



PREPARING THE TEACHER-RESEARCHER: PERFORMANCE ASSESSMENTS IN AN ONLINE EDUCATIONAL RESEARCH COURSE

Zsuzsanna Szabo •
Marist College, USA

Abstract

This paper presents the use of performance assessments in an online asynchronous educational research graduate level course. Participants in this mixed-methods case study were graduate students (mostly inservice teachers) in the last semester of their masters program in a private college from North-East of the United States. The course aims to help develop critical thinking skills, research inquiry, and skills to conduct educational research. Aligned with professional standards the course goal is to help teachers develop as professionals and become proficient teacher-inquirers. Teaching methods, type of assignments, course flow, and changes in the use of performance assessments across two semesters are presented. The paper presents results from class discussions, assessments, student feedback via a survey and self-reflections provided at mid-point and at the conclusion of course. Finally, implications for course changes are discussed.

Keywords: online teaching; performance assessment; teacher-inquirer

Introduction

Research and scientific inquiry in education (conducted at all levels) can strengthen the education process, provide intellectual advancement, and

Correspondence concerning this paper should be addressed to:

• Ph.D., Marist College; 3399 North Road; Poughkeepsie, NY 12601. Tel: 845-575-2994; Fax: 845-575-3965 E-mail: zsuzsanna.szabo@marist.edu

Zsuzsanna Szabo, is an Associate Professor of educational psychology in the Education Department at Marist College. Her research focuses on cognition and learning, student learning assessment, integrating technology in instruction, and gender issues in education.

improve teachers' professional practice. In order to develop professional teachers who are able to think critically and conduct educational research in their own schools and classrooms, they must have the skills needed for an inquiring professional. Most inservice teachers believe that only researchers conduct educational research. With the implementation in K-12 schools of the Common Core Standards (CCS) and Annual Professional Performance Review (APPR), that measure K-12 teachers' ability to prepare the students for college and career readiness, the need to develop college courses that provide teachers with the necessary skills is even more stringent.

Literature on college teaching and learning (Armstrong & Savage, 2002; Ginsburg-Block, Rohrbeck, & Fantuzzo, 2006; Henderson, 1996; Rohrbeck et al., 2003; Schunk, 2012; Slavin, 1994, 1995), demonstrates that besides reading and acting upon the content studied, the best way is to teach what one learns. Modeling is a very important component in the teaching and learning process (Rosenthal & Zimmerman, 1978; Schunk, 1981, 2012). Constructivist models of education are commonly used in face-to-face course offerings where group work and cooperative teaching methods are successful, students are motivated, and appreciate the collaborative learning.

Lately constructivist approaches are used in online course offerings as well (Roseth, Saltarelli, & Glass, 2011; Schwartz & Szabo, 2011; Szabo, 2015; Szabo & Schwartz, 2011). Several studies (Baran & Correia, 2009; Hew & Cheung, 2011; Szabo, 2015) analyzed student-led online facilitation strategies used to overcome the challenges of instructor-dominated facilitation. It was shown that student-led facilitation enhanced the sense of learning community, and encouraged student participation in online discussion.

Schellens, Van Keer, Valcke, and De Wever (2007) argue that larger group size (8-10 students) results in the highest level of group interaction. However, this view is not consistent with the opinions of other researchers (Holtz, Kronberger, & Wagner, 2012; Nemeč, 2011; Sitzmann, & Ely, 2010; Szabo & Schwartz, 2011). Larger groups do not provide an opportunity for all members to participate and enhance their skills (Schober, Wagner, Reimann, Atria, & Spiel, 2006; Szabo, 2015). Ng, Cheung, and Hew (2009) are in favor of groups that consist of fewer students. Education programs commonly use constructivist teaching models since they allow teacher candidates to experience the theory they study. Literature on face-to-face and online teaching stresses that course performance assessments are more effective than the use of

content-based paper-pencil testing (Roseth, Saltarelli, & Glass, 2011; Schunk, 2016). Students learn at higher levels when they have to apply and analyze the content studied, and have a much deeper understanding of the content when they are required to create examples with the new knowledge learned.

The importance to “walk the talk” and the need to help teachers become better teacher-inquirers was the purpose in the development of the educational research graduate level course presented in this paper. This mixed-methods case study presents an educational research graduate course where performance assessments require students not only to discuss the learned material, but also to present research proposals, perform peer review, and debate critically the soundness of others’ thinking. Team lead discussions by modeling research inquiry, forum discussions, research article critique, performance assessments, and feedback from instructor show not only improvement in learning, but also improved student satisfaction.

Method

This mixed-methods case study was conducted in an online asynchronous graduate level Educational Research course (spring offering only). Most students in the course are inservice teachers completing their master’s degree, occasionally non-matriculated teachers take the course for professional development reasons. In Spring 2014 were registered 17 students, and 11 students in Spring 2015 semester. The course curriculum was redesigned for Spring 2014 semester, based on standards for Quality Matters for online teaching (Appendix A). Student Learning Outcomes (SLOs) set forth aimed to develop skills to identify and articulate manageable, meaningful, and focused educational research designs (see Appendix B). Teaching methods used individual and team participation in asynchronous forum discussions, critical analysis discussions on research articles, also three individual and one team performance assessments.

The course had three modules, and performance assessment was used to measure the learning outcomes set forth. In spring 2014 three individual written summative performance assessments were used. Students presented a research proposal representing different types of research designs studied in the course (Assignment 1 - Introduction to research design; Assignment 2 - Quantitative research designs; Assignment 3 - Qualitative and Action Research

designs). All assignments were posted individually and discussed in open forums. Students were required to analyze at least three research papers using a peer review feedback model. While in Spring 2014 a holistic rubric was used for grading, in Spring 2015 the instructor graded and provided feedback on individual papers via a more detailed and structured analytic rubric (*see* Appendix C).

In the first module of this course, each week teams of 2-3 students presented the discussions materials, presented an article critique appropriate for the topic, and facilitated the asynchronous discussions across one week. All other students posted individual discussions. The instructor was facilitator across the entire semester and modeled critical inquiry and discussions providing feedback on use of educational research methods and appropriate research language. The second module did not use team facilitations, but required students to post individually reflections in open forum discussions on the topics in study (same in both semesters 2014 and 2015). The instructor continued to model Socratic inquiry and critical thinking. In the third module, teams of students took turns and presented a research proposal paper while the rest of the class discussed and provided critical feedback for the teams on their final work.

The final examination project proposal had as requirements creating and writing a project proposal as in real life teachers would write up an educational grant proposal. On the discussion forums each team submitted the project proposal paper and a PowerPoint presentation. Class members were required to analyze the project, provide critical feedback (using the peer review model), and post discussions. This method modeled the experience that educational researchers would have while presenting their research in a virtual conference.

Mid-term surveys responses and end-of-semester self-reflections on perceived performance and course teaching methods were collected. Based on students' feedback from Spring 2014 some changes were implemented for Spring 2015 semester. Assignment 1 from a summative assessment was transformed into a learning performance assessment. Assessment 2 and 3 were kept as summative assessments. Another change for the Spring 2015 semester concerned the article critique assignment, which was completed this time by another student in the class, not a team member of the facilitating team in that week. Currently, for Spring 2016 semester, the 2015 model is used for teaching

the course, with additional podcast lectures created to comply to the Quality Matters requirements for accessibility and usability.

Results and discussions

Quantitative Results

Individual and team facilitation forum discussions, individual performance assessments, and final examinations were scored by student and compared across the different course tasks. Quantitative results bring evidence that the use of open discussions on written performance assessment in asynchronous online forum discussions, along with generated Socratic discussions modeled by the instructor, improve quality of work on performance assessments. However, the scores on assessments comparing the two semesters seem to decrease (*see* Table 1). This decrease in quantitative scores on assessments may be the results of implementing a more structured grading rubric for course performance assessment measure (*see* Appendix C).

Table 1. Percent average scores by assessment and semester

	Percent Average Scores Spring 2014	Percent Average Scores Spring 2015
Total students in the course	17	11
Performance Assessment 1	88.5	N/A
Learning Performance Assessment 1	N/A	93.6
Performance Assessment 2	96.7	87.3
Performance Assessment 3	98.8	90.1
<i>Increase in score from Assessment 1 to 3</i>	<i>+10.3</i>	<i>-3.5</i>
Research Critique Assignment	97.4	90.7
Final Examination	94.4	93.8
Course total average score	95.74	92.85

Interestingly, when the first performance assessment (Assignment 1 from Spring 2014) was transformed into a learning performance assessment (Spring 2015), average scores were indeed higher (since students had the opportunity to receive feedback and revise their work). However the impact on subsequent performance assessments was not as large as when the assignment did not have a revised option (*see* Table 1). Actually, it seems when the

students had the learning performance assessment they did not transfer their learning to the final project performance assessment. It is possible that because they knew that the first performance is a “revise and resubmit for grade” (Spring 2015), the learning was not as effective as for the summative performance assessment for grading (Spring 2014). However, it is also possible that results were different based on the more structured and stringent grading with an analytic rubric used in Spring 2015 semester (as compared to a holistic rubric in Spring 2014).

Qualitative Results

Separately, on forum discussions, a qualitative text content analysis was conducted. Groups of educational research specific language and terminology related to the different research designs studied across the semester were drawn from the asynchronous discussions and compared across the semester. Content analysis results from discussions show an increase in development of quality of discourse posted to the forums across the semester. For example, in Assignment 1 and across the initial two topics of forum discussions on quantitative research designs, students made multiple mistakes in their statements explaining the procedures for quantitative research designs, statements for research questions, and hypothesis testing. The most challenging performance task was to write correct statements for Research Question, Null Hypothesis, and Alternative Hypothesis. Some students found it quite difficult, in their example of quantitative research study, to correctly state and explain the variables (Independent and Dependent Variables). Other topics that presented difficulty were type of error (Type I and Type II error), and validity (internal and external). Despite that students were able to explain the theory and what a particular concept means (following the textbook content), they found it difficult to point out and explain based on their research design example.

Transitioning between the research design types (from quantitative to qualitative designs) students had difficulty correctly using terminology. For example, students seemed to want to force the statistical analysis of comparison between groups in the qualitative study. Another example was the necessary change in statements of research question for qualitative research. Students had the tendency to state a question that was more appropriate for a quantitative design. Another difficulty was related to making sense of the difference between cause-effect (as for an experimental study) and relationship (as for a

correlation study). The difficulty showed up especially in crafting correct statements for research questions and hypothesis.

Mid-term surveys and end of semester self-reflections showed student satisfaction with learning, and confidence in their research skills. Almost 87% of students rated their learning in this course the highest in the masters program. In spring 2014 students suggested that the initial summative performance assessment (Assignment 1 - Introduction in Research Methods) not be graded initially, since they did not have enough content knowledge so early in the semester. The assignment was transformed into a learning performance assessment. Students had to complete the same performance assessment, post it to forum, discuss, gather feedback from instructor and peers, and revise their work. At the end of the weekly discussions all assessments were graded to cumulate scores from assignment, peer review, and comments posted to other students' research papers. Feedback from spring 2015 was very positive regarding the learning performance. Reports from the end of semester self-reflection provided by students explains that the use of performance assessments (Assignment 1, 2, and 3), posted for peer review and discussed on the forums, were the most helpful to improve their use of research language. As the course progressed, students became more comfortable writing and discussing educational research designs, and their forum postings demonstrated the use of better and increasingly correct educational research terminology.

Educational Implications

Based on students' feedback and analysis of end-semester course reflections the next iteration for the course (offered Spring 2016) resulted in creating podcasts for each topic, along with the power point and handouts for lectures. Team facilitators had only the task to facilitate the discussions on designs studied in the respective week, while another student (not belonging to the team) would present a research article critique. Separating the two weekly tasks helped the team to focus more on the discussion forums, and not have also the task to follow the article critique discussions. A new change (for Spring 2017) will be implemented by creating short lecture videos with voice over power point and integrating the "research design misconceptions" lecture handout in each video. As mentioned above, students had difficulty in stating appropriate research questions for the different designs, as well as making the shift in thinking from quantitative research designs to qualitative research and

action research. It is expected that the lecture videos and pointing out misconceptions and red flags, would provide even more detail regarding specifics of research designs and research terminology, so students can prevent making mistakes in their forum discussions and performance assessment. Another improvement will be redesigning the look of the course site with the New Lessons feature of the iLearn learning management system (open source from Sakai), which will be updated in summer 2016.

This case study has as major limitation that was conducted only in one online asynchronous course and had a limited number of participants. The course had some changes from one semester to other, and the performance assessment rubric was restructured, which might have resulted in grading on a stricter scale, resulting in lower scores in Spring 2015. Because of case study characteristics of this research there is low generalizability to other asynchronous courses. However, lessons from this study can be used in replications and future research on asynchronous courses where performance assessment is centerpiece.

Conclusions

Critical thinking and proficiency in research inquiry skills are a necessity for all inservice teachers. Teachers must develop as professionals and become proficient teacher-inquirers. In order to prepare teachers who are able to conduct classroom research and help their students think critically and be prepared for college and careers, teachers need to master good critical thinking skills and methods of inquiry. It is not enough to learn about educational research, but teachers need also to experience proper research methods, be able to read and critique educational research, and not lastly, they need to be able to conduct educational research. Results from this study brought the incremental changes in the course, and in the end helped students develop better educational research skills. Performance assessment improved students' skills in use of educational research language, helped them think critically and analyze educational research articles, and be ready to conduct research in their classrooms and schools. With the use of performance assessment inservice teachers not only mastered the content, but also became better professionals and teacher-inquirers.

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Appendix A



Online Course Redesign Program

Quality Matters Review Summary

Standards	# Available	# Met	Pts. Available	Pts. Earned
3 points (ESSENTIAL)	21		63	
2 points (Very important)	12		24	
1 point (Important)	8		8	
Total	41		95	

Review by General Standard

General Standard	Points Available	Points Earned
Standard 1: Overview	14	
Standard 2: Objectives	15	
Standard 3: Assessment	13	
Standard 4: Content	12	
Standard 5: Engagement	11	
Standard 6: Tools & Media	12	
Standard 7: Support	9	
Standard 8: Accessibility	9	

Quality Matters Thresholds

Threshold	Met?
All 21 Essential (3 point) standards have been meet	(yes/no)
An overall score of at least 81 (85%) has been reached	(yes/no)

Appendix B

Course Learning Outcomes

STUDENT/CANDIDATES LEARNING OUTCOMES

Based on our Conceptual Framework statement “*Preparing reflective professionals who think critically and work collaboratively to help all students learn*” – by successfully completing this course, students/candidates will:

1. Demonstrate an ability to think critically about educational research, to identify key components, and apply the fundamental concepts of rigorous educational research. Articulate, explain, and critically analyze the need for teachers to have an understanding of traditional educational research and action research
2. Demonstrate the ability to analyze published research and synthesize information that is appropriate for a particular research design
3. Identify and articulate manageable, meaningful, and focused research questions and research designs that can be explored in school settings. Apply knowledge about appropriate methods and analytic plans to study proposed research questions in school settings
4. Demonstrate an understanding of the action research process and how teachers can effectively conduct educational research in their own classrooms and schools as teacher-inquirer

Appendix C

Performance Assessment Grading Rubric

Name _____

<p>Literature Review / Support of Main Ideas</p> <ul style="list-style-type: none">• Provides relevant background or context for the issue targeted in the research• Alerts readers to the major positions they will hear• Demonstrates mastery of the content presenting pertinent and current resources from the literature• Literature is well organized, supports, and leads to the Research Question with a transition paragraph <p><i>Comments:</i></p>
<p>Research Question; Hypothesis; Research Design and Methods</p> <ul style="list-style-type: none">• Correctly stated Research Question (variables and hypothesis)• Correctly chosen and described research design or data collection methods• Good and detailed description of participants and instruments or measures used in data collection• Correctly described the methods of data analysis and statistical methods of data analysis (if quantitative); correctly explained data collection and analysis, and concluding expected hypothesis (if qualitative) <p><i>Comments:</i></p>
<p>Expected Results and Discussions</p> <ul style="list-style-type: none">• Expected results are aligned to the research question and research design, and pertinent to the methods used• Elaborates on each point well, supporting each with evidence and relying on appropriate resources• Presents arguments and supporting evidence clearly and relates back to literature presented in the theoretical section• Mentions type of error statements, limitations, and implications <p><i>Comments:</i></p>
<p>Concluding remarks</p> <ul style="list-style-type: none">• Makes a summary of expected results and presents the limitations of the research design, methods, and use of results as related to the ideas from literature review• Presents any concluding educational implications of the topic presented in the paper• Presents future lines of research, stating several new research questions, and

explains what design would be used • Draws conclusions <i>Comments:</i>
APA format= Organization /Structure; Language & Mechanics • use of appropriate headings for a good and logical organization of the paper • use of professional language according to APA style • correct grammar, fluency, punctuation, and terminology • correct format conform APA style <i>Comments:</i>
Other comments:

Total points = / 100

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