

Pre-Service Teachers Serving Students: Service-Learning Through Virtual Tutoring A Case Study

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Service-learning in teacher education programs is a growing trend in universities around the world. Coffey (2011) states that the number of higher education institutions using service-learning programs has greatly increased within the last twenty years, and teacher education programs are using them to help teacher candidates achieve an awareness of social and community issues. For some, the rationale for including service-learning within teacher education programs dates back to John Dewey, who believed the best way for the teacher to learn was to provide the candidate with experiences by which they could facilitate their own learning (1938). Later, the Citizen Education Project from the 1950s articulated the need of participation within the community (Daniels, 2011). The current study is intended to enhance the teacher education program at a selected higher education institution in the South by serving as a method for increased learning opportunities, while providing non-traditional learning opportunities for both collegiate teacher education candidates and elementary level students (Karayan, 2005). The model described also provides the chance for candidates to meet and interact with community members outside of their normal environment (Coffey, 2011). Furthermore, it “responds to the call for higher education to improve the quality and productivity of instruction” (Driscoll, 2011, p.66).

ABSTRACT

This study details the experiences from a pilot program aimed at virtually pairing pre-service teacher education candidates with fifth grade students for the purposes of raising achievement and creating meaningful field experiences. Researchers paired the difficulties of traditional field experiences with the difficulties in vocabulary comprehension for at-risk students to reach a solution of service-learning through virtual tutoring. Junior and senior level pre-service candidates majoring in middle school education used videoconferencing to tutor fifth grade students in vocabulary at a nearby elementary school. Results suggest that the pilot program provided increased student achievement for elementary students as well as increased satisfaction concerning field experiences for pre-service teachers.

The rationale for service-learning within the realm of teacher education can be argued from studies which cite positive teacher candidate impacts from such programs. One common problem area in teacher education programs involves providing meaningful field experiences to pre-service teachers. Often, the experience hours completed by candidates involve primarily observation, which while certainly necessary, become less meaningful after observing the same activity multiple times. There is certainly value in learning how to teach by watching others; however, it is necessary for candidates to learn through meaningful interactions with students as well. Candidates want to be able to interact with both teachers and students, not simply to observe them.

Often, a lack of developmentally appropriate vocabulary skills is a factor for students at the elementary level to struggle in reading comprehension. Students are rarely exposed to extensive vocabulary in traditional vocabulary acquisition programs. As a result of the lack of exposure, students fail to develop strong reading skills and a well-developed vocabulary bank. In addition, elementary students often lack individualized attention or mentoring relationships with literacy instruction. This study explores how technology can aid in the progression of reading skills with young learners. Researchers are not in agreement as to how important a role technology plays in the development of vocabulary when delivered on a one-on-one basis (Houge, 2009).

The researchers blended the ideas of service-learning, meaningful field experiences, and vocabulary acquisition through non-traditional means to develop a virtual field experience pilot program. The purpose of this study was to discover the benefits and drawbacks of a virtual field experience in which pre-service teachers tutored fifth grade students on a particular topic. The aim of the researchers was to record first-hand experiences from pre-service teachers, one classroom teacher, and her participating students while participating in a virtual field experience pilot program. Through a non-traditional program, pre-service teachers provided one-on-one tutoring to individual students through videoconferencing. Through a mixed method case study design, this research strove to answer the following:

- Can a service-learning program that pairs pre-service teachers with fifth grade students be an effective medium to “virtually” tutor students in vocabulary acquisition, thereby increasing the students’ achievement?
- What effect does a virtual tutoring and mentoring program have on pre-service teachers as a mean of providing meaningful field experiences?

The following literature review explores the three above areas: service-learning in pre-service teacher education programs, field experiences in pre-service teacher education programs, and videoconferencing as a means for tutoring young students.

Literature Review

Service-learning in Pre-service Teacher Education Programs

While there are many varying definitions of service-learning, Daniels, Patterson, and Dunston (2011) define it “as a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities.” The major themes that show up in the literature about service-learning concern the rationale, the benefits and challenges, and the components that service-learning should include.

It would seem that any service-learning opportunity would be beneficial to all parties served, but some would argue that there could be disadvantages (*not challenges*) with the

misuse of service-learning (Coffey, 2011). Additionally, Coffey claims that “in order for service-learning to be meaningful, participants must not only provide service, but must also examine the conditions that exist within society that create the need for service organizations” (2011). Authors agree that while there are challenges (*not disadvantages*) associated with service-learning, “the benefits outweigh the challenges involved” (Anderson, 1998, p.11). Some challenges noted by Anderson, such as the “already overcrowded curriculum,” (p.5) the trouble of organizing school sites to complete service, and relating the service-learning to state and national accreditation standards (1998) are realistic challenges that any service-learning program could face. Despite these challenges, the study completed by Anderson and Pickeral (1998) showed evidence that most teachers are able to overcome these barriers and incorporate successful service-learning activities. In another study, Daniels, Patterson, and Dunston (2011), state that service-learning programs are effective in changing the attitudes and beliefs of candidates and in increasing their awareness of social justice. This same study also showed academic growth of the students who participated in service-learning programs, specifically in the areas of critical thinking and writing skills.

In order for the service-learning program to work effectively, researchers claim that there need to be certain components within the program. Karayan and Gathercoal recommend that all service-learning programs should include distinguishing criteria between service and community learning, some type of “assessment, evaluation and reporting process,” instruments that measure the programs impact on all parties, and acknowledgment that a “relationship between service-learning activities and standards-based reform” are important to the continuation of these activities (2005, p.80). Others go into much greater detail as to what the definition of service-learning should include. For example, Daniels, Patterson, and Dunston (2011) have four very distinct components that are essential to the success of any program: students must actively participate in a program that meets actual needs, the program must be an integral part of their curriculum and allow them time to reflect on what they did, must give students the ability to use learned skills in real situations, and the program must extend what is being learned within the classroom to the community.

The promotion of technology within education has prompted major changes for public schools systems and teacher education programs alike. These changes “have forced educational reform, including the development of a new educational paradigm for online distance education” (Strait, 2004, p.62). Teacher education programs have found barriers when including a service component to online courses. The major barriers for service learning in online courses are: targeting the community in which the candidates provide the service, documenting services provided, and connecting online curriculums to service learning (Gibbons, 2012). However, these issues do not negate the potential that online service learning can provide to students. The advantages of using technology to foster the online service aspect of teacher education programs is that “when combined with pedagogies that foster the development of critical dialogue, personal insight, and active engagement, such technologies can extend learning beyond regional confines and identities to enable individual growth and to increase capacities for understanding and awareness” (Guthrie, 2010, p.1). Additionally, online service learning has the greater potential to substitute the existing problems with traditional service learning experiences. Through their exploration of current online service learning projects, Strait and Sauer believe that this type of service learning experience is an enhancement to current teacher education programs and that it “challenges students to think in new ways, explore new ways of problem solving, and raise critical questions about their learning and service” (2004, p.64). While some challenges of online service learning are still evident, the

potential that this new realm of service has for increased connection between candidate and community is prominent.

Field Experiences in Pre-service Teacher Education Programs

While all states have varying requirements for teacher certification programs, all require a certain number of observation and participation hours in public schools. Certification programs that include field experiences that supplement what students are learning in their methods classes are not a problem and are very beneficial to candidates. However, not all certifications allow candidates to have meaningful field experiences because they often focus only on candidates completing the needed amount of hours. Not only do traditional field experiences deny candidates valuable learning opportunities, they could have potentially damaging effects on that candidate's future in the public schools. When field experiences are meaningful, they have been found to have positive effects on both candidates and K-12 students. Cochran-Smith and Zeichner summarized many studies on the effects of field experiences on pre-service candidates. One in particular found that "the field experience increased the pre-service teachers' motivation to become good teachers," and these candidates also became more aware of their strengths and weaknesses in teaching (2009, p.316). Furthermore, they found from these studies an important aspect of successful field experiences that is often overlooked: "planned, guided, and sustained interactions with pupils" (2009, p.316). In other words, simple observation does not create successful field experiences.

It was John Dewey (1938) who globalized that idea of hands-on experience as a necessity for true learning to take place, but he also argued against the idea that any experience was good experience. Traditional field experiences are normally "largely mechanical and management oriented" (1938, p.313) forcing them to become the bad experiences. Ultimately, traditional field experiences have become about "survival rather than...professional development" (Gallego, 2001, p.314). Gallego (2001) does point out, however, that some field experience programs are changing and improving in a number of different ways. One related advancement is having pre-service teachers engage in activities within the community that not only benefit the candidates, but have a more direct impact on all community members. More research about the direct impact these types of field experiences have on both candidates and the community needs to be completed, but it is certainly a step in the right direction (Gallego, 2001).

Videoconferencing as a means for tutoring young students

Videoconferencing can be an effective and efficient means to assist students with literacy comprehension. Videoconferencing allows for communication to take place from virtually anywhere. Elementary, middle, and high school students are unable to maintain proficient literacy skills due to many factors such as limited language experience, poverty, and lack of motivation (Houge & Geier, 2009). The more exposure to proper communication, whether it be verbal or written, is always beneficial. In a traditional classroom setting, students rarely have the opportunity to share intellectual conversations with others. With the use of videoconferencing, students can be provided a rich repertoire for communication and engagement within traditional activities (Anderson & Rourke, 2005).

Existing literature reveals that one-on-one tutoring is an effective way to remediate student skills if implemented well (Allen & Chaukin, 2004). The one-on-one interaction allows for students to have the attention and specialization of the lessons that they require in order to

progress to becoming academically successful students. Furthermore, the lessons can be tailored to the individuals needs in order to insure growth under the instructor's guidance. During a tutoring session, the tutor evaluates a student's performance and adjusts upcoming lessons as needed. Objectives are clearly defined, and activities are created to meet a specific objective (O'Neill & Harris, 2004). Studies found significant improvement in student literacy scores when college students with minimal training provided one-on-one tutoring. Literature explains that effective tutoring program features are effectively measured by intensity, structure, and monitoring performance (Allen & Chaukin, 2004). According to O'Neill (2004), knowledgeable adults who are working and learning outside school systems have a significant amount to contribute to the education of children.

Another point to consider are the findings that some researchers feel that one-on-one tutoring is generally most effectively delivered in person and is considered the most effective method of advancing literacy skills (Houge & Geirer, 2009). In addition, tutoring via videoconferencing reduces time and cost (Doggett, 2008). Past researchers indicated that videoconferencing is a promising medium for increasing the accessibility of one-to-one literacy instruction. Today, videoconferencing occurs with no satellite or long-distance charges. Videoconferencing, also called distance technology, helps students feel part of a real classroom-learning environment, which provides immediate contact, motivation, and clarification (Houge & Geier, 2009).

Methods

Background of the study

Researchers were initially examining two specific problems. First, from the university prospective, the researchers were looking to identify the means of providing more meaningful field experiences to pre-service teachers. Secondly, from the K-12 perspective, classroom teachers were looking for a way to use technology to raise student achievement and motivation. Blending the ideas, the pilot program was designed to provide meaningful field experiences to junior and senior level pre-service teachers while removing the constraints of entering a school, interrupting classes, or classic constraints of time and distance. The program provided a means for pre-service teachers to "virtually tutor" students in a fifth grade classroom who were struggling in the area of vocabulary. In turn, it also provided one-on-one technology based instruction to classroom students.

Case design

Participants were chosen based on convenience sampling. University pre-service teachers participating in a six-hour methods course were given the new program as an option for completing the required fifteen hours of field experiences for their current course. Of the eighteen students in the course, fourteen chose to participate. Those that did not noted that time conflicts with other classes were the reason for not participating. Of those fourteen students, all of whom were junior and senior level majoring in grades 4-8 elementary education, eleven attended tutoring sessions without fail.

The classroom teacher was enrolled at the same university as a graduate student. Her students were chosen to participate based on a pretest given to two sections of fifth grade students. The pretest given was used to determine students' proficiency with a pre-selected group of on-grade level vocabulary words. After analyzing the data, students with the lowest mean score were chosen to participate in the program. Because of the number of pre-service

teachers, or tutors, available to participate in the study, the lowest performing fourteen fifth grade students were chosen to participate. Parental permission was attained, and fifth grade students were enlisted as the first group to participate.

Participants

Pre-service teachers were part of a community of learners at a comprehensive, regional university primarily serving students from the South. In 2010, 68% of the students enrolled at the university were over the age of twenty, with 94% of the student population being state residents. The College of Education is the largest of the five academic colleges on the campus, encompassing more than 25% of the student enrollment in 2010. The College of Education (COE) offers undergraduate degree programs in a wide variety of teaching areas, including birth to age five education, elementary, middle and high school education, and k-12 education in the areas of art, health and physical science, and music education. The COE also offers undergraduate degrees in psychology. Graduate programs include those in psychological counseling, teaching, and educational leadership. Each year, the College of Education enrolls approximately 500 undergraduate candidates, and approximately 400 graduate candidates, across its twenty-two programs.

The public school that participated in the pilot program is a two star school where 84% of students are eligible for free or reduced lunch. Only 8% of students who attend the school are considered students with disabilities, which includes speech and language impairments. Most fifth grade students who took the state standardized test scored a Basic on the English Language Arts portion. Slightly over 1% scored Advanced and over 25% scored Approaching Basic. More than 96% of classes taught at this school are taught by teachers that are considered highly qualified under NCLB. Class sizes are generally small, with 85% of classes having between 1 and 20 students in them. A very small percentage have over 27 students in a class at a time. The attendance rate of 95% is over the state average. Overall, the school's baseline performance score is 91.1.

Data collection and analysis

Pre-service teachers were chosen through convenience sampling. The first group of participants was 14 junior and senior level students, all majoring in grades 4-8 elementary education. Each of the fourteen pre-service teachers, or tutors, was randomly assigned to a fifth grade student. Due to pre-service teacher and fifth grade student absences, data were collected based on eleven pairings. Based on the amount of time and the schedule of the elementary school, the pilot program took place in eight individual twenty-minute sessions. Sessions were held two times each week, spanning a four-week instructional period. Pre-service teachers and fifth grade student pairings remained consistent throughout the pilot program.

Pre-service teachers prepared a series of eight lessons based on content given by the classroom teacher. The fifth grade teacher provided the material that was to be the content of each lesson based on the current instructional needs of the students. Individual sessions lasted twenty minutes, where tutors and tutees interacted through real-time videoconferencing, audio conferencing, and document sharing. The content of each of the eight sessions remained consistent for all participants; however, the delivery method of content was at the discretion of the pre-service teacher, or tutor. At their own discretion, pre-service teachers were asked to assist students in the knowledge acquisition and comprehension of the content. Lesson preparation and presentation varied among pre-service teachers. Many included document

sharing, presentation sharing, and screen sharing as part of the lessons. Others used traditional dry-erase boards or over sized flashcards as instructional tools. All pre-service teachers adjusted their instruction to meet the needs of their individual student. Often after one instructional tool was used, modifications were made before the next session based on the reaction of the student.

At the conclusion of the study, quantitative data were collected from fifth grade students in the form of posttests in vocabulary acquisition and achievement. These posttest scores were compared to pretest scores to answer the initial research questions. Survey data were collected from both pre-service teachers and fifth grade students to explore the benefits and drawbacks of the program.

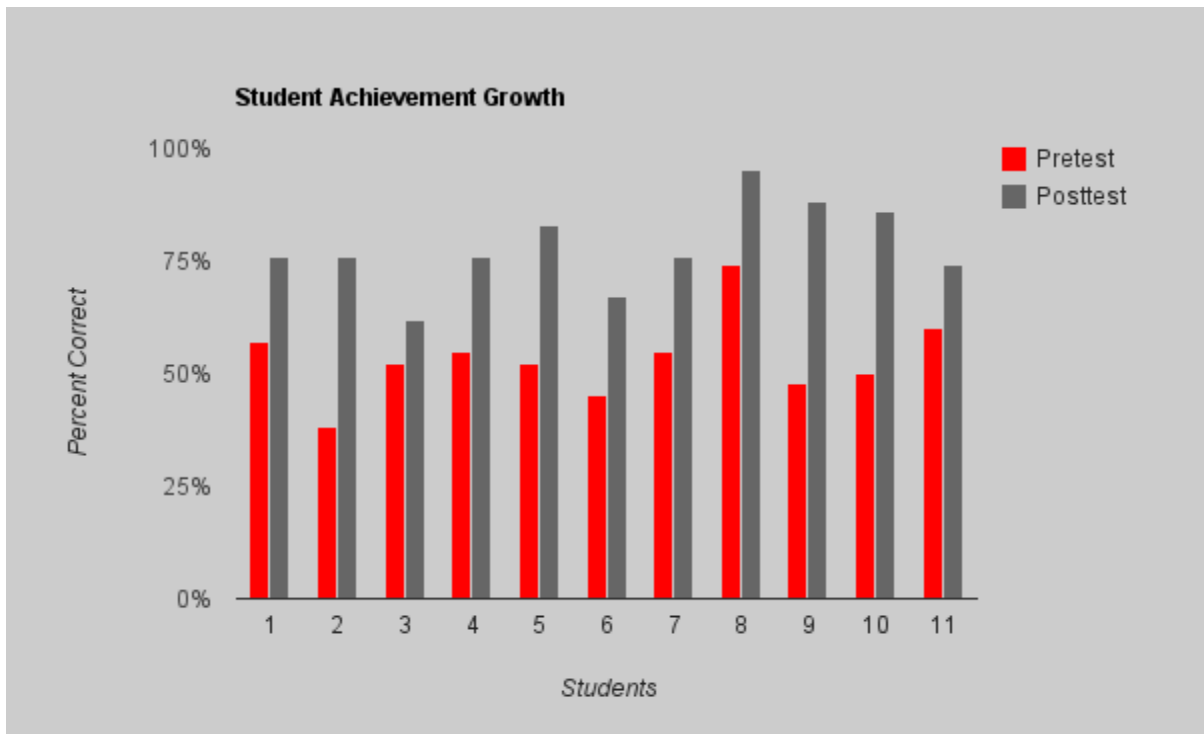
Results

The purpose of this study was to discover the benefits and drawbacks of a virtual field experience in which pre-service teachers tutored fifth grade students on a particular topic. The aim of the researchers was to record first-hand experiences from pre-service teachers, one classroom teacher, and her participating students while participating in a virtual field experience pilot program.

Research Question 1:

Can a service-learning program that pairs pre-service teachers with fifth grade students be an effective medium to “virtually” tutor students in the area of vocabulary acquisition, therefore increasing the students’ achievement?

Pre and Post tests were given to all fifth grade students. Students not participating in the virtual tutoring program showed a 14% achievement growth with typical classroom instruction. Participating students’ average achievement growth was 23%. Achievement increases ranged from 9%-41%, with a mean of 23% (figure 1).

Figure 1: Student Achievement Growth**Research Question 2:**

What effect does a virtual tutoring and mentoring program have on pre-service teachers as a mean of providing meaningful field experiences?

The eleven pre-service teacher participants ranged in age between twenty and thirty two, with a mean age of twenty-two. Ninety-one percent were Caucasian, and all were female. Most, 82%, held a part or full time job in addition to being enrolled full-time, where all were expected to finish their degree in grades 4-8 education within five semesters. During a post survey, pre-service teachers were asked to comment on twelve items related to service-learning (chart 1).

Chart 1: Student responses

Question	Percent Strongly agree-agree	Percent Strongly disagree-disagree
I have a good understanding of the needs and problems facing the community in which I live.	82%	18%
I have a responsibility to serve the community.	100%	
I learn course content best when connections to real life situations are made.	100%	
The idea of combining course work with service to the community should be practiced in more courses at this college.	91%	9%
The service aspect of this course helped me to better understand the required lectures and readings.	72%	18%
The service aspect of the course helped me to see how the subject matter I learned can be used in everyday life.	91%	9%
The service aspect of the course made me aware of my own biases or prejudices.	54%	45%
The service aspect of the course showed me how I can become more involved in the community.	82%	18%
The service that I did through this course was not at all beneficial to the community.	9%	91%
I plan to enroll in more courses that offer service-learning.	71%	27%
As a result of my service-learning experience, I would encourage other students to take courses that offer service-learning.	91%	9%
This pilot program provided challenging, meaningful and educational tasks for me to accomplish	100%	

Changing Opinions

In addition to those above, pre-service students were asked to reflect upon the program. Many pre-service candidates discussed how their initial impression of the program was not on point. Due to limited success in the past, surrounding service-learning projects and/or classroom field experiences, most thought that the project would not make an impact on their learning.

My first impressions of Colonel Chat were not great at all. I figured it was more pointless, out of class work that the teachers were making us do, and I didn't like the idea of having to communicate over the computer at all; I had never done it before.

After the pilot program, however, pre-service teachers were asked if their participation in the project was a meaningful one.

Oh my goodness, so much! This was my first teaching interaction with a student, ever. Although nerve wracking at first, I quickly picked up on what was working and what wasn't by being attentive to the responsiveness of my child. I swear I learned way more about teaching from Colonel Chat than I did in the entirety of my class

Clearly pre-service teachers enjoyed the experience. In addition, many went on to identify key skills that were attained with this program in contrast with a traditional field experience program. "It (the pilot program) allows you to use a variety of instructional methods and see the reactions of the students." Others commented on the lack of student feedback given after teaching a traditional lesson. With the virtual tutoring program, pre-service candidates were allowed to receive immediate feedback, and individualize the instructions specifically for the student with whom they were working.

Lastly, one pre-service candidate discussed the fact that she had not entered a classroom in many weeks, and longed for the justification of her choice of professions:

Being out of the classroom for a few weeks almost made me forget what was keeping me in the teaching program. After seeing the students enjoy learning something new and seeing the excitement on their faces upon answering my prompts correctly, I was reminded why I'm meant to be a teacher.

Program and bonding with students in the field

Another unique benefit of the pilot program was the ability of each pre-service candidate to build a unique relationship with a fifth grade student. Knowing that a traditional face-to-face meeting never occurred between pre-service candidates and students, it was overwhelming to see the bonds forming between groups. "Not only (did I) get tutoring and teaching experiences from a different perspective, but (I was) also able to build a relationship and truly help a child." Many did not believe that these types of bonds would form because of the technology that divided tutor and tutee:

I learned that when technology is used correctly it came be so AMAZING. This thing became something so awesome to me. I was able to gain a connection with my student and show him and myself how to use technology with tutoring. The program helped make me a better believer of technology in the classroom.

Responsibility and concerns for learning

Often when teaching an isolated lesson, pre-service teachers feel little or no connection with students actually mastering material. The service-learning virtual tutoring experience allowed pre-service candidates to see learning taking place in real time.

I felt a unique responsibility to my student; I knew that my failures were to his detriment. I felt the responsibility that comes with owning an opportunity to advance learning for a young, bright student.

In addition, many pre-service teachers took views further, commenting that a program such as this had “certainly changed my view on civic responsibility. After realizing and actually being able to see my student’s results, I knew that this program was truly a blessing for everyone involved.” Summarized, the program provided a positive experience for pre-service candidates in relation to service-learning and field experiences:

Upon completion of the virtual tutoring experience, my desire to help others has greatly increased. Before, I was not the first person to volunteer to tutor students. Now, if I know someone who has a student that needs to be tutored, I am willing to offer my services in order to help that student succeed. As a result of the first-hand experience through this program, I know that as a future teacher it is my responsibility to go above and beyond to ensure that every student's needs are met. I used to feel that if the students did not understand something, I could only try two or three times to help them. If they did not understand the concept then, I felt there was nothing else I could do. This program has shown me that I need to be enthusiastic and put forth the maximum effort to help students succeed, which will, in turn, increase their motivation as well. Getting a little taste of success through this program has, without a doubt, helped me realize that I have responsibilities as a future teacher and that I need to have the strongest desire to help students succeed.

Technical concerns and suggestions

The isolated suggestions and comments from all participants surrounded technology hardware and software outages. Many stated that “my only changes I would recommend for the program is that it would last longer than the 4 weeks provided; I truly felt that I could have continued!” Others, however, had specific suggestions that will be immediately incorporated into the next step in the program.

If I could change something about the program, the absolute only thing that I would try to change would be how close the students are sitting to one another, along with the mentors on the other side. I could hear other people's conversations through my headphones and it interrupted our lesson. Other than that, everything was great!

Other suggestions that will be taken into account are:

- Initial sessions between students and pre-service teachers should not contain content. This opening session should serve as a “meet and greet” and testing of equipment.
- Programs should be longer than eight sessions. Both students and pre-service teachers were disappointed when the program ended, as relationships were being formed and trust gained.
- A “user’s manual” should be developed to address specific and common technical issues. This manual has been drafted and will be distributed to classroom teachers, principals, and pre-service teachers participating in the next phase of the program.

Conclusions

Reflections from Pre-service Students

Perhaps more interesting than 100% of pre-service teachers reflecting that the pilot program provided challenging and meaningful field experiences is the excitement seen from pre-service candidates after participating in this pilot program. The program provided a means

for future teachers to build a relationship and have ownership in a student's learning. In addition, the program provided a means for pre-service teachers to understand concepts, such as differentiated instruction, on a new level.

...[B]eing able to see and hear each other through videoconferencing recreated that personal relationship that you get when you actually are sitting face to face. I also learned how to prepare and modify lessons to meet the needs of my student. On the first day, I shared a document with my student, which had him choose the correct vocabulary word to complete each sentence. Although he understood the concept, I found that he did not fully master the definition of each of the vocabulary terms. Based upon his performance, I had to adjust my instruction for the next lesson. This experience taught me a valuable lesson that I will incorporate into my teaching in the future. I know that I must do whatever I can to meet the individual needs of my student, and this program has provided me with first-hand experience with this concept.

This virtual service-learning opportunity has provided pre-service teachers meaningful and accessible field experience opportunities, with greater convenience for public school teachers. Pre-service teachers do not commute to the partner school, and therefore they do not interrupt instruction in the classroom. As an added bonus, the technology component of the program provided motivation for students, both elementary and collegiate, in a way that other field experiences had not. Participating pre-service teachers experience a teacher in the field who is truly integrating technology for the benefit of her students. The experience of actually tutoring and learning with one student via the Internet has become a distinctly unique experience for the pre-service teachers.

In the elementary fifth grade classroom setting, the program was also successful. Scheduling and technical difficulties were initially a problem; however, these issues became less prominent as sessions went on. Surprisingly, the classroom teacher found that parents were eager for their children to participate, and students were constantly asking when their next sessions will take place. The classroom teacher also noticed students utilizing material learned during the program more frequently than before. Overall, the success of the initial virtual service-learning field experiences pilot program was a success. Additional research needs to be conducted on the benefits of videoconference tutoring in student achievement and growth. A replication of this study would be beneficial to test the validity of the results. The study could also be conducted with varying levels and subject matters within the school environment.

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