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Examining the Effectiveness of Technology Workshops on Teacher Candidates' Attitudes and Confidence

An Action Research Report
By Alouisa Thames

Examining the Effectiveness of Technology Workshops on Teacher
Candidates' Attitudes and Confidence

By Alouisa Thames

Submitted on _____

in fulfillment of final requirements for the MAED degree

Saint Catherine University

Saint Paul, Minnesota

Advisor: _____

Date: _____

Abstract

Research has revealed that teachers lack the training and confidence needed to effectively integrate our world's rapidly changing technology into the classroom. Workshops have been given in an attempt to address this issue, but their effectiveness has not been assessed. To measure the effect of technology workshops in teacher training, 11 teacher candidates from Saint Catherine University were asked to attend and participate in two 40 minute technology workshops where they were instructed in the use of Promethean Interactive Whiteboard, Activinspire software, and Activexpression clickers. A pre- and post-survey were administered in order to determine the effect of the workshops on the teacher candidates' attitudes toward and confidence in the use of technology. Results of this study indicate that technology workshops are somewhat effective, but other options need to be explored. Further investigation into training teachers via a specifically designed course on technology is advised.

How often have you used technology today? Our society has become increasingly intertwined with technology, and it has become a necessity in the classroom. Mims-Word (2012) noted that what society expects in the leaders of education and academics depends upon the degree to which the rest of society is technologically integrated. As technology improves rapidly, new and innovative uses for technology integration in the classroom become apparent. But the question is, are teachers prepared? Among many factors, a lack of teacher proficiency in technology is allowing technology to advance much faster than it is being integrated in the classroom (Mehra and Mital, 2007). Though technology has been shown to enhance learning by engaging multiple senses in the learning process, ensuring teacher proficiency in the use of technology has not been emphasized. Though standards are written, re-written and revised, and teacher candidates are scrutinized more than ever before, technology has grown around, rather than in, schools. To ensure schools are not left behind, technology must be included in educator training, educators must integrate technology into the classroom, and educators must keep up to date with technological advances.

Coskie (2013) cited the International Reading Association, agreeing that teachers have an obligation to be well-versed in the pieces of technology used in the classroom (pg. 5). However, a survey revealed that teachers find technology intimidating or difficult to use in the classroom (Mehra and Mital, 2007). Hughes (2005) reported that many teachers find using technology overwhelming and foreign. Hastings (2009) found that, even teachers who do use technology, don't use it effectively (pg. 5). Better teacher instruction could help alleviate this fear, and help more teachers effectively integrate new electronic learning tools in the classroom. From survey results, Hastings (2009)

concluded that instructing educators is key to effective technology implementation and use in the classroom.

The 1995 Office of Technology Assessment report to Congress stated that “Technology is not central to the teacher preparation experience in most colleges of education”, and “most new teachers graduate from teacher preparation institutions with limited knowledge of the ways technology can be used in their professional practice”(Mims-Word, 2012, p.271) More specifically, Hughes (2005) found that many teachers lack access to subject-based technology training opportunities.

In 1999, teachers were only given 5.9 hours of training, in the form of workshops, on how to integrate technology into teaching. These workshops were short and lacked connection to pedagogy or curriculum. Since 1999, teachers have been prepared to use and integrate technology in in-service meetings (Mims-Word, 2012). Such focused training on technology use in a specific discipline, as compared to technology treated as a separate entity, has produced technology integration specific to each content area more successfully (Mims-Word, 2012).

In another survey, though researchers said teachers were more informed about technology than in 1999, they found that teachers still experience a lack of access to adequate technology, and a lack of time to prepare technology-integrated lessons (Mehra and Mital, 2007). A 2007 survey confirmed this lack of technology, reporting only 62% of professors having access to personal computers (Mehra and Mital, 2007). Of these professors, 40% lectured traditionally, 4% used only technology to teach, and 54% used a combination of both (Mehra and Mital, 2007). Despite the lack of access, teachers

consistently pointed to technology as a supporting tool for teaching in the survey.

To address the lack of teacher technology training, I proposed facilitating workshops in which teacher candidates learn how to use two pieces of technology to use in the classroom: Promethean and Activexpression clickers. These pieces of technology seemed the most relevant to focus on because the Smart Board is noted by Muhanna (2013) as one of the most widely used technological devices in the classroom. My aim was to assess the effects of technology workshops on teacher candidate proficiency and confidence in technology use, and to discover what happens to teacher candidate attitudes and confidence in using technology after attending technology workshops.

The technology workshops were given to 11 female elementary school teacher candidate students at a private university. These students would soon have the opportunity to experience and use Promethean boards in their education fieldwork, so training in the use of Promethean was appropriate. Each teacher candidate was asked to attend two 40-minute technology workshops in which she learned the basics of both Promethean and Activexpression clickers. Each teacher candidate was given a pre-survey to assess her attitude toward and confidence level in using technology. The workshops were given as part of the teacher candidates' "Methods and Materials in Science" course. The teacher candidates were instructed in the various features of the technology being addressed, and viewed video tutorials on the same features.

The first session involved Promethean Activinspire. After instruction via PowerPoint, video tutorials and Activinspire media using the Promethean board, the teacher candidates used the technology to construct a "do now" of their own using Promethean and the Activinspire program. A "do now" is a warm-up activity mentioned

in Doug Lemov's book *Teach Like a Champion*, meant to engage students immediately upon entering the classroom, thereby cutting down on transition time and maximize productive learning time. It is meant to take the students only a few minutes to complete, before leading into the lesson of the day. Though technological difficulties were experienced in the first workshop session, the students were still able to learn and use the various aspects of Promethean to create a warm-up activity.

The second session demonstrated the use of Activexpression clickers, again using PowerPoint, video tutorials and Activinspire. Teacher candidates not only learned how to make tests and quizzes, but learned that clickers can help intersperse lecture with discussion where students can comment or ask questions (Mollborn, 2010). This aspect of Activexpression clickers was more relevant to the type of instruction these elementary school teacher candidates would conduct. The teacher candidates took a "practice quiz" to get used to the clickers, and then created a quiz of their own. The teacher candidates were also given articles on relevant research regarding Promethean and Activexpression clicker use in the classroom to read. Finally, a post-survey was administered to again assess the teacher candidates' attitudes toward and confidence in the use of technology.

Description of Research Process

As illustrated in the introduction, technology in the classroom has been developed significantly in recent decades. In order to better understand these current technological advances and their impact in the classroom, a compilation of current studies and teaching methods involving technology was constructed in the form of a literature review. From the information gathered, it was determined that teachers, especially teacher candidates, need training in using technology to gain confidence. I proposed giving technology

workshops to teacher candidates in order to assess the effect of technology workshops on teacher candidate skills and confidence levels in using technology.

From the beginning, limitations of the study could be foreseen. First, time was limited and, though research showed that the more time teachers spent in training the better, this study could not dedicate an extensive amount of time to teacher training. Second, the teacher candidates in this study were elementary teacher candidates and would therefore not adhere strictly to a certain discipline around which to base the workshop, as suggested by other researchers (Hastings, 2009). Third, our teacher candidate sample size was small and consisted of only women.

After completing the literature review, it was found that the greatest obstacle in integrating technology into the classroom, was teacher training. Most teachers had not been instructed in the use of certain pieces of technology, and therefore were not able to incorporate them effectively into teaching the curriculum. It is understood that technology workshops are sometimes offered as part of staff development, but the effectiveness of these training sessions has not been investigated or measured.

With this knowledge, a tentative research plan was developed and discussed with an advisor. Because technological advances are moving towards having most everything stored in the Cloud, the use of Chromebooks was discussed as a possible technology piece to introduce to student candidates, but was ultimately decided against as it didn't seem to lend itself easily to the workshop setting envisioned.

A final protocol was constructed and sent to the university's internal review board for review. Upon approval, lesson plans were developed, and PowerPoint slides and Activinspire flipcharts were created for use in the workshops. Relevant research articles

were chosen to give to the teacher candidates as background and supporting information to supplement the workshops due to the time constraint. These articles were written (see References) by Mollborn, Muhanna, Martin and Berry.

A pre-survey (see Appendix A) was constructed with the aim of assessing the teacher candidates' current attitudes toward and confidence in using technology. The questions were designed to be answered on a scale of 1 to 10 to aid in data analysis and provided a quantitative aspect to the research data. In this way, I hoped to evaluate the effectiveness of the technology workshops in teacher training.

The post-survey (see Appendix B) was designed in a similar manner, using some of the same questions given in the pre-survey in order to monitor any change in the teacher candidates' attitudes or confidence levels after attending the technology workshops. However, some of the questions from the pre-survey were omitted, and others added in the post-survey for relevance, and to better gauge any change in teacher candidate attitude and confidence in the use of technology after the workshops. Some of the questions in the pre-survey were general, and would not be useful in the post-survey as they would elicit the same response. Finally, the teacher candidates were given the opportunity to pose any questions or make comments on the workshops at the end of the post-survey.

Eleven students in an undergraduate education class at a small mid-western university were asked to participate in two 40-minute technology workshop sessions. Before starting the workshops, each student was asked to fill out a survey designed to assess her current confidence and attitude towards the use of technology in the classroom. The survey was created in a Google-doc so as to be easily accessible to the candidates

and to use technology in implementing the survey. The pre-survey was sent to the students a week and a half in advance, along with a form explaining the purpose and a description of the research and technology workshops to be given. This form was signed by the teacher candidates to document their consent in participating in this research process.

During the workshop, the teacher candidates learned some of the ways Promethean and Activinspire software could be used in a classroom. They were instructed via direct instruction using PowerPoint and Activinspire media. The teacher candidates also viewed YouTube tutorials for using Activinspire, and were given two relevant research articles for future learning. Each student was able to successfully use many of the applications and features provided in the Activinspire program. After learning how to use the software, the students were asked to create a “do now” activity for possible classroom use.

Later the same week, the teacher candidates attended a second seminar in which any questions posed by the candidates were addressed, and any technical difficulties were resolved. The students were also instructed in the uses and features of Activexpression clickers. The students were again instructed via direct instruction using PowerPoint and Activinspire media along with another YouTube tutorial on Activexpression clickers. The teacher candidates also learned via active participation in a practice mini quiz. Finally, each candidate created her own quiz for Activexpression clickers.

During each workshop, the teacher candidates' interest and participation level were assessed using Chart 1. Teacher candidate behaviors and attention levels were noted

during the workshop in order to visually assess the level of interest and engagement displayed.

Each student was assigned a number for the sake of anonymity, and asked to submit both the warm-up activity and quiz she created in the workshops using her number to protect the privacy and confidentiality of the research process.

After attending both technology workshops, each student was asked to complete a post-survey. This survey was designed to assess any change in attitude toward or confidence in the use of technology. The post-survey was not made available to the teacher candidates until immediately after the second workshop so as to ensure the validity of the data. The students were asked to complete and submit the Google-doc post-survey.

Analysis of Data

Confidence and Attitude in the Pre-survey

The teacher candidate pre-survey responses confirmed previous research results, indicating that teacher candidates do not feel very confident in the use of technology. The teacher candidates answered the question “I can use most any technology without instruction” with a neutral mode of 6 in the survey scale. However, with a mode of “9” on the scale, most teacher candidates agreed that if taught, they could use any new piece of technology. Interestingly, the teacher candidates seemed to feel better about their abilities when asked about technology implementation in the classroom, answering with a mode of a “9” on the scale. This level of confidence may be attributed to their previous instruction in education classes, and the fact that the candidates reported already using technology on a daily basis with a mode of “10” on the scale given.

Research had found that teachers feared admitting a lack of understanding of technology would lessen their sense of authority in the eyes of students, especially when the teachers felt students understood more about technology than they. However, the teacher candidates in this study seemed to disagree. When asked if they felt students younger than the teachers know more about technology, the candidates disagreed, responding with a mode of “3” on the scale. When responding to the statement that students should never teach teachers, teacher candidates strongly disagreed, reporting a “1” on the scale most often. In retrospect, the use of “never” should probably have been avoided as it may have skewed results to the lower end of the scale. Rephrasing the statement may have elicited different responses.

Teacher candidates responded in the neutral scale range of “5-7” to the statement “I will use technology in every lesson plan I create.” Again, the use of the all-encompassing “every” may have swayed results, and rephrasing would be advisable in the future. The neutral response from the teacher candidates to this question could be due to their career goals as elementary teachers. As these teacher candidates plan to be instructing young children in multiple subject areas, the idea of using technology in each lesson plan may have been unrealistic. In a different teacher population, such results may have been different. A more realistic setting for them may involve simply using technology at least daily, but not in every lesson. To such a scenario, the teacher candidates strongly agreed, responding with a mode in the “9-10” range of the designated scale. These elementary teacher candidates may have also been responding to the uncertainty of what their future job may be like. These teacher candidates most likely

don't know exactly what grade level they will be teaching, or if their school will have access to technology. With this in mind, a lower scale score would be expected.

When asked if they felt technology is helpful to student learning, the teacher candidates agreed, responding in the "8-10" scale range. When asked about her own discipline area, teacher candidates reported feeling that their discipline already uses sufficient technology, and didn't feel their discipline would be aided by using more technology. Consistent with deeming technology helpful to student learning, teacher candidates reported disagreeing with the statement "technology is not necessary to teach in my content area".

Pre Survey Data

Table 1. *Statistical Analysis of Teacher Candidate Pre-Survey Responses*

| Q#: | Avg: | Mode: | Q#: | Avg: | Mode: | Q#: | Avg: | Mode: | Q#: | Avg: | Mode: |
|-----|------|-------|-----|------|-------|-----|------|-------|-----|------|-------|
| Q1 | 6.9 | 6 | Q4 | 4.4 | 3 | Q7 | 9.8 | 10 | Q10 | 7 | 5 |
| Q2 | 8.9 | 9 | Q5 | 2.1 | 1 | Q8 | 8.3 | 9,10 | Q11 | 7 | 9 |
| Q3 | 7.8 | 9 | Q6 | 5.3 | 5,6 | Q9 | 7.6 | 8,10 | Q12 | 4.6 | 3 |

Table 2.

Teacher Candidate Pre-Survey Responses 1-3

| Question | I can use most any technology without instruction. | If I were taught, I could use any new piece of technology. | I feel confident I can implement technology in a classroom. |
|-------------------|---|---|--|
| Strongly Disagree | 0 | 0 | 0 |
| 1 | | | |
| 2 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 |
| Neutral 5 | 1 | 0 | 1 |
| 6 | 4 | 0 | 0 |
| 7 | 2 | 0 | 3 |
| 8 | 0 | 3 | 1 |
| 9 | 1 | 4 | 4 |

Strongly Agree 10 1 2 0

Table 3.
Teacher Candidate Pre-Survey Responses 4-6

| Question | Students younger than I know more about technology. | As a teacher, students should never teach me things. | I will use technology in every lesson plan I create. |
|-------------------|--|---|---|
| Strongly Disagree | 0 | 5 | 1 |
| 1 | | | |
| 2 | 1 | 1 | 0 |
| 3 | 3 | 1 | 0 |
| 4 | 0 | 1 | 0 |
| Neutral 5 | 2 | 1 | 3 |
| 6 | 2 | 0 | 3 |
| 7 | 1 | 0 | 2 |
| 8 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 |
| Strongly Agree 10 | 0 | 0 | 0 |

Table 4.
Teacher Candidate Pre-Survey Responses 7-9

| Question | I use technology on a daily basis. | I see myself using technology in the classroom daily. | Technology is helpful to student learning. |
|-------------------|---|--|---|
| Strongly Disagree | 0 | 0 | 0 |
| 1 | | | |
| 2 | 0 | 0 | 0 |
| 3 | 0 | 0 | 1 |
| 4 | 0 | 0 | 0 |
| Neutral 5 | 0 | 1 | 0 |
| 6 | 0 | 1 | 1 |
| 7 | 0 | 1 | 1 |
| 8 | 0 | 0 | 2 |
| 9 | 2 | 3 | 1 |
| Strongly Agree 10 | 7 | 3 | 2 |

Table 5.
Teacher Candidate Pre-Survey Responses 10-12

| Question | My discipline could benefit from using technology more. | My discipline uses sufficient technology. | Technology is not necessary to teach in my content area. |
|-------------------|--|--|---|
| Strongly Disagree | 0 | 0 | 1 |
| 1 | | | |
| 2 | 0 | 0 | 0 |
| 3 | 0 | 1 | 3 |
| 4 | 0 | 0 | 2 |
| Neutral 5 | 3 | 1 | 0 |
| 6 | 1 | 2 | 1 |
| 7 | 1 | 0 | 1 |
| 8 | 2 | 2 | 0 |
| 9 | 1 | 3 | 0 |
| Strongly Agree 10 | 1 | 0 | 1 |

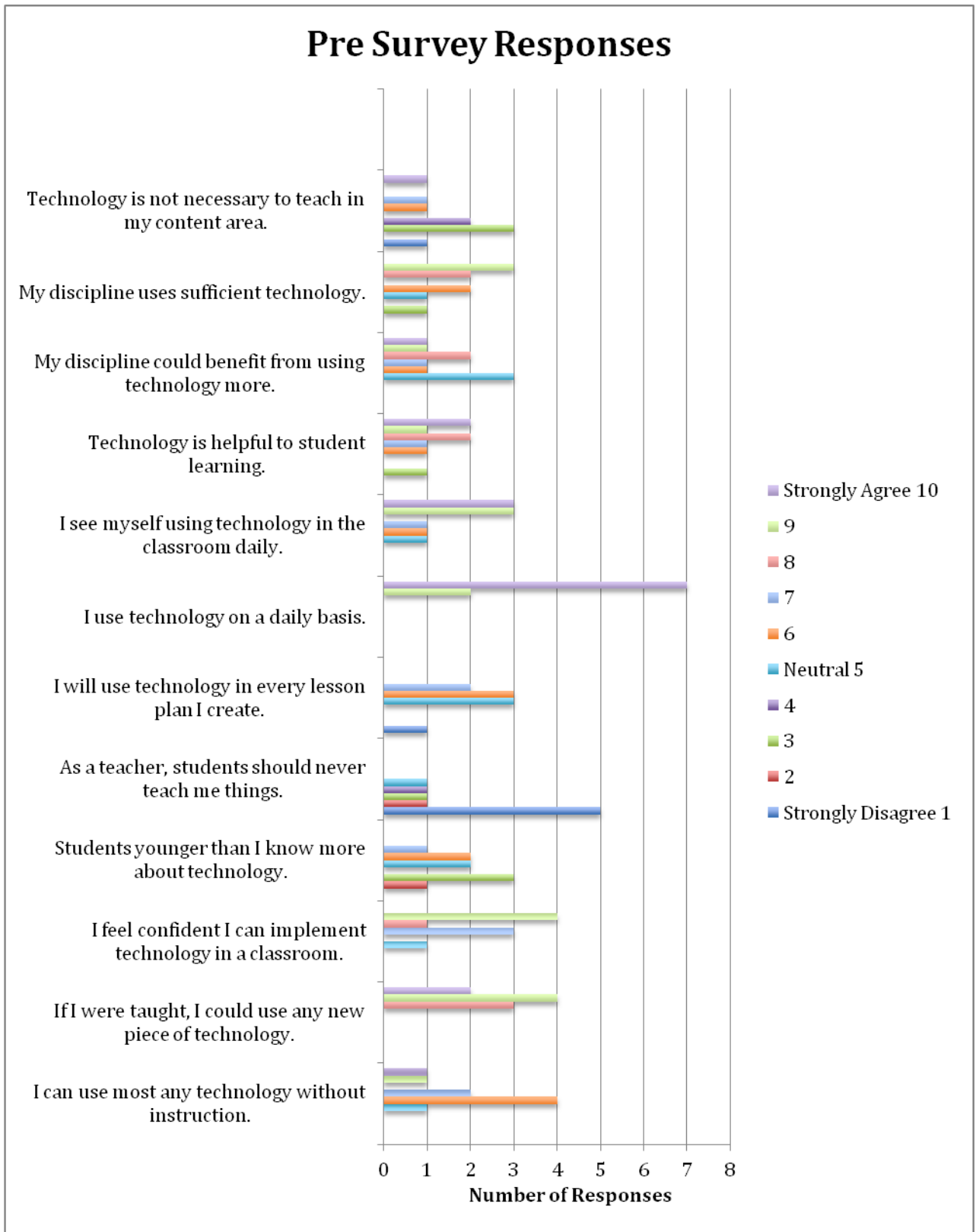


Figure 1. Teacher Candidate Pre-Survey Responses

Attention and Participation

During the technology workshops, the teacher candidates were evaluated using Chart 1. According to observations, the teacher candidates demonstrated an attention level consistent with the criteria in area “3” of the chart. The slight lack of attention or display of interest may have been due to technical difficulties experienced, previous knowledge or understanding of the particular aspect of the technology being addressed at the moment, and the researcher’s lack of familiarity with the individual teacher candidates’ personalities. While watching the YouTube videos, for example, teacher candidates were not as attentive, as demonstrated by body language. This can be attributed to possible frustration with the sound not functioning at first. Actions such as resting a hand on her head or gazing away from the presentation were some of the visible signs noted that suggested lack of interest or participation. The fact that the workshops were conducted in the morning at 9:00 AM after already having had an hour of class beforehand may have been a contributing factor to teacher candidate inattention.

For the most part, the teacher candidates showed moderate, respectful interest in the workshops and participated fully in listening to explanations of the technology, watching YouTube videos on Promethean and clicker use, exploring Promethean applications, engaging in a practice quiz using Activexpression clickers, completing a warm-up activity and a quiz.

Table 6: *Teacher Candidate Engagement*

1= <25% of the time 2= <50% of the time 3= <75% of the time 4=100% of the time

| | | | | |
|---|---|---|---|---|
| Students were on task | 1 | 2 | 3 | 4 |
| Students were engaged listeners | 1 | 2 | 3 | 4 |
| Students displayed interest in subject matter | 1 | 2 | 3 | 4 |

Students asked relevant questions and understood how to use the technology taught

1

2

3

4

Teacher Candidate Work Samples

The teacher candidates created resources consistent with the age group they will be teaching. Each used colors, pictures and shapes to attract the attention of her students in her “do now”. Three candidates asked students to reflect on weekend or summer experiences in the warm-up activity, and one candidate focused on science and math respectively. The remaining students focused on student literacy, asking students to journal, read, or write a short reflection on something the class was to have read. Such choice in subject matter may be a reflection of the emphasis courses the candidates have completed place on meeting standards and core discipline skills.

The warm-up activities demonstrated a sufficient mastery of Activinspire software. Students used Activinspire to create visually appealing shapes and designs. None used sound, but all used text and shapes.

In the quizzes, four teacher candidates chose to quiz students on math, and three made a mix of math and literacy questions. The remaining candidates created quizzes focusing on literacy and basic knowledge skills. Again, the simplicity and subject matter used in the quizzes reflected the fact that these candidates planned to teach elementary students. A focus on basic core skills and meeting standards could also be seen in the questions asked in the quizzes as well.

Creating the quizzes did not involve as many Activinspire applications, but the teacher candidates were able to use the Activinspire “quick-poll” application to create a quiz and enter questions for the students to answer. The teacher candidates could choose

how long their quiz should take and the type of answer, multiple choice, short answer, etc.

Post-Survey Results

Most likely due to time constraints, only five of the teacher candidates chose to complete the post-survey. The teacher candidates were neutral about the technology workshops in terms of gaining new ideas for technology implementation in the classroom. This could be due to the fact that only two short technology workshops were given, and only two pieces of technology were addressed. However, the candidates displayed an interest in attending future workshops and learning more about technology. Regarding teacher candidate confidence in being able to use technology without instruction, an increase in scale response was observed from a pre-survey mode of 6, to a 9 in the post-survey. The teacher candidates also still agreed that they could learn new technology if taught. A mode of 9 was still observed for teacher candidates' confidence in using technology in the classroom, but the average was slightly lower. This could be due to the technical difficulties experienced, which may have frightened some candidates and lowered their confidence. In the post-survey, candidates agreed again that they see themselves using technology in the classroom on a daily basis. Surprisingly, two teacher candidates responded with a 9 and 10 regarding using technology in every lesson plan, where before none had responded in that range. Otherwise, responses to the other questions seemed to follow the pattern observed in the pre-survey.

Table 7. *Statistical Analysis of Teacher Candidate Post-Survey Response Data*

| <u>Question</u> | <u>Response Average</u> | <u>Mode</u> |
|-----------------|-------------------------|-------------|
| 1 | 7 | 5 |
| 2 | 7 | 10,5 |
| 3 | 6 | 10 |
| 4 | 7 | 9 |
| 5 | 9 | 9,10 |
| 6 | 7 | 9 |
| 7 | 6 | NA |
| 8 | 10 | 10 |
| 9 | 7 | 10 |
| 10 | 7 | 7 |
| 11 | 5 | 5 |
| 12 | 3 | 2 |

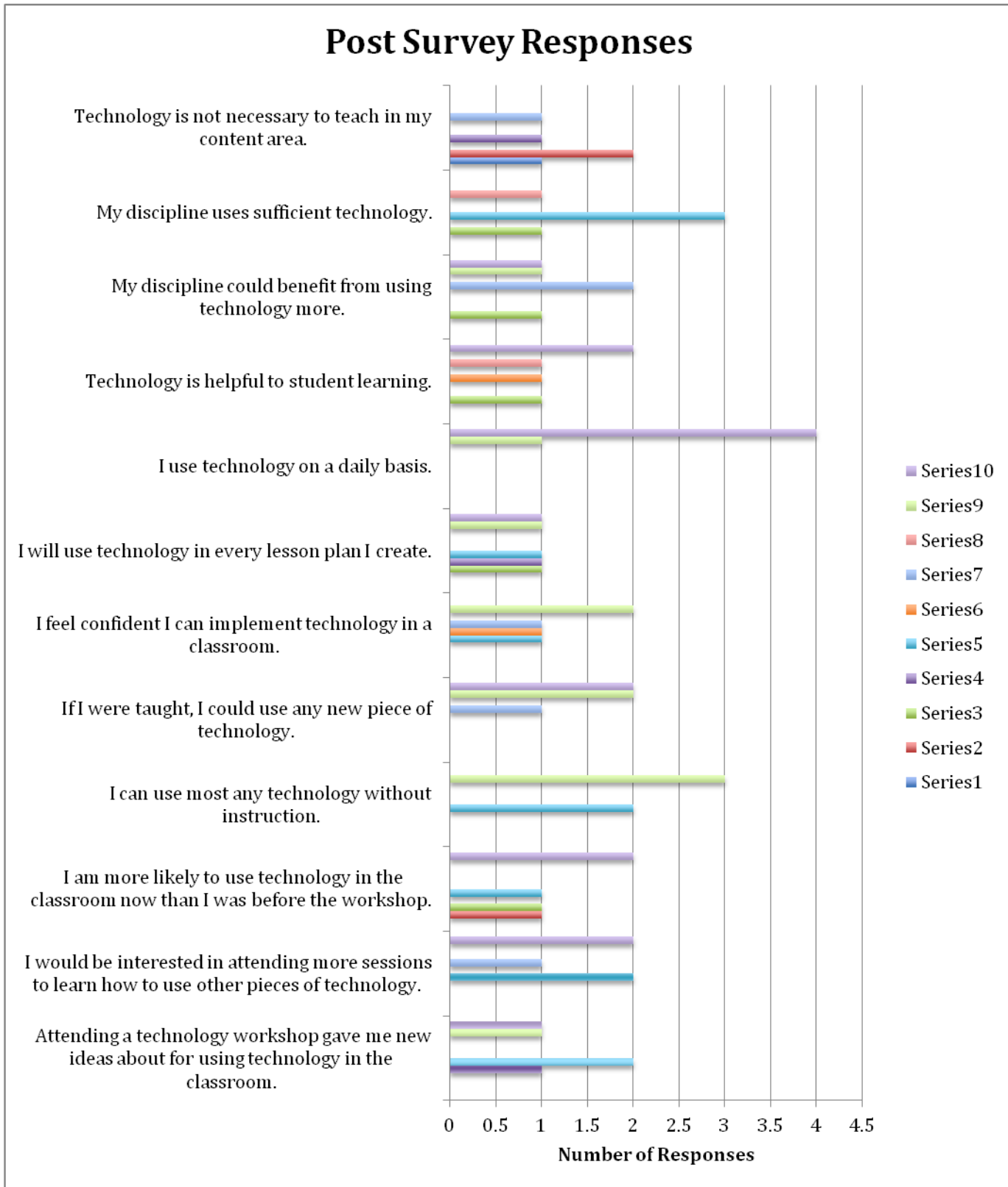


Figure 2. Teacher Candidate Post-Survey Responses

Action Plan

Results of this study indicate that student teacher candidates feel they need instruction in the use of various pieces of technology. Teacher candidates also feel technology is helpful to student learning, and imagine they will use technology in the classroom every day. All of these findings are consistent with research done with teachers already in the field, indicating that new and creative ways of training teacher candidates is becoming increasingly important in order to prepare future teachers. However, this study revealed that workshops, though demonstrating some promising results, may not be the most effective means of instructing teachers in the use of technology.

Workshops are commonplace in teacher development days when already in the field, but implementing more of such training before entering the school environment could help better prepare future teachers for the classroom. Dedicating an entire course to technology training may be more beneficial than simply a few workshops. A course could allow teacher candidates to explore and research current advances in technology. For teachers already in the field, such courses could be offered in the summer, in the evening, or on weekends. This way, such training would not take away from any other necessary agenda items on staff development days. Future research could compare teachers not trained in technology at all, teachers trained via workshops, and those trained in a course.

As mentioned previously, time was a limiting factor in this study, and it would be advised that any future research regarding technology workshops be conducted with longer and more frequent workshops covering more pieces of technology. Expanding the population of teacher candidates to those planning to teach high school or even at the college level could provide further insight into the needs of these rising professionals in our changing world. Investigating attitudes and confidence levels further in teachers

already in the field, and even those in specific disciplines, especially in comparison with teacher candidates, could prove to be eye-opening as well. Finally, conducting an investigation into the effects of technology integration in lesson plans needs continual evaluation as technology advances.

This study was conducted with only 11 teacher candidates and two pieces of technology. Such a study is admittedly limited, and increasing the sample size of both candidates and technology pieces would improve data accuracy.

As technology becomes increasingly a part of the lives of young people, this study has many practical implications for those of us who will teach this future generation. Picture this scene: in a restaurant, a one year old sits at a table with her family. While the adults are engrossed in conversation, she is glued to a tablet screen. At this young age, she has already figured out how to play a game, and can navigate what a 70 year old may deem a complex piece of machinery. Open, minimize, turn, spin, tap, touch...her senses are tuned-in completely to this screen. We can capture that curiosity and attention, and focus it on learning, but her future teachers will need to know how.

In our society today, a huge part of a child's worldview is shaped by technology. Children are constantly bombarded with information from media sources and entertainment such as television, Internet, videogames, tablets, smartphones, androids, etc. Toymakers understood this concept years ago, and began creating leap-pads, gigapets and more, and profits soared.

If we want to help our students are to also succeed, it behooves us to stay on top of these advances because children are using technology more and more. As shown in previous research and in this study, technology has the potential to complement and

significantly enhance the learning process. Going forward, it is evident that we will best be able to instruct our students, if we first instruct our teachers.

As a future high school science teacher, I have toyed with the idea of the flipped classroom in which students view online tutorials or videos created by the teacher as homework, and then come to class to complete homework and have any questions answered. Such a method allows the student to work at his or her own pace, to an extent, and allows him or her the freedom to stop, pause, rewind, and replay sections of a lecture he or she finds unclear. It also creates more time for thoughtful student questions and therefore aids the teacher in understanding where the student is at in comprehension. Such instruction also leaves room and time for creativity on the part of both student and teacher, allowing accommodation for an individual's unique learning style or needs. For example, a student who is slightly ahead could be assigned a research project on a topic of his own choosing, or he could be given a topic and allowed to choose the method of presentation. To execute such an instructional method, a teacher must be well versed in the use of PowerPoint, video editing and creation, camera and sound techniques, special effects, etc.

Blogging has been another area of interest for teachers. It allows easy student-student and student-teacher and even teacher-parent communication. A teacher with an understanding of blogging could set-up a daily update communication with parents, allowing them to be actively involved in their child's learning process.

In conclusion, this study determined that, though more is needed than two short workshops, and other instruction methods may be more effective, instructing teacher candidates via workshops is helpful. Teacher candidates already used technology daily,

and therefore saw its potential to enhance student learning, but were not entirely confident in the use of technology. After the workshops, teacher candidates were able to successfully master two pieces of technology, thereby increasing confidence and eliciting more positive attitudes toward technology.

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Appendix: *Resource List for Workshop Participants**Articles*

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- Making Quizzes Using ActivInspire. (n.d.). Retrieved November 22, 2014, from <https://www.youtube.com/watch?v=bHX55VkUkow>

Appendix A

Pre-Survey

1= strongly disagree 10= agree

1. I can use most any technology without instruction.
1 2 3 4 5 6 7 8 9 10
2. If I were taught, I could use any new piece of technology.
1 2 3 4 5 6 7 8 9 10
3. I feel confident I can implement technology in a classroom.
1 2 3 4 5 6 7 8 9 10
4. Students younger than I know more about technology.
1 2 3 4 5 6 7 8 9 10
5. As a teacher, students should never teach me things.
1 2 3 4 5 6 7 8 9 10
6. I will use technology in every lesson plan I create.
1 2 3 4 5 6 7 8 9 10
7. I use technology on a daily basis.
1 2 3 4 5 6 7 8 9 10
8. I see myself using technology in the classroom daily.
1 2 3 4 5 6 7 8 9 10
9. Technology is helpful to student learning.
1 2 3 4 5 6 7 8 9 10
10. My discipline could benefit from using technology more.
1 2 3 4 5 6 7 8 9 10
11. My discipline uses sufficient technology.

1 2 3 4 5 6 7 8 9 10

12. Technology is not necessary to teach in my content area.

1 2 3 4 5 6 7 8 9 10

Appendix B

Post-Survey

1= strongly disagree 10= strongly agree

1. Attending a technology workshop gave me new ideas about for using technology in the classroom.

1 2 3 4 5 6 7 8 9 10

2. I would be interested in attending more sessions to learn how to use other pieces of technology.

1 2 3 4 5 6 7 8 9 10

3. I am more likely to use technology in the classroom now than I was before the workshop.

1 2 3 4 5 6 7 8 9 10

4. I can use most any technology without instruction.

1 2 3 4 5 6 7 8 9 10

5. If I were taught, I could use any new piece of technology.

1 2 3 4 5 6 7 8 9 10

6. I feel confident I can implement technology in a classroom.

1 2 3 4 5 6 7 8 9 10

7. I will use technology in every lesson plan I create.

1 2 3 4 5 6 7 8 9 10

8. I use technology on a daily basis.

1 2 3 4 5 6 7 8 9 10

9. I see myself using technology in the classroom daily.

1 2 3 4 5 6 7 8 9 10

10. Technology is helpful to student learning.

1 2 3 4 5 6 7 8 9 10

11. My discipline could benefit from using technology more.

1 2 3 4 5 6 7 8 9 10

12. My discipline uses sufficient technology.

1 2 3 4 5 6 7 8 9 10

13. Technology is not necessary to teach in my content area.

1 2 3 4 5 6 7 8 9 10

14. Comments or Questions: