THE GLOBAL eLEARNING JOURNAL
VOLUME 3, ISSUE 1, 2014

# In-service Teachers' Perceptions Toward iPad Integration

**Michael W. Spaulding, Ed. D.**
Associate Professor of Instructional Technology
Department of Educational Studies
College of Education, Health and Behavioral Sciences
University of Tennessee at Martin

**Louis Charles Glover, Ed. D.**
Assistant Professor of Curriculum and Instruction
Department of Educational Studies
College of Education, Health and Behavioral Sciences
University of Tennessee at Martin

---

**Abstract**

In 2010 the state of Tennessee was one of only two states awarded the Race to the Top Grant in which they received approximately $500 million to develop and implement a comprehensive school reform plan for the next four years. Part of this reform involves replacing the Tennessee State standards with the Common Core Standards. This research expands previous research concerning the effectiveness of technology usage in the classroom and more importantly evaluated teachers' attitudes or perceptions of iPad usage prior to implementation in the classroom and after implementation. This study attempted to identify in-service teachers' attitudes and/or perceptions toward using iPads in their classrooms. Respondents were in-service teachers from a single elementary school, which was recently awarded a grant to fund the purchase of iPads for every teacher in the elementary school, 3 mobile iPad learning labs, 6 Promethean boards and the program Classworks. Based on this study there appears to be positive response to having the iPad technology in the classroom.

---

## Introduction

In 2010 the state of Tennessee was one of only two states awarded the Race to the Top Grant in which they received approximately $500 million to develop and implement a comprehensive school reform plan for the next four years. Part of this reform involved tying teacher evaluations to student performance while also implementing a statewide Science, Technology, Engineering and Mathematics (STEM) initiative. Another part of this process involved replacing the Tennessee State standards with the Common Core Standards. The Common Core Standards are a set of standards for math and English Language Arts. The standards identify the skills K-12 students need to be prepared for higher education or the workforce. By 2014-2015 Tennessee Comprehensive Assessment Program (TCAP) tests in math and English Language Arts for grades 3-11 will be replaced by new comprehensive assessments that align with the Common Core Standards. To date, the Common Core Standards are only partially in effect, but will be completely phased into English Language Arts and math across all grade levels by the 2013-14 school year.

With these standards clearly at the doorstep of every school across the state, schools and teachers have begun to prepare to implement them and teach their students based on the newly adopted standards. Many do however; continue to seek ways to more effectively prepare their students for the new assessments that will accompany the new standards. Technology has in many schools been looked to as a means to help teachers better prepare their students to meet the standards across the board. One such elementary school recently applied for and received a grant used to purchase iPads for every elementary teacher as well as a mobile iPad Learning Lab for the school and Promethean Boards all to be used in conjunction with the Classworks program to prepare their students to meet the new testing standards.

## Literature Review

### *Importance of technology*

Research continues to support the use of technology integration in the classroom to enhance student performance (Coffman, 2009; Enriquez, 2010; Edyburn, 2006). Swan, Mark, Kratcoski and Unger (2005) found that use of mobile technology increased student motivation which in turn, improved the quality of their work. The U.S. government has also recognized the need for technology by highlighting their goal of putting some form of computer in every student's hand (Ash, 2010).

These factors and supporting research findings, coupled with the ever changing technological landscape, create some interesting challenges for teachers and schools in today's educational environment. However, as technology continues to develop the challenge of maintaining a current technological environment is often difficult especially on increasingly tightening budgets.

### *The digital divide*

The Digital Divide within education has long been a debated and much researched topic with a major emphasis on defining exactly where the divide exists. Historically the digital gap was more about those that have access to computers or technology and those that do not (Block, 2010; Borja, 2005; Feldman, 2001; Gorski, 2002). According to Reinhart, Thomas and Toriskie (2011) there are actually two levels of digital divides or gaps. One is the aforementioned

historical level of those teachers or students that simply did not have access to computers or technology.

Then there is a second level divide or gap, which they define as the difference in how technology is being used (Reinhart, Thomas & Toriskie, 2011). Compounding this are technological advances that make it difficult and costly to keep up with the latest technology. In fact, since the 1990's, technology has transitioned more to wireless computers and wireless technology (Kim, Holmes, and Mims, 2005). Wireless technology has brought on a new set of costly factors to consider such as rebuilding the school infrastructure to accommodate the wireless capabilities (Keller, 2011). Other factors may include teachers simply not using the available technology or lacking the knowledge and/or skill set which is a level two gap, and is equally as difficult to overcome (Wilson, Charles & Yunker 2003). Numerous studies have been done on identifying and eliminating the digital divide among various types of students at various levels.

*Bridging the Gap*

Although bridging the gap is an easy idea to talk about, it is a very different thing to address and is only the beginning of addressing technology integration issues (Hawkins & Oblinge, 2006). Compounding this is the fact that schools or groups can have different gap levels. Many schools are simply trying to acquire the latest technology and resources for their staff and students (Hawkins & Oblinge, 2006). For example, a school district in Texas recently purchased and provided 6,800 technology devices, most of which were iPads, for their districts' students (The Associated Press, 2013). Other schools may have the technology, but need appropriate training opportunities.

In fact, some states like Virginia have now funded the hiring of technology integration specialists to help faculty, staff and students learn to utilize and integrate technology effectively (Coffman, 2009). While Virginia appears to be headed in the right direction, there still remains a discrepancy in equality among resources and technological access from school to school in many states (Damarin, 2000).

In addition, Banister and Fischer (2010) stated that in order to overcome the digital divide it is important to provide in-service teachers with continuous professional development. Conversely, Brown and Warschauer (2006) found there to be a digital divide within teacher education programs. They indicated that there needs to be more professional development at that stage of their career since many technology integration courses simply focus on basic technology skills rather than actual specific curriculum area integration.

*iPad*

In 2010 Apple introduced the iPad and since that time, schools have been scrambling to get them into their classrooms. Since they are still relatively new and many schools still do not have access, there still are many relatively unknowns about the impact they may have (Peluso, 2012). Murray and Olcese (2011) based their study on whether or not the iPad would impact the classroom in such a way as to allow educators and students to do things they were unable to do before. They go on to say that they do not think the iPad will cause a revolution in the classroom setting because they feel that the capabilities of iPads can be accomplished with other various technologies. However, Dobler (2011) states that iPads are taking the educational setting by storm as more and more appear to be purchasing them for both teachers and student. Although

some positive results have been reported among pre-service and in-service teachers in K-12 settings when using iPads, results to date are very few as it is still very early in the implementation stage (Bennett, 2011; Saine, 2012).

## Purpose of the Study

This research expands previous research concerning the effectiveness of technology usage in the classroom and more importantly evaluated teachers' attitudes or perceptions of iPad usage prior to implementation in the classroom and after implementation. Why are perceptions important? Perceptions are derived from a process through which the brain organizes and interprets what happens in one's environment (Kowalski & Westen, 2004). Perceptions are influenced by past experiences, memories, expectations, suggestions, and the context in which any given experience occurs (Schiffman, 2000). One reason it is important to understand perceptions is because perceptions provide a valuable reflection of the beliefs that individuals hold, in this case, a reflection of teachers' beliefs about iPad technology (Morton, 2004). Beliefs frequently lead individuals to action (Ajzen, 2002; Pajares, 1992).

This study attempted to determine if the use of iPad technology has had a positive impact on the learning environment within the classroom as perceived by teachers. It also sought to identify whether or not in-service teachers feel the iPads have had a positive impact on the students in the classroom environment.

The findings of this study were shared with the school administrators as a way to inform them of the effectiveness of the technology. This allows them to better understand how the technology has transformed, affected and/or enhanced the teachers' attitudes towards technology integration and their classrooms. This information can then be used to better structure professional development to enhance any weak areas that may be identified. It can also help provide a means of information exchange as they learn the various ways each teacher utilizes the technology in their classroom. Hopefully the results will foster meaningful and constructive dialog among the teachers that participated and others at the school. This in turn, will incite a collaborative effort to effectively utilize the iPad technology among all grades of students at the school.

The hypotheses for this proposed study was that there are distinct and significant differences between in-service teachers' attitudes and/or perceptions toward the use of the iPads at the beginning of the semester prior to implementation and at the end of the semester after implementation.

This research was guided by three primary questions:

1) Are teachers concerned about using iPads themselves in their classroom?
2) Are teachers concerned about their students' use of iPads in the classroom?
3) Are teachers concerned with the effect iPads will have on them or their classrooms?

## Methodology

This study attempted to identify in-service teachers' attitudes and/or perceptions toward using iPads in their classrooms. Respondents were in-service teachers from a single elementary

school, which was recently awarded a grant to fund the purchase of iPads for every teacher in the elementary school, 3 mobile iPad learning labs, 6 Promethean boards and the program Classworks. The teachers were all teaching at the same rural elementary school and were issued iPads for the 2012-2013 school year to use in their classrooms. Every classroom teacher also had access to a mobile iPad lab for students and a Promethean board or Mimio board in their classroom. They also had access to Classworks, which is a program students can utilize to help prepare them for the standardized tests. In addition to Classworks, they also had access to various professional development opportunities to help as well.

This study used the *Stages of Concern* survey (Hall, G. E., George, A. A., & Rutherford, W. L., 1977) to determine in-service teachers' perceptions toward iPad integration in their classroom. The 35-item survey was based on an 8 point-Likert scale (0-7) with 0 being very little to no concern and 7 being high concern. The survey included questions concerning the following categories: (a) Awareness, (b) Informational, (c) Personal, (d) Management, (e) Consequence, (f) Collaboration and (g) Refocusing. SPSS version 20.0 was used to run the Mann-Whitney U test and Wilcoxon Rank Sum test to determine if the mean scores from the pre-survey results (beginning of the semester) were significantly different from the post-survey results (end of the semester). The survey was administered and data collected online through Dragon surveys to approximately 34 elementary teachers that teach a variety of different grade levels and curriculum.

## Results

Of the 35 total elementary teachers that received iPads through the grant, 29 responded to the pre/post surveys for this study. There were twelve teachers with 16 or more years of experience teaching and seven with 11-15 years of experience. Three teachers had 7-10 years of experience and seven had 4-6 years of experience. Twenty-two teachers did not previously own and iPad while seven did have their own iPad prior to the grant. Fifty-four percent had never used an iPad prior to the grant.

The research survey consisted of an 8-point Likert scale with ordinal data not normally distributed, thus the Mann-Whitney U and Wilcoxon Rank Sum tests were used to analyze the pre and post survey data. Since the same group of participants took both the pre and post survey, the Wilcoxon rank sum test was used to determine if significant differences exist in pre and post survey results. Table 1 below shows individual results for each question.

Table 1

*Mann-Whitney U & Wilcoxon Rank Sum tests output for pre and post iPad survey*

| Variable | U | W | *p* |
|---|---|---|---|
| I am concerned about students' attitudes toward iPad technology. | 342.500 | 748.500 | 0.267 |
| I now know of some other approaches that might work better. | 351.500 | 757.500 | 0.500 |
| I am more concerned about another iPad technology. | 332.500 | 738.500 | 0.206 |
| I am concerned about not having enough time to organize myself each day. | 372.000 | 778.000 | 0.577 |
| I would like to help other faculty in their use iPad technology. | 313.500 | 719.500 | 0.111 |
| I have very limited knowledge about iPad technology. | 367.500 | 802.500 | 0.524 |
| I would like to know the effect of reorganization on my professional status. | 274.000 | 652.000 | 0.050 |
| I am concerned about conflict between my interests and my responsibilities. | 375.500 | 781.500 | 0.582 |
| I am concerned about revising my use of iPad technology. | 330.500 | 765.500 | 0.209 |
| I would like to develop working relationships with both our faculty and outside faculty using iPad technology. | 405.000 | 811.000 | 0.987 |
| I am not concerned about how iPad technology affects students. | 369.500 | 775.500 | 0.874 |
| I am not concerned about iPad technology at this time. | 246.000 | 681.000 | 0.008 |
| I would like to know who will make the decisions in the new system. | 376.500 | 811.500 | 0.630 |
| I would like to discuss the possibility of using iPad technology. | 266.000 | 672.000 | 0.023 |
| I would like to know what resources are available if we decide to adopt iPad technology. | 349.000 | 755.000 | 0.347 |
| I am concerned about my inability to manage all iPad technology requires. | 382.000 | 788.000 | 0.693 |
| I would like to know how my teaching or administration is supposed to change. | 232.500 | 638.500 | 0.005 |
| I would like to familiarize other departments or persons with the progress of this new approach. | 272.000 | 678.000 | 0.024 |
| I am concerned about evaluating my impact on students. | 401.500 | 807.500 | 0.942 |
| I would like to revise the innovation's instructional approach. | 359.500 | 765.500 | 0.438 |
| I am preoccupied with things other than iPad technology. | 304.000 | 739.000 | 0.098 |
| I would like to modify the use of iPad technology based on the experiences of our students. | 401.500 | 836.500 | 0.942 |
| I spend little time thinking about iPad technology. | 346.500 | 724.500 | 0.452 |
| I would like to excite my students about their part in this approach. | 379.000 | 785.000 | 0.656 |
| I am concerned about time spent working with non-academic problems related to iPad technology. | 305.000 | 711.000 | 0.147 |
| I would like to know what the use of iPad technology will require in the immediate future. | 299.000 | 705.000 | 0.083 |
| I would like to coordinate my efforts with others to maximize the iPad technology's effects. | 240.000 | 646.000 | 0.007 |

| | | | |
|---|---|---|---|
| I would like to have more information on time and energy commitments required by iPad technology. | 242.500 | 620.500 | 0.021 |
| I would like to know what other faculty are doing in this area. | 324.500 | 730.500 | 0.182 |
| Currently, other priorities prevent me from focusing my attention on iPad technology. | 395.500 | 830.500 | 0.864 |
| I would like to determine how to supplement, enhance, or replace iPad technology. | 320.000 | 698.000 | 0.234 |
| I would like to use feedback from my students to change the program. | 324.000 | 730.000 | 0.180 |
| I would like to know how my job would change when I am using iPad technology. | 330.500 | 736.500 | 0.221 |
| Coordination of tasks and people is taking too much of my time. | 404.500 | 839.500 | 0.980 |
| I would like to know how iPad technology is better than what we have now. | 405.000 | 840.000 | 0.987 |

$p = .05$

The results of the surveys produced some interesting findings concerning a few different areas. As shown in table 1 above, there were six questions that displayed statistically significant differences between pre to post survey. These six questions were: "I am not concerned about iPad technology at this time" ($U = 246.000$, $W = 681.000$, $p = 0.008$); "I would like to discuss the possibilities of using iPad technology" ($U = 266.000$, $W = 672.000$, $p = 0.023$); "I would like to know how my teaching or administration is supposed to change" ($U = 232.500$, $W = 638.500$, $p = 0.005$); "I would like to familiarize other departments or persons with the progress of this new approach" ($U = 272.000$, $W = 678.000$, $p = 0.024$); "I would like to coordinate my efforts with others to maximize the iPad technology's effects" ($U = 240.000$, $W = 646.000$, $p = 0.007$); and "I would like to have more information on time and energy commitments required by iPad technology" ($U = 242.500$, $W = 620.500$, $p = 0.021$).

Table 2 below shows the frequency/percentages each question received by number on the six questions that were statistically significantly different according to both pre/post survey responses.

Table 2

*Frequency/Percentages for 6 significantly different questions from pre and post surveys*

| Variable | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| **Pre** | | | | | | | | |
| I am not concerned about iPad technology at this time. | 20 (69.0) | 0 (0) | 4 (13.8) | 3 (10.3) | 2 (6.9) | 0 (0) | 0 (0) | 0 (0) |
| I would like to discuss the possibilities of using iPad technology. | 2 (6.9) | 0 (0) | 5 (17.2) | 4 (13.8) | 7 (24.1) | 3 (10.3) | 0 (0) | 8 (27.6) |
| I would like to know how my teaching or administration is supposed to change. | 3 (10.3) | 0 (0) | 3 (10.3) | 3 (10.3) | 7 (24.1) | 8 (27.6) | 0 (0) | 5 (17.2) |
| I would like to familiarize other departments or persons with the progress of this new approach. | 10 (34.5) | 0 (0) | 5 (17.2) | 7 (24.1 | 3 (10.3) | 2 (6.9) | 0 (0) | 2 (6.9) |
| I would like to coordinate my efforts with others to maximize the iPad technology's effects. | 0 (0) | 0 (0) | 3 (10.3) | 5 (17.2) | 4 (13.8) | 8 (27.6) | 0 (0) | 9 (31.0) |
| I would like to have more information on time and energy commitments required by iPad technology. | 0 (0) | 3 (10.7) | 5 (17.9) | 6 (21.4) | 3 (10.7) | 3 (10.7) | 0 (0) | 8 (28.6) |
| **Post** | | | | | | | | |
| I am not concerned about iPad technology at this time. | 12 (44.4) | 0 (0) | 0 (0) | 4 (14.8) | 4 (14.8) | 4 (14.8) | 1 (3.7) | 2 (7.4) |
| I would like to discuss the possibilities of using iPad technology. | 5 (17.9) | 4 (14.3) | 2 (7.1) | 8 (28.6) | 4 (14.3) | 2 (7.1) | 0 (0) | 3 (10.7) |
| I would like to know how my teaching or administration is supposed to change. | 6 (21.4) | 1 (3.6) | 7 (25.0) | 6 (21.4) | 3 (10.7) | 4 (14.3) | 0 (0) | 1 (3.6) |
| I would like to familiarize other departments or persons with the progress of this new approach. | 16 (57.1) | 4 (14.3) | 3 (10.7) | 2 (7.1) | 1 (3.6) | 1 (3.6) | 0 (0) | 1 (3.6) |
| I would like to coordinate my efforts with others to maximize the iPad technology's effects. | 1 (3.6) | 4 (14.3) | 4 (14.3) | 6 (21.4) | 4 (14.3) | 7 (25.0) | 0 (0) | 2 (7.1) |
| I would like to have more information on time and energy commitments required by iPad technology. | 6 (22.2) | 4 (14.8) | 5 (18.5) | 2 (7.4) | 3 (11.1) | 5 (18.5) | 0 (0) | 2 (7.4) |

0 = Not true of me now

3 = Somewhat true of me now

7 = Very true of me now

## Discussion

While it is somewhat difficult to say definitively that the proposed hypotheses were true, there were noteworthy differences found within the results. As mentioned previously, there may in fact be some merit to the differences between pre and post survey responses even if they were not found specifically to be statistically different. For example, responses to "I would like to excite my students about their part in this approach" were not found significantly different. However this could mean that they wanted to excite their students both before using and even after using iPads for couple of months. Similarly, both pre/post responses indicated that they would like to know what other faculty are doing in the area of iPad usage. Although not significantly different, it could simply by that they wanted to know what others were doing both before and after their own usage.

Specifically looking at the six questions that did have significant differences, the percentage of participants that "were not concerned about iPad technology at this time" was 69% on the pre and 44.4% on the post. This basically shows that they were more concerned with using iPad technology as they used it and became more familiar with it. They also were more interested in learning about iPad technology before using them than after they used them. This shows that their experience and knowledge levels with the technology itself went up as their familiarity increased as evidenced by the percentages. According to the pre (10.3%) and post (21.4%) they also had a better understanding of how the iPad technology would affect their teaching after they had utilized them in the classroom.

A greater number of participants also indicated that after using the iPads for some time they were more excited about sharing with others how to use iPads in the classroom as shown on pre (6.9%) and post (3.6%) results.

The results provided some insight as well to each individual research question. Research question 1 stated: Are teachers concerned about using iPads themselves in their classroom? Although no significant difference was discovered between pre and post results, there still may be a partial answer to this within the data. Responses to "I am concerned about my inability to manage all that iPads require" showed that the highest percentage of participants felt the same on both pre (24.1%) and post (42.9%) surveys. This indicates that participants were confident in their abilities to manage the technology both before and after usage. However, a significant difference was found in response to "I would like to know how my teaching is supposed to change" when using iPad technology. Prior to using the technology (17.2%) participants were more concerned with how the technology would affect their teaching than afterwards (3.6%).

Research question 2 stated: Are teachers concerned about their students' use of iPads in the classroom? Although the survey questions related to this research question was found to be statistically insignificant there may still be some answers here. For example, in response to "I am not concerned about how iPad technology affects students" both pre (53.6%) and post (59.3%) indicated that most likely participants were concerned both before and after their time spent using iPads. This would indicate that they are in fact concerned, just not necessarily any more concerned before or after.

Research question 3 stated: Are teachers concerned with the effect iPads will have on them or their classrooms? Again, results seem to indicate there were a few concerns in general among participants when talking about iPad usage. Both pre (41.4%) and post (32.1%) showed

that a larger percentage of participants felt the statement "I would like to know what resources are available to manage all that iPad technology requires" was very true. Both surveys also found that a higher percentage spent more than a little time thinking about iPad technology.

Overall, of the thirty-five questions only six had significant differences from pre to post survey. While those areas are useful in addressing, this research discovered some equally useful findings in the areas in which there were not significant differences found between the two surveys. As noted previously, it is important to note that in some areas the participants' responses did not change from one survey to another. Based on this study there appears to be positive response to having the iPad technology in the classroom. However, the results seem to point to the fact that many of the teachers would like to know more about how the iPad technology should be used and how it fits into the bigger picture of learning environment. It does appear that they recognize the usefulness, the need and the excitement the technology generates in the classroom. The results though do indicate that more time and study is needed to better understand the exact role they should play in the classroom. It also appears that some teachers also do not fully understand the uses and capabilities and so more professional development and/or collaboration may be needed.

## Limitations and Future Research

As with any study, there were limitations to this study. One such limitation was the fact that the study was conducted at the same elementary school on the same 29 participants that took part in the grant. The fact that this study was limited to only the 29 participants that received iPads from the grant may be a limitation. Another limitation was that although both pre and post surveys were distributed to all 29 participants; there were some questions that were unanswered by one participant. Although it appeared to be a random or inadvertent mistake it is nonetheless a limitation to the study. Another limitation may be that although some results for individual questions did not appear to be significantly different, there still is some merit to the responses. For example, when asked whether they were concerned about students' attitudes toward iPad technology, there was no significant difference found. This could mean that they were either unconcerned prior to using iPads and unconcerned after using iPads. Or it could mean they were concerned before using iPads and after using the iPads. There were several questions where this was the case. Still another limitation was that the pre survey was administered at the beginning of the semester and the post was administered about 2 months later. Due to state standardized testing dates the post survey had to be administered at that time. It would have been better if there could have been more time between pre and post surveys. Lastly, with the grant being still in its first year, this study was limited to perceptions and how teachers felt about using the iPads initially.

Future research might need to focus on a longitudinal study that might do a follow-up survey from one year to the next to determine or identify any differences or changes in results that might occur over a longer period of time. It may also be important to possibly survey the students themselves to try and determine their perceptions prior to and after iPad usage. Further research may also want to focus on the various other resources that were provided as part of this grant to measure their impact on in-service teachers' perceptions of technology effectiveness. It would also probably be useful for future research to focus on the impact of professional development and/or collaboration and how it impacts the teachers' perceptions or uses of the technology.

**References**

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. Journal of Applied Social Psychology, 32, 665-683.

Ash, K. (2010). U.S. ed-tech plan urges rethinking in K-12 schools. *Education Week, 29*(24), 1-1. Retrieved from http://search.proquest.com/docview/742877491?accountid=29025

Banister, S., & Fischer, J. (2010). Overcoming the digital divide: The story of an urban middle school. *Mid-Western Educational Researcher, 23*(2), 2-9. Retrieved from http://search.proquest.com/docview/964183360?accountid=29025

Bennett, K. R. (2012). Less than a class set. *Learning & Leading with Technology, 39*(4), 22-25. Retrieved from http://search.proquest.com/docview/964181422?accountid=29025

Block, J. (2010). Distance education and the digital divide: An academic perspective. *Online Journal of Distance Learning Administration, 13*(1), 5-5. Retrieved from http://search.proquest.com/docview/742867560?accountid=29025

Borja, Rhea R. (2005). Digital Divide. *Education Week 2*(10). Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA215123586&v=2.1&u=tel_a_pml&it=r&p=PROF&sw=w

Brown, D., & Warschauer, M. (2006). From the university to the elementary classroom: Students' experiences in learning to integrate technology in instruction. *Journal of Technology and Teacher Education, 14*(3), 599-621. Retrieved from http://search.proquest.com/docview/62107856?accountid=29025

Coffman, T. (2009). Getting to the heart of technology integration: Virginia's instructional technology resource teacher program. *Learning & Leading with Technology, 36*(7), 20-23. Retrieved from http://search.proquest.com/docview/61797968?accountid=29025

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal, 38*(4), 813-813. Retrieved from http://search.proquest.com/docview/200379244?accountid=29025

Damarin, S. K. (2000). The 'digital divide' versus digital differences: Principles for equitable use of technology in education. *Educational Technology, 40*(4), 17-22. Retrieved from http://search.proquest.com/docview/62335573?accountid=29025

Dobler, E. (2011). Using iPads to promote literacy in the primary grades. *Reading Today, 29*(3), 18-19. Retrieved from http://search.proquest.com/docview/917459021?accountid=29025

Edyburn, D. L. (2006). Failure is not an option: Collecting, reviewing, and acting on evidence for using technology to enhance academic performance. *Learning & Leading with Technology, 34*(1), 20-23. Retrieved from http://search.proquest.com/docview/61798299?accountid=29025

Feldman, Sandra. (2001). The Haves and Have Nots of the Digital Divide. *School Administrator 58.3,* 30.Retrieved from http://go.galegroup.com/ps/i.do?id=GALE%7CA76880158&v=2.1&u=tel_a_pml&it=r&p=PROF&sw=w

Gorski, P. C. (2002). Dismantling the digital divide: A multicultural education framework. *Multicultural Education, 10*(1), 28-30. Retrieved from http://search.proquest.com/docview/62202709?accountid=29025

Hall, G. E., George, A. A., & Rutherford, W. L. Measuring Stages of Concern About the Innovation: A manual for use of the SoC Questionnaire. Austin,Texas: Research and Development Center for Teacher Education, the University of Texas, 1977.

Hawkins, B. L., & Oblinge, D. G. (2006). The myth about the digital divide. *EDUCAUSE Review, 41*(4), 12-13. Retrieved from http://search.proquest.com/docview/62105860?accountid=29025

Kowalski, R.M., & Westen, D. (2004). Psychology. New York: John Wiley & Sons.

Keller, J. (2011). The slow-motion mobile campus. *The Chronicle of Higher Education,* n/a. Retrieved from http://search.proquest.com/docview/865547539?accountid=29025

Kim, S. H., Holmes, K., & Mims, C. (2005). Mobile wireless technology use and implementation: Opening a dialogue on the new technologies in education. *TechTrends: Linking Research & Practice to Improve Learning, 49*(3), 54-64. Retrieved from http://search.proquest.com/docview/62072158?accountid=29025

Morton, A. (2004). Philosophy in practice: An introduction to the main question. New York: Wiley-Blackwell.

Murray, O. T., & Olcese, N. R. (2011). Teaching and learning with iPads, ready or not? *TechTrends, 55*(6), 42-48. doi: http://dx.doi.org/10.1007/s11528-011-0540-6

Natriello, G. (2001). Bridging the second digital divide: What can sociologists of education contribute? *Sociology of Education, 74*(3), 260-265. Retrieved from http://search.proquest.com/docview/216483066?accountid=29025

Pajares, M. F. (1992). Teacher's beliefs and educational research: Cleaning up a messy construct. Review of Educational Research, 62(3), 307-332.

Peluso, D. C. (2012). The fast-paced iPad revolution: Can educators stay up to date and relevant about these ubiquitous devices? *British Journal of Educational Technology, 43*(4), 3-E125. Retrieved from http://search.proquest.com/docview/1031151244?accountid=29025

Press, The Associated. "iPads Easing a Texas District's Digital Divide." *Digital Directions* 13 June 2012: 8. *Educators Reference Complete*. Web. 6 Feb. 2013.

Reinhart, J. M., Thomas, E., & Toriskie, J. M. (2011). K-12 teachers: Technology use and the second level digital divide. *Journal of Instructional Psychology, 38*(3), 181-193. Retrieved from http://search.proquest.com/docview/1023530317?accountid=29025

Saine, P. (2012). iPods, iPads, and the SMARTBoard: Transforming literacy instruction and student learning. *New England Reading Association Journal, 47*(2), 74-79, 81. Retrieved from http://search.proquest.com/docview/940889699?accountid=29025

Schiffman, H.R., (2000). Sensation and perception: An integrated approach. New York:

John Wiley & Sons.

*This research was sponsored by the Project RITE grant, The University of Tennessee, Office of Information Technology, Educational Technology Collaborative, 2012-2013.