**Successful Implementation of a 1-to-1 Initiative**

**Introduction**

One of the major trends in education today is the integration of technology into our schools. As we prepare our students to be productive citizens, we cannot deny that technology is an important part of nearly every aspect of our society. Our students are changing. One question we must ask ourselves as educators is how do we address the needs of 21st century learners? Students today are bombarded with information at a rapid pace. They are used to instant communication and immediate feedback. Many traditional teaching methods are not as effective as they used to be. So how can we find a way to harness the power of technology and use it to make our schools better?

Many school districts are answering this question with the implementation of a 1:1 laptop initiative. The goal is to empower and engage students at a higher level while helping to better prepare them for a world that is immersed in technology. The potential that exists in such a program is tremendous. A laptop initiative goes beyond just the students. Teachers must change the way they teach, and the entire school community must be involved and supportive. In fact, as Weston and Bain (2010) point out, we may very well be in the beginning stages of a complete paradigm shift in education, a shift that embraces and integrates technology as an essential learning tool.

The trends indicate that a 1:1 student to computer ratio is on its way to becoming the norm (Bebell & O’Dwyer, 2010). As more and more schools begin to put laptops into the hands of their students, it is important to realize that the research shows that there are still some negative aspects of such a program. However, the positive effects of a 1:1 program are
undeniable and greatly outweigh the negatives. The real question for school districts across the country lies in how to implement a laptop initiative successfully to be certain that it will have positive results for everyone involved.

**Review of Literature**

*Negative Aspects of a 1:1 Laptop Initiative*  It cannot be denied that there are still some areas of concern when implementing a laptop initiative. One study found such a program to be entirely negative. Fried (2008) found that teachers were beginning to ban laptops from their classrooms as they felt they were too much of a distraction. Additionally, students in Fried’s study felt that their understanding of the material was not as good with the use of laptops. This particular study was very limited and seemed to have a bias against laptop implementation. Students in a study by Trimmel and Bachmann (2004) showed that students who had laptops experienced greater physical discomfort and a greater pressure to perform well in school. Similarly, a study that focused on laptops in language arts classrooms also found that many students were off task, and others were isolating themselves socially from the rest of the class. Many of these concerns could be easily addressed through some consideration for the physical environment (McGrail, 2007).

It is important as we examine the negative aspects of a laptop program to keep in mind that, as Holcomb (2009) points out, it takes 5-8 years to fully implement a new innovation. Similarly, Shapley, Sheehan, Maloney, and Caranikas-Walker (2010), who offered the most comprehensive study, found that only 6 of 21 schools had reached a level of substantial implementation after 4 years. It is a time-consuming process that does not happen overnight. It is this fact that brings up the concern of cost. Is a 1:1 laptop program worth the investment? Lei and Zhao (2008) note that not only is there a high cost associated with a laptop initiative, but the
research cannot keep up with the changes in technology to know whether or not the program is really working. Rutledge, Duran, and Carroll-Miranda (2007) agree in their study of New Mexico schools, stating that there is not enough evidence to justify the cost of these programs.

The other primary area of concern is in the actual implementation of a 1:1 program. There are worries about discipline issues that come along with putting technology into the possession of students. Others have expressed concerns about students’ digital literacy and possibly even becoming too dependent on technology (Lei & Zhao, 2008). For the most part, students are not really the reason for concern. As Maninger and Holden (2009) identify in “Put the Textbooks Away: Preparation and Support for a Middle School One-to-One Initiative”, it is the teachers who fear change. Yet, teachers are instrumental in helping a laptop program succeed. Those programs that were not as successful found that one of their biggest barriers was a lack of time devoted to professional development for teachers (Drayton, Falk, Stroud, Hobbs, & Hammerman, 2010). Finally, Bebell and Kay (2010) explain that poor implementation and a lack of leadership are also contributing factors to less than ideal programs.

**Positive Results from 1:1 Initiatives** The majority of research done in the area of 1:1 laptop initiatives has looked at what the programs have achieved. Those achievements have been far-reaching and greatly outweigh the negative aspects. Villano (2006) cites the Technology Immersion Project in Texas as resulting in positive changes in both attitude and behavior of students. A large number of studies found that student engagement and motivation increased while discipline referrals and absenteeism decreased (Bebell & Kay, 2010; Bebell & O’Dwyer, 2010; Mouza, 2008; Russell, Bebell, & Higgins, 2004; Rutledge et al., 2007; Suhr, 2010). Not only did student involvement at school increase, but their time spent doing homework outside of school hours increased as well (Russell et al., 2004; Gulek & Demirtas, 2005). In their study of
three California schools which were picked specifically to represent three very different socioeconomic levels, Grimes and Warschauer (2008) found that 74% of those various students found school more interesting with the implementation of laptops. Thus the research indicates time and again that laptops do have a positive impact on student engagement.

Not only were students more engaged, parent involvement also increased (Rutledge et al., 2007; Lei & Zhao, 2008). Villano (2006) states that the benefits extended even further and had a positive impact on entire communities in Texas. Certainly, increased support of parents and community can only be seen as a tremendous benefit to the education of our youth.

Research also indicates that teachers are finding many benefits in the implementation of a 1:1 initiative. Teachers are not only improving their technological skills, they are enhancing and improving their instruction as they integrate technology (Holcomb, 2009). Classrooms are becoming more student centered (Dunleavy, Dexter, & Heinecke, 2010) and lesson plans are more creative and collaborative (Rutledge et al., 2007). The focus is shifting toward project-based learning with more higher-order thinking skills (Lowther, Ross & Morrison, 2001). In short, students are more involved not only because of the technology itself, but because of how the technology is changing the approach of the teacher. As teachers utilize technology across the curriculum, there is less large group instruction and greater autonomy among students (Russell et al., 2004; Grimes & Warschauer, 2008). In their California study, Grimes and Warschauer (2008) found that 88% of teachers wanted to continue the laptop program and 82% would recommend that other schools implement such a program as well.

Clearly there are many positive aspects to a laptop initiative, but in today’s age of accountability, do they really translate to measurable academic achievement? Studies show that the first year there may be no noticeable gains. In fact, in the California study, those with
laptops fell behind in standardized test scores in the first year, but made strong gains in the second. (Grimes & Warschauer, 2008). Mouza (2008) found academic gains in both writing and mathematics among students with laptops. A 2005 study by Gulek and Demirtas found higher achievement in grade point averages, writing test scores, and standardized test scores. In a study that employed an essay prompt as an evaluation tool rather than relying on outside test scores, the students with laptops showed a statistically significant gain with effect sizes ranging from +0.61 to +0.78 in the four dimensions scored over those students who did not have continuous access to technology (Lowther et al., 2001). This reflects how much of the research found that one of the areas most changed by the use of technology was the area of writing (Gulek & Demirtas, 2005; Mouza, 2008; Russell et al., 2004; Suhr et al., 2010).

Another interesting benefit for a small number of students was that no longer were those who needed assistive technology singled out. Rather, everyone in the classroom was using technology so those who previously had been the only one on a computer no longer felt out of place (Maninger 2009).

Overall, the benefits of a 1:1 laptop initiative are undeniable. Interestingly, the strongest predictor of success on the TAKS reading and math assessments in Texas was student use of their laptop at home outside of school hours. Not only is technology integration positively changing teaching and learning at school, it is helping to create independent, self-determined learners outside of school (Shapley et. al 2010). We are beginning to see the results of this increased student engagement, and the potential for where the technology may take us is great (Bebell & O’Dwyer, 2010). More than that, we are truly preparing our students to play an active role in our modern society (Mouza, 2008).
Successful Implementation of a 1:1 Initiative  A multitude of school districts are on the verge of diving into the vast ocean of technology implementation. It is important to begin to look at what makes a 1:1 initiative successful and avoid the mistakes that have been made. One of the first steps is to address the technological aspects. There needs to be a wireless network available, sufficient power supply (including electrical outlets as batteries drain quickly), access to printers, and maintenance available on site (Cutshall, Changchit, & Elwood, 2006). A partnership with either a vendor or a public agency can also go a long ways in making a program successful (Villano, 2006). That vendor can provide technical support in addition to the onsite person fulfilling that role.

A successful 1:1 initiative begins with strong leadership that provides administrative support and gains backing from parents and the community. (Shapley et. al 2010). The district needs to create a vision that takes community values and socioeconomic context into consideration (Warschauer, 2007). Simple, straightforward policies that define the beliefs and vision of the district should be consistent and include an acceptable use policy (Drayton et al., 2010; Weston & Bain, 2010; Rutledge et al., 2007). That vision must then be clearly communicated to all parties. The policies should be clear enough to allow teachers to focus on the integration of the technology rather than the procedures (Dunleavy et al., 2007).

Shapley et al. (2010), who offer very thorough advice, also point out that it is important to have a start-up year for planning before actually distributing the laptops to students. Holcomb (2009) agrees, arguing that teachers need to get the laptops first and have time for training and planning before students bring their machines to class. The recurring key factor for success is the preparation of teachers. The importance of the role that teachers play in making a 1:1 program successful cannot be overstated. Professional development is vital. Teachers need to
learn how to integrate so that pedagogy comes before the technology (McGrail, 2007). The curriculum remains the driving force, but teachers need to find ways to harness the power of the available technology. Not only do teachers need professional development to get started, but follow up support as time goes on (Shapley et. al 2010). Teachers need to have the support of the administration so that they are not afraid to try new things (Maninger & Holden, 2009). The goal is not mastery of the technology but continuous re-evaluation and improvement (Bebell & O’Dwyer, 2010).

Finally, a school district must consider how they are going to assess the 1:1 program (Holcomb, 2009). Grimes and Warschauer (2008) state that standardized test scores are not the ideal measure for success in this type of a program. Technology integration is not a quick fix. Schools who decide to go this route must develop a vision and commit to it, realizing that while academic achievement should improve, there are many other benefits that are more difficult to measure and that the process will take time (Shapley et. al 2010).
Conclusion

Technology is here to stay. One can no longer argue that it is a passing fad. Therefore, as educators, we have to decide what we are going to do with it. The integration of technology into our schools holds tremendous potential, if we are willing to put aside our fears and embrace change. For those of us ready to jump into the realm of 1:1 laptops, there is much to learn from those who have gone before. We need to make ourselves aware of both negative and positive aspects of such a program. Knowing the negatives will allow us to prepare to deal with them if not avoid them completely. Knowing the positives will help us to form our vision for a successful program.

Finally, and most importantly, we can learn key components to creating a thriving 1:1 laptop program. Creating a strong vision for a program that supports teachers in implementing change, that allows students to become more independent and more engaged, and that reaches out to the public will result in a positive environment that benefits all members of the extended school community.
References


