Introduction

Our problem that we are interested in is the importance of teachers being adequately prepared and trained to effectively integrate technology into their curriculum. Technology in the classroom is the future of education not only in the state of Ohio but also around the country as a whole. The demand for integrating technology as part of the teaching process is heightened due to the new Common Core State Standards (CCSS). Students will no longer be able to take an isolated computer class, according to an article on the NASSP (National Association of Secondary School Principals) website (Stafford, 2012). Due to this inevitable move towards technology-based education, it is imperative that our teachers are successfully prepared for this shift.

The educational shift towards technology puts added pressure on teachers to not only learn about what standards to teach, but also to teach the curriculum by learning how to use new technology. This may be intimidating for some teachers, especially, in cases where they feel the students know more about the new technology than they do. Students are using technology in their daily lives for social connections, entertainment and more; they are digital natives. We notice that students tend to immerse themselves into new technology with little or no direction, but some teachers have a tendency either to give up using technology or not to use it at all when glitches occur. In general, educators need to embrace the technology, glitches and all, in order to reach these digital natives where they are.

We are doing an injustice to the teachers, the students, and the educational system as a whole if we do not provide teachers with the sufficient training to move forward. In our research study, we hope to determine how effective technology integration can result from professional development, both training sessions and ongoing coaching. We also hope to discover how a teacher’s attitude impacts his/her use of technology in the classroom.

Personal Interest

My interest in this topic was piqued because this year at my school a lot of new technology was implemented. The transition was anything but smooth. Teachers and administration became frustrated with the transition; so therefore, the new technology was never implemented very successfully. The teachers used the technology incorrectly, and the ones who suffered the most were the students. Our teachers did not feel adequately trained to implement the new technology, and the school was not adequately prepared to implement the new technology. Teachers reduced the use of the new technology to free-time use, surfing the web or just simply did not use it at all. Did our students still learn the state required curriculum? Yes, they did the traditional way.
we adequately prepare our students for the new educational move toward a technologically integrated curriculum? No, we did not. (Lashawna Grimes)

I have had a similar experience to Lashawna’s in that what new technology has been purchased and placed in the classroom has not been used for effective teaching and learning. Two SmartBoards were purchased four years ago to share among 16 teachers, and although we had one training session on how to set them up in our classrooms and how to use the software to create interactive lessons, the SmartBoards continue to see very little usage. I think this is due to the teachers’ lack of enthusiasm for and perhaps fear of new technology. I would like to confirm or deny my claim with a thorough literature review and a research study like this one. Stating my opinion without the research to support it will not help the culture in my school to change. Collecting data as we describe it in this problem of practice will not only give me credibility with the administration and my colleagues, but also the analysis of the data will steer me in a direction that may allow me to avoid poor implementation of technology. By studying the effects of technology training and the comfort level of teachers, I will be able to help the teachers in my school be more successful so that our students can be more successful. (Susan Martin)

My interest in this topic began during my first few years of teaching. In college, I was blessed with a job where I worked in a technology lab, helping other college students navigate new technologies and teaching them about them. Due to this, I was lucky to learn about all of the newest technologies that could be integrated in the classroom, and the positive affect they could have on learning. My first 2 years of teaching I worked in a low SES district, where the majority of my students had little to no access to technology in the home. However, due to our SES, our district received large state funding for technology. Our building technology was bountiful. Every room had state of the art Smartboard systems that could be used in the traditional Smartboard way, but also had video recording software for “green screen” videos, and sound systems. We had a 2:1 student to iPad ratio for each grade, AND a 2:1 student to laptop ratio for each grade. In addition, there were two computer labs with brand new computers, with all of the latest software and programs. With all of this, it made it possible for every student and every teacher to have access to technology every day. I found out VERY quickly that few teachers took advantage of this. I was cautious not to overbook the technology at first (I did not want other teachers to be mad I was using everything), but soon learned there was no point. No one else was using it. I spent two glorious years of teaching my students through technology-based lessons. My 6th graders became iPad geniuses, with a culminating activity of building their own virtual Ancient Roman city. Each student had a laptop or an iPad on their desk at all times, and we had all of this information at our fingertips. After 2 years of teaching, I decided to take a job closer to home and in my favorite grade level and subject. This new district I am at is a very affluent district. We are a top-rated district in state, have wonderful teachers, but the technology access is little to none. In my first 2 years of teaching here, we had a Smartboard in each room, 3 working computers (that are over 9 years old) and that is it. No computer lab, no iPads, no laptops, nothing. It was a huge transition for me to get used to. Here I am being pushed to use the new CCSS standards, with tons of technology in them, and I don’t have the tools to teach them. I became frustrated every day with how I am going to prepare my students to be 21st Century Learners. In my third year (this past year), we FINALLY got a computer lab, and that has helped a lot. I have started doing much more with technology with my students, but I still find most teachers are not doing the same. I can use the computer lab anytime I want. Why aren’t my
fellow teachers using what’s available? This is a question I think we all wonder. (Amelia Capotosta)

The staff, faculty, and administrators are supporting technology at the college where I teach, because they realize this is the change for our future. We have to be able to meet the needs of the 21st century learners. Everyone in our college is not using technology at a high level; however they are interested in the information. As educators we can no longer rely on textbook lecturing and exams to keep the students interested. I realize it is a process and for this reason I support our “Problem of Practice” topic. We have department and division meetings monthly. Many of the individuals in my division do not know how to use technology as it pertains to e-learning. Most of my colleagues want to use more technology, but it can be challenging. Our department has 2 Interactive Whiteboard (IWB). Last year we were trained to use these in our classrooms. We were all excited and thought it was a great tool to transfer learning to our students. I find this tool to be effective and exciting. Some teachers are not comfortable using IWB. When we were trained on this equipment many stated they were excited and wanted to use it in class. However, only a few of us were able to implement it into our lectures. The others did not know how to effectively use this equipment and they had difficulty creating a different lesson plan using the IWB. During these meetings I would like for faculty to share difficulties or new found technology experiences. I will look for new resources and tools to better enhance the learning experience for my students and to share with my colleagues. (Verlinda Bennett)

Research Plan

We will focus our research plan around two questions:

1. What effect does teacher training on new technology have on effective implementation of technology into the curriculum?

2. How do teacher skill and comfort level with technology impact student achievement?

We have decided to focus on these two questions because answering them will help to solve the problems we are having at our own schools. It will also help us to come up with a solution that will be both beneficial to the teacher as well as the students’ academic achievement.

In our case study we will identify four cases of teachers. The average class size for each case will be twenty students representing two separate school districts. The two districts will have different levels of access to technology and technology funding. We will conduct the same study in both districts, and use our resulting data to compare the two classes intra-district, and also the 4 classes inter-district. This will allow us to address both research problems on a higher level. One teacher will represent each class and be identified as the lead teacher who will or will not receive the training. These teachers will be involved in all phases of the research. This will help researchers gain an understanding of participant’s emic perspective and will allow them to convey their results clearly to the readers. The selection of these teachers will be very important. We want to make sure that the teachers in each district have similar prior technology experience and comfort levels. We will focus our study on the intermediate level of students’ (grades 4-6). In each district we will give all grades 4-6 teachers a 25 question pre-survey on technology usage
and comfort level. We will compile the results of this survey for each district and analyze the data. We will be looking for a cross-comparison of two teachers in each district. In other words, in district 1 we will choose teacher “A” that will be similar in technology usage and comfort with teacher “AA” in district 2. We will do the same with teachers “B” and “BB.” This will ensure that we have consistent and valid data in our end result. We will be asking the teachers to volunteer to participate in our study. The willingness to participate will be a crucial component in the success of this study.

Since we are focusing closely on 2 cases in two different school districts, we will want to use measures that allow us an in-depth look at each of the four teachers’ comfort levels in using technology in their classrooms. We will use both interviews and observations to determine these important aspects of their teaching. Gathering data from interviews and observations both before, during, and after technology training and mentoring will allow us to determine themes that will shape the results of our research study.

We also feel that other measures that will work well in this study will be test measures and questionnaires. We will use these measures to compare the effect that teacher training in new technology has on the successful use of that technology within the current curriculum. We will give both a pretest and a posttest of the subject matter to see if teacher training seems to make a difference. We will also administer a questionnaire to both the students and the teachers to see if their attitudes about using the technology differ if training is provided.

After using the results of the 25 question pre-survey on technology usage and comfort level to choose the four teachers, we will conduct informal interviews not only to confirm their technology usage and comfort level but also to get to know them and share the procedures of our research study. If there is time and the participants seem willing, we may ask them to keep a journal throughout this research study that we can analyze and use for triangulation.

An important phase in our research study will be the controlled implementation of technology training of iPads in a math class for a particular unit. The dependent variables are the subject (math), the content lesson (fractions), the technology to implement (iPads), the duration of the study (one school week to teach the lesson and implement the technology). The independent variable is that one teacher in each district will go through an in-service training on how to use iPads in the classroom prior to teaching the lesson, and the other teacher in each district will not. The following procedures will take place in this phase of our study:

1. Teachers “A” and “AA” will receive hands-on training on how to implement iPads in math.
2. All four teachers will be given an iPad a week before the lesson is to be taught in order to become familiar with the technology and complete lesson plans.
3. All teachers will give their students a pretest on the lesson to be taught on day 1.
4. All teachers will then teach the lesson (for one week) using iPads as an integration teaching tool.
5. At the end of the week all four teachers will administer a posttest over the lesson.
6. We will follow up with both a student and teacher questionnaire to see if attitudes about the lesson and the technology used differ based on if training was provided for the
teacher or not.

We will conduct follow-up interviews with the teachers to obtain more data in terms of their feelings on their use of iPads and the effect on student achievement. We may even interview the students to get their perspective on this week of lessons.

One way we can analyze the data is to see if the scores on the final test were better, worse or the same in the four classes. We can also analyze if a student’s individual academic achievement is better, worse or the same by measuring the percentage of growth between the pretest and the posttest. Finally we can see if attitudes about using the iPads in class are more positive, negative, or about the same in the classrooms with the trained teachers versus the untrained teachers. We can also videotape and review both the class sessions and the interviews so that we can analyze the data. For instance, we can tally the number of times a lesson is interrupted by a technological glitch and then compare the results between the trained teachers and the untrained teachers. We can also conduct a content analysis of the interviews to tally phrases indicating comfort level with technology. The analysis of the observations and interviews will help us to determine themes related to our research study.

Strengths and Limitations

One of the strengths of the research study is our desire to involve the cases plans and procedures. Not only can we easily gain entry because we are teachers, but also we can be directly involved in the training and mentoring because of our area of study in Instructional Technology. Of course, we will have to be keenly aware of our bias. Keeping our bias in check, we will have a good balance between etic and emic perspectives.

Another strength of our study is the potential to triangulate the data. By using both the objective tests and the subjective questionnaires before and after implementation of the technology training and iPad lessons, we can confirm or deny our findings on the impact of technology training. By using two school districts, we provide an opportunity for our final report to help a wider range of schools, teachers, and students. We can also use our observations and interviews to crystallize our analysis of the data. By collecting data in multiple forms, we also ensure that we keep our biases in check and that our analysis is not skewed by our enthusiasm for technology integration.

One of the challenges with this study is the time factor. We expect teachers to maintain this style of teaching with technology throughout the school year. They have participated in a study for a short period of time. They may not have shown a real change in their attitude or teaching style implemented with technology. In reality everyone tries to implement it after the professional development, but few keep it up. It will be important for teachers to recognize the importance of following through and voicing their needs to maintain this style of teaching with technology. We think we can overcome this challenge and its effect on our results by offering refresher training sessions and more mentoring support. Perhaps these steps will extend our research study or help us to formulate a new study.

The second concern is the teachers’ potential and time to develop activities to challenge the academic ability of each student using technology. The role of the teachers is pivotal because
they set the pace for many students. Teachers need to be creative enough to teach various students with different abilities. If teachers react in a negative manner towards students sometimes the other students may begin to judge and treat them differently. According to Schunk, Pintrich, Meece (2008) teachers with higher self-efficacy are more apt to develop challenging activities, help students succeed, and persist with students who have problems. When instructors give students positive feedback and look for their strengths, then students may have the confidence to try different tasks and new technology. Teachers’ planning and instructional activities affect student cognitions and learning and, in turn, teachers’ thoughts and behaviors are influenced by how students react to classroom activities. It is important for teachers to have a planned activity for the students and a plan to address technical difficulty if necessary. We will attempt to overcome this limitation by closely observing the interactions between teachers and students and by using our own experiences and knowledge to determine if these factor impact our results.

Implication

First, we feel that this research will impact us directly. As both classroom teachers and potential technology coaches in our respective teaching environments, we will use the data we collect to improve both our own technology practices and potentially that of our school/school district. For instance, if we see that those teachers who have a higher level of comfort with technology also have students who achieve at a higher level, then we will want to improve our own comfort level with the integration of technology in our classrooms. Also, we will want to find ways to increase the comfort level of teacher technology use in our buildings and/or districts through on-going professional development and coaching. In addition to other teachers and ourselves, the students are extremely important stakeholders who will be impacted by our research. Our goal continues to be to implement technology to improve student achievement. Our data will identify who does this and how they do it, which will in turn, inform our own practices to help our students achieve more as 21st century learners.

References


Reading List

The AACTE Committee on Innovation and Technology. (2008). *Handbook of Technological Pedagogical Content Knowledge (Tpck) for Educators*. New York: Published by Routledge for the American Association of Colleges for Teacher Education.


