

Taming Technology: Supporting Teachers in Technology



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Literature Review

Preparing students for the world in which they live is paramount. Teachers often bear the brunt of the responsibility in preparing students to meet standards and learn curriculum. Along with content that needs to be covered, teachers cannot overlook the importance of technology in the 21st century. Many schools nationwide are implementing and updating technology in order to keep up with today's global economy. Due to this shift, teachers are increasingly expected integrate technology into the curriculum. Keeping up with new, ever-evolving technology tools and using them effectively is a challenge. It takes time for educators to learn how to first use the technology, then to figure out how best to integrate it into their personal, value-laden pedagogy so that students can not only learn the curriculum to meet expectations, but also to learn how to use technology and use it effectively. Strehle, Whatley, Kurz, and Hausfather (2002) describe technology and student participation as a slow dance; effective use of technology in the classroom does not happen overnight. Technology integration and adjustments to instruction take time, thought, trial and error.

Today's Learners

The way students learn has changed over time due to changes and advances in technology. No longer are students limited to simply assimilating a single "validated" source of knowledge such as a textbook or class lecture or memorizing information. Effective learning involves seeking, analyzing, and synthesizing several sources of information. The Internet offers access to a plethora of multi-media resources at your fingertips. The ways of accessing and gathering information on the Internet is different than in previous years. The read/write web of today encourages learners to co-design learning experiences in order to personalize the experience to suit his or her needs and preferences.

Because many students have access to and use tools like smart phones, tablet computers, social media, one could make the assumption that they are well prepared for the classroom. While some students may be familiar with current technologies, these skills

do not always readily transfer to other technological applications that might be used in education (Rosen & Nelson, 2008). It is important to recognize that students today are not necessarily a homogenous group of digitally enhanced students. This idea presents a challenge to teachers in using technology with students.

Technology in Education

“Technology continues to profoundly affect the way we work, collaborate, communicate and succeed...technology skills are also critical to success in almost every arena and those who are more facile with technology will advance while those without access or skills will not.” (Johnson, Adams, & Haywood, 2011, p.4).

In addition to being a necessary skill, technology in the education setting can allow students and teachers to do things that could not be done previously.

The limits of classroom walls start to vanish when technology is used to connect students with the world outside the physical classroom as geography is no longer a fully limiting factor in connecting with experts and others (Dede, 2004).

Technology can provide learning situations and virtual environments that students would otherwise not be able to experience. In addition, using technology has the potential to transform schools along with providing disabled students with improved opportunities for participating in mainstream curriculum. *Technology use also creates new prospects for educators to build communities where they can share best practices (November, 2010).*

The organization of the Internet itself may further support learning and using technology in education. Dede explains that Web representations of information are usually non-linear, which closely mirrors a human’s long-term memory structure. Long-term memory works by associating and linking ideas with one another. In contrast to web representations of information, traditional sources of information that are common in schools, such as textbooks and auditory and video presentations, which are often organized in a linear manner. Dede suggests that using the Internet can potentially result

in a more effective learning experience because the organization of the Web is similar to the organization of the human brain.

Current Technology Integration in Education

Technology integration in schools can positively influence student learning.

However, when United States teachers have been surveyed in the areas of technology use and integration, the findings have not always been ideal. In 2001, a report that surveyed public school teachers and their use of technology in the United States indicated that approximately only half of the public school teachers who had computers or Internet available in their schools used them for classroom teaching. The report also found that just one-third of teachers reported feeling well prepared or very well prepared to use computers and the Internet for classroom instruction (Smerdon, Cronen, Lanahan, Anderson, Iannotti, & Angeles, 2001).

A decade later, The New Media Consortium's (NMC) Horizon Report analyzed and examined educational technology in K-12 education in the United States. This report found critical challenges when it came to technology integration in education. As digital media literacy is increasingly being recognized as an important skill, the authors of the report identified this as a challenge because they found that digital literacy skills and techniques are rare in teacher education and school district professional development programs. To remedy this lack of formal training, professional development and informal learning are being promoted, but Johnson, Adams, and Haywood (2011) believe we are far from seeing digital media literacy as a norm among educators.

These findings suggest that there is a need to reach out to teachers to encourage, support, and promote technology use in education. Strategies to increase digital media literacy among teachers are needed, so that they can better work with students and integrate technology into their teaching. "Improving professional learning for educators is a crucial step in transforming schools and improving academic achievement" (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009, p. ii).

Models for Professional Learning

Professional development uses a variety of models to educate teachers. Educational research explores the types of professional development that work best in the school context with the goal of discovering which models of professional development offer the most benefit to educators.

Professional development seems to be most effective when not approached in isolation, as can be seen in stand-alone workshop model. Instead of isolated workshops that do not directly connect to the teacher's work, there should be a seamless integration of teacher professional development. (Elmore & Burney, 1997; Cohen & Hill, 2001; Garet et al, 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Supovitz, Mayer & Kahle, 2000 as in Darling-Hammond et al., 2009). Darling-Hammond and her colleagues recommend that professional learning is a product of both externally provided and job-embedded activities that increase teachers' knowledge and change their instructional practice in ways that support student learning. Thus, formal professional development is just a subset of the range of experiences that may result in professional learning. Therefore, professional development does not necessarily lead to professional learning (Darling-Hammond et al., 2009).

Whatever the learning opportunity may be, the setting should be an environment in which teachers feel comfortable. Magestro and Stanford-Blair, who coach teachers, have found that teachers are more likely to try, reflect on, evaluate and integrate new information into their classrooms if new strategies are presented in a user-friendly, risk-free, hands-on manner. The teacher, when in the role of a learner, should be actively involved in order to construct his/her own meaning (Magestro & Stanford-Blair, 2000).

In reviewing successful professional development programs in middle schools, Killion discovered that when teachers participate in professional learning with colleagues from their school site, they become "engaged in a powerful form of staff development that allows them to grapple with "real" issues related to the new content and instructional processes," (Killion, 1999, quoted in Darling-Hammond et al. 2009, p.180). This idea of

teachers collaborating with each other is emerging and can be seen in the structure of learning communities.

Learning Communities are another type of professional learning model that can increase teacher knowledge. Historically, in the educational world, we see teachers working in isolation. Researchers, policy-makers, and teachers themselves are starting to see that working together can lead to positive results and significant gains. Smith (1998) described learning as a social activity. He says we learn from the groups with which we identify. We identify with the group and this identification creates the possibility for learning (Smith, 1998). This work suggests that bringing teachers together can result in productive learning experiences.

Learning communities are comprised of groups of people who share a learning objective. A practice-based learning community forms around improving a specific work-related set of practices (Riel & Polin, 2004). A practice-based learning community, or community of practice, is a structure that can promote teacher reflection as a means to improve the practice, while gathering ideas and feedback from colleagues. Reflection is an important part of the learning process, as Dewey (2008) suggests people learn by reflecting on experiences, not simply by having experiences. Wenger, McDermott, and Snyder describe a community of practice as “groups of people who share a concern, set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis,” (Wenger, McDermott, & Snyder, 2002, p 4).

Fulton and Britton reported that some experts took note that even in poorly- executed learning communities, participants still felt there was significant value in breaking the teacher’s isolation by providing opportunities to collaborate and share about math and science lessons (Fulton & Britton, 2011).

As professional learning communities become a more prevalent practice in the world of education, Anderson and Herr caution against using a pre-designed program of externally and commercially produced products. Predesigned programs could stifle the connections

between people and prevent organic growth of ideas and connections. A structure to build a learning community can be put into place, but one cannot force a community to grow. Predesigned programs could also prevent teachers from addressing specific students needs. Going by the book could prevent or deter teachers from addressing the real needs of their students.

These templates and prescribed procedures can undermine the authentic quality intrinsic to professional learning communities. “Authentic inquiry implies that we do not know all of the answers ahead of time... Transforming professional learning communities into tools for implementation, rather than spaces of inquiry and critical questioning, short-circuits the potential contributions of teachers to educational reform,” (Anderson & Herr, 2011, p. 287).

Many benefits of professional learning communities have been documented in the education field. Fulton and Britton analyzed two large studies that support professional learning communities for teachers. They were able to conclude that “STEM [Science, technology, engineering, and math] teaching is more effective and student achievement increases when teachers join forces to develop strong professional learning communities in their schools” (Fulton & Britton 2011, p. 4). In addition, they stated that teacher collaboration supports student learning and reported that teachers who worked in strong learning communities tended to be more satisfied with their careers. This career satisfaction leads to the increased prospect of teachers continuing in the teaching field long enough so that they become accomplished and experienced educators (Fulton & Britton, 2011) which can further benefit student learning.

Teacher Collaboration Supporting Technology Integration

In small-scale study, Strehle, Whatley, Kurz, and Hausfather found that a system of collaboration among teachers, along with self-reflection on the process of implementing technology, assisted in the process of implementing new technologies into their teaching practice. The teachers who were new to using technology faced several challenges. Some of the students they taught were more computer literate than the teachers and some

students were resistant to using new technologies in and outside of class. The teachers also faced the problem of having technology equipment that was reliable only some of the time. Weekly collaboration time allowed teachers to work with each other to figure out new instructional approaches and to later experiment with those ideas while participating in a supportive, non-threatening environment. Most importantly, the educators supported each other as they each developed their own beliefs about the limitations and possibilities of integrating technology into teaching, rather than unquestioningly accepting a specified way of doing things (Strehle, Whatley, Kurz, & Hausfather, 2001, p. 44). There were no specific demands on how teachers were supposed to integrate technology, instead they were able to explore different ideas and try new things.

Stephens (2011) observed teachers in a 1-to-1 school computing setting, where each student was equipped with laptop. The school district in which these teachers taught had a support program, which included face-to-face meetings and an online teacher learning community. Stephens reported that, “the professional development teachers received was important in establishing a teacher community of practice to share resources, strategies, and expertise,” (Stephens, 2011, p.75).

Communities of practice are not limited to face-to-face gatherings. Fulton and Britton reported that online tools are increasingly being used to support STEM [science, technology, engineering, and math] professional learning communities. These online tools can aid in extending research and the resources of the learning community. *Geography is no longer a barrier in forming a learning organization* (Fulton & Britton, 2011). These online tools allow for collaboration across time zones, etc.

Conclusion

Technology is part of the social fabric of daily lives and links us together in an ever-expanding global network. If the goal of education is to prepare students for tomorrow, technology must be an integral part of education today. With these suggestions for

professional learning, plans can be created and implemented to aid teachers in integrating technology into their teaching to help students meet the demands of the world today and of the future. In addition, using technology has the potential to improve the learning experience and in turn benefit student knowledge. Supporting educators is a vital component of successful technology integration. Working in isolation can stifle teachers' opportunities to build knowledge and improve practice. Bringing teachers together to collaborate can improve teacher expertise and practice. As teachers learn new technology skills and work to incorporate technology tools into their teaching, a continued focus on bringing teachers together can support and encourage the practice. A popular Chinese proverb stresses the importance of collaboration, "Tell me and I'll forget; show me and I may remember; involve me and I'll understand." Providing teachers with learning opportunities that actively engage them, rather than preach to them, can best support teachers in the artful and sometimes arduous process of implementing technology into instruction.

Introduction to the Problem

In many ways, a teacher attempting to use technology is like a lion tamer preparing to work. One can sense excitement, but also anxiety. The teacher and the lion tamer want to let the beast out of its cage. But even when prepared, they worry how this capricious beast will react. One wrong move and the beast will roar in triumph while the tamer and teacher cower in defeat. Fortunately for the teacher, defeat will never result in physical harm. However, the teacher's spirit often becomes damaged and discouraged.

My role as the technology teacher and coordinator in an elementary school has placed me in the center of the technology world within my work site. In working with the teachers, I have observed, first hand, some of the struggles and accomplishments teachers have experienced when working with technology. In many cases I there is an underutilization of technology by teachers in the classroom and for classroom related work. Teachers want to use technology, but fear they will not be successful. I would like to help them tame the technology beast so they can be more confident using technology.

The purpose of this action research study is to better understand how I, as a technology specialist, can better support teachers in their use of technology for school-related work. In this action research project, I worked to explore ways to better support teachers in using technology in an elementary school environment. This project focuses on twenty-four teachers: twenty-two classroom teachers, one science teacher, and one resource teacher.

Context of the Study

Work Site Setting

In the elementary school, the teachers service approximately 530 students in kindergarten up to fifth grade. These teachers work with class sizes ranging from twenty-two to thirty-three students while the resource teacher works with students individually or in small groups. The teachers range in age from mid-twenties to early sixties. Most of these educators have been teaching for ten or more years and have taught at this school for that amount of time or longer. All are female, except for the male science teacher. Our school employs several support teachers who work with small groups of students in order to provide more opportunities for differentiated academic support. Parent volunteers can be seen on a daily basis as they work with students and assist teachers with general classroom duties.

Our school has a high population of gifted students, which supports our school in routinely meet state testing expectations. Most of the students live in the surrounding, predominantly Caucasian, upper middle class neighborhood. About five percent of students live outside of this neighborhood. Additionally, English is a second language for about five percent of our students. There is not one predominant native language among these students, as their native languages vary greatly. These non-native English speakers do have a solid command of English and communicate verbally using English with classmates and teachers. About ten percent of students receive some form of educational support services. These services range and can include speech, occupational therapy, academic support, special accommodations, and one-on-one support.

My Role at the Work Site

As the technology teacher and coordinator, my first responsibility is to teach students in all grades about technology. I work with students from each classroom for about an hour each week. In that time, I cover age-appropriate information about using technology tools. In weekly classes, I address skills (such as troubleshooting, word processing, and Internet navigation) that will make it easier for students to work autonomously when using technology in their regular classrooms or at home.

My second responsibility is to support teachers in their interactions with technology. I am the only on-site technology person at our school. Teachers look to me as the technology expert, especially when they encounter problems. The help I provide can range from simple tasks like fixing a printer jam to more complex tasks such as assisting in the creation of a website photo gallery. In addition to teaching and supporting staff, I assist our school site in making decisions about online learning programs and technology tools to use. I also work to share resources and instructional ideas that I feel could benefit teachers.

Technology and the Work Site

Three years ago our school launched a new website program to promote communication between home and school. A parent volunteer and I work together to manage this website to keep families and students informed about events and other school information. I also maintain sections of the website which focus on separate sections of student and teacher resources for use in and out of school. In addition to maintaining the website, I also support teachers who are required to maintain a section of the school website for their homeroom class. The web traffic to each teacher section varies. Some teachers use their website section as a place for general information that stays rather static throughout the school year. Other teachers' sections are more dynamic and often include elements such as assignments, blogs, pictures, and calendars.

The classrooms in our school vary in the technology tools they house, as the school district is in the process of installing and distributing new technology equipment for all classrooms. Currently, every teacher has at least one laptop and all classrooms have a projection system with a document camera. Each classroom has at least five student computers. Several classrooms have a one-to-one computing set up with a netbook for each student, along with an interactive whiteboard. The technology lab has Mac laptops for each student along with a projection system and document camera. This technology lab is used for technology classes and can also be reserved by classroom teachers to work with their students. This is particularly helpful for teachers who do not have a class set of computers.

Teachers work constantly to improve their teaching practice, with the goal of helping students develop grade level competencies in all subject areas. Within this larger community of practice with teachers working to enhance their teaching practice, there is also a sub community of practice. This sub community focuses on integrating technology into the teaching practice. In regards to technology, teachers are expected to use the technology tools present in their classrooms, communicate using email, and maintain a classroom website. Teachers' interests and abilities influence the way they use technology to support instruction, learning activities, and assessment. Teacher teams sometimes dedicate a portion of their grade-level planning time to technology related tasks, such as updating class websites. At staff meetings, I regularly share technology information and occasionally technology related workshops are held for staff.

Currently, teachers have limited support in our school and within the school district, even with additions of new technologies. At the present time, I provide the majority of the technology support at our school. This is challenging as over half of my time is dedicated to teaching and preparing for student classes. My ability to support teachers when they need it is limited because I cannot leave my classroom to assist someone when students are present. Additionally, I teach in several different classrooms, not just the technology lab. This can make it difficult for teachers to locate me. There are occasions when I have coverage for my classes, so I can work with teachers, attend trainings, or fix technology equipment. These times are rather sporadic because they are based upon funding for substitute teachers. When I am able to assist teachers on campus, my knowledge is

limited due to the menagerie of hardware and software used by teachers and students on our campus.

Technology support from our school district is available to teachers, but has limitations as well. The required and optional workshops offered at the district level are frequently a one-size-fits-all design, which does not readily address teachers' varied ability levels. There is often little follow-up for these workshops, which results in teachers having trouble remembering and applying what they learned. All of the optional workshops are held off-site, usually after school, which deters many from attending. District technology specialists visit our campus intermittently, but they are not present regularly to assist teachers. Furthermore, there is a district level technology help desk, but the purpose of this department is to record problems and arrange for a technician, rather than troubleshoot problems over the phone.

Teachers have a desire to use the technology, but are repeatedly pressed for time and have a multitude of other demands to meet. Technology presents excitement for something new and better in the classroom, but also generates stress. Teachers worry about being able to learn new technology and use it successfully. The majority of teachers at my work site seem very confident in their curriculum knowledge and teaching practice. However, technology sometimes overwhelms them. With the little support currently in place, teachers can feel isolated in that they often have to figure out the technology on their own. Due to the sometimes unruly nature of technology, it is easy for teachers become stumped on simple tasks and become discouraged.

The current state of the economy and funding for public education does not lend itself to monetarily solving this problem of teachers in need of technology support. The school district has expressed desire to hire technology support persons for elementary schools, but budget cuts continue to quell this intention. My school has the advantage of having a parent group, which raises funds for my technology specialist position. However, I often feel I am stretched in too many directions. My responsibilities could easily be divided into several positions. This research project will concentrate on how to better support teachers with the staff and resources currently in place. This may aid other educational institutions with limited resources in understanding how leveraging current resources could support teachers. Technology has amazing potential to enhance the classroom and it is important to find ways to support technology use regardless of existing limitations.

Cycle One Report

GUIDING RESEARCH QUESTION:

What impact will access to support opportunities have on technology use by teachers?

Throughout this action research project, I explored strategies to support teachers in using technology. I implemented different support opportunities for teachers. By offering more support than what was previously available, I hoped to increase the teachers' use and ability with technology. In this first cycle, I hosted optional learning sessions where teachers could drop in to the technology lab for technology support in any area where they desired help. In leading the learning sessions, I worked to create a relaxed environment to further encourage teachers.

CYCLE ONE RESEARCH QUESTION:

How will access to optional learning sessions affect the technology use of teachers?

In this cycle, I hosted optional learning sessions for teachers. I am not able to create mandatory training or support activities, so teachers cannot be required to attend. For thirty minutes per week, I opened the computer lab to teachers. During this time, teachers were invited to drop in and receive help with any technology-related problem or question they had. They had the option of bringing their laptop or using one in the technology lab.

In designing this project, I wanted to create a plan that the technology teacher/coordinator could maintain within the current constraints of the positions' responsibilities. Had the project required work outside of the current structure, sustainability for myself or someone else to continue this project would be limited. In order to create time for this project, I decided to stop leading a technology club this school year for 4th and 5th grade students, which was in place last school year. The club helped the upper grades, as the students provided support to their teachers and classmates, but the computer club did not provide any support for other grade level students or teachers.

This new project will focus on teachers, which should better support our staff as a whole. Upon announcing this project plan to teachers at a staff meeting the idea was well received. I explained I would take more class time to cover troubleshooting and new technology skills with students during class time so that all students could get a taste of the technology club, rather than just then 4th and 5th grade students as I had done previously. This new project plan would allow for regular times to meet with teachers to provide them with increased technology support.

PLAN IMPLEMENTATION:

To gain a better insight from the teachers, I presented a needs assessment survey at a staff meeting to allow them to share about their technology needs and desires. Additionally, I asked them to share their preferred times to have these learning sessions. Sharing their name was optional and I informed teachers they could return the survey to me personally or place them in my mailbox in order to remain anonymous. Most teachers (17 of 24 total teachers) returned the survey—a return rate of 71%.

In analyzing the needs assessment, I was able to identify technology tools that were of high interest, tools for which more support was needed, as well as specific topics to cover during learning sessions. In some cases, I was able to provide immediate support for teachers who indicated having a problem. For example, one teacher indicated that she could not log in to a specific learning website. Since I do not administer this website I gave her the contact information for a representative who would be able to help her.

If a topic had a low number of votes or received zero votes, I did not want to completely dismiss that topic as being unimportant or designate it a topic that would not generate interest. One teacher indicated she would like to learn more about wikis. In my experience, I have found periodically teachers simply do not know about the technology tools available to them. In some cases, they are aware of a tool, but are not sure how they could apply using it in an elementary school classroom. I would not be surprised if this were the case for wikis. Personally, I knew about wikis for the past few years, but only recently learned about how I could integrate them into my teaching practice. I also noted the topics that teachers added. I was pleased teachers added topics that I overlooked when designing the survey.

Upon looking at all of these topics and seeing many teachers had interest in the same ones, I was tempted with the idea of holding large sessions with a specialist or myself leading. However, I have hosted a few large group sessions in the past with the teachers. These sessions were generally not successful. The teaching staff has a very large range of technology knowledge and ability. Trying to meet their individual needs in one session is like jumping through hoops: very challenging and unnecessarily demanding. I have noticed when teachers attend workshops with a large group of participants both retention and application of the information from the workshop are typically not strong.

Number of Teachers Interested <i>(Teachers selected as many or few topics as they desired.)</i>	Topic
6	Envision Math
6	Webpage: Editing
5	iPads
5	LanSchool
5	Polling on Netbooks (Active Engage/Expression)
4	Email
4	Promethean Board
4	Webpage: Photo galleries
3	First in Math
3	Excel
3	iMovie
3	Webpage: Blogs
2	Active Inspire
2	<i>Gradebook*</i>
2	iPhoto
2	Learning Upgrade
2	Power Point
2	Teacher Tablet PC's/Netbooks
2	Word Processing
1	Digital Camera
1	Flash Drives
1	Garage Band
1	MacBook (laptop)
1	Projecting Computer Screen
1	<i>Sound System*</i>
1	Thin Clients
1	Total Reader
1	<i>Website for grade 1 reading*</i>
1	Wikis
0	Document Camera
0	Internet Research
0	YouTube/TeacherTube

Table 1.1: Teacher Interest

**Topic added to survey by teacher.*

In working with teachers it seemed that they liked the small group or one-to-one setting. On the post-cycle survey, I did not ask directly about the size of the sessions but one teacher shared, *“One-on-one is usually the best for me. I appreciate the step-by-step directions.”* While this comment was only from one out of twenty-four teachers, this reaffirmed my decision to hold learning sessions geared toward small groups.

Learning Sessions

In September 2011, I started holding weekly learning sessions for teachers in the technology lab. These sessions lasted for thirty minutes and provided an opportunity for the teachers to get an answer to an immediate or on-going technology problems they had. There were never more than a handful of teachers in each learning session, so this was very manageable on my part and each person received close attention from me. Working with these teachers gave me a window to better see the problems and concerns they face. When necessary, I followed up with the teachers after our learning session.

Before this plan, teachers had to seek me out when they needed help. I do have time in my schedule to see teachers and help them, but they usually had to approach and ask for it. I also have numerous other duties to take care of in my “free time”. Some teachers were quick to ask for assistance but some seemed hesitant to approach me, knowing my job responsibilities keep me occupied. Having a set schedule has seemed to have taken away some of the pressure on teachers in having to approach me for help. Teachers know I am offering this time to them and this prevents them from feeling they might be imposing on me. I work to keep our sessions a relaxed environment focused on their needs. If I don’t know how to help them or we need more time, I follow up with them or remind them that they can attend another session.

Learning Session Participation

For cycle one, I held ten learning sessions for teachers. These were sessions where I opened the lab to teachers inviting them to drop in to seek support with technology. Most of the meetings took place on Wednesday mornings from 8:00 to 8:30 AM (before the school day began at 8:45), which was the most common time indicated by teachers on the needs assessment. Teachers are not required to be on campus until 8:30 in the morning, but many do come to school before then.

Overview of Teacher Visits

- At least one teacher dropped in for 7 out of 10 of the originally scheduled sessions.
- Three additional sessions were added at the request of specific teachers who were unable to attend the offered times or who needed to work in a location other than the computer lab. These teachers met with me at our mutually agreed upon time.

Table 1.2: Learning Session Visitors: Cycle 1 (September 2011 to December 2011)

Session	Date	Day	Time	Total Participants
1	September 28	Wednesday	1:30-2:00	5
2	October 6	Thursday	3:30-4:00	0
3	October 12	Wednesday	1:30-2:00	2
4	October 19	Wednesday	8:00-8:30	1
5	October 26	Wednesday	8:00-8:30	0
6	November 2	Wednesday	8:00-8:30	3
7	November 9	Wednesday	8:00-8:30	2
8	November 16	Wednesday	8:00-8:30	0
9	November 30	Wednesday	8:00-8:30	2
10	December 14	Wednesday	8:00-8:30	1
Additional Sessions*				
11	September 29	Thursday	3:15-3:30	1
12	November 17	Thursday	3:30-4:00	1
13	December 7	Wednesday	1:00-1:30	2

** Additional sessions were scheduled at the request of teachers who were unable to meet during scheduled learning sessions.*

Table 1.3: Overall Teacher Participation

Number of Sessions Attended	Number of Teachers Attended
0	9
1	10
2	5
3	0
	Total Teachers: Total: 24

I targeted 24 teachers for this project. Throughout the fall, I offered a total of 13 learning sessions, which they could attend. In looking at visits for cycle one, I found the following:

- 15 out of 24 of teachers attended one or more sessions
- 10 out of 24 teachers attended one session.
- 5 out of 24 of teachers attended two sessions.
- 9 out of 24 of teachers did not attend sessions.

I believe my flexibility in scheduling additional sessions allowed more teachers to attend than if I had not added these additional sessions. Three of the teachers who scheduled additional learning sessions seemed relieved I was able to accommodate their request.

The data that most pleased me was seeing teachers attend more than once. This tells me they found the time in the lab worthwhile. Two teachers worked with me on the same activity for two weeks in a row because we could not finish the task in just one session. Several other teachers came in on two different occasions for different topics. I was also pleased to see 63% (15 of the 24) teachers in the lab for help with technology.

In this first cycle, the range of topics covered in the learning sessions were at the request of the teachers. The popular topics (email, website help, creating photo galleries) were also highly ranked in the needs assessment survey.

Table 1.4: Topics Covered During Learning Sessions

Topic	Number of teachers who asked to cover the topic
Email: create contact group	6
Website: General	5
Website: Photo Gallery	3 (<i>Two teachers worked on this topic for two consecutive weeks. Each of these teachers was counted once.</i>)
Folders and files	1
Sync iPhone with MacBook Laptop	1
Auditorium sound system	1
Microsoft Word	1

While helping teachers with the topics above, I tried to show them some new skills that could also help them with what they asked about. In some cases teachers learned a new skill, which they found helpful. For example, I have found it is easiest to create a folder on the desktop with photos *before* uploading photos to the website to create a photo gallery. This idea is not included in the website tutorial. Some teachers did not know how to create folders, but once I showed them, they found it simple to do. It was skills like this that teachers did not ask about, simply because they did not know about them. Sharing these extra tips was well received during learning sessions and I explained that many skills can be used to help with other technology tasks. This knowledge sharing was an important advantage of working with small groups of teachers.

One area of need, which was difficult for me to cover during open lab sessions, was the Promethean board. Many teachers ranked the Promethean board and related software as an area with high interest. I do not have a Promethean board in the technology lab. My knowledge about Promethean boards is limited, as I only use them a few hours per week. In order to use some of the Promethean software, students need to be using computers at

the same time as the teacher. Perhaps I could address this need by scheduling a time for the teacher to meet with one of the district educational technologists who specialize in Promethean boards. Another solution to this problem could be holding a learning session in one of the Promethean board classrooms. However, having a learning session in a classroom with a Promethean board would be challenging because there are currently three different versions of boards in our school. They all work similarly but the differences are just enough to create unnecessary confusion.

REFLECTION:

My intent in this cycle was to make teachers feel more comfortable with technology and to encourage them to use it more. Throughout this cycle, I saw teachers generally worked comfortably with technology in our learning sessions. The teachers that participated in sessions were learning how to do new things which they could then apply after they left the learning sessions, which hints they were using the technology more easily, if not more, than previously.

In working closely with teachers, I was able to see what they know, do not know, and the areas where they need help. Being able to work closely with the teachers allowed me to observe exactly how they interact with technology and offer appropriate tips and tricks as we worked. This gave me a different perspective than what I learned from the needs assessment.

In working with teachers and technology, two authors, Bitner and Bitner, acknowledge that fears and concerns exist among educators and these feelings must be addressed in professional development. "Helping teachers overcome their fears, concerns, and anxiety is crucial to the success of the program. (Bitner & Bitner, 2002, p. 96) They further explain teachers need an environment in which they can experiment without the fear of failure. In the learning sessions, I worked to encourage teachers. As Bitner and Bitner point out, I noticed many teachers lacked confidence, which reminded me teachers are often vulnerable when they come to work with me. This further reinforced the need for my patience, support, as I worked to build their confidence one step at a time.

Before starting this project, I anticipated higher attendance at each session. Looking back however, it was very manageable working with a small amount of teachers. The first session where five teachers attended was a bit challenging, even though they were all working on the same topic. The sessions I recorded going very smoothly were often the ones where there were one to two participants. This size was very manageable on my part and as a result teachers received consistent attention from me. Working with these teachers gave me a window to see into the problems and concerns they face. When necessary, I followed up with the teachers after our learning session.

Unexpected Outcomes

I emailed weekly reminders to teachers about the learning sessions. On many occasions I received replies back from teachers. These replies ranged from thank you's for my

support, apologies for not attending learning sessions, asking technology questions or telling me about technology problems. I was pleasantly surprised that sending out reminder emails helped to open the communication between some of the teachers and me. Some of the teachers also thanked me in person for sharing my time with them. This showed me teachers were appreciating my efforts. Throughout this cycle, I feel this project helped me to strengthen my rapport with the staff, which was a welcome outcome.

Future Steps

In the next cycle, I would like to continue to support the teachers who have participated and encourage them to continue to explore technology by continuing to host learning sessions. In their outline for teacher technology supports Bitner & Bitner mention that the support model needs to be ongoing. (Bitner & Bitner 2002). I would agree based upon my observations from this first cycle. The first cycle had a nice flow to it I would like to continue it. In this next cycle, I want to focus some of the learning sessions on specific topics. To figure out which topics to target, I will look at the needs assessment survey, topics covered in cycle one, and take into account my observations from this cycle's learning sessions. In this cycle, teachers often asked questions about topics they already knew about. If I suggest topics, I might be able to push teachers to explore unfamiliar or less familiar topics. Planning topics ahead of time might aid in generating interest among teachers as well. Outlining the topic ahead of time would also give me the opportunity to better prepare for the sessions. During this cycle, there were several times when I had to follow up with a teacher after the session because I did not know an immediate solution to the question at hand. In these topic-focused sessions, I can target several teachers at once and possibly have them help each other in addition to having me help them.

I would also like to reach out to the teachers who did not attend any learning sessions. In cycle one, I sent mass emails and posted signs in the mailroom to remind teachers of upcoming sessions. Personal invitations might better encourage teachers to continue to attend along with reach those who have not attended. I could refer to the needs assessment survey to know who specifically might be interested in a certain topic. By starting a conversation with the teacher about a topic they indicated wanting more help in, I could find out exactly what they want to do. For example, several teachers indicated wanting help in Microsoft Word, which is a board topic. Initiating conversations with them could allow me to better understand their specific needs and find out exactly what they want to be able to do with Microsoft Word. If the teachers were unsure I could give suggestions. These conversations could help me design a plan for the learning session. Another problem posed when working with a computer-based software program is that teachers at my site have both Windows and Mac computers with different versions of the same programs. By talking to teachers ahead of time I could get a better idea of who will attend and what computer/software version they prefer to work with.

Following up with all teachers after these learning sessions could also give me more specific feedback on how the session impacted them. I could also share information that

was covered in the session. This could be a review of the information we covered or information to extend their learning about a topic we addressed during a session.

Cycle Two Report

GUIDING RESEARCH QUESTION:

What impact will access to support opportunities have on technology use by teachers?

Throughout this action research project, I explored strategies to support teachers in using technology. I implemented different support opportunities for teachers. By offering more support than what was previously available, I hoped to increase the teachers' use and ability with technology. In the first cycle, I focused on optional learning sessions, where teachers could receive support with any tech related concern they had. In this second cycle, I hosted learning sessions focused on a specific topic for learning sessions.

CYCLE TWO PLAN:

I hosted learning sessions, focused on topics which teachers have indicated interest in. In leading the learning sessions, I will work to create an environment where teachers can be comfortable using technology and receiving help with technology.

CYCLE TWO QUESTION:

How will access to open lab sessions about a specific topic affect the technology use of teachers?

PLAN IMPLEMENTATION:

Getting Started

Upon reflecting on cycle one, I observed that teachers who dropped in to open learning sessions usually asked for help regarding topics familiar to them. In cycle two, I decided to focus the learning sessions about specific topics in order to promote topics, which might be unfamiliar to teachers. In choosing topics for the learning sessions, I chose areas where teachers indicated wanting support for in the needs assessment given at the beginning of cycle one. I also held learning sessions about topics teachers specifically inquired about. In order to prevent teachers from asking for help about what interested them, some sessions at the beginning of cycle two were still open to all topics. When learning sessions were given a specific topic, I explained to teachers that I would still field other technology questions they may have. I felt it was important to continue to give teachers a voice about the content we worked on together, by giving them the opportunity to still pose their own questions.

Learning Session Participation

In cycle two, I held sixteen learning sessions for teachers. In these sessions teachers were invited to drop into the lab for technology support. Most of the sessions were held on

Wednesday mornings from 8:00-8:30. Some sessions were held on Wednesday afternoons when there were no other meetings.

Overview of Teacher Visits

- At least one teacher dropped in for 10 out of 16 originally scheduled sessions.
- Four additional sessions were added at the request of specific teachers who were unable to attend the offered times or who needed to work in a location other than the computer lab. These teachers met with me at our mutually agreed upon time.

Table 2.1: Open Lab Visitors: Cycle 1 (January 2012 to June 2012)

Session	Date	TOPIC	Day	Time	Total Participants
1	January 4	Open	Wednesday	8:00-8:30	0
2	January 11	Open	Wednesday	8:00-8:30	2
3	January 18	Open	Wednesday	8:00-8:30	0
4	February 1	Open	Wednesday	8:00-8:30	1
5	February 8	Open	Wednesday	8:00-8:30	0
6	February 15	Saving	Wednesday	8:00-8:30	0
7	February 22	Labels	Wednesday	1:00-1:30	2
8	March 7	Open	Wednesday	1:30-2:00	1
9	March 14	Open	Wednesday	8:00-8:30	1
10	March 21	Website	Wednesday	1:30-2:00	1
11	March 28	Website	Wednesday	8:00-8:30	1
12	April 11	Open	Wednesday	1:30-2:00	2
13	May 2	Slideshow Etc.	Wednesday	1:00-1:30	0
14	May 9	Slideshow Etc.	Wednesday	8:00-8:30	1
15	May 16	iPads etc.	Wednesday	8:00-8:30	0
16	May 23	iPads etc.	Wednesday	1:30-2:00	2
Additional Sessions*					
	February 23	Printing documents	Thursday	3:30-4:00	1
	March 13	Printing labels	Tuesday	3:30-4:00	1
	May 9	Projector Set Up	Wednesday	12:30-1:00	1
	June 6	Burning DVD's	Wednesday	1:30-2:00	2

** Additional sessions were scheduled at the request of teachers who were unable to meet during scheduled open topic learning sessions.*

I targeted 24 teachers for this project. Throughout the spring, I offered a total of 16 learning sessions, which they could attend. In looking at visits for cycle two, I found the following:

- 11 out of 24 teachers attended one or more sessions.
- 5 out of 24 teachers attended one session.
- 5 out of 24 teachers attended two sessions.
- 1 out of 24 teachers attended four sessions.
- 13 out of 24 teachers did not attend sessions.

I believe my flexibility in scheduling additional sessions allowed more teachers to attend than if I had not added these additional sessions. The five teachers, who worked with me in additional learning sessions, seemed relieved I could accommodate their requests.

Table 2.2: Overall Teacher Participation

Number of Sessions	Number of Teachers Participating
0	13
1	5
2	5
3	0
4	1
	Total Teachers: 24

In cycle two, 11 out of 24 teachers participated in at least one learning session. 13 teachers did not participate in any learning sessions. In cycle one, 15 out of 24 teachers joined in learning sessions. Some teachers that participated in cycle one also participated in cycle two. For cycles one and two combined, the total teacher participation was

18 out of 24 teachers joined in at least one learning session—a 75% participation rate. There were 9 teachers who did not participate in any learning sessions.

Learning Sessions with Topics

In this second cycle, I decided upon learning session topics based upon my observations from working with teachers and the needs assessment from cycle one. The selected topics were: saving, website, slideshow, and iPads. A teacher suggested the topic of labels. Not wanting to neglect teacher concerns, I informed teachers I would still field questions not related to the topic of the learning session.

Table 2.3: Topics Covered in Learning Sessions with a Topic

Session Number	Topic of Learning Session	Number of Teachers that Participated	Topic Actually Covered
6	Saving	0	
7	Labels	2	labels website
10	Website	1	website
11	Website	2	website
13	Slideshow	0	
14	Slideshow	1	slideshow
15	iPads	0	
16	iPads	2	slideshow

Teachers attended five out of eight sessions that had set topics. This table shows that in four of these eight sessions, teachers asked for help about the topic of the learning session. Three out of eight sessions with set topics did not have any teacher participation. When looking at the additional sessions from table 2.1, two of the four additional sessions teachers requested were about topics suggested: printing labels and burning DVD's of slideshows previously created.

Throughout this cycle I noticed teachers still sought help on what interested them, just as they did in cycle one. Even though I choose learning session topics of high interest teachers did not necessarily ask for help with those topics. It seems the topic of iPhoto slideshow encouraged two teachers to make one and use it for the school's open house night. In addition, one other teacher told me she made a slideshow on her own while another one asked me about how to create one.

Looking back at the needs assessment the teachers completed in cycle one (figure 1.1), working on the website ranked as highly as iPads. Four teachers worked on the website in cycle two, while none had a desire to work with the iPads during learning sessions.

It is hard to say if topics improved participation. In the case of the iPhoto slideshow topic, the data shows that teachers were encouraged by this topic. Also one teacher attended each of the website learning sessions and asked for help with the website. iPads were a highly ranked topic on the needs assessment survey, however no teachers attended a learning session for iPads or requested to work with them. While topics might have influence on some teacher's participation, it may have also deterred some teachers from dropping in on a learning session.

Table 2.4: Topics Covered During Learning Sessions

Topic	Number of teachers who asked to cover the topic <i>(Some teachers worked on topics for more than one session. The topic these teachers worked on was counted once.)</i>
Website: General	2
Website: Photo Gallery	2
Labels	2
iPhoto Slideshow	2
iMovie/iDVD	2
Web Browser	1
Folders and files	1
Printing Documents	1
Organizing Photos	1
Microsoft Word	1
Projector Set Up	1
Total Amount of Topics Requested by Teachers	15

At the end of cycle two, I asked teachers to complete an anonymous survey to learn about their thoughts on cycle two and cycle one. 15 out of 24 (63%) teachers completed the survey. Of the teachers who responded to the survey, 7 reported attending a learning session while 8 reported they did not attend a session. Of the 8 that did not attend, three wrote a comment regretting that they did not attend. Another teacher said she would have attended but had too many other meetings that interfered.

I alerted teachers about learning sessions through email and by posting signs in the staff mailroom. Throughout cycles one and two I regularly sent email reminders and occasionally posted signs. After the first several sessions in cycle one, learning sessions were always on Wednesdays, unless teachers requested a different time. In the survey, I asked teachers if notification for sessions was too little, just right, or too much. 14 of the 15 teachers surveyed reported notification was just right. Only one teacher reported that notification for sessions was too little. This teacher also made a note that she did not attend because she did not remember when sessions were held. Posting signs on a regular basis may help give this teacher the reminder that she needs.

Teachers were asked what they would like to see in the next year in terms of technology support. Eight of the fifteen teachers who responded to the survey answered this question. Of these eight teachers, six said they liked the structure of the learning sessions. Four teachers expressed interest in working with me during grade level planning time. One of these teachers said she would be interested in attending class with her students and

having my support while she was there. One teacher mentioned she would like me to present about technology at staff meetings.

REFLECTION:

My goal in this cycle was to continue to provide technology support for teachers who were interested. I also wanted to encourage teachers who had not participated in cycle one. I continually informed teachers that they could schedule another time with me if they had a scheduling conflict and could not attend a learning session. Five teachers did this in the second cycle.

In an attempt to reach teachers who had not participated in cycle two, I sent personalized emails to seven teachers and approached one in person to encourage them to come to the lab and create an iPhoto slideshow for the school's Open House night. This was a time-consuming task and I worried I may come across as pushy or looking out for my own interests—my action research project. The teacher I approached in person told me she was not interested. I received email responses from four of the seven teachers I emailed of which one came to a learning session. Another teacher informed me she made a slideshow on her own. Two teachers and I communicated over several email messages. They expressed interest, but never came to a learning session. The other four teachers did not respond. I was happy my email efforts resulted in one teacher attending and another one creating a slideshow. I do not think the teachers who responded saw my purpose as just being for my own gain, but I do not know that for sure, particularly with the teachers that did not respond. Due to the time requirements of composing personal emails and my feelings of being uncomfortable with this action, this is something I would rather not do in the future. I would prefer to encourage learning sessions in a more organic way, which I did throughout this cycle. If a teacher expressed interest in doing something with technology, I offered to use his or her topic for a learning session or encouraged them to come to a learning session. In my cycle one reflection, I mentioned I would like to target teachers as a future action in cycle two. I did not specifically target teachers until half way through cycle two. I have a good rapport with teachers, which was strengthened through this project this year. As I worked through this cycle I was concerned that targeting teachers might risk damaging these relationships. This is why I continually delayed trying this action.

I was pleased to see teachers dropping in regularly for learning sessions in this cycle. This told me teachers are in need of technology support and saw me as a resource that could help them. It was also satisfying to know that this structure allowed me to share my knowledge with staff.

One teacher made remarkable progress in cycles one and two. She regularly attended learning sessions throughout the year. Over the time we worked together, I saw her technology skills improve in editing her webpage and navigating around her computer. Every time I worked with her she seemed a bit more confident and remembered the skills we had worked on previously. At the last learning session she asked me to help her burn DVD's of a student picture slideshow that she created in earlier learning sessions. She

has really surprised me with her energy, dedication, and how far she has come this year in regards to technology skills and confidence. I had always thought that teachers just needed more time to build their technology skills and that they could only move on to advanced technology activities after they mastered all the basic skills. Her success prompted me to reconsider this. She showed me that motivation, accompanied with the right support, could move teachers to do amazing things with technology.

Learning Sessions with Topics

As I look to future cycles, I think I could focus more on motivating with new ideas than making sure to cover topics that I think would be helpful, but maybe aren't all that exciting. For example, the first learning session with a topic was *saving*. That is a good skill to know but perhaps a title such as *organizing and backing up your documents* would be more exciting for someone.

In future learning sessions, I would like to keep the topics open and only suggest a topic if a teacher expresses interest or I have a topic I think would appeal to teachers. For example, the iPhoto slideshow topic was something new to some teachers and not very complicated. I explained how this could be used for a specific event. In this case of the slideshow topic, I found it was beneficial to tie in an upcoming event with the learning sessions. While, this was a new idea for some teachers, it had a suggested purpose. I wonder if teachers would have created a slideshow if I had not suggested it. This has helped me to see that while I can't force teachers to do something, I can make suggestions that might influence them.

Future Planning

It was affirming seeing teachers continue to attend learning sessions and schedule learning sessions in cycle two. I was also pleased to hear some teachers are interested in continuing learning sessions and would like other forms of technology support. When I first started working at this school, I was under the impression that some teachers just didn't like technology. But after working with them and analyzing my work with them, it seems that they are interested in technology but are often lacking support so they do not try it out.

Over the course of the two cycles, there were still teachers that did not attend. This could tell me there are some who are just not interested or may not be able to participate in learning sessions due to scheduling or other responsibilities. In addition to these teachers, there are also aids, support teachers, and specialty teachers I did not include in this project. These teachers work a shorter day than the regular teachers so they are not at school early nor do they stay for Wednesday afternoons. The aids and support teachers work with the regular teachers, so they can also be seen as supports for technology. If they are not familiar with the technology students and teachers are using, supporting them can be challenging. I would like to work with the administration next year to see if we can coordinate a meeting during the day for these teachers so I work with them.

In this cycle, I confirmed the teachers do have a need for my support. Having a structure in place for this was helpful. I could sense teachers liked having a set time, which prevented them from feeling like they were imposing on my time by asking for help. Before cycles one and two teachers often seemed hesitant when asking me for help. Having this time set was also more convenient for me.

Upon surveying the teachers, (and listening to informal feedback) I found there is an interest for me to continue supporting them in the future. The technology is not going away so the need for support remains. Support will be especially important in the next school year, as the technology will be increasing. Interactive whiteboards are going to be installed in six classrooms and another grade level will receive iPads for its students.

In the next school year, I would like to have a model like the learning sessions in place. This continuous time where I worked with small groups of teachers was ideal. In the end of the cycle two survey, several teachers suggested I meet with their grade levels to support them. I would like to invite teachers to attend technology class with their students. When teachers have grade level planning time, I teach their students so I am not free to help. There are occasional times where there would be funding for a substitute teacher in order to permit me to meet with the grade level team, but this opportunity does not happen often. However, asking teachers to come to the lab during their class' technology class time could help us work with this problem. Teachers often work on technology during their planning time anyway, so working on technology in the lab would not require any more of their time. If teachers attended a class, they would get to see what students are working on and even have the opportunity to try it for themselves. If teachers encountered trouble, students could provide them with guidance, along with myself.

I also think having a set schedule would help. This would let teachers know this model was going to continue and would know exactly when they could stop in. In cycle one and two I usually informed teachers several days to several weeks before a learning session. We had a bit of a routine switching from Wednesday morning to Wednesday afternoon if there was a meeting. However, I think having this on a calendar would help us all know exactly when they can expect learning sessions. Staff meetings are sometimes subject to change, so putting together a schedule would require assistance from the administration.

Earlier I mentioned not being able to support teachers because of my own teaching responsibilities. I would like to have a conversation with the administration about using money for occasional substitute teachers so I can be relieved of teaching duties in order to better support the teachers. In an ideal setting, where money would not be a limitation, I would suggest that we split my current position into two different positions—one for teacher support and managing technology and one for teaching students. Until then, this cycle shows a way I can support teachers within the confines of the current situation.

Cycle Three Report

CYCLE THREE PLAN:

For the next cycle in this project, I desired to tap into a resource I had yet to directly involve—the students. When developing cycle three, I did not foresee any significant ways to adjust cycle two so I decided to approach my method of supporting teachers in a different manner than offering open lab times. For cycle three, I decided to examine how working more closely with a grade level team of teachers and their students could support technology use among them. My actions involved increasing communication with the grade level teachers and sharing web resources with teachers and students. In this cycle, I hoped to better meet the needs of the grade level teachers and students.

Background Information

The upper elementary grade level team consists of three teachers each with a class of approximately thirty students. Each class comes to the technology lab for instruction for an hour each week. Students and teachers in this grade level use technology on a regular basis. Teachers are quite tech savvy and require students to create and print documents as well as use the Internet for research assignments. Students often print pictures from the web to include in posters and booklets they create for class assignments. Students use technology in their classrooms and at home to complete these tasks. Typically these teachers and I connect sporadically with each other through email or chance encounters around the school campus. Occasionally, we discuss what I am covering with students in technology class and sometimes the teachers ask me to cover specific topics during class time.

CYCLE 3 GUIDING RESEARCH QUESTION:

How will working more closely with students and teachers influence the implementation and use of technology among students and teachers?

CYCLE THREE QUESTIONS:

How will communicating with classroom teachers more often affect what is done in technology class and in the grade level teachers' classrooms?

How will introducing and sharing a variety of websites affect their use by students and teachers?

CYCLE THREE PLAN IMPLEMENTATION:

In this cycle, I kept in closer contact with a grade level team of teachers than I typically do with teachers at my work site. I communicated regularly with teachers in this team

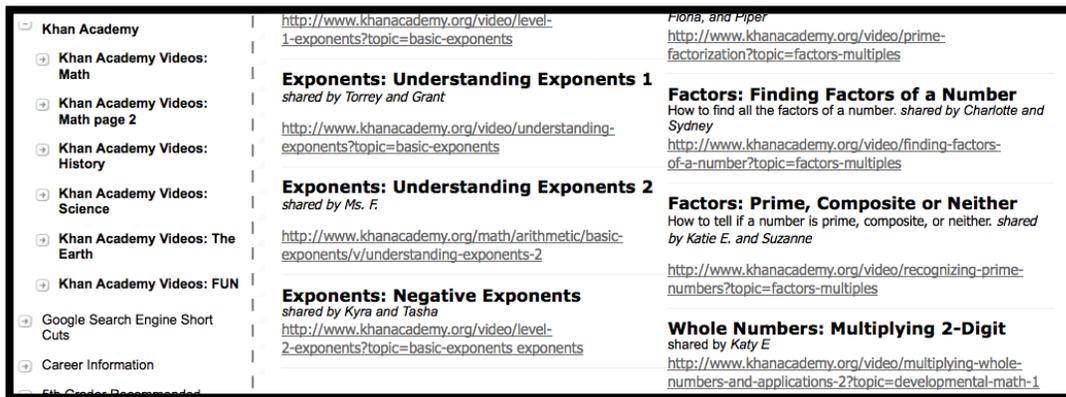
through email and face-to-face conversations about what students were working on in my technology class. I held one lunch meeting and checked in with at least one of the teachers on each activity students worked on in technology class.

Throughout the spring, students worked on several activities in technology class. These activities included working on a report, blogging, learning about and exploring Khan Academy (a website with video tutorials about math), participating in a brochure contest, and an optional raffle contest. In the first week when I communicated with teachers, two of them asked me to review a research report that the students were working on. The third teacher requested I review student blogging and give the students time to contribute to a discussion blog she had created.

The next project involved the Khan Academy, a website with thousands of narrated tutorial videos on math, science, and other subjects. One of the teachers was interested in utilizing this web resource with her class and asked I familiarize her class with it. Upon checking in with the other grade level teachers, they were also interested in having their students use this website. The teachers' interest excited me and I was interested to see what students would think of the site. The first time I introduced Khan Academy to students was during the last part of a class period. I simply asked students to go to the website to familiarize themselves with it. As students began to check out the videos, I repeatedly observed them watching what seemed to be randomly selected tutorials. The video tutorials on the site cover a wide range of academic levels ranging from upper elementary level to the college/university level. While the tutorials are very clear and easy to understand, many students were watching videos which were fairly complex and above their ability level. I approached students who were doing this and suggested they find a tutorial that was more appropriate for their ability. This observation influenced how I approached Khan Academy in the next two weeks with students.

In our next few classes, students examined Khan Academy. I directed students to look the videos on the site with an analytical eye and to look for the relevant resources on the website. In each class, students and I listed topics that were being covered in specific subject areas in their regular classes. Next, the students were to seek out tutorials on Khan Academy that aligned with those topics. When students found a relevant tutorial they liked, they submitted the link with a description to me via an online survey. Next, with the help of a few students, we built pages for our school's website featuring links to these videos, thus creating a mini library of relevant videos to make Khan Academy more accessible to students. During class, students also tested out their knowledge by completing online practice problems that accompany many of the math tutorials.

Figure 3.1 Excerpt from webpage featuring our Khan Academy mini library.



After students gained an understanding of Khan Academy, they began working on the Bullying Academy, an online program that teaches students strategies to better handle bullying. This activity satisfied the online safety component I cover each year. Along with covering real life bullying situations, it also explores online bullying situations. One of the teachers was excited about this activity because she had been observing instances of bullying with her students and thought this would be beneficial for all grade level students.

In the next project, teachers wanted the students to create a brochure to be distributed to guests at our school's 60th Birthday Party. The teachers requested my assistance and due to the significance of this project, I requested that we meet. In the lunchtime meeting we discussed details of the brochure contest along with what I had been doing in technology class with the students. I shared the Khan Academy webpage that I built with some student support. We discussed this a bit and began talking about flipping the classroom in math (when teachers assign video tutorials for homework, then have students work out problems during class time). The teachers were interested in this idea. They then mentioned that soon they would be requiring students to create a PowerPoint presentation. We discussed other alternatives such as using Keynote (Apple's Presentation software) and Prezi (an online presentation software). I shared how these options could work with our available technology and pointed out limitations that existed. Teachers were particularly interested in the online option, which I said I would investigate for them.

For the last month of class while students worked on the brochure project, I also started a weekly raffle with the goal of helping students to share helpful online resources. While searching for Khan Academy tutorials, I conversed with a handful of students who reported using Khan Academy to help them with homework or learn more about something they were studying in class. This optional weekly raffle asked students to share any web resource that taught them something, from dividing fractions to learning a new dance. During class time students filled out paper entry forms for the raffle by sharing the website they used and explaining what they learned from it. At the end of technology class, a student drew an entry from a hat. The students chosen had their

photograph and website featured on a webpage on our school website, and also won a small prize. The winners from each class were then entered into a final drawing for a five-dollar gift card. I also included the websites that others students shared at the bottom of this webpage in a list format.

Figure 3.2 Excerpt from Student Recommended Websites Page featuring raffle winners and contributors.



I used Free Rice to help me learn vocabulary. www.freerice.com

I used YouTube to find out how to make a Power Point for class.

I used You Tube to find out how the respiratory system works.

Students, when using YouTube, please ask for a parent's help in navigating the site. There are so many great sources, but it can be hard to sift through all the videos on YouTube to find the worthwhile videos.

Here are some more sites that students like!

Arcademics
Academics + Arcade Games = FUN
<http://www.arcademicskillbuilders.com/>

Brain Pop
Here you can watch videos and take quizzes to learn about all sorts of topics including DNA, genetics and how the US government works.
<http://www.brainpop.com>

Students shared a variety of solid web resources for the raffle. I introduced several of these websites to students during class and also used a couple in lesson plans with other grade level classes. There are some sites that I plan to examine more closely in order to use them in a future lesson or class activity.

Student Feedback

Students were surveyed in an anonymous online survey in order to discover their thoughts about the raffle and other activities related to this cycle. 73 out of the 92 grade level students responded to the survey. Of these 73 respondents, 42 reported participating in the optional raffle (a 58% participation rate), while 31 reported they did not participate.

Those who did not participate reported a variety of reasons for this. About half, 16 of the 31 students, said they were not interested in the raffle and 12 stated they did not have a

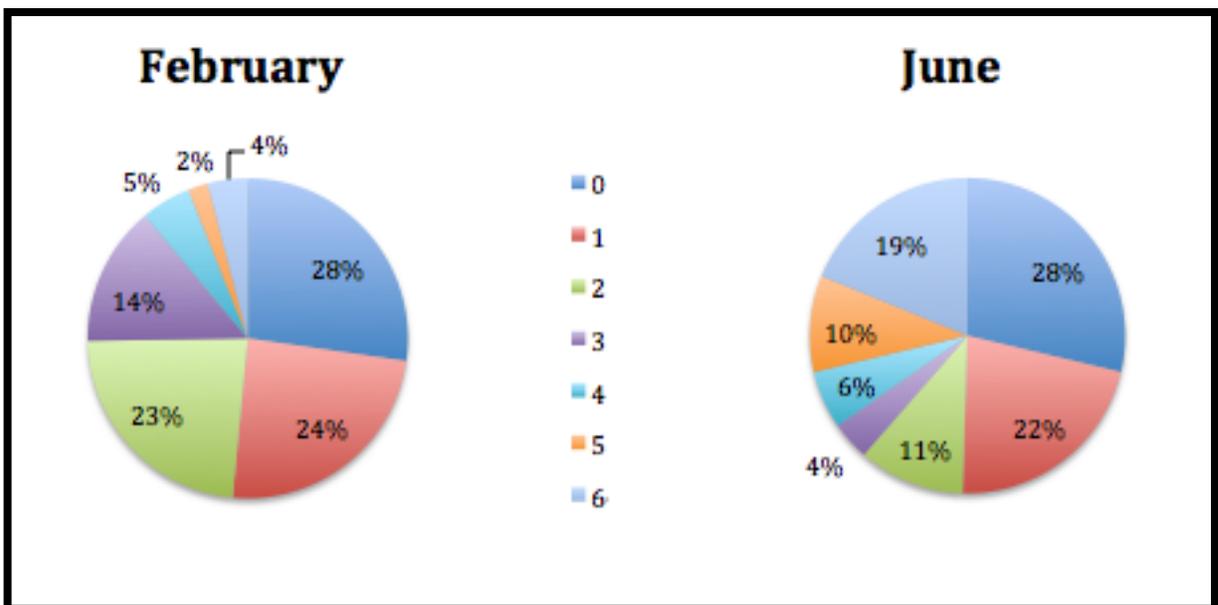
website to suggest. One shared that he or she did not hear about the raffle, one did not want to enter the raffle, and one other student reported that he or she forgot to enter.

In order to understand what students thought about the raffle activity, I asked how they would describe it given the descriptor choices of awesome, so-so, and lame. 18 out of 73 students described the raffle as awesome. 14 out of 73 students rated it as so-so. 41 out of 73 students rated it as so-so. This tells me student interest existed, but that this activity was not extremely engaging or exciting for most students.

I also inquired if students looked at the Student Recommended Websites Page, which is where websites submitted in the raffle were shared. One third of students (24 students) looked at this page on their own while two thirds did not. Of the 24 students who looked at the page, 17 of them explored a link on the page. This tells me that just 23% of all fifth grade students viewed any of the links on the Student Recommended Websites Page.

In February, at the beginning of cycle three, I conducted an anonymous online survey to learn how often students use the Internet for homework. I also asked students the same question in June, at the close of cycle three. In February 94 out of 94, 100% of students responded. In June, only 73 out of 92 students responded or about 79% of students. Throughout the school year, the number of students fluctuated due to students leaving the school. The participation rate varied due to technology class attendance.

Figure 3.3: Amount of Times Per Week (1-6) Students Use the Internet for Homework



Students reported how many times they used the Internet for homework at the beginning and end of cycle three. The amount of students who reported not using the Internet or using it once per week did not change significantly. The most significant change can be seen in students who used the Internet 6 times per week, which saw an increase of 15%. Other increases were seen in the percentage of students who used the Internet two and three times a week. A smaller increase was seen in the percentage of students who use the Internet five times per week. Overall, this data shows that students began using the Internet more times per week for their homework. This suggests that the activities in cycle three may have contributed to this increase.

Teacher Feedback

In June, all of the three teachers from the grade level team completed a survey to express their perspective at the end of this cycle. Teachers were asked how often their students typically use the Internet to complete homework. Responses were 2, 3, and 4 times per week. Teachers explained students used the Internet for work including research for projects, blogging, and online programs. One teacher reported, “...and after reading the fifth grade page of sites... they've used the Internet for Khan Academy, YouTube, and lots of other things.” This same teacher said she did not use Khan Academy in class nor assign it for homework. However, it seems that student use is motivating her because she wrote, “My plan is to research and get to know the Khan Academy BETTER this summer. I will implement usage in the fall.” Of the two other teachers, one reported using Khan Academy with students, while the other did not.

Two of the teachers investigated the Student Recommended Website page on their own and both of these teachers also viewed specific websites listed on the webpage. All teachers agreed the lunch meeting was helpful. They mentioned they liked being together and had a chance to share information, which helped keep everyone on the same page. One teacher noted this meeting was necessary for the success of the brochure contest, which was a technology class activity students completed during this cycle.

I asked teachers about the model of support I should provide in the future. One teacher reported being happy with what went on in cycle three. Another teacher said she was unsure, but wanted to watch students' needs and technology changes to see what kind of support would be needed in the next academic year. Another teacher expressed she would like help with learning about iPads, tools she will have in her classroom next year. This teacher also expressed continuing to collaborate would be beneficial.

REFLECTION:

Overall, this cycle pointed to how increasing collaboration and communication can improve idea sharing among teachers and students. The activities conducted in this cycle helped to share knowledge between teachers, students, and myself. I found that by valuing student and teacher ideas—in working with teachers to find out their desires and by asking students for their feedback—some solid knowledge sharing occurred. I learned

that putting effort into the communication process helped lead to new, exciting possibilities.

My main goal for the Khan Academy project was to make this web resource more accessible for students and teachers, which I believe we achieved. Students repeatedly mentioned this website in the raffle contest. I also spoke casually to students throughout the spring who shared they liked learning from this website and used it to assist with homework. As we discussed Khan Academy in the grade level team meeting, I introduced the concept of flipping the classroom, which was fairly new to these teachers. Flipping the classroom involves restructuring instructional time, so that traditional homework becomes class work and lectures are watched for homework. The teachers were open to learn more about this idea. I was excited that one teacher who did not use Khan Academy this spring, intends to look into it over the summer, after seeing students using it. Khan Academy is not the only site that can be used to flip the classroom and down the road I would like to introduce the idea of teachers, or even students, creating their own screencasts or videos to use for instruction.

In working with students, I have informally observed that many view the Internet as a great source of entertainment, but often overlook its potential for learning. In our school, teachers do not use sites like YouTube often and many are blocked for student use. This indicates that students usually access these types of sites at home where their main purpose is likely entertainment. Throughout this cycle, I was excited to notice some students starting to view the Internet as a learning tool. While students analyzed Khan Academy, we had several class discussions about how using a site like Khan Academy could actually help them with homework. We talked about how they did not need a computer to watch one of these videos—a tablet or smart phone would work too. One student inquired about how to explain to his parents that he needs a cell phone to do his homework. I was glad this activity helped to open the student's eyes to new possibilities. This was also evident in the raffle where many students who participated reported using videos on YouTube, Khan Academy and more to learn how to do things like create a drawing or PowerPoint presentation, solve a math problem, or learn a new dance. This tells me students are beginning to see how online tools can help them take charge of their own learning.

One surprising benefit of meeting and communicating more often with teachers was that we started looking to the future, not just the present. Teachers were interested when I shared our work in creating a mini Khan Academy library online. In addition to suggesting another grade level use Khan Academy, they also wanted students to use the log in feature so students could track the videos they watched. There was also an interest in getting the students email accounts and using the web-based online presentation software program, Prezi. Excited about these new ideas, I investigated creating online accounts for students. I learned of legal issues regarding students under the age of 13 using certain web tools. This affects our students, so I communicated these concerns to the grade level team and we decided we would work with the administration to find a way to implement these online accounts in the fall. Creating accounts for any or all of these tools would allow more possibilities for both students and teachers. I was very

pleased to see the teachers' interest in using these web tools, as these are tools I have also wanted to use with students. Having the teachers in the same arena with me is the support I have been seeking. This face-to-face meeting opened more doors than I anticipated. The meeting gave us a venue in which to discuss and share thoughts and desires. It helped us all to get on the same page and develop a vision for the future. I do not think any of us were opposed to sharing before; we just never had the forum in which to do it.

In addition to this grade level team of teachers, there are five other grade level teams in my school. Meeting with other teams could support communication and idea sharing between them and me. Next year, I would like to schedule at least one meeting with grade level teams to check in and find out more about teachers' thoughts on how we can work together to better meet the diverse needs of students and teachers in respect to technology. For this cycle, I chose the specific grade level team of teachers to work with because of their openness to technology. In working with other grade levels, there will be different needs and abilities among teachers and students. These may present challenges, but I believe increased communication about technology with grade level teachers, as in this case, can lead to looking to new possibilities—a very valuable action.

Another action in this cycle, the raffle, built up some excitement among students and was a simple way to quickly gather web resources from students. I would like to use the idea of a raffle again, to share web resources and maybe even iPad applications. However, making adjustments to the structure could make it more engaging. I have not done much student sharing outside of this cycle and this is something I would like to continue to do in my workplace with other grade levels.

Instead of only posting the websites and a brief description of it online, I could ask students to demonstrate the website for the class. Having students create a screencast about the website, which could be shared online, would be another way to better utilize and share student knowledge. Asking students to review a website, rather than just tell what they learned from it, would challenge their thinking and give the rest of us an improved understanding of a website. Using one or combining these models could result in a more rewarding learning activity for students.

My actions of sharing the Student Recommended Websites Page, created with the raffle results, could have been improved. I created a website so that the information was accessible to others outside of the grade level. I shared this website weekly with grade level students, but only briefly during class. I did not share detailed information about specific sites, thus I did not highlight the potential value of these sites. To promote the sites listed on the webpage in the future, I would like to create activities for students around some of the sites to build awareness and interest by having them experience them first hand. I shared Student Recommended Websites Page with the grade level teachers briefly over email, but again, did not share any specific information. Giving some details about the site might have sparked their interest. Another way I could have shared the Student Recommended Websites Page could have been putting a message with a link in the weekly mass email communication sent to parents and teachers. Because this

information is on a webpage, it lends itself easily to using it next school year and sharing with others.

I did not predict that I would personally benefit from this raffle activity. Many of the sources students shared were new to me or were sites that I was only aware of, but had not used. The students helped me to learn more about their interests and also how the sites they recommended could be used for learning. Their suggestions sparked my interest. In the next school year, I plan to use sites listed on this webpage with students and teachers. I have already used a few of the websites in other grade level classes and plan to explore more of the sites in order to implement them into future lesson plans and activities. This raffle activity helped me to keep in touch with student interest. The websites they have shared have increased my knowledge, and I can share this new knowledge with students and teachers at our school. Overall, I found the raffle activity was an easy and productive way to tap into student knowledge to find web resources.

As the technology teacher and coordinator at my school site, I am seen as the liaison between the teachers and the world of technology. Teachers often have unrealistic expectations of my knowledge and will ask me any and all questions related to technology. When I do not know the answers, I look to resources that I think will have the information. As technology continuously changes, it can be challenging work to keep abreast of new technologies. In this cycle, I was pushed to stay current and learn more about Khan Academy and flipping the classroom because that is what teachers were interested in. Students shared websites I found to be useful in other grade levels. Both of these actions helped me keep me up to date in my practice so that I can share current information with students and teachers.

Final Reflection

If someone had told me four years ago I would now be working as a “technology expert” and hold a masters’ degree in learning technologies, I would not have believed them. Since starting my college career twelve years ago, I feel that both my personal life and my career have taken me in surprising directions that I could not have foretold. I have had amazing adventures full of rich experiences that have helped me to grow. The process of designing and implementing this action research project has only continued this tradition.

The Action Researcher

In doing this research project, I learned more about myself and how I work. Ideas that presented themselves in my action research readily applied to my personal life. I learned that I do my best when I have time to think about a problem I encounter. I can usually create an immediate response. But, if I wait and give myself some time to think, I often start to see the problem from different perspectives and then can pinpoint the best way to approach the situation. Throughout this past year, I started looking at problems I have encountered with a more analytical eye. Trying to solve everything that is bothering you will leave you exhausted and unsuccessful. This project reinforced the importance of prioritizing and maintaining balance in my life. Instead of trying to jump through all the hoops, I worked at directing my focus on the most important.

Increasingly, I started looking at things for what they were, instead of what I wanted them to be, and that helped me to gain perspective and new understanding. If I was not happy with something, I looked for ways I could make a change to improve the situation instead of waiting for someone else to do it. I learned that going through the process is often more valuable than reaching success. The journey is more important than your destination. At times trying again with a valiant effort will prove worthwhile. There are times when allowing the process to simply end is critical. However, being able to make this distinction is an important lesson that I am still learning.

The Action Researcher in the Workplace

Having just completed my third year working as an elementary school technology specialist and nearing completion of my masters’ degree begs the question, “*What’s next?*” Many would suggest it is time for me to seek a higher paying job with my new, flashy degree. However, I am happy to stay in my workplace. Before starting action research, I was in this position for two years. I started here with a limited background in technology. Slowly and through much trial and error, I became more confident in my practice and built my expertise. I have formed stronger relationships with staff and students. This foundation helped me to enact change in this action research project. It felt like everything fell into place this year. Cycle four starts this fall. I am excited to see what else we can accomplish.

As Zander and Zander (2002) said, you can lead from any chair. I found that attitude and passion can go much further in affecting change than your actual job title. If you truly care about your work and others, the people around you pick up on that and respond positively to it. Approaching people with the right attitude offers more impact than what you are actually trying to get them to do. For a while now, I have approached life and work with the following idea, “*A person won’t always remember what you say, but they will always remember how you made them feel.*” This idea is important in working with anyone and I found it extremely helpful in the workplace. To influence the group, you need to target the individuals, which I worked to do in my action research project. I received many sincere thanks from students and teachers this year.

Action Research for Others

In conducting research, I gained a better understanding of why idea sharing is important. Reviewing literature as I planned my project helped me to see what was going on in the educational technology field and prompted me to think reflectively about the specific problem I wanted to target. As I read others’ work, I found ideas that spurred thoughts for actions I could take. It was also helpful to read about ideas that didn’t work well or that I did not think would work in my school setting.

Along with listening to the literature, I found conversations with others a very valuable tool. By listening to what others said and hearing what they did not say, I have been able to see a much broader picture than if I just assumed what they were thinking. This gave an insight to the pulse of the organization as well as the person. People were usually happy to share their thoughts—it made them feel valued and respected. Regardless of age, background, education, wealth, and expertise everyone has a different perspective to offer. Listening to others’ ideas might just be what is needed to reach that “ah-ha” moment when approaching a dilemma. Significant innovations are often the result of combining simple ideas and practical thoughts. If you don’t talk to others, you could be missing out on a great opportunity.

In this research, I discovered elements that were effective in supporting teachers in using technology. A hot topic in education is differentiating instruction for students. However, when shifting to teachers and professional development, this consideration often seems to be neglected. I found that working in small groups and individually with teachers allowed me to readily address their varied needs, which in turn resulted in successes.

Often people will say they cannot do something because they are pressed for time. Conducting action research has shown me if someone is motivated and interested, they will make the time to pursue a task. When people are not interested in something, it’s often because they are scared to try something new or they do not see potential benefits. In working with others to find a solution to a problem, I have learned not to share all the possible technology tools they could use. Instead, focusing on one tool that could meet their needs was usually the best strategy.

In most worksites finding time seems to be an issue. In my project, one might argue that teachers just need more time in general to complete tasks related to their jobs. However, I realized that teachers didn't just need time. They needed time for support. Creating continuous times dedicated to technology support gave these teachers the encouragement and structure that was needed. It also let them know they were not alone in their endeavors with technology.

While this research project was conducted in a school context in using technology, the elements I have described could be applied in a multitude of other contexts. People need to be valued and be shown respect for their voice and perspective. Support, encouragement, and time all go hand in hand when trying to move forward and make changes for improvement within an organization. Regardless of what path my personal life and career might lead to me next, these principles are now a part of me and should prove helpful no matter what the future holds.

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