Developing a technology committee for the integration of technology at Edison Elementary in Waterloo, Iowa

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Abstract
Everywhere you look there are new technologies springing up! People are showing other people the new and latest electronic devices they have acquired to make their lives easier and get things done quicker. Most people would say that you must get on board with technology or get left behind.

Educators often say that when students start to fall behind it is very hard for them to get caught up without extra time and support. Most educators do not realize that they themselves are already falling behind. They are falling behind in the integration of technology into their classrooms. This is not totally the teachers fault, but a combination of different factors that will be discussed in this paper.
Developing a Technology Committee for the Integration of Technology at Edison Elementary in Waterloo, Iowa

A Research Paper Presented to Department of Educational Psychology and Foundations

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Chapter I

Introduction

Everywhere you look there are new technologies springing up! People are showing other people the new and latest electronic devices they have acquired to make their lives easier and get things done quicker.

The growing use of various technologies is prominent in today's society (Cooper, 2001, 75).

Most people would say that you must get on board with technology or get left behind.

Educators often say that when students start to fall behind it is very hard for them to get caught up without extra time and support. Most educators do not realize that they themselves are already falling behind. They are falling behind in the integration of technology into their classrooms. This is not totally the teachers fault, but a combination of different factors that will be discussed in this paper.

One reason that teachers are falling behind in technology integration is because they do not know how or where to start. Even though an elementary school has current equipment and internet access, relatively few teachers feel well prepared to integrate educational technology into instruction (Franklin, 2007).
How do teachers find out about technology integration strategies, or locate the perfect piece of software or hardware to use with their curriculum? This paper will address this issue at Edison Elementary in Waterloo, Iowa. The focus of this paper is to examine the usefulness of a technology committee within an elementary school in order to encourage successful integration of technology into the classrooms and curriculum. This paper will also illustrate what a technology committee at an elementary school should look like and explain its main functions and responsibilities.

Statement of the Problem

When I arrived at Edison Elementary School 5 years ago, as a new teacher, I didn’t know where to start. I didn’t know how I was going to teach my first lesson. Should I use an overhead projector, should I write on the board, or should I use an LCD projector to help me deliver my lessons?

I wanted to use a LCD projector, but there was one problem. LCD projectors did not come standard in most of the Edison’s classrooms. Neither did an up-to-date fully capable computer to run the LCD projector. I would have to say that I lucked out, because it only took me two days to find both a capable computer and a LCD projector. I finally found a LCD projector and computer in a computer lab underneath a sheet, not being use at
all. The principal told me they had been there for two years and had hardly been used. Technology items for a classroom are very expensive and teachers are unable to afford these items on their own. I knew any kind of technology could be useful for my classroom and I would find a way to use it with my students.

Now, 5 years have passed and the use of technology has started to grow at Edison Elementary School. A new superintendent has made it his goal to update the current technology in all school buildings in the Waterloo Community School District. Instead of the old overhead projectors or LDC projector now the district is installing new digital active boards that let the students interact with the lesson that is being presented to them. The students become part of the lessons instead of being observers of the lessons.

Although this is a great victory for the classrooms to have this updated technology it also leads to more problems because not all teachers are ready for this new technology, and not all teachers are using computers in the classroom.

**Significance of the problem**

The simple fact is that Edison Elementary School has technology to be used, and there were not many teachers using it in their classrooms. Edison’s computers and technology were just sitting in abandoned rooms, or sitting in classrooms not
being used, or they were just being used for teacher use and being isolated from the students. The students that walk through our classroom doors are more inclined to use technology in their everyday life than we as teachers are in our classrooms. It is important that schools offer the use of technology so that students will be prepared for further education, careers, and functioning in society (Cooper, 2001).

This research paper was written to find out why some teachers at Edison were not using computers and technology in their classrooms, and how this trend could be changed. My goal was to make Edison, its staff, and its students technologically savvy to prepare the students for a technological world they will face in their future careers.

Most beginning teachers use technology more than experienced teachers (Franklin, 2007). The beginning teachers just feel more comfortable with technology because they have grown up with it. They have received training on how to implement it and use it effectively in their classroom from their method classes at universities and colleges. So the leaders of technology integration could be the young and inexperienced teachers. The real problem that is facing Edison Elementary is how do we get those teachers who have not grown up with technology and who have not been trained at universities and colleges to integrate technology into their classrooms? I
want to create a culture at Edison, using a technology committee, where every teacher feels supported and enjoys integrating technology into their classrooms.

**Definitions**

**Computer application** - is a computer program that is run by the computer user.

**Computer hardware** - is the physical parts the make up a computer, such as keyboard, monitor, printer, and USB.

**Computer software** - is a computer program that can be installed on to a computer by the computer user. Once installed it becomes a computer application.

**Computer RAM** - is memory a computer program uses to function. The more RAM a computer has the faster it functions.

**Computer hard drive** - is a device a computer uses to store computer programs data.

**Computer network** - is a group of interconnected computers that share computer applications and data.

**Desktop computer** - is a computer that in stationary and remains on a desk for use. It is not easily move from place to place.

**Internet browser** - is a computer program that allows you to access the internet or World Wide Web.
**LCD Projector** - is a type of video projector for displaying video, images or computer data on a screen or other flat surface.

**MAC** - is a Macintosh computer made by Apple Inc.

**NCES** - National Center for Educational Statistics

**OS - operating system** - is the face of the computer and the system that make software and hardware work together. Examples are Windows XP, Windows Vista, and Linux.

**PC - personal computer** - is any general-purpose computer whose size, capabilities, and original sales price make it useful for individuals. For this paper PC is generalize term of a computer that supports Microsoft Windows XP for an operating system.

**Promethean active boards** - a board that is digital and is run by computer software and hardware. It allows students to interact with and manipulate objects and lesson presented on the board.

**Tech-savvy person or teacher** - is a person who is proficient with and easily understands technology devices and their capabilities within any kind of medium.

**Technology specialist** - a person who is trained and has expertise knowledge of technological devices and their capabilities. This person might not be about to use technology effectively with students.

**Webmaster** - is a person who creates/designs and maintains a website on the World Wide Web or internet.
Organization of the Paper

This paper is organized into five chapters. Chapter I presents the problem and its significance, and it also defines necessary terms the reader will need to be aware of to navigate this paper.

Chapter II presents the background of technology integration and discusses the major obstacles of technology integration at most schools. The purpose of chapter II is to show why technology integration is so important to a school, the teachers, and most importantly the students. Chapter II will also state everyday barriers that teachers face and the importance of attitudes of teacher’s and student’s when trying to successfully integrate technology into their classroom.

Chapter III identifies the sources and content of technology integration research. This chapter reveals strategies of how technology has been successfully and effectively integrated in different locations and for different situations. It also focuses on how integration of technology can effect student achievement.

Chapter IV explains why a technology committee should be formed. This chapter will discuss how the committee should be formed and what the responsibilities of this committee will be by using research findings and content as a foundation.
Evaluation tools for this committee, to see if the committee is providing the assistance it was created for will, also be presented in this chapter.

In chapter V the discussion will focus on the current technology situation at Edison Elementary and the future plans the district has for this school. After summarizing the findings from the research I will lay out a plan for the formation of a technology committee at Edison Elementary. A proposal will be set forth for Edison Elementary and the limitation of this proposal will be addressed. I will then conclude that a technology committee is very important at Edison Elementary if it is to successfully integrate technology into all of its classrooms.
Chapter II

Introduction

The main focus of this chapter is to uncover the obstacles and/or barriers of technology integration. This chapter will provide research data completed by Cheryl Franklin, Daylene Lauman, John Bauer and Jeffrey Kenton, and Rhonda Christensen. Past research shows that computer technology is very effective when providing more educational opportunities, but many teachers do not use technology to deliver instruction and do not integrate technology into their curriculum (Bauer & Kenton, 2005).

As a classroom tool, the computer has captured the attention of the education community. This versatile instrument can store, manipulate, and retrieve information, and it has the capability not only of engaging students in the instructional activities to increase their learning, but help them solve complex problems to enhance their cognitive skills. (Bauer & Kenton, 2005, 520)

Cheryl Franklin conducted a study of 100 graduates from a university that had a great success rate of preparing their future teachers to integrate technology in their classrooms. During this study Franklin identified certain factors that
influenced the use of computers in these classrooms, which will be explained later in this chapter.

Daylene Lauman is a teacher and curriculum coordinator of instructional technology at a junior high. She uncovered research about the relation between students who use a computer at home and how it affects students' ability to use technology effectively at school. She discussed other researchers' findings like Markham, Wright, and Giacquinta & Lane, who support her views.

John Bauer and Jeffery Kenton completed a research study on 30 teachers that were considered to be "tech-savvy" teachers by their administrators and used computer technology in their classrooms. These teachers came from 4 schools (2 elementary, 1 middle school, and 1 high school). Bauer and Kenton used a qualitative study to examine obstacles that these teachers had to overcome to integrate technology into their classrooms.

Rhonda Christensen looked at the psychological side of technology integration. She conducted a study of 6 teachers in suburban, public elementary school. A questionnaire survey was given to the teachers as they completed intense training on computer skills and technology integration. The survey was conducted to see if the teacher's attitudes improved as they received their training.
Student Use of Technology

Technology is vital in education today, and access to the internet can be found in nearly 100% of public elementary schools and 93% of elementary classrooms (Baker, 2007). With that kind of availability the learning opportunities are endless inside a classroom.

Computers have considerable potential for allowing students to discover or construct ideas from themselves (Franklin, 2007, 273).

The problem is, students do not have access to the internet in their classroom. Student use of technology may differ from school to school and from classroom to classroom, depending on the teachers at each school setting.

Most students not only have access to computers at school, but some also have access to computers at home. It is believed that 80% of families from the middle class have at least one computer in their home (Lauman, 2000). Students who have computers at home often do not need to learn basic computer skills, like turning on and off the computer, finding and opening files or applications, and other skills that are needed to operate a computer in an educational situation.

Students who have a computer at home do have advantages of bringing to learning situations that will set them apart from others who are less
fortunate, particularly if students with home computers have developed the problem-solving skills and ability to use computers in a productive manner (Lauman, 2000, 198).

Bauer & Kenton (2005) refer to this separation of students with computer basic skills and those without computer basic skills as a "digital divide" in a classroom. Most students use their home computers for recreation activities; such as playing games, surfing the web, or chatting, and rarely use it for educational purposes; such as homework - word processing, research, or slide show presentations.

Students use computers for many different reasons in an elementary classroom. Franklin (2007) tells us that most students will use computers in three primary ways:

1.) General software applications - word processors, spreadsheets, presentation/slide shows, internet or CD-Rom searches, and graphics software like Inspiration.

2.) Complex/multimedia and Communication tasks - e-mails, data analysis, and Hyperstudio.

3.) Practice/simulations - Games for skills, such as Math Blasters and Reader Rabbit.

Although students use the computers in different ways for each grade level, teachers generally used the computers in the same way no matter what grade level they teach (Franklin 2007).
Franklin (2007) noticed that grade level also made a difference in frequency of computer use and the higher the grade level, the more often students used computers in school. The primary (K-2) teachers used the computers more for centers with games and activities and upper elementary (3-5) teachers used the computers more for word processing and slide show presentations. The internet was used by all grade levels to a certain degree.

Lauman (2000) tells us that parents also have a very important role when it comes to technology integration and student computer use. Many parents do not realize that they are their child’s first teacher, and perhaps the most important teacher (Wright 1986). A parent’s influence with technology can have a great impact on their child’s academic performance at school. A parent can use the internet to communicate and collaborate effectively with their child’s teacher about expectations, learning goals, and accomplishments. Some teachers even have a classroom website setup for parents to access for additional support and resources.

Giacquinta and Lane (1990) found that students were not using the home computer for academic pursuits primarily because there was little influence or support from parents, and further more Dowes (1995)
found that many parents both male and female played games on their computers. (Lauman, 2000, 201)

Adults and parents in the household with a young child can model using the computers for productive purposes, and playing games as only a small part of computer use.

Markham (1995) suggests that parents do their homework by learning and playing with all forms of technology when possible. Examples of this would include learning with the child by spending time with him or her when using the computer, being an appropriate guide by talking with the child when using the computer, and by placing the computer in a family-type room rather than the child's bedroom. (Lauman, 2000, 201)

Lauman (2000) also offers a reality check for parents. She states just spending computer time online will not make their child a well rounded student who will grow into a successful adult.

**Barriers for Technology Integration**

As the above research show, technology must be used in education. One of the leading barriers of technology integration is teacher preparation. Many teachers do not feel they have enough knowledge to integrate technology effectively.
Even though an elementary school has current equipment and Internet access, relatively few teachers feel well prepared to integrate educational technology into the classroom instruction. The NCES (2000, 2002, 2005) reported that only about one-third of elementary teachers in the United States felt well prepared or very well prepared to use computers and the Internet for classroom instruction, less experienced teachers felt better prepared to use technology than their more experienced colleagues (Franklin, 2007, 268).

Research shows that there are 6 major barriers to the integration of technology into a classroom. I have seen these barriers first hand in my 5 years of teaching at Edison Elementary School.

**Barrier #1**

Technology is not integrated into our classrooms because teachers don't know where to start, and this is the first barrier to overcome. Only in the last 15 years have colleges and universities offered courses to pre-service teachers on how to integrate and implement technology into lessons and classrooms. If you are a teacher who never received that training, then it may be hard to figure out how to implement technology successfully and effectively. Many teachers do not know where to start and could really use a mentor when it comes
to this unknown aspect of teaching. This can result in teachers who have no desire to use technology in his/her classroom.

**Barrier #2**

A 2\textsuperscript{nd} barrier is the technology that schools have at their disposal is not being put to use or the current computers do not network or work well together. The technology at a school should interact with one another and be compatible with one another. This is very difficult to do when there are half PC’s and half Mac’s and different ages of operating systems.

**Barrier # 3**

Barrier 3 is many teachers don’t have easy access to technology and technology applications. It is too expensive for teacher to purchase technology on their own, and if a school does not acquire the technology that teachers want to use it is very difficult to use technology in the classroom.

Technology is expensive. One fully capable and up-to-date computer can cost teachers almost their entire month’s paycheck. Most public schools and their technology department are very under funded. Teachers must look in many different places to get their technology. They can use what little money they get from the school district, they could ask an organization to donate money for technology, or they could take “hand me downs” from universities and local businesses. This leads back to the
problem of having many different kinds and different ages of computers in schools so it gets harder to network them together.

Once they have acquired the hardware, they must then purchase the software to go with it and that is also costly. The equipment barriers involve hardware, software, and applications. Problems with hardware are having computers of different ages, different operating systems, different RAM or hard drive capabilities, different brands (Mac's to PC's).

Bauer & Kenton uncovered that problems with software fell into two categories, compatibility and availability. Some software was hard to find or it was too expensive to purchase. Some software did not work with certain computers and worked fine with others. Applications such as Internet browsers would connect to the internet were found on one computer and not on another, or would crash or disconnect at inopportune time. This would frustrate a teacher greatly and lower their confidence to want to do these types of activities with their students in the future.

**Barrier # 4**

Another difficulty technology integration faces is teachers not fully understanding the role computers should play in their classrooms. They often feel threatened with the possibility of being replaced by them (Bauer & Kenton 2005). Teachers might have computers in their classroom, but don't use them for
instructional activities with students. Instead they use them for administrative tasks or preparatory tasks; such as locating and gathering materials, communication (e-mails), posting information, but writing lessons, and not for teaching tools to help improve student learning. (Franklin, 2007).

The way teachers choose to use their computer can be very important. Teachers, who use the computers to check their e-mail, write lesson plans, or search the internet are not integrating technology into their classrooms. Teachers who let students play games on the computers for centers are also not integrating technology. They are using the computers for their own reasons or entertaining instruments instead of using them with the curriculum to enhance learning opportunities for students.

**Barrier #5**

Teachers who do not want to change their teaching style because the integration of technology is not a part of their current way of teaching or they do not have enough time to make an attempt to integrate is another barrier. When Franklin, Bauer, & Kenton (2005) asked teachers what their greatest barriers were in integrating technology into their classrooms, the teachers indicated that time and equipment were among the greatest barriers to overcome. This could include time for planning lessons, time it took to do a lesson involving
instructional activities with students. Instead they use them for administrative tasks or preparatory tasks; such as locating and gathering materials, communication (e-mails), posting information, but writing lessons, and not for teaching tools to help improve student learning. (Franklin, 2007).

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technology, scheduling time to get into a computer lab, and time to just learn how to use a computer as a learning tool; either through workshops, professional development, or college courses. This also includes the time it takes to teach other parts of the curriculum which do not involve technology and preparing students to take high stakes tests.

Carvin (2000, as cited in Staples et al) suggests that professional development for technology integrations should be close to 30%, but unfortunately was as low as 3% in some districts. Without time and monetary resources devoted to increasing staff expertise in technology use, effective integration was a struggle. (p. 286)

Two statements commonly given by teachers at Edison Elementary when asked about integrating technology into their classroom, were "Who has the time to do that," and "I got by this many years without computers."

**Barrier #6**

Franklin, Lauman, Bauer, & Kenton (2005) tell us other barriers that teachers face when trying to integrate technology into the classroom are skill levels and class sizes. Skill level can be broken into two categories, student skills and teacher skills. With class sizes of 30 or more, varying degrees
of student skill levels make it difficult to use computers with the students.

If the teachers were to add these basic computer skills components to their every day lessons, this would leave even less time for completing other curriculum required subject areas. Also, if a class size is too large it is hard to keep an eye on or help students who needed assistance, or to even have enough computers to go around. Even if a school has a computer lab, the labs only had 25 - 30 computers available for students to use, so it can only be used by one class at a time.

One concern to emerge from their study is the issue of student computer skill level; this is, such items as keyboarding and negotiating the menu systems (Bauer & Kenton, 2005, 537).

Teachers' and Students' Attitudes

We are all entitled to our opinions and most of the time our attitudes will reflect the opinions we have about a certain situation. Teachers and students can have very different attitudes about the integration of technology in a classroom, but as Christensen tells us, those attitudes will either support technology integration or become another barrier to it. Christensen (2002) supports the theory that using computers can be stressful and that effective integration of technology into a
classroom can depend solely on the positive attitudes of the teacher and the students.

Positive teacher attitudes towards computers are widely recognized as a necessary condition for effective use of technology in the classroom. (Christensen, 2002, 411)

When teachers have more experience teaching in the classroom they become confident in their ability to teach the students in their class. This correlates directly with a positive attitude for classroom teaching. The same is true with technology integration. The more experience a teacher has using different technologies will positively correlate to a teacher having a positive attitude towards technology integration into the classroom. When teachers are familiar with technology, their anxieties and fears tend to decrease and their confidence will increase (Christensen, 2002).

Computer anxiety is one of the major reasons why teachers resist the use of technology in their classrooms. Research shows that the only way to reduce this computer anxiety is for teachers to increase their computer experiences (Christen, 2002). Computer anxiety will not decrease by a teacher just jumping onto a computer. The teachers have to be learning a basic skill or have direct instruction for 30 hours or more just to start reducing computer anxiety (Christensen, 2002). Also, a
teacher who has professional development on technology skills and strategies will have less anxiety than a teacher who was not trained in using technology in the classroom.

Teachers should also try to use technology in their everyday life. This will increase the practice time that teachers need to feel comfortable with the technology they will be using in their classrooms. When teachers have less anxiety and more confidence and experience using technology, their attitudes toward technology integration becomes more positive.

After her research study, Christensen (2002) concluded that when teachers had a positive attitude towards technology the students had a more positive attitude toward technology. This positive attitude from the students eventually turned into a perception for the importance of computers in their lives. When students felt like technology was important in their classrooms, from the positive attitudes of their teachers, they started to realize technology was important in their everyday life, which is a realization that students need to have to be successful in today's job market.

An important factor affecting the quality of a child's experience with computers in school may be the teacher's attitude toward computers. (Christensen, 2002, 412)
Christensen (2002) also found that there was reverse effects of the importance of computers. When the students had a greater sense for computer importance this created more computer anxiety for the teacher. This balance of computer importance from the students and computer anxiety by the teachers can only be solved by schools continuing to fund professional development for teacher to integrate technology into their classrooms (Christensen, 2002).

Bauer & Kenton (2005) assure us that even with all the barriers to integrating technology effectively and their lack of confidence using technology in their classrooms, teachers have a positive attitude toward technology integration. The reason for this positive attitude is that teachers understand the instructional implications of using the large amounts of resources found on the internet.

Summary

As the research above shows, there are many different reasons technology is not being integrated into schools and classrooms. The obstacles and barriers come in many different shapes and forms. It is important for schools and teachers to know about these obstacles and barriers so they can plan to overcome them.

With all of that said teachers generally do have a positive attitude about having technology in the
classroom because they can appreciate all the limitless possibilities that websites and creative software bring to their classroom. It is much easier to search for fresh ideas by surfing the Web than by poring over text based resources. (Bauer & Kenton, 2005, 521)

Franklin identified six factors that stand in the way of teachers integrating technology into their classrooms. They are training access, availability, incentives, external constraints, and philosophy and preparation. She also found leadership and personal support to be an important factor.

Through her findings, Franklin also found that a teacher's philosophy and preparation were the most significant factor influencing their use of computers and technology in the classrooms. If a teacher's philosophy and preparation are geared towards technology integration, then most teachers can overcome the other factors. These other factors will be discussed in chapters 3, 4, and 5. Franklin's main concern was that colleges and universities are not doing a good job of training our future teachers to use and integrate technology into the classroom.

Lauman shows us that some authors suggest that just the mere presence of a computer in the home contributed to a favorable attitude (philosophy) towards computers (Lauman 2000).
She also concluded that most students who had a computer at home and had parents who regulated that computer to be used in a meaningful way had a positive affect on how a student used technology at school.

Bauer’s and Kenton’s study on technology integration, and all the obstacles involved with it, showed that schools have not yet achieved true technology integration. Bauer and Kenton do offer implications for stakeholders, which will discuss in chapter 5. Their research will help teachers and schools anticipate the obstacles to come and plan for them.

Christensen unlocked some of the hidden obstacles teachers faced when trying to implement technology into their classrooms. This might be considered the psychological side of technology integration. School districts must remember that this is probably the most important obstacle a teacher will face when using technology in the classroom. I will discuss how Edison can overcome this psychological obstacle with the implementation of good professional development and a strong support system for the teachers.
Chapter III

Introduction

The information that was presented in Chapter II addressed the difficulties in integrating technology into a classroom or school successfully. This chapter will focus on schools' and teachers' strategies used to overcome the barriers and obstacles to successfully integrate technology into schools and classrooms. This chapter will present research from Amy Staples, Heidi Stevenson, and Sandra Cooper.

Amy Staples used a qualitative research study to look at three urban elementary schools. During this study Staples focused on the different aspects of these three school cultures that might increase the use of technology at these schools. She also studied the partnerships that these three schools shared with a local university, and how that partnership helped support technology integration into these schools.

Heidi Stevenson used an exploratory study to understand the use of informal teacher collaboration regarding technology use and integration into two different schools. After analyzing the data from her study, Stevenson found that five major assertions emerged in the relationship of teachers' informal collaboration regarding technology integration.
Sandra Cooper completed a study at a university that looked at how the formation of a technology committee could improve technology integration for future teachers. This technology committee was made up of college students in the teaching program at this university. Her study analyzed the student's computer knowledge and their confidence in using a computer with their instruction.

**School Cultures that Supports Technology Integration**

Technology needs to be supported from the top downward. This means that the first person to get on board with technology integration has to be the leader of the school. In most cases, this could be the superintendent, but in the cases of urban schools, like Edison Elementary, it has to be the principal. In most cases the principal is the key to the success of technology integration.

One of the most commonly held beliefs about implementing technology across a school is that the commitment and leadership of the principal is essential to reaching this goal. (Staples, 2005, 301) Staples (2005) concluded from her study that having a positive attitude about technology integration, supporting technology integration with professional development, and having funding to fully support technology integration were also key to the success of integrating technology into a school and a classroom.
Staples (2005) discussed 3 other important areas that schools should consider when they are integrating technology. These 3 areas act as a kind of scaffolding, work together and overlap one another to aid in the integration of technology. These 3 scaffolds of successful technology integration:

1. alignment with the school’s curriculum/mission
2. teacher leadership
3. public/private roles for technology recognition

Alignment with the school’s curriculum/mission

There are many forms of technologies that can be implemented into a school or classroom. There are many companies that make and/or distribute these different forms of technologies which teachers can use in their classrooms. All of these companies want a piece of the funding schools are going to spend on integrating technologies. They will all make great cases that their hardware and software is the best or easiest to use and that it will help to improve student learning.

According to Staples’ (2005) research, the first important job of the technology leaders is to acquire technology resources and support that align and enhance the school’s current curriculum.

Principals themselves do not at first need to be technology experts, but they do need to understand the
alignment issue and the importance of the curriculum connection. (Staples, 2005, 303)

Technology leaders need to resist the temptation to purchase flashy, exciting, and fun technology resources and focus on funding for just a few resources that will directly align and work with the current curriculum to reinforce student learning (Staples 2005).

When technology integration and curriculum are aligned they become one, instead of two separate entities working against one another. We need to revisit that old school debate "more is not necessarily better." The schools that did not align their technology resources with the curriculum may have had more kinds of technology resources, but they did not see those resources improve student learning. This was simply because the teachers did not have enough time to learn to use them effectively with students in their classrooms.

**Teacher Leadership**

Principal are the leaders of everything that goes on in an urban elementary school. The principal can not be expected to be the expert in every field. If a principal is experienced and knowledgeable in technology, then that is great. In most situations the principal can not be expected to be the school leader and the technology leader, too. This is where teacher leadership comes into play.
According to Staples (2005), it is important that the principal identify those teachers or staff members who are considered tech-savvy and who have good leadership skills. The two should go hand in hand. The technology integration system should take on a pyramid looking shape, with the principal at the top, the technology leaders on the next tier, the teacher leaders on the third tier, the rest of the staff, and finally the students on the bottom. With that said the principal does not have to make or approve every decisions regarding technology at their school.

The principal trusted the teachers to learn how to use technology, but she prescribed the conditions under which it had to be used. She empowered the technology project staff and held a very high degree of respect for their expertise. (Staples, 2005, 303)

The principal should trust the leaders of technology to make smart, wise, and fair decisions that are in line with the principal’s views of how technology resources should be used in the school.

One last aspect of technology integration, as it is related to teacher leadership, is the art of communication and collaboration within the technology pyramid system which I will address later on in this chapter.
Student Roles in Technology

In the last section I discussed the technology pyramid system as a top downward system, and I placed the students at the bottom on the pyramid. This placement does not mean students are less important than any other tier on the pyramid. The ultimate goal of most schools is to improve student learning, and the technology integration system is put in place to ensure those students are getting a well-rounded education that will prepare them for future career paths, and job markets.

Staples (2005) discovered that when schools would recognize the student’s learning and work presentations using technology resources it reflected positively on the teachers of those students. This would in turn reflect positively on the school as having a great technology program, which would in turn reflect positively on the teacher leaders, the technology leaders, and the principal of the school.

Everyone knew that technology was being used in new and exciting ways and this accomplishment was being celebrated publicly. The recognition was showered on the students rather than the teachers. In many ways, the students were carrying the technology ball, so to speak, along with the technology specialist. (Staples, 2005, 305)
These recognitions for students do not have to be flashy or extravagant, but they need to be done on a day to day basis to let the students demonstrate their level of understanding and achievement (Staples 2005).

Without student learning happening when using technology, the technology pyramid has no foundation, and as the years move along, that foundation will crumble to the ground, bringing the technology program down with it. The schools that recognize the accomplishments of the teachers and the leaders, instead of the students, send a message to the students that technology was not a high priority at that school. Furthermore, without the empowerment of the students and the teachers, most technology programs will not stay at a high level for long periods of time.

Collaboration Regarding Technology

People enjoy talking to one another, and they enjoy sharing ideas, thoughts, and memories with other people. It is just natural for human beings to communicate with one another on a daily basis, and this communication carries over into the workplace. Stevenson discovered that these lanes of communication can be a very powerful tool when trying to learn something new, such as understanding how to use technology in the classroom effectively.

Stevenson (2005) confirmed, after interviewing and questioning teachers trying to implement technology into their
classrooms, that informal collaboration was even a more powerful tool for learning technology skills than professional development. Five major assertions emerged from the data of her study regarding technology integration:

First, teachers value informal collaboration as a more effective method than even professional development. When teachers talk to one another they can learn from one another and share ideas with each other. Teachers go into a professional development session to learn a certain set of skills or subject content. Stevenson (2005) found that the teachers thought informal collaboration regarding technology use was even a better way to learn a set of skills. The reason for this feeling was the teachers got immediate assistance with a specific subject, skill, or problem they were experiencing, and it was communicated through the eyes of another educator like themselves (Stevenson, 2005).

Teachers also really liked the idea of sharing their ideas with other teachers. This helped to keep the technology activities and projects fresh and up to date, and this was also done by brainstorming new ideas with one another to use with the current schools' curriculum (Stevenson, 2005). When teachers hear about a new and exciting activity happening with technology in another classroom, those teachers might be more confident to try it in their own classrooms.
Informal collaboration allows teachers to have the opportunity to explore their own thoughts and interactions with students, curriculum, and instruction which significantly contribute to teachers’ success. (Stevenson, 2005, 133)

Second, informal collaboration often takes place spontaneously and teachers do not consciously separate it from daily conversations. Teachers talk to one another every day about the different things going on in their classrooms, and do not even realize they are talking about work. Teachers talk about things they have in common, and technology in the classroom is one thing all of these teachers had in common. They found that technology used in the classroom would work itself into the conversation at any moment. The teachers did not even realize they were collaborating informally, but would take these opportunities to address problems they were have or to just trade stories or information they had regarding technology use (Stevenson, 2005).

Third, informal collaboration is influenced by time and the perceived potential of obtaining information specific to their needs. Time is always an issue when it comes to a teacher’s life. They never have enough time to get everything done that is asked of them, such as standardized tests, curriculum, and behavior issues; and professional development just takes even
more time from their already packed schedules. Integrating technology into their classrooms is just another use of their time, and it takes a great deal of time to integrate technology effectively.

Stevenson (2005) found that informal collaboration was the most effective use of time for teacher’s integrating technology into their classrooms.

Hargreaves (1992) reported that despite the constraints on teachers’ time, they still find a way to collaborate. The time constrains may just contribute to the importance of making informal collaboration time efficient. (Stevenson, 2005, 136)

Teachers will seek out an individual whom they perceive will be able to answer or assist them with their technology needs. They will do this instead of trying to flip through a book or call tech support.

Fourth, teacher’s specific needs generally focus around the broad areas of curriculum ideas and how-to information. As mentioned in the previous section, curriculum and technology need to be one, and not two separate entities. Through her study and data analysis, Stevenson (2005) found that teachers would discuss two main topics through their informal conversation about technology use.
The first discussion topic of informal collaboration regarding technology was implementation of technology into the current curriculum at their school. This topic drove most of the informal collaboration time teachers used talking about curriculum. It is the responsibility of the teacher to teach the curriculum of the school district. According to Stevenson (2005), the conversations these teachers had about technology and curriculum were on technology resources, and delivery methods of curriculum using technology. Teachers also discussed how to meet the direct needs of their students using technology.

The second main discussion topic of informal collaboration regarding technology was how-to information when they were experiencing difficulties with the use of technology in their classrooms (Stevenson, 2005). This could include learning and using new programs or applications; dealing with hardware and software problems; using a scanner, printer, and digital camera; or just problem solving a difficult situation.

Troubleshooting is a component of how-to information with which teachers frequently need assistance. How-to information provides teachers with the resources they need to make their curriculum ideas and instruction possible. (Stevenson, 2005, 138)

Lastly, teachers seek out different types of individuals depending upon which area they need assistance in. Stevenson
(2005) realized that there are three different types of people teachers seek out when they are trying to obtain curriculum ideas or how-to information regarding technology use in the classroom. The first type of person is a teaching colleague who understands the curriculum and can offer some curriculum ideas to use with technology in the classroom. The second type of person is a technology specialist who has a great understanding of technology. A third type of person is one who has the best of both worlds, and they are called tech-savvy teachers.

Teachers have a tendency to collaborate informally about curriculum with teachers that teach the same grade level as them (Stevenson, 2005). They do this because those teachers are working through the same curriculum and can offer ideas and strategies regarding technology use with the current curriculum to a teacher in need of assistance.

Teachers found their most productive collaborative experiences occurred when they worked with other experienced teachers at the same grade level and with whom they had long term relationships. (Stevenson, 2005, 139)

When teachers have how-to questions or need help troubleshooting a problem using technology, they have a tendency to collaborate informally with a teacher who is considered technology savvy (Stevenson, 2005). These types of tech-savvy
teachers can offer answers to both how-to questions and curriculum questions because they have successfully integrated technology into the curriculum for their classroom students. Also, these types of tech-savvy teachers are easier for other teachers to approach about technology questions and seem more willing to help a fellow colleague.

Technology specialists can sometime be hard to get a hold of and do not always offer assistance in a timely manner. Teachers will consult technology specialists about one time per week throughout the school year. When teachers do have these conversations with technology specialists it will give them the ability and confidence to integrate technology successfully in their classrooms (Stevenson, 2005).

Organizing Committees to Improve Technology Integration

As mentioned earlier in this paper, the younger teachers are often leading the charge when it comes to technology integration into the classroom. The main reason for this is these younger teachers experienced technology integration in college when they were preparing to become teachers.

Teacher educators will need to expose pre-service and in-service teachers to the use of a variety of technologies to effectively prepare them for educating today's children. (Cooper, 2001, 75)
Most universities now have a technology integration methods class that is required of pre-service teachers before they graduate from the college of education and become teachers at elementary schools.

During these college classes the student technology committee members were exposed to many types of technologies that teachers could use in the classroom. They had plenty of time to work with each application and were given support when working with these applications by university staff or technology experts. Cooper (2001) discovered that when these committee members gained valuable experience and knowledge with these technologies their confidence seemed to grow. Then these committee members teamed up with other students in the university teaching program, in groups of two or three, to work with them using technologies they might use as teachers.

As a result of this study Cooper (2001) found that many students preferred to work in groups, with a technology committee member or with other peers, when learning a new technological application. They seemed to feel less intimidated and it was easier for them to ask questions of their peers than it was to ask an expert or university faculty member, in fear of looking stupid or dumb (Cooper, 2001). The students would also feel more confident asking an expert for help when they were
experiencing technical issues out of their control, if they would approach the expert as a group, instead of an individual.

The results showed that because of the technology committee, these future teachers began to gain confidence, understanding, and use technology when they created lessons and worked with elementary students. They also started to create presentations for assignment they completed in other college classes, not related to teaching. Students even started to call one another when they were working on assignments, class projects, or lessons to ask a question needed assistance, or to just schedule a time to work with one another (Cooper, 2001).

Cooper's (2001) findings show that organizing a committee to help teachers experience and use technology effectively in the classroom can help relieve fears and concerns that teachers are having about integrating technology into their instruction. As shown earlier in chapter II, when computer knowledge goes up, so does confidence using technology effectively.

Copper (2001) concluded that when teachers relieve fears and concerns, they gain confidence using computers, and they are more likely to take more risks in learning new technological applications that they might encounter during their teaching career.

If students are comfortable in using computers and have confidence in themselves to try computer
applications, they can adapt to the various situations that would arise. (Cooper, 2001, 78)

Confidence is important because each school will have different levels of technology available to the teachers and teachers need to be prepared to use any kind of technology effectively in their classroom or with their instruction.

Teachers who attempt technology integration without any support can become overwhelmed. By implementing the strategy of a technology committee, teachers can experience a wide array of classroom technologies without losing precious time. They can become comfortable using classroom technologies with their curriculum, in their instruction, and with their students.

Summary

The research presented in this chapter is very different from the research that was presented in chapter II. This research shows that technology can be successfully integrated into a classroom or a school if a vision is set and the proper steps are taken to achieve that vision. This chapter is very important to the successful integration of technology at any school.

From all the research presented in this chapter, the one common thread that can be found is teachers should not integrate technology by themselves. Even the most tech-savvy person can
always improve their technology implementation through communication with others.

Staples unlocked the first three keys to successfully integrating technology into a school or classroom. These three keys are: technology needs to be aligned with the school’s curriculum and mission statement; leadership roles must be taken by many different stakeholders; and students must be the foundation of technology integration. Their learning is the ultimate goal of technology integration.

Stevenson stated five major assertions about teachers’ collaborating with one another informally about technology integration. She found that informal collaboration regarding technology integration can be more effective than professional development, because it happens spontaneously and without conscious thought. She also found collaboration is influenced by time and needs, that it focuses on curriculum ideas and how-to information, and that certain individuals are called upon depending on the needs of the teacher.

Cooper brought Staples’ and Stevenson’s research together, and uncovered the fact that teachers enjoyed working with other peers who were taking on a leadership role with technology integration. She also found that the formation of a technology committee could help teachers implement technology in the classroom, because it supports those teachers who are
implementing technology, and helps relieve fears that most teachers have when trying to implement technology. Relieving fears and gaining confidence are also directly related to having a positive attitude towards technology integrations into schools and classrooms.
Chapter IV

Why create a Technology Committee?

Bauer & Kenton tell us through their study results that teachers who have low confidence and skill levels in integrating technology were among the ones to have the strongest desire to improve their technology situation for their classrooms. Some teachers tend to have more confidence than skills when it comes to technology integration and confidence is a very important factor in learning to teach with computer technology (Bauer & Kenton 532).

Clearly, knowing how to use computers for one’s personal use is a necessary foundation to the development of electronic pedagogical content knowledge and skill. On the other hand, knowing how to use computers for one’s personal use is not synonymous with knowing how to teach with technology. (Franklin, 2007, 284)

Pedagogical use of computers is different from other uses of computers (making lessons, receiving e-mails), and teachers must learn to develop and implement curriculum plans that include methods and strategies for integrating technology in various subject matter areas to maximize student learning and to support the diverse needs of all learners (Franklin, 2005). Learning
how to plan and implement these developmentally appropriate learning opportunities is not easy, but should be an integral part of teaching the students of today’s society.

So what is the answer to knocking down these great barriers of technology integration at elementary schools? I believe that the formation of a technology committee will help and assist teachers in taking their first steps towards technology integration in their classrooms. There should be a team effort in implanting or obtaining technology. Everyone should be on the same page with technology instead of having five or six lone rangers implementing technology in different or however they see fit.

Research shows that all the pieces have to fit together to make technology integrating a success, and when one or more pieces are missing, it can lead to failure. With a technology committee, the lines of communication are open, support can be given, and a vision and a plan can be achieved. Skills and confidence can lead to positive attitudes, barriers and obstacles can be overcome, and most importantly student learning can improve. A technology committee can also open the doors to new research to find new strategies and skills that can be used in the schools.

Compatibility, communication, confidence, and culture are the four most important keys to implementing technology.
effectively. A technology committee can offer all 4 of these components for teachers and schools trying to integrate technology successfully.

Technology Committee: Formation

Before we talk about the four C’s (Compatibility, communication, confidence, & culture) of technology integrations and how a technology committee will meet these needs, we need to first properly form a committee that will be successful and provide good leadership for technology integrations. Creating a school culture that is excited and enjoys technology integration is very important to a school’s success, and at the same time can be very difficult to do. It is important to form a technology committee with people who have a common goal in mind.

There are many things to consider when forming a technology committee. The first thing to consider is why the committee is being formed in the first place, which has already been discussed in this chapter. The other important aspects to consider are leadership, personnel or members, and meeting times and length of those meetings. This discussion will turn to the leadership and personnel needs and what the meeting should look like to form a successful technology committee.

Committee Leadership and Members

Technology committee members should be asked to volunteer for this committee. You want committee members who are
interested in what the committee is doing and want to be apart of it. Most schools require teachers and staff to join at least one or two committees, so it would not be an extra obligation and it would be done on company time. A person on the technology committee should not be required to have advanced technological skills to take a leadership role. Any person should feel welcome to join the committee, and encouraged to learn a great deal about technology they otherwise didn’t know.

The shape of the technology committee hierarchy should look like a pyramid. As the Staples (2005) research showed in chapter III the number one person that needs to be on board is the leader of the school. Whether that is the superintendent or the principal, he/she is at the top of the pyramid. The leader is also the one who will reap the rewards if the technology integration is a success and will take responsibility if it is a failure. Also, if the technology committee does not have the support of the principal, a poor and confusing school culture will be created and it will ultimately fail.

The second tier of the technology pyramid, are people who might not necessarily work at the school all the time. They are the technology leaders. These people might come to the school to set up computers and networks and help teachers troubleshoot problems they might be having with technology, which cannot be fixed by the committee. In bigger, urban, districts, the
technology leaders might have offices in a central location and may work at 3 or 5 other schools in one week. These people might not be apart of the committee at all times. They are the hardware technicians that keep equipment running, but are still very important because if the technology does not run right, it is very difficult to use in the classroom.

Inside of the second tier of committee members is a very important person who mandates and regulates all of the school district's technology components. This person will be in charge of letting the committee know what can and should be done with the current technology, and what is not allowed by the school district when using technology in the classrooms. They also make sure the vision and goals that the district has set for technology integration are being achieved. This person will be in charge of types of computers used at a school, hardware and software regulations, internet regulations and virus control, and protective passwords. Some teachers come to dislike this person. We must realize they are helping to keep our technology safe for everyone to use.

The third tier of the technology committee pyramid hierarchy is the teacher leaders. The teacher leaders are very important to the success of the committee. With the principal and the technology leaders' regulations and vision, they must work to create a vision of technology integration at their
school. These leaders help move the school towards the technology vision and accomplish the goals that have been set by these leaders to make the vision a reality. This is where the breakdown often occurs. A school can have a vision of what it wants to look like using technology in its classrooms, but often no steps are taken or no goals are set to make the vision a reality.

The fourth tier of the technology committee is the rest of the committee members. Most of them should be teachers. Some of them could be para professionals, secretaries, other staff members, and parents (if the committee so chooses to have parents on the committee). These committee members are there to help the committee leaders set and achieve their goals. They are there to offer ideas, feedback, and criticisms. They are there to collaborate with other teachers and staff members to help and inform them of what is currently happening with technology integration. They offer the support that teachers will need to integrate technology effectively and successfully.

The fifth tier is not part of the technology committee directly and might not come to all the meetings but it is the most important part. This tier is the remaining teachers and the staff of the school, and the students that attend the school every day. These people act as the foundation of the technology committee pyramid. Without the support of this tier, the whole
pyramid crumbles. The committee members must create a technology culture that is inviting and improves student learning through the integration of technology. It would be great to invite members of the fifth tier to committee meetings to share their thoughts, ideas, and experiences with the committee.

**Technology Committee Meetings**

Meetings are important at a school and there is hardly a week that goes by where teachers and staff don't have to attend some kind of meeting. Meetings are useful tools for communicating information. Sometimes meetings can be a bit overwhelming for teachers. Teachers already say they do not have enough time in the day and meetings take away more time from the teacher. Leaders must remember to keep this factor of time in mind when planning technology committee meetings.

Meetings for a technology committee do not have to be everyday. They also should not be once a month. A happy medium should be found for successful technology integration that takes continued work and communication. I would recommend having one small 15 minute meeting every week with just the committee members. I would also recommend once a month having a 60 - 90 minute meeting for all committee members and any faculty, students, or parents that would like to come and participate.
Finding the days to have these meetings can be very difficult. For the 15 minute meetings you will need to find a day and a time that works for everyone. I would try to pick a day that is more towards the middle of the week, such as a Tuesday, Wednesday, or a Thursday. It does not matter if the meetings are in the morning before school, or after the students have left. I recommend these days because Mondays are when teachers are getting everything ready for the up coming week. Meetings on Friday are usually unproductive because teachers are thinking about the weekend.

The 60 - 90 minute meeting can be on any day of the month, and this meeting should take place after school hours. It should be at the same time, place, and day every month so other faculty, students, and parents can attend this meeting. This meeting should help open the line of communication between teachers, parents, and students regarding technology integration at the school.

The last item to discuss about technology committee meetings is how they should be run. A critical component of these meetings is an agenda. This will keep the meeting moving and will make sure everything is discussed that needs to be discussed for that meeting. The facilitator of the committee should make sure that these agendas are created and distributed
to the committee members at least one day in advance of the technology committee meeting.

The facilitator does not necessarily have to be the principal. In all reality it will most likely be one of the teacher leaders because the principal already has many different things to take care of in a normal day. Staples (2005) reminds us that a principal will choose facilitators that they trust to carry out their agendas of how technology is to be used at their schools. The situation will empower and support the decisions and recommendations the technology committee. There also needs to be a secretary to take minutes at the meeting and make sure those minutes are accessible to all staff members. There needs to be a time keeper to make sure the meetings are running on time and do not get too long. Finally, there needs to be a treasurer if the technology committee has access to funding or money.

**Technology Committee: Functions & Responsibility**

The main function of a technology committee is to break down the barriers and obstacles that get in the way of teachers integrating technology effectively into the curriculum and their classrooms. Other functions of this committee are to make it easier for teachers to integrate technology into the curriculum and their classrooms through support and collaboration, funding, and skill development.
The main responsibility of a technology committee is to make sure that technology is being implemented into the curriculum and the classrooms to improve student learning. Also, it is the responsibility of the committee to make sure the integration of technology is in line with the school district's regulations and vision and the technology committee's regulations and visions. Any technology committee must set goals and move toward their goals to achieve the vision that has been set for their school. Lack of a shared vision between the district, the technology committee, and all the other stakeholders can be very problematic, and without consensus on the key issues technology integration can become stagnant and a waste of time (Romeo, 2002).

When asking teachers, other staff members, and parents to join the committee, it is important to make them aware of all the things that are involved in being a member of the technology committee. Talk to them about the functions and responsibilities of the committee. Also discuss the times, lengths, frequency, and setup of the meetings for the committee. This way they know what they are signing up for and can come ready to help create a culture that accepts and enjoys technology integration.

Early in this section I stated that the reason for having a technology committee was to accomplish the four C's of
technology integration. These were compatibility, communication, confidence, and culture. In this section I will discuss the functions and responsibilities' of a technology committee and how it can make all technology at a school compatible with one another, open the lines of communication between teachers and students when implementing technology, and create positive attitudes about technology integration that can help teachers gain confidence when using technology. Finally, putting all the previous three C's together will create the fourth C; which is to create a school culture that enjoys and accepts technology integration as a positive experience, and focuses on the importance of technology to help improve student learning.

Compatibility

One of the barriers discussed in chapter II was the fact that not all computer and technological devices work together. The function of a technology committee is to use the technology leaders and experts to make all computers, technological devices and the school's network compatible and run smoothly with one another. This can be done by using one kind of computer, such as PCs or Macs, or by using the same kind of operating system, such as Windows XP or Linux. Most importantly, the computers and technological devices should be about the same age, so
computers and their operating systems can work together, such as Windows XP or Windows Vista.

A whole other section of technology compatibility in a school is the issue of hardware and software. Hardware and software can usually be used in either PCs or Macs, but most hardware has to be installed by a technology specialist or a very tech-savvy person. Software on the other hand can be installed by most computer users very easily. It is the job of the technology committee to make sure that the hardware, software, and technological devices installed into and used with computers are done by technology leaders, and that they are compatible with all the other computers and technological devices currently at that school.

The reason why it is so important for the technology committee to oversee this compatibility progress is to make things easier for teachers to integrate technology effectively and successfully. Teachers can then get the same support, have the same conversations, and build the same skills when every teacher is using the same hardware, software, and technological device. It is also important to make sure all the hardware, software, and devices are approved by the districts regulations and guidelines.
Communication & Confidence

Have you ever looked at a home improvement project that you didn’t want to pay someone to do because you thought you could do it yourself? Then, you never get it finished because you start doing it, but get to a point where you don’t know what to do next. Then you have to call a professional that does know what to do next. This can paralyze you to never do another project on your own again and instead calling the professionals to do it for you.

This is exactly what can happen when teachers try to integrate technology into the classroom. They are unsure how to do it by themselves and if they get stuck, they have no one to help them through it. So inevitably they leave technology integration into the classroom to the so called professionals (tech-savvy teachers), who understand it and have used it, and in some cases have been trained to use it in college. There is no Home Depot (do it yourself store) for technology integration, but with the help of a technology committee we can create a Home Depot for technology integration.

The function of opening the lines of communication and the responsibility of creating a support system for teachers who are trying to implement technology into their classroom is probably the most important duty a technology committee has. Franklin’s research (2007) stated in Chapter II showed the leading barrier
to successful technology integration was that most teacher did not feel they had enough knowledge to integrate technology. So with the use of a technology committee, teachers can collaborate with one another and with technology experts to create a support system. Through professional development teachers can gain more knowledge and skills on how to use technology effectively.

"Professional development" are two words that teachers hear a lot. These two words mean many different things to many different people. To some it means a new and exciting learning opportunity and to others it means another thing they have to learn that they will never use or will be changed in the years to come. Professional development for technology integration can also have many different meanings, but the one constant is technology is not going away. This is why professional development for technology integration has to be meaningful and be directly related to student learning. Teachers need to understand the reason why the professional development is important to them and for their students.

Technology committees will be in charge of setting up and facilitating professional development for the teachers at their school.

Teachers are the main gate keeper in allowing educational innovations to diffuse into the classroom. They are one of the key factors for effecting an
integration of computers in the school curriculum is adequate training of teachers in handling and managing these new tools in their daily practice. (Christensen, 2002, 412)

Some of the professional development opportunities could be summer in-services, workshops, seminars, college credit courses, and even collaboration sessions to work with others on technology integration. The skill development opportunities can be offered in the mornings, afternoons, and even on weekends. Staples' (2005) study indicated some of the skill development sessions were even attended by students.

Through technology committee meetings, the teachers and committee members can share ideas and projects, and give feedback to what is working well and what is not working well. The technology committee can set up times when technology leaders and tech-savvy teachers can be accessed to help teachers who need assistance in a timely manner. The committee can set up professional development opportunities for the teachers. Stevenson (2005) indicated that some teachers thought collaboration was even more effective than professional development.

When we open the lines of communication, teachers can more easily understand what is being asked of them in integrating technology. They can ask questions and share thoughts and ideas
with others who might be having the same problems they are having. They don't have to feel like they are going at it alone. They might even be more willing to take some risks and try some new things with technology in their classroom. Cooper (2001), as reported in Chapter III, revealed that teachers preferred to work in groups when working with technology applications. Teachers want to feel like they have someone on their side and they are standing together instead of alone.

Cooper and Christenson both found that when teachers understand technology integration better, because of communication and support given to them, it starts to relieve fears and concerns about technology integration. They then start to form a positive attitude about technology. This positive attitude then turns into confidence in using technology. When teachers have confidence, they are more willing to take risks and try to learn about more technologies they could use in their classrooms. They strive to become tech-savvy teachers and they can help or support other teachers who need it.

Beginners or newcomers move from the periphery of a community of practice to its center, and as they become more active and engaged within the culture they assume the role of expert. (Mills, 2003, 384)
The confidence cycle of communication, support, skills, and a positive attitude towards technology integration then starts to create a school culture that is excited about technology integration. It also creates a feeling that technology is important in our school and important for the student to experience.

**Culture**

Culture is defined as behaviors and beliefs that are characteristic of a certain group. Culture is created, but sometimes it can take some time. This is very true when creating a school culture that feels technology integration is important.

This type of culture can not be created just by computers being compatible, or teacher’s communicating and collaborating with each other so they gain confidence in their ability to integrate technology. It has to be all of this and more. In this section I will discuss all of the other factors that go into creating a positive school culture for technology integration.

The first factor is funding for technology at schools. In past years, funding has not been up to par for technological purposes, but as the years pass and the need for a technological work force increases, the funding has increased. Is it where it needs to be today for a public school? Probably not, but at
least the need for technology integration funding is being recognized and is being noticed. When Staples (2005) was conducting her research, she noticed that when the funding was available, the school culture focused on technology integration, but as soon as the funding was gone, technology integration slowed greatly and was almost forgotten.

We can't afford to stop using technology when we do not have enough funding. It is the responsibility of the technology committee to find other resources for technology integration. Some schools pair with a local college or university for funding and equipment. Some schools have written grants, had fundraisers, or tie technology in with other curricular areas to use some of that funding. A technology committee needs to find ways to provide funding for continuous technology integration and skills development for teachers. Christensen (2002) tells us that schools spend the majority of their technology budget on buying hardware and software, and only spend 15% on skill development for teachers. The U.S. Department of Education recommends that schools spend at least up to 30% on training teachers to use technology in their classroom. I am not saying that a school has to have the best and most up to date equipment, but they need to keep moving in a direction to improve their technology situation moving them closer to their vision.
Another factor for the technology committee to examine is looking at curriculum and technology as one, and not two separate entities. Technology should only be integrated into a school if it is directly related to the school’s curriculum. Staples (2005) researched, discussed in chapter III, told us that one of the most important jobs of a technology committee is acquiring technological resources that support and align with the current school curriculum.

The integration of technology in the classroom and schools is a complex process that entails supporting curriculum goals through the instructional use of computer technology to enhance student learning. (Mills, 2003, 385)

Staples (2005) also discovered that when schools align their technology with the curriculum, teacher’s current lessons improved and student achievement went up. This means that teachers don’t have to change their lessons to fit the technology, but the technology will improve the lesson they have already created. This saves time and headaches for the teachers and makes technology integration into the classroom easier.

The last factor in creating a school culture for technology integration is having good leadership and having a vision. A good leader should always have a vision of what they want to accomplish. A technology committee can be no different.
Sometimes the leaders of technology in a school are the young and inexperienced teachers. This is simply because they might not have as much experience teaching in the classroom, but they have more experience using technology.

Several beginning teachers indicate that they are the technology leaders at their school sites. Whether this speaks to their preparation, the lack of preparation of their colleagues, or a combination of both is unknown. However, since a high percentage of graduates indicate they felt quite prepared to teach with technology, it is likely that their technology leadership is a result of their preparation and their willingness to accept leadership roles. (Franklin, 2007, 283)

The leaders in the technology committee need to work together to form a vision for technology integration at their school. They should use the input of all stakeholders (faculty, parents, students) when creating this vision for technology integration. They should also create goals to help achieve the vision they have set for themselves.

The key aspect of creating a school culture is to make everyone who is apart of the school feel like technology is important. Technology is needed to improve student learning and prepare the students for the job market they will face in the
future. Students and parents can get involved with technology activities and teachers by forming a technology club. This club can be a way for students to show parents, teachers, and other students what they have learned about technology and how to use it. A feeling that technology is important can be created by showing all stakeholders what technology integration has already done in the school and what it plans to do in the future.

**Evaluation of the Technology Committee**

Now that a school is moving in the direction of creating a culture that supports technology integrations, how can we see if the technology committee’s functions and responsibilities are being done successfully? How do we know if we are accomplishing our goals and moving in the direction of our vision? Are the student’s needs being met? One way to do this is for the technology committee to develop a set of standards that act as the framework of good technology integration. These technology integration standards should reflect shared values and ideals by identifying things that are important for students to be able to do and understand with technology (Mills, 2003).

Having national and even state technology standards could happen in the future, but because technology integration, availability, belief, and expectations vary so much from one district to another, technology standards should be defined locally and use the national and state standards as a good
starting point. A technology committee should formulate a set of standards for its school using national, state, and district standards together, but also identifying educational best practices from research to support the new synthesized standards (Mills, 2003).

Steven Mills worked to create a systematic evaluation tool for schools and technology committees to use when evaluating how successful and effective the technology integration was at a certain school. He found that it is hard to evaluate teachers who have so many different skill levels using and integrating technology, so one set of standards would not work for all teachers.

What Mills (2003) uncovered through research was that there are five different stages for technology integration at a school:

1. Entry Stage - teachers using text-based materials and instruction to support teacher-directed activities.

2. Adoption Stage - teachers using technology for keyboarding, word-processing, or drill-and-practice software.

3. Adaptation Stage - teachers integrate new technologies into classroom practices and students
use word processors, data bases, graphic programs, and computer assisted instruction.

4. Appropriation Stage - teachers begin to understand the usefulness of technology and students work at computers frequently as project based instruction begins to take place.

5. Invention Stage - learners become more student-centered, and more project-based instruction, peer tutoring, and individually paced instruction occur.

Mills (2003) also uncovered three phases that a teacher goes through when they are integrating technology into their classroom:

1. Novice Technology Operator - who uses technology as a tool for professional productivity.

2. Technology Facilitator - who uses technology as a tool for the delivery of instruction.

3. Expert Technology Integrators - who are augmenting student’s learning with technology.

Mills (2003) found that technology integration experiences stages of development over time and teachers also experience different phases of development over time, and it is important to take this development approach into consideration when developing standards for your school. A technology committee has the responsibility to organize their evaluation standards
for technology integration into phases and stages that reflect a developmental approach (Mills, 2003).

This is how Mills (2003) suggests technology committees set up their technology integration standards. The standards should be organized into three skill set phases that teachers go through when implementing technology. If you have nine standards, make standards 1-3 for the novice technology operator, make standards 4-6 for the technology facilitators, and make 7-9 standards for the expert technology integrators.

When you have three different phases, you can look at each individual standard. Each standard can be set up like a rubric that is organized along a continuum using the five stages of development of a school integrating technology. For example, Standard 1 would be in the novice phase, but would be evaluated using a 1 - 5 number system, entry stage being a 1 and invention stage being a 5. It would be up to the technology committee to define what needs to be observed in the classroom to receive a 1 thru 5 and what stage a teacher has to reach to pass a certain standard.

It would be the job of the technology committee to set up a time line for the whole school meeting each standard. For example, a school might want the whole school to meet standards 1-3 in two years. Then, standard 4-6 in the next two years, and so on until all the standards have been meet. If there are
teachers still struggling with a standard then the technology committee could design a plan for that teacher to help and support them of meeting a certain standard. It would be the responsibility of the technology committee to revisit these standards from year to year to make sure they are updated and revised to fit the ever changing world of technology.

With this evaluation system, it would be easier to determine if the school is moving in the right direction when it comes to successful technology integration. It is also a system that will not punish teachers who do not have a lot of experience with technology integration. This system would help them overtime to move forward and continue to work towards a classroom that had successfully integrated technology.

Professional development and skill building activities need to be built into this evaluation process. It would be hard to expect teachers to continue to move in the right direction if learning opportunities were not available to them.

Another evaluation tool that could be used is a confidence scale. Bauer & Kenton (2005) suggest a confidence scale could be setup. Using a Likert-like scale survey (1=low, 5=high) teachers can rate their confidence using technology in certain ways. They can also rate which standards they have confidence they will meet and which standard they don’t think they will meet. An effort scale could be set up the same way. This kind
of survey results would help the technology committee discover areas that need to be supported more and areas that no longer need to be supported.
Chapter V

Current Technology Situation at Edison Elementary

In the past three years the technology situation at Edison Elementary has greatly improved. The Waterloo Community School District reached a deal with Dell Inc. This new relationship with Dell brought about many technology changes to Edison Elementary School.

The first change that Edison experienced was the arrival of brand new up to date Dell desktop computers. Within two years every single teacher at Edison now has a new Dell desktop. This did cause some minor difficulties because the old computers in the classrooms were Macintosh. The teachers quickly realized that the two different types of computers did not use the same software and did not network together well.

Another difficulty the teachers faced was that they had already learned the skill to use a Macintosh and had no idea how to run the new Dells. The district did not offer in-service or professional development to go with these brand new pieces of technology. The teachers had to learn from other teachers or by using trial and error.

With the arrival of these new Dell desktop computers, the teachers started letting the students use the old Macintosh computers, but the only thing they could really use them with
were games and drill and practice software. The software on the Dell and the software on the Macintosh’s were not compatible, which made it very difficult for teachers to use them with student projects and activities.

The teachers could not take the students to the school computer lab computers because they were also old Macintosh computers. Also, the district technology leaders stopped servicing the old Macintosh computers two years after the introduction of the new Dells, so if there was a problem with one of the old Macs, the teachers had to try and solve it on their own.

All of this created some hostilities between staff members who liked to use the old Macs and the teachers who liked to use the new Dells. The district was in the process of purchasing new PC software for the Dells, but some of the teachers wanted Edison and the district to purchase new Macintosh computers to go with the Macintosh software it already owned. This resulted in students not using technology to help improve their learning.

It also created a divide among teachers and students in the classroom. The teachers did their work on the new Dell computers and the students used the old Macs for games and skill practice. The new computers were making a technology divide at Edison. When change comes it can be difficult.
The hiring of a new superintendent at the Waterloo Community School District, helped close this divide. He believes that technology integration is very important. Almost all of the old Macintosh computers at Edison have been removed, and the district is now starting to replace them with brand new Dell desktops.

Now teachers have PC Dells for themselves and for their students, which are compatible with one another. The media centers computer lab has also been converted to new Dell desktops so teachers can have students work in the lab and save their work to bring to the classroom. The goal for the next two years is to make sure that there is at least a 1:3 ratio of computers to students at every school in the district. So hopefully, in the next two years you will walk into Edison and see one Dell computer for the teachers and three Dell Computers for students in most normal classrooms.

Edison also has a Webpage that can be accessed by the whole Edison community. It was developed and is currently maintained by a tech-savvy teacher. The website provides information about the school, events calendar, messages from the principal, pictures of the staff and their contact information. Some staff members even have a webpage that can be accessed from the Edison Webpage. Parents love to access pictures of the students, assignments and handouts, and the educational links.
The latest technology innovation that Edison has taken on in the last year and will be fully implement in the next year is the arrival of Promethean boards. They are active boards that teachers can use to teach lessons, show videos, and use virtual manipulation tools. The students can come up to this board and fully interact with it as if they were running the computer itself. They can write on it, move objects and manipulate tools and resources. There are active slates and voters that the students can use right from their desks to interact with the board and take quick, anonymous assessments the teacher has set up for the lesson. The teacher doesn’t have to use a blackboard or an overhead projector ever again.

These Promethean boards were piloted in the third grade classrooms and the feedback from the teachers and the students was outstanding. The students enjoyed having lessons taught with them, and they felt like they were part of the lessons when they participated with the active boards. The teachers were able to set up lessons that were more interesting and really caught the attention of the students, plus they could have quick assessments built right into each lesson using the voters. Another major plus is that when teachers make a lesson to use on the promethean board they can save it to use next year or to share with other teachers.
The district did offer professional development for every teacher implementing these boards and plans to have professional development for any teacher having one of these boards in their room next year. There will also be Promethean leaders at every school that are to help integrating the promethean boards into their classrooms. The district is trying to create a support system and time to collaborate with other teachers for the implantation of this new and exciting technology.

The technology committee at Edison Elementary was formed this past year by a tech-savvy teacher and was fully supported by the principal. The technology committee is just getting started and is still in the developmental stages. It currently has the support of the principal, support of the technology leader of the district, a facilitator, a secretary, and six committee members. During the past year the committee did not have a budget, but hopes to implement that this year.

In the next year, the functions and responsibilities of the technology committee at Edison are to help support the teachers and Edison staff to integrate the technology of new Dell computers and new promethean boards, help maintain the current Edison Webpage, and to make sure technology it being used by all students to improve their learning and prepare them for their future endeavors. This will be done using the 4 C’s
(compatibility, communication, confidence, and culture) of technology integration mentioned in chapter IV.

Summary & Discussion of Findings

The research findings of chapter II focused on all the reasons why technology should be integrated, but showed us the reason why it is not being done effectively and successful at some schools. Chapter III revealed all the strategies and processes a school needs to integrate technology successfully and effectively. In chapter IV the findings of both chapters II and III were put together to create a technology committee based on successful strategies and best practices that this research thought could be successful in any elementary school trying to integrate technology successfully and effectively. The main points of these three chapters, were used to help Edison Elementary create a successful technology committee that will knock down the barriers in place, based on researched and best practices to integrate technology successfully and effectively.

Research shows the main reasons technology needs to be integrated is students already have access to it and will need it for their future. Almost 99% of students at public elementary school have access to computers somewhere, whether this be at school, public libraries, or at home.

Our students want to use and learn about computers and technological devices. The barriers that some teachers put up
for students are the ones they create when they do not integrate technology into the classroom. The barriers will continue to build as a student moves through school, into college, and eventually into a profession. Students need to have exposure and access to technology starting in the elementary schools. This way they can develop technical skills early in life and use them in later years to refine the skills they have learned or learn a new or more complex set of skills. Parents also have a responsibility to their children when building appropriate computers user skills at home or for school.

Teachers face many barriers when trying to integrate technology and the number one reason for those barriers is money. Money is an important factor when it comes to integrating technology. If a school had an unlimited money supply for technology integration, it can knock down many of these barriers facing teachers and schools, but since this is not the case for many public schools, they must find other ways to integrate technology with the funding they have.

Another major factor teachers and schools face when integrating technology is that many teachers do not have the skills or the confidence to even try using technology with their students. Teachers do not know where to start or what types of programs to use with their students. Some teachers think they
are integrating technology, but they are really just using it to entertain the students or practice basic skills.

Another challenge in integrating technology is changing the mindset some teachers have that since they taught without technology before, they don’t need to use it now. Others think that there is not enough time to integrate technology. These are the teachers that don’t want to change their teaching and can sometimes have a detrimental affect on other teachers that do want to use technology in their classrooms. This does not help a school create a positive attitude towards technology integration.

Confidence is an important factor that all teachers should have when they are trying to integrate technology. When teachers become more comfortable with technology through personal use, professional development, or working with other people it helps to relieve fears and to build confidence. This confidence then turns into a positive attitude towards technology integration, which can have a positive affect on student’s attitudes and beliefs about technology. It is important to remember that a reverse affect can also occur when teachers do not believe technology is important, student can take on this belief, too.

Some very effective strategies that successful technology integrated schools have done is aligning the technology with the
curriculum. These schools also have good leadership from the top downward. Public showcases of technology integration and accomplishments will get all the stakeholders excited about technology and show them why it is so important in student achievement.

Collaboration is one of the most effective strategies used by successful schools. When teachers talk and work with each other, they feel more like a team instead of an individual. When teachers work together they are more likely to take risks, and each risk will help a teacher gain more confidence that they can integrate technology into their classroom successfully. Teachers can ask questions and not feel like they are the only one who don't know. Strength in numbers is important! Some teachers even believe that collaboration is more effective than even professional development. Teachers can collaborate with other teachers, technology experts, teacher leaders, and even their students.

Organizing a committee is a perfect way to knock down the barriers and obstacle facing technology integration and open lines of communication between teachers and others to effectively and successfully integrate technology. A committee can help provide funding, leadership, guidance, equipment, and skill development for teachers and schools to integrate technology. A technology committee will have many functions and
responsibilities and these will focus on the 4 C's. This committee should have an evaluation process with a developmental process. This will ensure the committee is functioning in the way it was designed.

To create a school culture that feels technology is important to student learning and have all stakeholders hold positive attitudes about this integration, a school must examine many ideals and strategies already implemented at other successful schools. This is not easy work, and can be done easier and more effectively using a technology committee. I used the findings of my research and best practice methods and made a proposal to Edison Elementary to create a technology committee to integrate technology into its classrooms and its school culture.

Proposal for Edison Elementary

Every teacher at Edison has at least one fully capable and up-to-date computer in his/her classroom and a Promethean active board. The issue now is making sure each teacher has a helping hand in using this new technology.

I believe that the formation of a technology committee could be that helping hand. In the next year the school district will be installing interactive boards in every classroom, with the expectation that teachers use them to teach their students. Many teachers at Edison are unsure of how to
fully use the new Promethean active boards. If the technology committee helps to provide these teachers with support, skill building, and collaboration opportunities, then all the teachers can successfully use these boards in their classroom, and maybe even learn new ways to use the computer in their classrooms effectively.

My proposal for Edison Elementary is to form a technology committee out of administrators, teachers, other staff, and some parents. The responsibility of this technology committee is to support teachers with the implementation of the Promethean boards, and any other technology device they desire to use. The technology committee will use best practices and research findings to help guide the integration of technology. I will break down my proposal for Edison into three sections: A proposal for the entire school, a proposal for the grade level teams, and a proposal for teacher's classrooms.

Entire School

Formation

The first thing that Edison Elementary needs to do is reform its current technology committee. The committee should be formed in a pyramid hierarchy. The principal should be at the top of that pyramid. The principal should then find one or two teachers with good leadership skills and who are trusted to work within the guidelines the principal has set for technology
integration to be the technology leaders and facilitators of the technology committee.

The teacher leaders should then ask one teacher from every grade level team and two or three other people to represent the other staff members at Edison to join the technology committee. It is important to communicate what being a member of the technology committee entails. This will allow for every person at Edison to be represented at technology committee meetings.

Parents can be involved and send a representative to every committee meeting if the committee feels it is important to have parents present. I believe that this parent representative should come from the current PTO (Parent Teacher Organization) committee, and could be another elected official of the PTO. This PTO representative could then report back to the PTO at the time of their next meeting. This could also happen with the current PIE (Partner in Education) committee. With that the technology committee should be reformed at Edison to show successful strategies and best practice according to research findings.

Once the committee is formed, during the first meeting it is important to select a secretary, a time keeper, a treasure; whose jobs have been described in chapter IV. It is also necessary to have representatives from the PTO and PIE. This
way the information can flow in two directions between the PTO and PIE committees, instead of just one.

**Meetings**

A technology committee meeting should be held at least twice a month either in the morning or right after school for 15 to 30 minutes. These meetings will be like updated and status meetings for the progress of a certain goal, or an initiative. At these meetings feedback, idea sharing, and collaboration will happen. Each meeting should have an agenda created by the facilitator and followed closely to make sure the meetings are not too long. Discussion items should be placed on the agenda before the meeting, not during the meeting because this would slow or derail the meeting.

There should also be one big meeting for any one to attend at least once a quarter or four times throughout the year. This meeting could be long or short. This meeting should join the PTO meeting. The reason for this meeting will be to share information about technology integration at Edison to the parents and other staff members. During this meeting students and teachers can share presentation, projects, and success using technology in the classroom with the parents and other staff members. It will also be a great place for discussion and feedback about the shared vision created by the technology committee for the current technology integration plan at Edison.
Responsibilities

The first and foremost responsibility of the technology committee at Edison will be to make sure technology integration is happening at Edison. The committee will do this by creating a vision that is within the guidelines of the district and the principal. This vision will be created through collaboration and ideas presented by all stakeholders. Goals will be set to help the committee move in the direction of its vision. The mission of this technology committee will be to improve student learning with the use of technology integration in the classroom and with the current curriculum.

Another responsibility of the Edison technology committee will be to make sure that the technology used at Edison aligns with the current curriculum. This can be done by overseeing purchases of hardware and software. The committee can regulate the use of personal software. It can teach teachers how to access the online teacher resources to use with technology and the curriculum. I will discuss this later in this chapter.

The last responsibility of the committee will be to evaluate the integration process for technology. Is the integration process progressing at a desired pace? The committee will need develop an evaluation process for technology integration in the school and in the classroom.
The criteria commonly used to evaluate the level of technology implementation taking place within a school needs to be developed, so that they become sensitive to the subtleties of policy and program implementation and to people’s attitudes towards it. (Romeo, 2002, 331)

The committee could use a developmental evaluation process described in chapter IV and use surveys to determine areas in need of support.

**Functions**

The functions of the technology committee at Edison will be to, first and foremost, support the teachers with collaboration, skill development, and funding for technology integration. It will help teachers become familiar, experienced, and confident when using the Promethean boards and all of its accessories to teach students. It will also oversee the Edison’s webpage and make it a wonderful communication tool for parents and students to use.

The Promethean boards will be the first main focus of the technology committee in its first full year. Every teacher will walk into their room with one of these boards attached to their wall. It will be the job of the technology committee to appoint an expert teacher for dealing with matters of the Promethean board. This teacher will become an expert using the Promethean
board through in-services provided by the district. The technology committee will not have to fund this project, because it will already be funded by the school district. Collaboration sessions and skill development will be set up by the technology committee. Between the in-services and collaboration sessions the teachers should be more comfortable using the Promethean boards with their students.

The second main focus of the technology committee will be to show the teachers how students can use the computers to enhance their learning. There are already many software applications on the computers at Edison that students can use as tools to enhance their learning. Teachers need to also find and use these tools themselves with their lesson planning needs and assessment needs so they become more comfortable with these tools and can use them with their students. There are also many tools and application that can be found online for teachers to use with their students. Leaders and experts can be appointed to oversee these matters also.

The third main focus of the technology committee will be to maintain the Edison Webpage and help grade level teams to create their own simple WebPages for parents to access. There should be one or two people who are the webmasters of the Edison Webpage, who will put things on the webpage that are approved by the technology committee. Discussions and feedback from the
parents and teachers should be considered when making decisions about the content to be displayed on the Edison Website. The Webmasters should be experts on building a webpage and could help the technology committee train teachers to make simple webpages for their grade level.

The last function of the technology committee at Edison is to try to provide funding for technology integration. The committee will have to work with the principal and the district to see what funding they have access to. All purchases of technology equipment and resources have to be approved by the committee. This will make sure these purchases are in line with the vision set by the technology committee and the current curriculum at Edison. It will also make sure it falls under the guidelines and regulation of the school district and that technology leaders or technicians from the district will help install and troubleshoot the technology purchases.

Grade Level Teams

One person from each team needs to represent that grade level as a member of the technology committee. This person will go to the technology committee meetings and discuss, share ideas, and give feedback on behalf of their grade level team. They will also bring back information to the grade level on things discussed and share at the technology committee meeting.
This person will not have to be a tech-savvy person, and it can be a different person every year.

My proposal for grade level teams at Edison is to get together as needed to talk about technology integration at your grade level. They will have discussions about the technology they are using in their classrooms and share ideas with team members about things that are going well and things that are not going so well. They will use their team as a support system. If they have questions about technology integration they can address them and seek out solutions together. They can do this as part of their weekly team meetings, or they can bring their concerns it to the next technology committee meeting or get together with another team and collaborate with them.

Teacher's Classrooms

Teachers can do many important things to help the process of the technology integration in their classrooms. They work and collaborate with their grade level teams. They can seek out different opportunities for skill development using technologies. They can seek out technology experts and tech-savvy teachers to help them integrate technology successfully and effectively. They can practice using hardware and software in groups or by themselves to make them feel more comfortable using technology with students.
One very important thing that teachers can do is reflect on the technology integration process, and share those reflections with their team and even the technology committee. Teachers cannot just sit there and wait for help to come. They should get together and work towards making technology integration happen.

**Parents Responsibility**

Parents will also have a responsibility when it comes to technology integration at a school or in a classroom. If parents have computers they should model and supervise how those computers should be used. They can attend technology committee meetings to stay informed about technology practices and strategies used at Edison. They should have their children use the computer as a tool to complete assignments and projects. It is very important that parents stay on top of their children’s computer skills and habits.

Haughland (1997) describes five areas that parents should concern themselves with regarding the use of the home computer by their child: “software selection, computer time, the Internet, family interaction, and supervision” (p. 133). (Lauman, 2000, 201)

The internet is a very powerful tool for student learning, but at the same time it can be a very dangerous place for kids. Parents need to model and supervise kid’s interactions with the internet. Parents can also use the internet to find resources
for their child and it can be used as a communication tool with the child’s teacher. Many teachers setup classroom websites for parents.

The internet can provide parents with access to information about what occurs in their children’s classrooms, allowing parents to reinforce classroom instructions. In addition, the internet can provide opportunities for parents to communicate with teachers and their children. (Baker, 2007, 7)

Through a classroom webpage, parents can find out about homework, spelling words, classroom activities and events, and teaching philosophies and approaches the teacher has.
Technology and the internet have become great tools for communication around the world, so parents should use it to communicate with teachers.

Limitations to the Proposal

Whenever something new comes along there will always be resistance. Change is never easy! Implementing a technology committee with the desire to change the school culture of Edison to one that has a positive attitude and believes that technology is important for students can be difficult and take some time. It is important the technology committee does not give up when barriers and obstacles arise. A team will overcome these obstacles.
The first year the committee might not accomplish everything it has set out to do. Funding might not always be available for technology integration. The committee might not have members from every grade level. Committee members might have difficulties making meetings. Working together with the PTO and PIE might take some time to perfect. These are all things that can work out in time and as technology integration improves at Edison.

Some things that are beyond the control of the technology committee are the district guidelines and regulations, or how the district sees technology committees playing a part in technology integration at the schools. The availability of professional development and skill building opportunities for teachers and staff members will be an issue. The willingness of the technology leaders, experts, and technicians working with the committee to accomplish its goals will play a part, along with the involvement of a busy administrator.

The one hope is that all the stakeholders will find that a technology committee is a great way to help teachers integrate different technologies into their classrooms. As time goes by the technology committee will gain momentum and start to help change the school culture at Edison towards the importance of technology integration.
Conclusion

Teachers have always had to overcome major obstacles to teach students in their classrooms. If it was not up-to-date textbooks, or too large of class sizes. Then, it was not enough resources or time to plan great lessons. It is no different when it comes to technology integration. It is a teaching style and it will come with its obstacles. Teachers must overcome these obstacles just like they have had to do year after year and decade after decade when they faced other problems. If teachers would have given up on teaching effectively when obstacles appeared in the past, like some of them have given up on integrating technology now, they would have lost their jobs.

It is the same thing as a teacher not integrating science into the reading curriculum, or reading being integrated into the math curriculum. Integrating technology should not be something that is asked, it should be something that is expected, for if this doesn’t happen teachers will not be doing the best job possible. A technology committee can help everyone at a school integrate technology successfully and effectively to help our students become responsible and productive citizens in a complex world that will require them to use technology at their future careers and lives.
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