

Integrating Service-Learning into a Required Educational Technology Course for Pre-service Teachers

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Rick Voithofer
Assistant Professor
The Ohio State University
voithofer.2@osu.edu

Introduction

This study examines the integration of service-learning into a required educational technology class for pre-service teachers. Based on a partnership between a teacher preparation program at a large Midwest university and a local urban school district, this project used a service-learning model to connect pre-service teachers to working teachers to help the working teachers integrate technology into their teaching while giving the pre-service teachers a real context for their assignments. The study is centered around two courses (one class for pre-service teachers (PRE791) and one class for working teachers (IN727)) that were taught at the same time during the summer of 2002 and that presented similar content related to developing technology skills and acquiring knowledge about technology integration. Participants in the study included 53 pre-service teachers in early childhood (K-3) education and seven working teachers in both elementary and secondary education. The purpose of the study is to determine the success of this model of technology education in terms of student learning and satisfaction for the pre-service and the working teachers.

Background

The pre-service teachers in this study are enrolled in an 18-month M.Ed. teacher education program that requires five quarters of full time study. Both courses, PRE791 “Media

and Technology in Education” and IN727 “Developing Educational Media for the Classroom” are taught in a five week summer session. PRE791 is a required technology integration course and is structured into three hours of lecture and five hours of lab per week. It is taught in two sections, one for early childhood pre-service teachers and the other for secondary education pre-service teachers. Generally taken in the first quarter of study, PRE791 provides students with basic technology skills in web development, PowerPoint, and Excel while teaching students how to evaluate technology resources (i.e. web sites and educational software), use electronic communication including discussion boards and create lesson plans that incorporate media and technology in teaching high order thinking skills. Students leave the course with the beginning of a web-based teaching portfolio that they build upon during the rest of their program. The course teaches students a constructivist approach to learning in which technology is treated as only one aspect of the classroom ecology.

A predicament presented by its offering early in the teacher education program is that PRE791 students have little or no classroom experience or background in education. This makes it difficult for them to create course projects that are authentic. In order to provide more realistic contexts for student projects the author wrote and was funded for a seed grant to integrate service-learning into PRE791. The grant proposed matching students in PRE791 with working teachers in the local urban school district. Service-learning (Albert, Chickering, Clark, Eyler, Ivel, Lazarus, Morton, & Zlotkowski, 1998; Cooper, 1998) was selected as the model for this project because it provides a real context for student work that incorporates reflection (Eyler, Giles, & Schmiede, 1996) and community service (Harkavey & Puckett, 1991). The local urban school district was selected because it includes the schools with the fewest resources and the greatest need for technology integration in the area surrounding the university (Maybach, 1996).

A class (IN727) was proposed and accepted by the school district to carry out the grant. The course description offered teachers the chance to learn web development, presentation software (PowerPoint), and spreadsheets (Excel), as well as, PowerPoint presentations, educational web site evaluations and lesson plans (created by PRE791 students) in exchange for sharing their classroom experience and agreeing to meet at least twice with the students in PRE791.

The grant was used to fund a teaching assistant to help teach the teachers taking IN727 and collect data and to purchase books, floppy disks, and parking passes so that the teachers could come to campus to meet with the pre-service teachers. Because of the short duration of the courses and the fact that the local public schools were not in session, it was not possible for PRE791 students to go to the surrounding schools and visit the teacher's classrooms – something that would generally take place in a traditional service-learning course. Instead, the teachers were asked to come to campus for two visits, once at the beginning of the class for students to interview the teachers to learn about their class, experience, and technology needs and once at the end of the summer session to receive feedback for their projects. All other communication between the in-service teachers and working teachers occurred over email.

While approximately 20 teachers initially signed up to take IN727, only eight came to the first day of class¹. Because most of the teachers in the class taught elementary school and because elementary education covers a variety of content areas the presenter decided to match the IN727 students with the early childhood section of PRE791 which had 53 students enrolled. Groups of approximately seven pre-service teachers were matched with each working teacher.

¹ One teacher did not participate in the collaboration with the working teachers.

While the matches were not always ideal, many of the pre-service and working teachers found ways to work together to find projects that were both relevant to the pre-service teachers and helpful to the working teachers.

In order to determine student learning and satisfaction with using a service-learning model the following questions guide the inquiry of this study:

1. What are the short and long term impacts on student learning (in both PRE791 and IN727) in terms of technical skills and technology integration knowledge?
2. What level of understanding did the students and teachers develop about the goals of service learning?
3. How did this course help PRE791 students to think about social and cultural diversity in relation to technology?
4. Did the service learning structure help PRE791 students to become more reflective and effective users of technology in the classroom?
5. How appropriate and useful were the projects that PRE791 students created for the partnering teachers?
6. Did the teachers use the projects that the PRE791 students created for them in their own class?
7. How could this course be taught differently to improve student satisfaction and learning?

Data Sources

To answer the research questions raised by this study and determine the effectiveness of this model, multiple data sources were collected for this study and triangulated for the analysis.

These data sources included:

1. A questionnaire administered at the beginning of the quarter PRE791 students that included questions about each student’s comfort and knowledge of various computer programs, technology skills, and education topics including word processing, spreadsheets, presentation software, web development, and lesson plan development, among others.
2. A questionnaire administered at the beginning and end of the quarter that asked about student’s knowledge of service-learning
3. A mid semester evaluation by the local service-learning initiative that included both a questionnaire and follow-up discussion
4. Interviews with students from both PRE791 and IN727 throughout the quarter
5. Instructor field notes taken throughout the summer session
6. The projects that the PRE791 students created for their partnering teachers
7. Final reflection papers written by PRE791 students about their service-learning experience and understanding of course content
8. Follow-up interviews with both IN727 and PRE791 students approximately eight months after the end of both classes.

Findings

Table one lists a pseudonym for each teacher for the purpose of this report, the areas taught by that teacher, and the self identified technology proficiency of each teacher.

Table 1
Participating Teachers and Self described technology proficiency

| Name | Subject/Area | Self Described Computer Proficiency |
|--------|---------------------|-------------------------------------|
| Monica | Sixth Grade Teacher | Low to Medium |

| | | |
|--------|--|---------------|
| Pat | Second Grade Teacher | Low |
| Sylvia | Middle school librarian | Medium |
| Tracy | Fourth grade special education teacher | Low to Medium |
| Laura | High school Spanish teacher | High |
| James | High school multimedia teacher | High |
| Kim | High school band teacher | Medium |

A survey was conducted at the beginning of PRE791 to assess the self-described computer proficiency of each student. Table two summarizes the results of some of the key factors related to this study.

Table 2
PRE791 students and self-described technology proficiency

Knowledge / Comfort Scale: 1=Very Low 2=Low 3=Moderate 4=High 5=Very High
N=53

| Area | Knowledge (Mean) | Comfort (Mean) |
|--|-------------------------|-----------------------|
| Spread Sheets | 2.28 | 2.18 |
| PowerPoint | 2.13 | 2.17 |
| Web Development | 1.47 | 1.45 |
| Basic Word Processing | 4.05 | 4.07 |
| Basic Web Browsing | 3.74 | 4.23 |
| Advanced Web Browsing (i.e., organizing bookmarks, installing plugins) | 2.15 | 2.13 |
| Basic Email | 4.34 | 4.38 |
| Advanced Email (i.e., creating filters, organizing mail in mailboxes) | 2.67 | 2.7 |

| | | |
|---|------|------|
| Technology Integration in a lesson plan | 2.01 | 2.28 |
| Lesson Plan Creation | 2.73 | 2.69 |

Mid Quarter Evaluation

A representative from the local service learning initiative conducted the Mid Quarter Evaluation. The evaluation consisted of a survey and open discussion. The results of the survey revealed that the some students didn't have a clear sense of the purpose of a service-learning course. During the discussion a portion of the class expressed anger and confusion about the purpose of a service learning class and wondered how service learning fit into PRE791. Students probably felt more comfortable expressing their opinions to someone who was not their professor, although the professor was present for the discussion. It is significant to note that based on the survey data it may have been a vocal minority that was unhappy. Table three summarizes the student responses to the survey.

Table 3
Midcourse Feedback Survey

| Question | Yes Frequency (Percent) | No Frequency (Percent) | NA Frequency (Percent) |
|---|-------------------------------|------------------------------|------------------------------|
| Are the learning objects of the course clear? | 43 (87.8%) | 4 (8.2%) | 2 (4.1%) |
| Are the in-class instruction and the service clearly connected? | 36 (73.5%) | 11(22.4%) | 2 (4.1%) |
| Are the methods of reflection on your service useful in helping learning courses content? | 25 (50%) | 14 (28%) | 11 (22%) |
| Is the quality of discussion good (e.g. Do you have opportunities to voice your opinion and ask questions?) Are differences in opinion accepted or allowed? | 33 (68.8%) | 7 (14.6%) | 8 (16.7%) |
| Are the assignment/homework appropriate? | 45 (90%) | 5 (10%) | 0 |
| Has the service contributed to your learning of particular concepts in the course? | 37 (74%) | 10 (20%) | 3 (6%) |

| | | | |
|---|------------|------------|------------|
| Are the goals of the service/activity/activities clear? | 35 (71.4%) | 11 (22.4%) | 3 (6.1%) |
| Do you see a connection between this course and an identified community need? | 27 (56.3%) | 15 (31.3%) | 6 (12.5%) |
| Do you receive useful orientation or training for your service? | 22 (45.8%) | 16 (33.3%) | 20 (20.8%) |

End of Class Results – General Observations

All the PRE791 students successfully completed the course and learned the skills necessary to earn a high grade. The course is designed in such a way that students are allowed to re-submit assignments for a higher grade.

End of Class Results – Working Teachers

- The teachers overwhelmingly felt positive about the projects that the pre-service teachers completed for them. All of them said that they would be using some of the web sites, PowerPoint presentations and lessons that were created for them. For them these projects addressed the problem of not having the time to create new materials. The most consistent criticism that the teachers had when they had suggestions was that some of the projects were not age appropriate for their students.
- The teachers were not always clear about their role in this partnership.
- The teachers were very satisfied with the loose structure of IN727 and appreciated having time to learn technology skills at their own pace.

End of Class Results - Pre-Service Teachers

- The responses to the service-learning aspect of the course were mixed. This was partially a result of some of the pre-service teachers not being matched with teachers in their areas and partially due to the fact that some students did not have a clear idea about the nature of a service-learning course. Those students who were matched with

an elementary teacher and understood the concept of service-learning had a positive experience and learned a great deal from the partnership. Positive responses included observations that their interactions with their partnering teacher provided insights into different types of scheduling (i.e. block scheduling, year round schools), information about the technology resources in local schools, and ideas about creating an inclusive classroom. Many students stated acquiring new knowledge about practical aspects of classroom management including how to utilize technology. It was significant that while the students had vocal criticism about the service learning component of the class they gave the class very high courses evaluations including a 4.8 out of 5 for overall rating of the instructor.

- Some students felt that they didn't spend enough time with their partnering teachers and therefore did not have the opportunity to get sufficiently acquainted with them to create projects for them.

Eight-month follow-up - Teachers

All eight teachers were asked questions about whether or not they used the projects that students created for them and about how they have utilized the skill they learned in IN727. The responses were quite varied including some teachers who put quite a bit of the PRE791 projects to use.

Monica – Monica had the greatest use for a PowerPoint presentation created for her by PRE791 students about lab safety. Part of the reason that she didn't use more of the projects was because she didn't have computers in her classroom for part of the year. She had a hard time getting age and ability appropriate material from the PRE791 projects. She was aware of their frustration and felt that they did good work with what they had to work with. One of the things

that surprised her was that these students were not more comfortable with computers. In fact, she felt as if she had a greater degree of comfort than most of the students with which she partnered. When there were computers in her class, Monica had students visit the web sites that she created and even was able to update the site.

Pat – Pat incorporated a PowerPoint presentation into her class that a pair of PRE791 students created for her on the branches of the government. She mentioned that her students enjoyed learning the information on the computer. She has not had an opportunity to use the web site evaluations or lesson plans created for her. As a result of IN727 she felt more comfortable using computers and mentioned that she is using the computer more with her students. At the end of the interview she said that she felt the PRE791 students are more computer literate than her.

Sylvia - Sylvia stated that she has not used any of the projects that the students created for her specifically, however noted that she has incorporated some of the ideas from their projects in her own work. She would have preferred a more structured set of interactions with students including receiving a copy of the questions that the students initially asked her. Multiple times during the course and during the follow-up interview she mentioned how she was struck with the familiarity that the PRE791 students expressed with her and that she would have preferred to be addressed by her last name. As a result of taking IN727 she noted that she was more confident using PowerPoint and creating web pages.

Tracy – Tracy felt that many of the resources found for her by PRE791 students were mostly things that she had already known about. This is probably due to the fact her field is specialized and there are fewer resources. The primary reason that she wasn't able to use many of the PowerPoint presentations and lesson plans was because she doesn't have computers in her classroom and it is not convenient to book lab space. As a result of the questions asked by

PRE791 students, Tracy researched some of the answers that she didn't know the answer to including the technology policy of her school. One of the interesting ideas that she shared during the interview was that she would have preferred to work collaboratively with the PRE791 students to create projects together. As a result of taking IN727 she was able to help her students to create PowerPoint presentation.

Laura – Laura was not able to use all of the projects that were created for her because of time constraints. She found a lesson plan and PowerPoint presentation on liquids and bases a valuable addition to a lesson. Some of the projects were not appropriate for her learners, who are special needs students. When asked about her feedback for the class format she responded, “I loved it. I had never had that experience before. I thought that was really neat. When I was in College it would have been nice to have been doing a project that was actually going to be used by someone and not just for make believe.”

Kim – Because of her busy schedule at the beginning of the school year as the band leader, Kim forgot about the projects that were created for her by the IN791 students. What she enjoyed most about the collaboration was working with the pre-service teachers was sharing her experience with them. She found great utility with the skills and projects that she developed in IN721. She is still actively using PowerPoint, Excel, and website development to support her teaching. Specifically she mentioned using the PowerPoint that she created in IN721 as an introduction during freshmen orientation to the band.

James - While James, a first year teacher, was able to use some of the projects that were created for him, the most useful part of the collaboration was the feedback he received from PRE791 students who gave him feedback on class organization, management, and communicating with parents. He characterized their discussion as between colleagues. He

mentioned an open house that he had during the school year that was suggested by the PRE791 students. Because of the technical nature of what he teaches (i.e. media production) it was difficult for these early childhood teachers to create projects, however he mentioned one project on media and fair use that he found particularly helpful and used with his students. Because he already had a strong technology background, he did not learn much of about the topics covered in class but instead engaged in more self-directed learning.

Benefits

- Exposed students to the reality of a classroom, school, and community including issues surrounding race, class, gender, and technology resources
- Students learned information about different pedagogical techniques (e.g., stations, classroom management)
- Students created projects that had the potential to be used in a real classroom
- Encouraged teachers to reflect on their own use of technology in the classroom
- Gave teachers more confidence to use technology in their own classroom
- Allowed teachers to share their own experiences with new teachers
- Provided teachers with new ideas for integrating technology into their classroom

Lessons Learned

- More thorough orientation to service learning for both the teachers and the students
- Reflection and feedback for reflection should occur earlier and more frequently
- Sharing of reflections between teachers and students (meta communication of the process)
- Better match between teachers and students
- Offer during a normal ten week quarter
- More meetings/interactions/communication between teachers and students

- Facilitate ongoing communication between teachers and students after the course
- Allow teachers and students more flexibility in creating projects (e.g., co-creation of projects)
- (In a perfect world) Match students with teachers with whom they will student teach

Conclusions

This study presents an integrated model of technology preparation for pre-service teachers and teacher professional development using service learning that is highly contextual to the needs and characteristics of the local community and schools. Pre-service teachers learn about what they can expect to encounter in the classroom while working teachers receive help in developing technology-based teaching materials and technical skills. Presented in this way technology is not seen as a separate add-on to the curriculum but an integral part of teaching that is influenced by district, school, classroom, and student and teacher characteristics. This model of teacher education complements recent trends in teacher preparation and teacher professional development that stress the importance of community and school district involvement and input in teacher education and teacher professional development.

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