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Incorporating Global Projects into Teacher Education: A Look at Practices and Perceptions of Preservice and Mentor Teachers

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Abstract

Global projects can be a significant training ground for teacher education students by providing authentic professional experiences that cannot be duplicated in the college classroom. In global projects, teacher education students are situated to learn and use new technologies, to interact with veteran teachers in distant locations, and to practice a global perspective. This qualitative study examined the perceptions of teacher education students and their clinical mentor teachers while working together in a multi-school global project. The study's purpose was to uncover beneficial practices and experiences that could improve teacher education in light of the challenges of teaching in today's global environment. This study supports prior research showing that technology used with project-based learning enhances engagement and promotes deliberate practice in areas such as global awareness, technology use, communication, and collaboration. Data and results suggest a number of benefits from incorporating global projects into teacher education programs. Preservice teachers in the study showed active participation beyond the physical classroom as they communicated with global partners using a variety of digital media. Mentor teachers reported effective learning experiences, new professional contacts in other countries, and the desire to engage in global projects again.

Introduction

Global Expectations of New Teachers

Expectations for content knowledge mastery, effective pedagogy, and improved technology skills have become a major focus for teacher education programs in recent years and is well documented (Carroll & Resta, 2010; Chen, 2010; Dilworth, Donaldson, George, Knezek, Searson, Starkweather & Robinson, 2012; Longview Foundation, 2008; US Department of Education, 2010; Zhao, 2010). These expectations have led to teacher education programs across the United States being subject to the same kinds of standards-based scrutiny that drives K-12 education today. Assessments of teacher candidates, such as Stanford University's testing instrument called the edTPA, are used increasingly in colleges and universities as a rigorous examination of teacher competencies linked directly to professional licensing (Darling-Hammond, 2007; Mehta & Doctor, 2013; National Launch of edTPA, 2013).

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But while competencies in content knowledge and pedagogy are a major focus, another dimension of expectations is being placed on new teachers: the idea of global competence in a connected world (Jensen, Searson & Yildiz, 2011; O'Connor & Zeichner, 2011; Suleiman, 2013; Villegas & Lucas, 2002; Zhao, 2010; Zeichner, 2010). A global perspective implies a responsibility for teachers to have a broader level of knowledge, a world view beyond their own classrooms and cultures. Today's teachers need to create learning experiences for an ever changing diverse society. This is a call for teacher candidates to be able to differentiate their teaching across cultures and different ways of thinking. It means not only understanding that people across the globe have views that can be quite different than those in the United States, but also being prepared to teach with this global perspective. Suleiman (2013) wrote that teachers should be able to "undertake their instructional roles effectively as they lead students to become empowered citizens who interact meaningfully and successfully in various global contexts. This can be done through providing multiple learning opportunities to all students in a culturally responsive way" (p. 36). But since "teacher training programs are often among the least internationalized programs on American college and university campuses" (Longview Foundation, 2008, p. 5), a change in teacher education is needed. We need teachers who are globally competent, teachers who can model global citizenship, and can create educational activities designed to engage students beyond the classroom to connect with other parts of the world (Longview Foundation, 2008; Zhao, 2009; Zhao, 2010).

Having a non-stereotypical, meaningful understanding of the world is at the base of what has been termed global competence. This competence is illustrated by curiosity and awareness of how other people and nations function. In *Educating for Global Competence: Preparing Our Youth to Engage the World*, Mansilla and Jackson (2011) argue that globally competent individuals should be able to do the following:

1. Investigate the world beyond their immediate environment, framing significant problems and conducting well-crafted and age-appropriate research.
2. Recognize perspectives, others' and their own, articulating and explaining such perspectives thoughtfully and respectfully.
3. Communicate ideas effectively with diverse audiences, bridging geographic, linguistic, ideological, and cultural barriers.
4. Take action to improve conditions, viewing themselves as players in the world and participating reflectively. (p. 11).

A global approach to teaching necessarily requires that teachers are knowledgeable with technology (Jacobs, 2010; Zhao, 2010). The challenge extended to institutions of teacher education, then, is how to go about structuring contextual experiences with technology that lead to global practices for our newest teachers.

University Experiences Compared to School Classrooms

In typical university teacher education programs, students are required to take course work in educational technologies and may have used or been exposed to collaborative

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technology such as video conferences, Google docs, blogs, wikis, or social network applications. Teacher education students are likely to have used or to have been exposed to interactive white boards, clickers for polling, and mobile devices such as tablets and smart phones with specific educational applications. Some universities blend the technology into coursework showing how to apply technology with specific content, while others have stand-alone technology classes leaving the classroom application up to the teacher education student – an inconsistency across schools of education that researchers say needs to be improved and geared toward explicit technology use in academic content areas (Ertmer & Ottenbreit-Leftwich, 2010; Russell, Bebell, O'Dwyer, & O' Connor, 2003; Liu, 2011).

The situation can be as equally inconsistent in public school settings (Aldunate & Nussbaum, 2013), that is, the level of technology, projects, and hands-on learning varies widely based on many factors including the skill level of the classroom clinical teacher, the guide and mentor for the student teacher. Student teachers, placed with competent, technology-using mentors, show more success in using technology in their placement classroom (Doering, Hughes, & Huffman, 2003; Liu, 2011), but finding an adequate number of technology-savvy mentors to meet the needs of teacher education programs is an ongoing challenge (Radinsky, Lawless, Smolin & Newman, 2005; Strudler, Archambault, Bendixen, Anderson & Weiss, 2003).

Integrating Content Leads to Project Based Learning

When teacher education students enter their clinical classrooms, they are expected to use a variety of active, hands-on techniques learned in their methods courses. Additionally they are taught and encouraged to integrate content when possible. For example, a teacher might create a context for teaching reading using science texts or web sites about plants, or might teach math using social studies resources for latitude, longitude and world time zones.

As teachers integrate and create active ways to teach across content areas, they find themselves in a natural position to introduce project-based learning, which is also an effective approach to global learning (Bonk, Whiting, Jung, Kim, Altuwaijri, Tan, & Wang, 2012; Pastor, Villen, Val, & Sancho, 2012). Generally defined, project-based learning is an active, multi-faceted approach that supports academic content and blends with other research-based approaches such as cooperative learning and constructivism. Various descriptions and models exist for what defines a *project*. Typically students work collaboratively in an integrated content area on a project that has a defining endpoint, event, or outcome. They use various tools and technology, and have flexible, working time less constrained than in typical classroom scheduling (Fosnot, 1996; Harris & Katz, 2001; Krajcik, Blumenfeld, Marx, Bass, Fredricks & Soloway, 1998; Markham, Mergendooler, Learmer & Ravitz, 2003). Benefits cited from project-based learning are numerous and include increases in engagement, motivation, collaborative skills, problem-solving skills, creativity, critical thinking, technology skills, and academic achievement (Brush & Saye, 2008; Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar, 1991; Moursund, 1995). Project-based learning allows for multiple

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participants to contribute to the project in varied and substantial ways (Kauchak & Eggen,1993), a process that can be facilitated by the teacher to individualize instruction for the needs of all students (Tomlinson, 1999). In essence then, a teacher has the power to amplify and enhance student involvement and attention by understanding the connection between activity and learning, or as Joseph and Nacu (2003) described in their work with technology and media as an "alignment of learning activities with interest-based activities" (p. 91).

Connecting Project-based Learning to K-12 Global Projects

Educational Internet projects for classrooms became prevalent in the early 1990's, all based in one way or another on communicating with remote classrooms and cultures and sharing information. This approach changed how teachers could use technology in the local curriculum to extending and sharing what students were learning with others beyond the classroom walls, across the United States, and around the world (Bonk, 2009; Hicks, 2003). Free video applications suddenly increased the ease and attraction of connecting beyond the classroom. Elementary students were developing speaking and listening skills as they were sharing stories, singing songs, giving classroom tours, offering riddles and math puzzles, and playing geographic I-Spy, all of which brought a new level of engagement and active learning to the classroom. Interested educators can search the Internet and quickly discover an abundance of global educational projects such as Kidlink.org, Flat Classroom, Global School Net, iEARN, Journey North, Skype in the Classroom, Monster Project, ePals and many more. Most of these are free and available to classrooms around the world simply by signing up for participation.

This study examines a teacher education field work situation which included participation in a multi-school global project. Data were gathered with surveys and lesson plans to address the following research questions: Is global awareness enabled by using technology in the global project? Are standards used in the global project? Does the global project enhance professional growth? Are participants likely to participate in global projects again based on this experience? Are teachers supported by administration and parents in using global projects?

Method

Participants

This qualitative study was conducted over a 30-day period in public schools in the Midwestern United States during the month of October. The term *preservice* is typically used for teacher education students training in schools as part of university course work. Classroom teachers responsible for supervising the preservice teachers and who provide expert guidance are typically referred to as *mentor* teachers. Twenty-four total participants were in the study and included 16 university students in the first semester of their senior year in the teacher education program, and 8 elementary teachers in public schools located near the university. Students in the study were 14 females and 2 males, ranging in age from 21to 22. All mentor teachers were females and had worked

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in schools 10 or more years. Of the 24 participants in the study, 8 preservice teachers and 8 mentor teachers participated in the Monster Project. Another 8 preservice teachers supplied lesson plans during this same time period, but did not participate in the Monster Project. The field experience occurred in grades 3 and 4 in which all preservice teachers were in schools for approximately 4 hours per day during the semester. During the field experience, all 16 preservice teachers taught lessons based in literacy, math, social studies, science, and health. Lesson plans were written according to requirements of the university's teacher education program.

The global Internet project was introduced as a voluntary activity to preservice teachers during a seminar prior to entering the placement classroom. All mentor teachers were also invited to join the project as a learning option they might want to try in their classrooms. They were informed that elementary teachers from around the world communicated with each other and shared learning using technology tools. The project was described as *entry level* for those teachers who might perceive the requirements as beyond their range of experiences or who might not feel comfortable with technology. They were informed that a step by step timeline was provided on the project web site to guide progress. Eight mentor teachers and their assigned preservice teachers chose to participate in the project. An additional 8 preservice teachers who were not participating in the Monster Project were selected randomly for purposes of examining their lesson plans over the same period as the preservice teachers participating in the Monster Project. Joining the project was entirely voluntary on the part of all participants, none of whom had participated in a global project before.

Materials

Two Likert-style surveys were used, each with 16 prompts. (see Appendix A). One survey was for preservice teachers and the other was for mentor teachers. One open-ended question was included in both surveys: "What other benefits do you see from participating in the Monster project?" Survey item choices were: Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, and Disagree Strongly. A neutral response was included so as not to force respondents to have an opinion (Suskie, 1996). The Likert-style surveys used for this study were constructed according to recommendations by Fink (2003): using content reflecting research questions, addressing attitude and behavior, and using questions specific to participants' context. The surveys were administered at the conclusion of the Monster Project using an online Qualtrics tool. See Tables 1 and 2 for the responses by preservice and mentor teachers to the open-ended survey question.

Prompts in the survey were associated with specific areas of examination (listed at the top of Appendix). For example, on the survey, prompts 1, 6, and 14 targeted the first area of examination: Use standards-based content in a global project. Prompts in the survey were formulated based on content and attributes previously identified in the project-based learning and global education literature such as global awareness (Zhao, 2010), standards in projects (Markham, 2003), collaborating with technology (Markham & Belkasim, 2011), and professional development via Internet projects (Beetham &

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Sharpe, 2013). Prior research has shown that project-based learning can enhance student engagement, collaboration skills, and problem solving (Brush & Saye, 2008; Blumenfeld et al., 1991; Gultekin, 2005; Moursund, 1995; Sahin, Arturk, & Schmidt, 2009).

Project Description

The scenario for this study was a yearly multi-school Internet event called the Monster Project (http://www.smithclass.org/proj/Monsters). For over ten years, the Monster Project has attracted K-6 participants from across the United States as well as from England, Canada, Taiwan, South Africa, Uganda, Australia, Japan, and Myanmar to name a partial list. The project runs for about a month each October and has activities that include global collaboration, teamwork, communication, using technology skills, sharing lesson ideas, posting student-created media, and evaluating the final project.

Building a monster is the grounding component of the project – and not just *any* random monster, but instead a specific creation based on the input of all participants. Each classroom was given ownership of a single part such as the nose, the mouth, the ears, the tail, the wings, and so forth. The number of parts matched the number of participating classrooms. Once a classroom was assigned a monster part, for example the mouth, they brainstormed a 12-word description of that part using shapes, colors, measurements, patterns, and other descriptive language. This mouth description was added to descriptions of all the other parts on a master chart on the project web site. When all of the parts had been described, teachers began the process of building the monster in their classrooms. The full chart of participants and 41 descriptions can be seen at www.smithclass.org/proj/Monsters.

Classes followed a posted timeline which also included activities such as reading related literature like Maurice Sendak's *Where the Wild Things Are* or a young reader's version of Mary Shelley's *Frankenstein*. Teachers created their own reading lists and shared the book lists with others during the project. The flexible design of the project allowed each teacher to conduct the project based on his or her preferences and curriculum.

To a traditional, non-project oriented teacher, the scope of a project like this one can be seen as a very consuming set of activities and challenges. All learning is not neatly laid out in a lesson guide book. Because much of the project is done in workshop fashion with students out of their seats, off task behavior is likely. And parts of the project can require technology use with which the teacher may not be familiar. The classroom becomes a place of energy. Students are moving about working with all types of materials such as construction paper, cardboard, ribbon, foil, yarn, craft sticks, glitter, and paints. A typically well-ordered classroom quickly becomes a noisy work space with students discussing and negotiating how parts come together, while cutting, measuring, and gluing and generally being involved in the messy work of project-based learning.

The minimum participation in the project is building a classroom monster, but teachers

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are encouraged to leverage the experience and take advantage of the group connections and communication with each other. Therefore, different levels of participation were observed with some teachers functioning as novices and some contributing and sharing at very high levels. Overall, technology use was significant during the project with examples of students working in computer labs, using classroom laptops, interactive white boards, and iPads. Students made slideshows, animations, videos, audio presentations (one in French using Voicethread). They communicated using email, Twitter, and Skype video conferencing. Some teachers with classroom blogs set up areas in which students could post comments on each other's blog pages. With the availability of easy communication and the attraction of posted artifacts, students and teachers used the project web site frequently during the month.

Student-created media from past Monster projects displayed on the project web site provided examples and motivation for current participants to create their own media. In the posted examples, media tools such as Animoto, SmileBox, GoAnimate, VoiceThread, Padlet, and Edmodo are used. This sharing serves to spread ideas to all participants, and is especially useful for the preservice teachers' experiences in observing the variety of technology tools used by practicing teachers around the world. Biographies of each participating classroom provided latitude and longitude, city and country locations, weather descriptions, and details about individual schools. Each classroom was also asked to submit a statement about the difference between learning in a *local* way and learning in a *global* way.

As classes finished building their monsters, photos were submitted and published on the project site. Once all monster photos had been posted, each student in the project was given the opportunity to evaluate the monsters based on the original criteria in the master chart. A project-wide voting concluded the project in which all students analyzed and voted for the monster best fitting the specifications. Finally, the Monster of the Year was selected as a function of the whole group's criteria analysis.

To add some qualitative data to the survey data, lesson plans were compared for preservice teachers who did versus did not participate in the Monster project. Preservice teachers normally submitted their lesson plans to the supervising college professor each week. Plans were checked for basic requirements such as learning objectives, standards, guided practice, closure, and assessment. Preservice teachers from both groups were asked to identify their most effective plans during October (the time frame of the Monster project).

Results

Surveys

This section shows the results of the six survey examination areas using comparative bar graphs for preservice teachers and mentor teachers. Survey items responses that corresponded to each of the areas of examination were averaged for the bar graphs.

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The final bar graph shows the survey results of mentor teachers regarding administrative and parental support for global projects.

In Figure 1, preservice teachers responded to *Use Standards-based Content in a Global Project* items with 100% agreement. Mentor teachers, however, indicated 84% agreement. Mentors and preservice teachers indicated that standards-based content is well represented in the experiences of the project. The 16% indication of Neither could be related to the fact that teachers are often concerned that projects will not fit well with expectations of meeting state standards (Shepard, 2000). Lesson plans were guided by Common Core standards (National Governors Association Center for Best Practices and the Council of Chief State School Officers, 2010), state standards, learning objectives, and associated assessments. Lessons were shared with the community on the project web site.

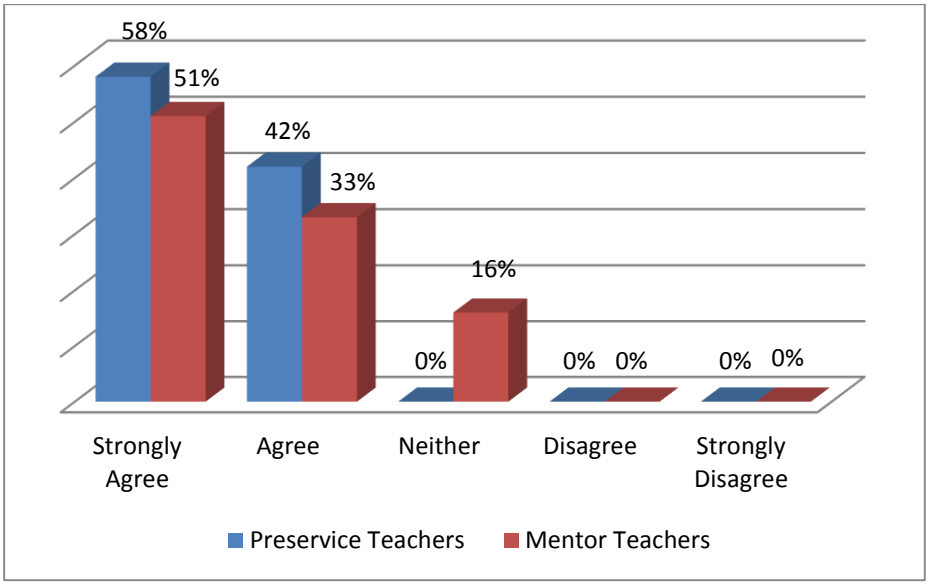

Figure 1: Uses Standards-based Content in a Global Project

Figure 2 shows that responses to *Use Technology for Collaboration* items were 100% agreement for preservice teachers. Mentor teachers indicated 87% agreement. Evidence of extended technology use was shown in Skype sessions, blogging collaborations, wikis, video sharing, digital photos, and email pals. The indication of Neither at 13% might be attributed to the fact that some teachers view technology for presentation purposes, but not necessarily as a collaboration tool (Brush, Glazewski, Rutowski, Berg, Stromfors, Van-Nest & Sutton, 2003).

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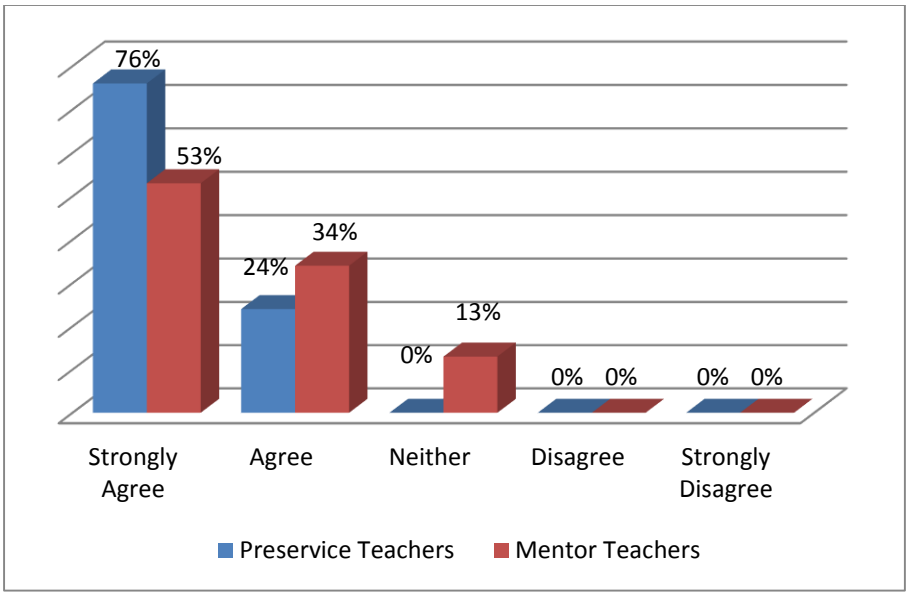

Figure 2: Technology for Collaboration

In Figure 3, preservice teachers responded to *Effective Education Practices for Professional Growth* items with 93% agreement. Mentor teachers indicated 83% agreement, 7% Neither, and 3% Disagree. Through project contact with a variety of teachers around the world, preservice teachers gained additional role models, lesson ideas, and advice in extending their personal learning networks in addition to everyday interactions at clinical schools. Non agreement with this topic by mentors fits with some perceptions that professional growth is a function of formal training rather than the self-learning that occurs experientially (Opfer, & Pedder, 2011).

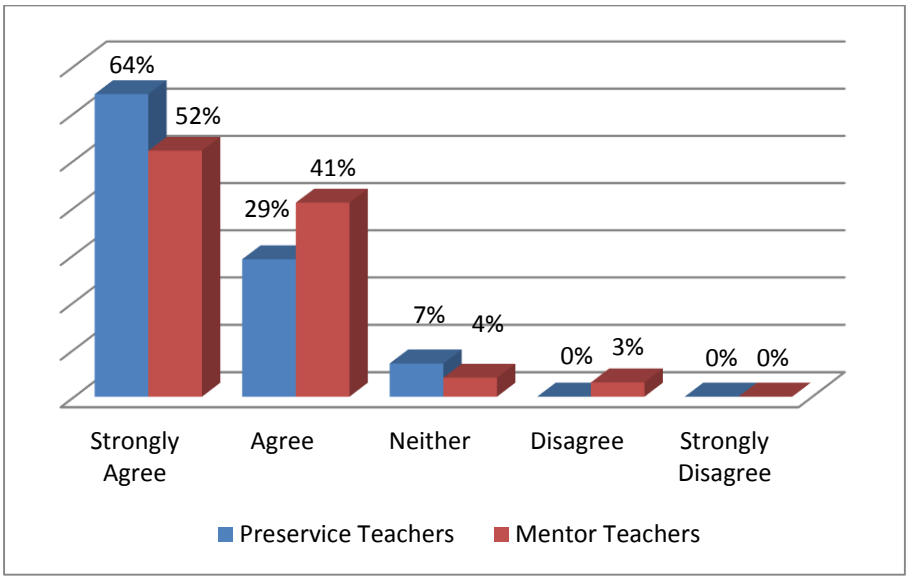

Figure 3: Effective Education Practices for Professional Growth

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In Figure 4, preservice teachers responded to *Technology-enabled Global Awareness* items with100% agreement. Mentor teachers indicated 82% agreement and 18% Neither. Examples of global awareness can be seen in the sample lesson plans described below. Similar to the mentor response on using technology for collaboration (Figure 2), some teachers do not perceive technology as a conduit to the world. (Levin & Wadmany, 2008). Most teachers, however, indicated that technology was an enabler of their global awareness.

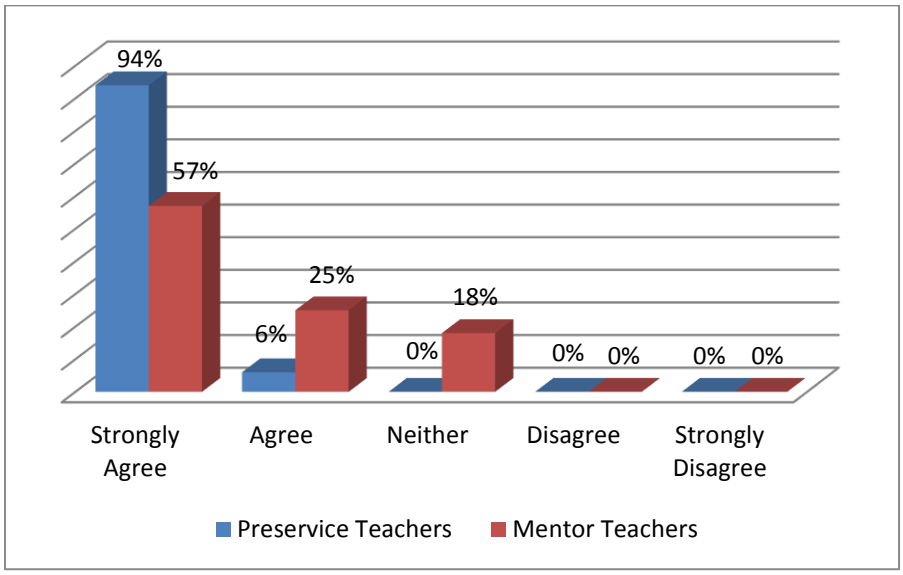

Figure 4: Technology-enabled Global Awareness

In Figure 5, preservice teachers responded to *Likely to Participate in Global Projects Again* items with 100% agreement. Mentor teachers also indicated 100% agreement. Unanimously, all participants indicated they would pursue global projects again.

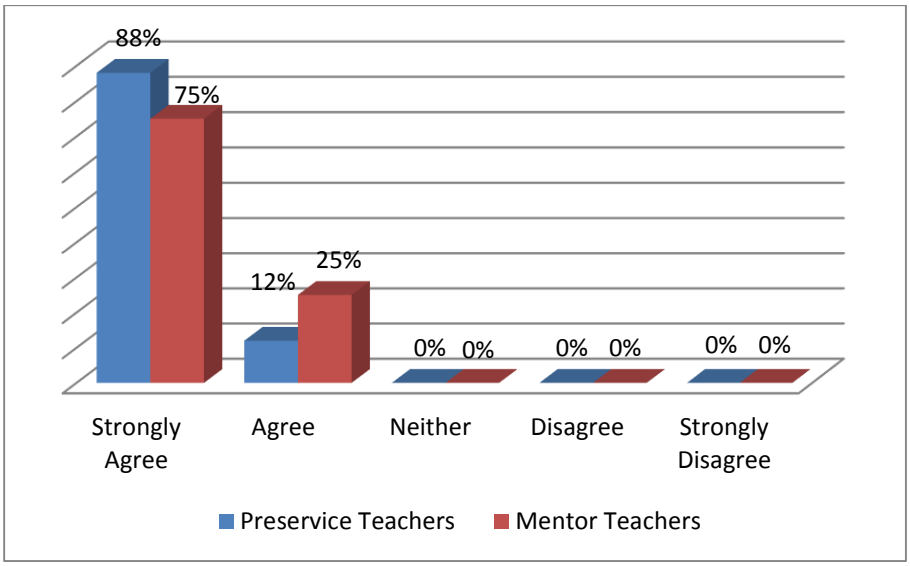

Figure 5: Likely to Participate in Global Projects Again

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In Figure 6, mentor teachers responded to *Administrative and Parental Support* items with 64% agreement, Neither 12%, Disagree 12%, and Strongly Disagree 12%. This survey area produced the most disagreement of any in the study. More than half of the mentor teachers indicated they felt supported by parents and administration, but 24% otherwise. In a time of increased documented accountability for student achievement, project learning can be difficult to justify which could help explain teachers not feeling supported (Black, 1998; Cizek, 2001; Hadley, 2010; Kohn, 2001).

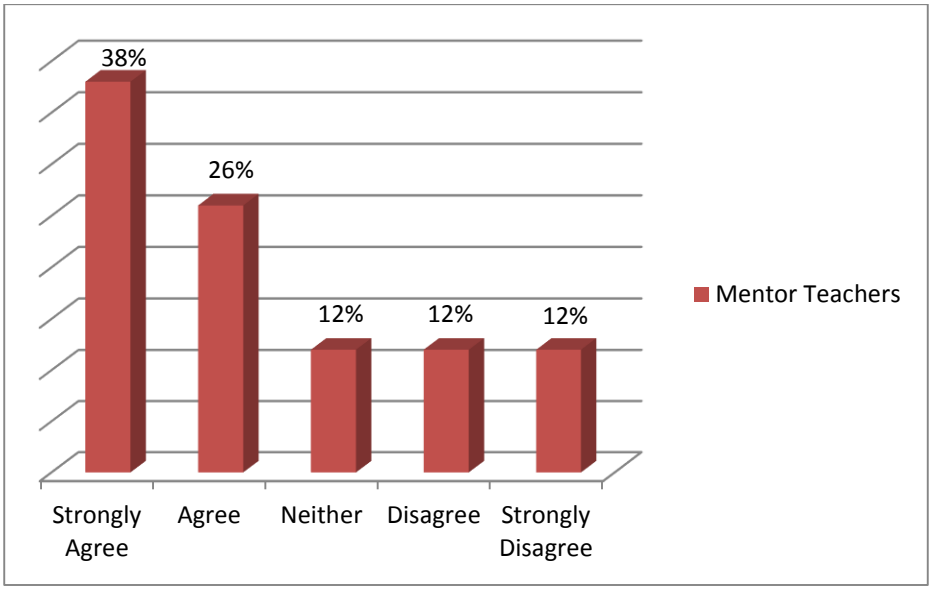

Figure 6: Administrative and Parental Support

Open-Ended Responses by Preservice Teachers

Responses by preservice teachers to the open-ended question were positive and indicated improved cooperative behaviors, global curiosity, creativity, academic skills practice, engagement, and enthusiasm about working with students from around the world. Participants often used the term *kids* to refer to their students. Strong indications of collaboration as well as high engagement are clear in teacher remarks. Teachers not only observed student curiosity, but also noted their own realization that the project provided them authentic ways to integrate content in "a natural avenue to teach curriculum about the world."

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Table 1
Preservice Teacher Open-ended Responses

Question: What other benefits do you see from participating in the Monster Project?
I think the students really came together as a cooperating group with this project. They actually learned how to work together and were clearly better at group work after we finished the project. The global connections were strong and the students were all able to find the other participants on the map.
I believe this project also helped students practice language arts skills with various activities including writing monster poems and stories. Kids had to use math skills a lot in measuring parts to fit the descriptions, creating some of the geometric shapes, and measuring distances to other countries.
Integration between content areas was huge in my class. Math fit perfectly in the distances, and literacy comprehension blended with social studies. Mainly the kids were so curious about the other kids around the world. Really helped me feel connected to my class experience.
This survey addressed the benefits but I don't feel it adequately addressed the absolute Best Practices approach. There was much more I could have answered about Best Practices. This was an awesome project that was totally engaging for the students and served as a natural avenue to teach curriculum about the world that was meaningful for students. Super, super!!! :)
The kids were so excited and curious that I think it made a great energy level for learning. They were asking about doing the project everyday so that made it easy for me to say things like "Today we have another Monster project lesson!"
My mentor got so involved in the social studies of the project. I'm sure she will do it again next year.

Open-Ended Responses by Mentor Teachers

Only half of the mentor teachers responded to the open-ended question, but the indications were all positive. One mentor pointed out how the younger preservice teacher contributed technology skills and that she was impressed with how the preservice teacher connected the class with students in other parts of world, something that her students had never experienced before. This helps illustrate that learning in the clinical classroom is composed of the current knowledge new teachers bring as well as what the veteran teacher knows from years of experience. Another teacher remarked how using map skills in the project context helped create stronger global connections. Collaboration improvements emerged in one teacher's observation as students negotiated and sometimes disagreed on exactly how to assemble Monster parts. The same teacher also remarked on classroom management practice and in finding a new professional friend in New Jersey, something that she states would not have happened to her without the project. The final comment focused on participation of shy students who might not typically become involved in classroom work. Observations of participation across ability levels are common in project-based learning environments.

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Table 2
Mentor Teacher Open-ended Responses

Question: What other benefits do you see from participating in the Monster Project?
The project was not only valuable for my preservice teacher, but also for me. She helped me with the technology part and I helped her with the academic part. I see the benefits of projects like this because the kids are so engaged. I think my student teacher felt very important and connected as she worked with the kids from around the world. I had never done anything like this before. Awesome!
map skills, tolerance of cultural and world differences, communication through children's e-mail
My students became much better at collaborating because they had to work together extensively and compromise in making the Monster components. The head was a particular challenge with some disagreements about placement of the eyes and the mouth. It was very noisy and I think this helped my student teacher to practice classroom management - there were many times when she had to have the kids' attention and she was able to get it. The kids became used to noisy work and staying on task although there was a good amount of socializing going on. I heard from parents that they preferred their children doing interesting projects rather than only paper and pencil work. And I now have a new Internet partner teacher in New Jersey which is so cool! The partnership would not have happened without this project.
The project wasn't just great for a teacher education experience, but was exciting and memorable for my whole class. It was interesting to see my shy students participating so much more with their peers.

Lesson Plans Based on Global Project-based Learning

Lesson plans of preservice teachers who did versus did not participate in the Monster project were checked for basic content: learning objectives, standards, guided practice, closure, and assessment methods. This was not an exhaustive examination, but one looking for basic differences in planning between the two groups. Differences were noted in technology use, standards, collaboration, and content explored beyond the classroom in literacy, math, science and social studies. While all preservice teachers were encouraged to create active learning experiences incorporating technology and collaborative learning, certain features distinguished those written in the global project-based context. Table 3 shows differences in lessons between the two groups.

Table 3
Planning Differences between Project and Non-project Preservice Teachers

Project-related Plans	Non-project Plans
Technology: Smart board/Internet - viewed web sites of project partners, shared project media, viewed videos from project partners. Created videos of skits and presentations.	*Technology:* Smart board/Internet – viewed web sites related to lesson topics, used Notebook files, showed videos.

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Classroom photos done with iPads, cell phones. Web tools used: Animoto, Voicethread, Weebly, Wikispaces, and KidBlogs.	
Collaboration: Used Skype, Twitter, email pals, blogs, photo sharing, and gift package exchanges. Compromising during to designing, building, and assembling Monster parts.	*Collaboration:* Done among students in the room, cooperative learning, group work in math and science. Tasks based on curriculum materials.
Standards: Listed for all plans. No difference.	*Standards:* Listed for all plans. No difference.
Content: Social studies lessons integrated with science and writing, focused on project-related topics; map studies/distances between project partners, GMT time zones compared, latitude-longitude used to locate partners, weather comparisons of world locations; land forms related to project partners. Literacy/Language: reading with text and digital media from the Monster site in French; reading blogs and web sites of project partners, writing/reading/posting biographies, interpreting descriptive writing for Monster part construction.	*Content:* Literacy, math, social studies, and science were represented using traditional textbook resources with focus on local curriculum.

The Monster Project web site provided project participants with easily accessible communication opportunities such as email addresses, regular mail addresses, blogs, class web sites, Twitter and Skype addresses. Class photos and biographies including geographic and weather information supplied real world topics of interest for generating questions and discussion. Preservice teachers took advantage of the ready-made global network to incorporate authentic situations using standards-based content in their lesson plans. While all preservice teachers would normally be creating literacy experiences in the classroom, the project-based preservice teachers had the advantage of communicating with others in parts of the world beyond the classroom.

To further illustrate how projects can be incorporated into lesson planning, this section shows the work of three sample preservice teachers chosen for their exemplary contributions (fictional names are used). They communicated with classrooms in Russia, Canada, and Myanmar: Beth in 4th grade, Ryan in 4th grade, and Katy in 3rd grade. Mentor teachers mainly served as helpers and learners as the preservice teachers experimented and learned the technologies necessary for communicating with project partners.

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Beth wrote a five-lesson project-based learning unit integrating math, social studies, science, and literacy with the Monster Project. She used Skype to connect her students with an elementary classroom in a small town in Siberia. Beth's elementary students had deliberate practice using video technology for speaking, and listening to students on the other side of the world – an arrangement that necessitated the Russian students to be at school at 9 o'clock in the evening due to the 13-hour time zone difference. To name a few of Beth's approaches, she used a variety of maps to teach latitude and longitude skills referencing the Russian school location, created a science rocket project that was designed to "fly off and visit our friends in Russia," and guided her students in an informative language skit which was videoed and embedded on the project site. The relationship continues as the classrooms have since exchanged gift packages, and Beth plans to join a future Toy Project sponsored by the Russian teacher.

Ryan wrote three lesson plans in his 4th grade class specifically related to the Monster Project. Weather, distances, local culture, sports teams, and favorite subjects were among his topics, all of which were represented by learning objectives and assessments in his lesson plans. Ryan's lesson plans included video conferencing with two other project schools, one in New Hampshire and the other in Winnipeg, Canada. He blended the video conference experience into a Common Core language arts event on informational text. Ryan's students took turns asking questions of the students in other parts of the North American continent, a technology opportunity the students had not experienced before in their classroom, and a highly interesting way to meet other participants in the global project. Ryan's students tracked answers of the conversation and were responsible for recording on paper what happened during the conference. Ryan said that getting to know new friends in far off places provided enhanced student attention to the writing and interviewing tasks.

Katy wrote six lesson plans based on the Monster Project. From the project biography page, she selected a class in Myanmar, emailed the teacher and asked if her 3rd graders could begin communications with the students in Myanmar. Katy set up a blog where the American students posted questions and shared writing from current classroom lessons. The Myanmar students responded in the comment section of the blog. They began by defining culture, then compared and contrasted cultural traits of the two countries. Although Katy had never taught in a computer lab before, she scheduled lab space for her 3rd grade so that students could do their blog writing all at once. Topics of the blogs included social studies, technology, music, arts, holidays, and reading. The Myanmar teacher supplied student photos for the blog to make it easier for Katy's students to *know* their new friends by seeing their faces. Postings from Myanmar students helped the Americans understand some of the cultural differences. For example, one Myanmar student wrote: "We clean the house before the Chinese New Year because if we clean the house it means good luck." Another student shared a tradition called Thadingyut, the lighting festival, at which time the students pray to Buddha. Katy's students shared creative writing on Halloween themes and posted pictures of pumpkins. Katy also created a video of her students to show the building

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phases of the Monster and embedded it on her own blog as well as on the Monster Project site.

Overall, from examining the lesson plans, preservice teachers in the global project showed use of technology in ways that were directly connected to the lives and experiences of their students and other students in the project. There were marked differences between the global project lesson plans and the non-project based plans. In all cases the global project plans illustrated multiple ways of leveraging real world content and examples that were relevant to the participating students and teachers, while non-project plans, while meeting university requirements, employed more traditional, less connected resources. As illustrated previously with the three preservice project teachers, their lesson plans described active communication experiences and activities with email, blogs, and Skype. Lesson plans referenced specific attributes and real world contexts of project partners such as latitude and longitude, time zones, weather, language, food, traditions, and holidays. All teachers in the project were encouraged to contribute ideas and lessons integrating content, to share their techniques and ways of staging the project in their classrooms. The preservice teachers submitted lesson plans which were posted on the project site to share with other teachers showing how standards, objectives, and assessments can be applied to project-based learning. The project web site itself served as a community reference resource in that it was frequently visited by participants and used to attain or review project information. From the perspective of the possibilities for learning in a teacher education program, clearly a wider range of examples and teaching ideas were available to the Monster Project teachers than would have been experienced in a non-connected classroom or in a typical university classroom.

Discussion

Yong Zhao (2010) and others (Mansilla & Jackson, 2011; Suleiman, 2013) have made the case that students in schools in the United States are not developing the global perspective they will need to live, work and interact with others in this age of rapidly expanding globalization. He has argued the following: “For our children to live successfully and peacefully in this globalized world, we need to help them develop the appropriate skills, knowledge, attitudes, and perspectives. This requires a new generation of teachers who are able to act as global citizens, understand the global system, and deliver a globally oriented education” (p.8).

The perceptions of the preservice and mentor teachers on their global experiences were significantly positive. Both were immersed in an outside-of-school setting that was educational as well as social. Not only was the setting effective for the teachers, but the overall experience placed their elementary students in situations with faraway project friends. From their own learning standpoint, preservice teachers had first-hand observations of how elementary students can share, converse, and learn about the world in ways not typically done in traditional teaching. For the elementary students, as well as for the preservice and mentor teachers, the learning was active, sometimes unpredictable, and always intriguing by the nature of the connections to others in the

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world. Preservice teachers had easy access to classrooms and teachers around the world via resources provided on the project web site. The use of technology was authentic and natural to the circumstance. Various applications were needed to communicate and share in the project and the use of these technologies (blogs, video conferencing, email, etc.) created an enabling environment for global awareness for the teachers and their elementary students. Lesson plans written by project preservice teachers reflected standards-based objectives and were shared with the project community. Preservice teachers and mentors expressed that the experience provided significant professional growth especially in establishing relationships with teachers in other states and countries. Mentor teachers mostly agreed that they were supported by their administrations and parents in the global project, however, 24% disagreed. The indication of nonsupport may have been based on testing pressures to use time differently, or a lack of clear understanding of project learning (Blumenfeld et al., 1991; Grant, 2002; Thomas, 2000).

Clearly, this project provided rich opportunities and experiences that could not be duplicated in a college classroom. Preservice teachers observed the use of technology and collaboration skills by veteran teachers, and in many cases communicated instantly with these new role models and their elementary students. The learning that was happening at these moments was not only exciting, but also significantly enhanced the expertise of the preservice teacher. Regarding the future, many veteran teachers in the Monster Project have formed their own smaller networks with each other and continue to interact. It remains to be seen if the preservice teachers will have an ongoing relationship with their new project colleagues.

Although this study was done with a small group, its implications and message about learning is important. Teacher educators know that isolated practice in classrooms does not produce the best results for learners. They also know that content-rich, active learning experiences are the most engaging – especially when experienced in a real context. It is the context of working and learning in the real world with real teachers and real students that gives support to this study's recommendations. The findings offer possibilities and ideas for enhancing the practice field of teacher education programs, many of which have been described as out of touch with real world needs.

Arguments, data, and literature in this paper have suggested that using global projects in teacher education coursework can be a step toward developing the "new generation of teachers" described by Zhao (2010). Data and results suggest that students in teacher education programs could benefit if global projects were formally incorporated into clinical classroom field work situations. The study also suggests that mentor teachers benefit by expanding their own pedagogy, and the elementary students benefit by being in a new kind of school – a 21st century classroom connecting with others around the world. This study provides one possible structure for scaffolding global learning opportunities into teacher education. More research on project-based global learning may help to show additional potential for improving teacher education programs.

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Limitations of the Study

There are several limitations to this study. The use of self report measures is limited by the manner in which participants respond to the survey based on their personal perceptions. Participants may feel they are being evaluated for their technical skills, or could feel they might be expected to respond in a certain fashion. The researcher cannot control for those who may respond in a way they think they are expected to as opposed to responding without bias. Next, when mentor teachers were surveyed on their feelings of support by the school administration and the parents, the question was blended, and therefore did not allow a distinction. Teachers did not have a way of stating, for example, that they felt supported by parents, but not by the administration, or vice versa. Also, the open-ended question: *What other benefits do you see from participating in the Monster Project*? may have skewed participants' responses. An improvement could have been asking what advantages and disadvantages were seen in the project. Next, lesson plans were generally compared for content in a few key areas. Examining a broader range of lesson plans in a more systematic manner might bring out other technology issues for discussion. Finally, casual observations revealed that participants were generally proficient with interactive whiteboards, using the Internet to acquire educational resources, and using social networking. Future studies in global project learning could be strengthened with a more detailed analysis of technology use in specific content areas as well as examining participants' levels of technology expertise.

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Appendix: Survey Questions

Numbers on each prompt indicate how the prompt is associated with an area of examination.

Areas of Examination:
1. Use standards-based content in a global project
2. Use technology for collaboration
3. Perceive the experience as effective practice for professional growth
4.Technology enabled global awareness
5. Likely to use global projects again
6. Level of administrative and parental support (mentors only)

Prompts for Pre-service Teachers
My project lesson plans were guided by state standards. 1
1. I observed my students engaged in collaboration with technology. 2
2. The project is a good way to integrate my regular class curriculum. 5
3. I observed my students interested in cultural content from other countries. 4
4. Technology made it possible to connect my students with the world. 4
5. I learned how to integrate content and standards into a project. 1
6. The project allowed my students to collaborate with technology. 2
7. I learned new skills from project teachers outside of my clinical classroom. 3
8. I have new technology skills after doing this project. 3
9. I intend to use global projects again in my future classroom. 5
10. I am comfortable with the energy and noise of the project. 5
11. The project provided me with a new group of future education contacts and resources. 3
12. The project provided me communication opportunities with technology. 2
13. I observed the connections between learning standards and activities in the project. 1
14. The project made my students more aware of the world. 4
15. What other benefits do you see from participating in the Monster project?

Prompts for Mentor Teachers
I received positive feedback from parents and principal about participating in the project. 6
1. The preservice teacher became more confident with classroom management during the project. 3
2. The project contributed to a positive atmosphere for learning. 5
3. I observed that students were excited and learning in the Monster project. 5
4. I observed standards in my preservice teacher's lesson plans. 1
5. The project connected the preservice teacher professionally with teachers in other schools. 3
6. I observed my students attaining a sense of global awareness in this project. 4
7. My students collaborated on the Monster with technology. 2
8. I intend to use a global projects approach again in my future classroom. 5

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9. Technology connected our classroom with elementary students and teachers in other countries. 4
10. The project provided the preservice teacher with Skype opportunities to another country. 4
11. I observed my students sharing information with technology. 2
12. The project provided the preservice teacher with a new education contacts and resources. 3
13. The project is a valuable addition to training a preservice teacher for today's world. 3
14. The project activities were covered by state standards. 1
15. What other benefits do you see from participating in the Monster project?

About the Author

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