted a proposal to present at the American Educational Research Association (AERA) conference in Spring, 2010. We have begun to frame the first article and believe that it will be completed and ready for submission by the end of summer.

Below you'll find a summary of what we've completed so far. We have additional lesson plans to rate this summer, and then more data to analyze.

All in all, a very successful year, thanks to the grant!

Problem

The goal of UMass/Boston's teacher education program is to prepare successful teachers of diverse learners in urban settings. Attaining this goal can be challenging. Many new teachers, who are increasingly white, middle class, and female (Trent, et al., 2008), "do not have the same cultural frames of reference and points of view as their students" (Banks, et al., 2005, p. 237) in today's classrooms where the students are increasingly from diverse racial and ethnic backgrounds and, in many cases, newly arrived to the United States. Research indicates that "when teachers use knowledge about the social, cultural, and language backgrounds of their students when planning and implementing instruction, the academic achievement of students can increase" (Banks, et al., 2005, p. 233). Additionally, general education teachers often are unprepared to teach the growing number of students with a wide range of cognitive, sensory and behavioral/emotional needs: "Although it seems fitting to strive for a seamless pre-service curriculum in which the needs of most students with disabilities are covered within general education courses, the ability of general teacher education faculty to deliver that content effectively remains tenuous" (Cochran-Smith & Zeichner, 2005, p. 566). Teacher education programs need to explore ways to better prepare pre-service teachers for the students who will be in their classrooms.

One aspect of teaching that is particularly challenging for our students is constructing lesson plans that can adequately meet the needs of these diverse urban learners. This challenge is not unique to our program. Ambrosio, et al. (2001) found that only half of the pre-service teachers in their study demonstrated minimal skills constructing multicultural lesson plans, but they did conclude that "lesson plans can serve as a rich means for evaluating multicultural/diversity (MCD) learning outcomes for student teachers" (p. 15). Studies on formative assessment indicate that its use can improve student learning, particularly when "feedback [is] linked explicitly to clear performance standards and that students be provided with strategies for improvement" (Shepard, et al., 2005, p. 278). Thus, our main objective is to test a novel feedback mechanism—experts giving feedback on lesson plans from various perspectives, what

we term “cross-assessing.” Preliminary data suggest “cross-assessing” may lead to improvements in lesson plan design for our student teachers.

Literature Review

In our review of the literature, we found studies that spoke to the benefits of using “multiple-assessors” —many assessors using the same rubric to assess the same student work (Brown & Knight, 1994; Thomas, 1996; Tillema, 2009). Not everyone, however, agrees on the efficacy of using multiple assessors (Buckman, 2007; Grossman, et al., 2005; Robinson, 2002). The research team wanted to find out if using experts who provide feedback specifically on their area of expertise may make the feedback more useful to students by being more targeted, by making students less likely to dismiss it as it is from an outside expert, and by improving student work enough so that the extra work involved is not “needless work”—to address the concerns of Buckman (2007), Grossman, et al., (2005) and Robinson (2002).

The needs the research team identified in our program based on our experiences assessing capstone portfolios match needs identified in the literature of teacher education programs across the United States. In addition to pre-service teachers needing to learn strategies to teach diverse learners, including English Language Learners (ELL), the increase in special needs students (Banks, et al., 2005, p. 232) and the importance of subject matter knowledge, particularly “the specific kinds of subject matter knowledge that matter in teaching” (Grossman, et al., 2005, p. 206) led the research team to identify three perspectives from which experts provided feedback: pedagogical content knowledge, accommodations for students with disabilities, and the needs of diverse ELL students who comprise a significant proportion of students in our urban environments.

In order to do this efficiently, we used an e-portfolio tool to facilitate this feedback process. There are multiple uses for e-portfolios noted in the literature: “to document the attainment of standards (a positivist model—the assessment portfolio), digital stories of deep learning (a constructivist model—the learning or process portfolio), and digital resumes to highlight competence (a showcase model—the best works/marketing/ employment portfolio)” (Barrett, 2007, p. 441). A consistent theme, however, throughout the literature was the ability of e-portfolios to “tell a story of growth and development over time” (Barrett, 2007, p. 440). Numerous studies of the use of electronic portfolios in teacher education recount the various advantages, disadvantages, and lessons learned, but all indicate that one of the important functions of e-portfolios is as a means of capturing students work to show their development (Chambers and Wickersham, 2007; Fahey, Lawrence, and Paratore, 2007; Spendlove and Hopper, 2006; Wilhelm, et al. , 2006). For our purposes, using e-portfolios not only facilitated the cross-assessing process, but it also allowed faculty and students to view pre-service teachers’ development.

Methods

In answering our overall question of “What happens when pre-service teachers’ lesson plans are cross-assessed using experts in three targeted areas, specifically content, special needs, and ELL/Urban?”, the research team raised several sub-questions, including:

1. Will student teachers develop lesson plans that are more aligned to the state standards when

they receive feedback from “expert” assessors in the multiple areas reflected in the state standards (general education students, those with disabilities, and those who are English language learners)?

2. Will students incorporate feedback from “experts” who are not their instructor at the same rate in which they incorporate feedback from their instructor?

3. Will the feedback provided from course instructors who are “experts” in one area but only knowledgeable in the other areas of interest increase the amount and type of feedback in their “non-expert” areas as a result of reviewing feedback to their students from the “experts?”

The research team is collecting a range of quantitative and qualitative data including survey results about assessment usage in our program, scores by criteria on lesson plans, student and faculty interview data, and student reflections.

To study the effects of using an e-portfolio tool to provide cross-assessor feedback, we used a multi-semester experimental design in order to separate out the effects of using an e-portfolio tool, which is a new tool for our program, from the effects of using cross-assessors. Thus, we developed the research design outlined in the table below which we each are implementing:

	Fall 2008 (control)	Spring 2009 (experiment)	Fall 2009 (experiment)	Spring 2010
Cross-Assessing		X	X	X
E-portfolio		X	X	

We are trying out each possible scenario: traditional lesson plan assessment (for our institution, this means students turn in an initial lesson plan, receive feedback from the instructor, and turn in a final lesson plan without the use of an e-portfolio tool); the traditional lesson plan assessment with an e-portfolio tool (during the two experimental semesters, looking at the initial and revised lesson plans serve this purpose); the value-added of having cross-assessors using an e-portfolio tool (the amount of difference between the revised and final lesson plans on various criteria for the experimental classes); and the cross-assessing technique without the e-portfolio tool. In this way, we hope to be able to focus in on the effects of both the technology and the cross-assessing technique.

In addition to using t-tests to compare scores on specified rubric criteria between the control and experimental classes as well as between the revised and the final lesson plans in the experimental classes, survey data about assessment and portfolio usage in this program will be and has been collected to give us a sense of the amount of experience students have with various assessment techniques and portfolio usage. We are also interviewing students and faculty from both the control and the experimental scenarios to analyze their perceptions of both the cross-assessing technique and of portfolios. In addition, classroom focus groups and student reflections about the process will be analyzed. Because these data examine the students' processes of receiving, integrating, and applying feedback, grounded theory, specifically Strauss and Corbin's (1998) open, axial, and selective coding, will frame how the qualitative data is coded and analyzed. By using this mixed-method approach, we hope to get a better picture of the effects of the cross-assessing process.

Findings

By using an independent sample t-test to compare the mean admission GPAs of participants to all teacher education candidates, the research team determined that our sample of students was representative of our teacher candidate population at large ($t(149)=-.81$, n.s.). Preliminary findings of inter-coder agreement ranged from 28% to 83% agreement across 24 rubric items. The research team will further evaluate those items with low level agreement and, where necessary, refine the rubric and conduct more training.

In preliminary analyses, paired sample T-tests were used to test 10% of the students' lesson plans for improvement on 24 of the rubric items from revised to final lesson plans. The overall improvement between the students' lesson plans generated after receiving feedback *only* from his or her respective faculty instructor compared with student lesson plans submitted after receiving feedback *from the 3 "experts"* was statistically significant ($p = .007$). On average, the students in our subsample showed an improvement of over 7 points after this intervention. We must be extremely cautious with these findings because they are based upon only 10% of the total sample.

In addition, significant improvement was found in one of the three targeted areas: teaching students who are English Language Learners ($p = .004$). There was no improvement indicated in the other two areas, content ($p = .175$) and teaching students with disabilities ($p = .611$). These areas will be re-analyzed using the full sample.

Initial review of the qualitative data reveal that some students found the process extremely useful:

The final product that I submit far exceeds my initial lesson plan. As I look back, my original submission is very much in line with the instruction that I received in my own high school experience. . . . The feedback that I received was varied but specific. It was wonderful to see how different individuals viewed my work. . . . It has most definitely evolved to include more students and I believe is a wonderful lesson which I look forward to implementing in a class.

Other students, however, placed more emphasis on feedback from their instructor and disregarded the feedback from outside assessors because they knew the instructor was the one giving the grade:

As far as the cross-assessor feedback is concerned, I found it largely confusing and unhelpful. There did not seem to be a lot of uniformity in what the assessors were looking for. And, to be quite frank, if a professor did not like something but you did, deferring to your opinion chiefly because you were responsible for grading my assignment. . . . I felt like the various cross-assessors were providing too many voices, shouting in too many directions. In the end, it became white noise and I focused solely on your comments.

Further analysis is needed to distinguish why some students found the process useful and others did not.

Conclusions

Preparing students to teach in diverse urban environments is a challenge faced by many teacher education programs. Using cross-assessors enables students to receive targeted feedback from the multiple perspectives of experts in the lesson plan's content, in inclusion of students with

disabilities, and in teaching students who are English Language Learners, resulting in positive changes. The research team reached this conclusion by comparing the “value added” improvements when compared with the more traditional means of providing students with feedback from only their single course instructor. The full analysis of all the data will be completed by August 30 of this year.

In addition to the analysis of change in lesson plans, we will also compile findings about the usefulness of the electronic portfolio in the assessment process from both the student and assessor perspectives.

An additional goal is to embed the electronic portfolio into the overall assessment process for students throughout their coursework and practicum experiences in the general education program. We believe that our research about assessment of lesson plans will draw interest from our UMassBoston colleagues in teacher preparation programs and, as we share our results we will also be introducing them to the benefits of using electronic portfolios for student assessment. So far, 2 additional key faculty have expressed interest in using the electronic portfolio with students in the courses they teach in fall. We would then have succeeded in embedding the electronic portfolio within 5 of the 10 required elementary and middle/high school teacher training programs courses. At that point we are hopeful that we can obtain a commitment from at least the 5 participating faculty to add the cost of the electronic portfolios to the list of course requirements.

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