Laptops in School: Necessity or Luxury?

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Since the beginning of time, education has been the key to sustaining human life. At first, knowledge was passed down by word of mouth and visual instructions, such as a father teaching his son to farm or hunt, or the oral traditions of Native Americans. Later in history we find the sharing of knowledge through letters, some, like the Egyptians, used clay tablets to send messages; others, like the Greek, wrote upon scrolls of papyrus. Histories were engraved in stone or metal, philosophies were written on scrolls and animal skins, directions were written on paper, and stories published in books. The sources of literature are endless; the evolution of it is astounding.

Today people don't need to worry about tanning hides so that we may have something to write on. We simply go to the store and pick up a notebook. The difficulties we now face are those such as deciding what color of paper to get, what size, do we want lines, no lines, graph paper, paper with perforated edges, paper with three holes, paper with no holes, sketching paper, and the list goes on.

When we want to learn about far off lands, cultures, or ideas, our greatest difficulty is not going to the library or book store to find out. Instead, we contemplate which web site is most credible and has the best information on the subject we're looking for. Today, thanks to the internet, we have the knowledge of the world at our fingertips. With the help of the internet, anyone can find the information they seek, the book they wish to read, or a how-to guide on anything. So wouldn't it seem like a wonderful idea to put laptops in our schools; at the very core of our children's education? What more could a parent wish for their child than to give them a world full of knowledge? Many state education departments have developed this idea over the last ten years. They have been testing the idea by giving laptops to high school and junior high students. Laptops are indeed a very useful tool, specifically in English classes, where the world of literature, history, criticism, and research are only a mouse click away. However, they are more of a luxury than a necessity and have the capacity to be as dangerous as they are helpful.

English Classes Have Success

In an English class, computers are used often for research as well as writing papers. Idealistically, laptops in an English class would mean that students could do more research because they wouldn't have to wait for a computer lab to be scheduled. Such scheduling can be chaotic if you have multiple classes and only one or two computer labs. Even after a teacher manages to schedule a lab, students may average only thirty to forty-five minutes looking for credible sources on their topic. One high school teacher states that, "correcting research papers can be a mountainous task when students do not know how to research and cite a paper correctly. By using laptops, you can monitor their work, help them

distinguish between reliable and unreliable sources, and edit papers in class. The result is an interesting paper" (Gill).

With more access to computers, students are able to do more research, obtain better sources, and further their knowledge on a subject. One study, performed by James Cengiz Gulek and Demirtas Hakan, indicates that the use of laptops in English classes has improved research analysis skills as well as contributed to a significant increase in access to information when researching. The report also stated that the "meta-analysis found that students who use computers when learning to write are not only more engaged and motivated in their writing, but also produce work that is of greater length and higher quality, especially at the secondary level" (Gulek).

This sounds like an English teacher's dream come true, and makes perfect sense when you consider the old adage practice makes perfect. The writing skills of students naturally would increase if they were constantly encouraged to write. One high school English teacher, Mr. Roy, has found many ways for his students to use their laptops. As they read *Treasure Island,* the students are asked to pretend that they have been kidnapped by pirates who want them to join their crew. Each day they are asked to post a blog on what it would be like to live the life of a pirate. Mr. Roy writes prompts for them and includes pirate and nautical terms from the book in order to expand their vocabulary. The students must then define these terms so that they can properly use them while writing their blog entry. Two of his students were briefly interviewed about this pirate project and both replied that the computers made learning English more exciting (Callahan).

Distraction

Mr. Roy's class is a perfect example of how laptops can be effectively used as a tool for teaching English. Successful utilization of laptops in classroom curriculum paired with research showing that standardized test scores in English have increased, make the move towards laptops very appealing; but, what about the things that the researchers and the interviewers didn't study? For instance, the research showed no results for things such as the amount of students who found laptops distracting. However, this is a problem that is experienced in many colleges all over the world, and professors are very aware of this. One such professor, Ms. Sieber, mentions that she often has students ask their classmates to stop playing games or watching movies during class, because it distracts them (Fishchman). College students care enough about their education to be willing to step up and say something to someone who is distracting them from learning. It would be extremely impractical, however, for a high school teacher to be able to expect this from his or her teenage students. Students attend high school because they have to. Students attend college because they are motivated to learn more and want to. Not only that, but college students tend to find more motivation to pass their classes in the fact that they pay thousands of dollars in tuition and books every semester. Sieber goes on to state that she,

> "identified 17 students in one of her classes who were using laptops most frequently. After the first test, she told them that they did 11 percent worse, on average, than their peers who did not have their faces in their computers as much. Lo and behold, the number of laptop-nosed students dropped to a half dozen, and the test scores of those who

stopped using their computers during class went up" (Fishchman). This not only suggests that laptops are distracting, and they may not be the most efficient way

of taking notes either. If such things are hindering college students, then how much more can it hinder the learning of high school students?

Taking Creativity Captive

When given a laptop to take notes, it is hard to believe that a high school student would have a tendency to pay more attention in class than a college student would. One teacher points out that, "Note-taking on a laptop encourages verbatim transcription. The note-taker tends to go into stenographic mode and no longer processes information in a way that is conducive to the give-and-take of classroom discussion. Because taking notes the old-fashioned way, by hand, is so much slower, the student actually has to listen, think and prioritize the most important themes" (Cole). Many studies within psychology have proven this idea to be true. If a person listens to something, then they might remember what is said; if a person writes down what they hear, they will remember it longer; if a person applies a principle being taught, then they will almost never forget it. So, if students do not have to think for themselves then they will not only struggle to remember what was taught, but will also have trouble coming up with their own thoughts.

Retention is not the only thing that concerns many teachers and parents. They also fear that a student's creativity may be threatened. Some fear that putting a child behind a computer all day may cause the

student to not be creatively challenged. One such person, Eugene Geist, has a son who is an exceptionally talented student. However, because of this, his son needs to be given greater challenges than other students and different opportunities to express his creativity or else he gets bored. When children become bored, teachers see one of two results: 1) the student becomes lazy, stops doing their work, and no longer participates in class, or 2) The student becomes disruptive and obnoxious, in an attempt to keep himself entertained. Mr. Geist has noticed that his son has been struggling with his online classes because he wants to do hands-on activities and create more than papers, blogs, and web pages. Geist certainly poses a pertinent question when he asks the following, "do we want to emphasize conformity and homogeneity at the expense of **creativity**" (Geist). For these exceptional students, as well as students with special needs, laptops may indeed stifle creativity and hinder their ability to learn. We should consider this as we contemplate the usefulness of laptops in public schools. These devices may also be a catalyst to chaotic classrooms.

I recently had the opportunity to shadow a class of nine special needs students at a high school in Shelley, Idaho. For the last twenty minutes of class, the students were asked to log onto the nine classroom computers and do the online practice problems for the Idaho Standard Achievement Test. All nine students already found it difficult to pay attention in their regular English classes because of ADD, ADHD, disinterest in the subject as a whole, or other various reasons. Regardless of the reason for attending the class, all of the students needed extra attention from the teacher just to keep them working for five minutes at a time. They looked at what was on their neighbor's screen, sat back in their chairs staring blankly at what was in front of

them, or just played around with their mouse. In a normal classroom these students with special needs would be placed into a class of 35 or 40 students alongside those exceptionally talented students who finish their assignments early and have nothing more to do. On a test these students show very different results, but in the classroom, in this situation, they share the common feeling of boredom, and all teachers know that boredom leads to chaos.

Teacher-Student Relationships

The potential for chaos is one of the reasons that schools need to be careful that they do not replace teachers with laptops. Some, such as Idaho State Superintendant, Tom Luna, have observed that it would be cheaper to require students to take one or two online classes in high school and get rid of several teachers because teachers are the most expensive part of education (Manning). Does it make sense to get rid of teachers just because they receive an annual salary? Teachers are what allow the other expenses, such as textbooks, technology, and other teaching tools, to educate students. They are the key to educating kids, not laptops. Laptops are a great tool, as illustrated earlier by Roy's English class, but nothing can replace the teacher-student relationship that helps students to understand a concept. Everyone learns in different ways and a computer cannot distinguish between different learning styles, or understand how to cater to them. It can see that a struggling student has a low score and that an exceptional student

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has a high score, but it cannot see that they are both bored senseless. An actual teacher who is constantly present in class however, can read students, understand their frustrations, and help their weaknesses by recognizing and using their strengths.

Travis Manning, a teacher from Caldwell, Idaho points out that "there is a symbiotic relationship between student, teacher, and parent. They all need each other for a student to succeed" (Manning). The places where a student spends the most time on weekdays are at home and school. This means that the two people observing the child most are the teacher and the parent; so, how could anyone, or anything, possibly teach a child better than these people. Manning admits that it is imperative for students to learn how to use technology, but he stresses that it is not a silver bullet when it comes to *teaching* students when he states the following. "As a teacher I have the fortune to teach at a secondary school with a Smartboard in my classroom, a personal computer, two extra personal computers for student use, clickers for students to record answers to quizzes and tests, a single mini laptop for students to use who have very poor handwriting, an iPod, and a TV with cable TV, video and DVD capabilities. But technology does not teach my students; I teach my students. I am able to build one-on-one personal relationship with them as I work to train, motivate, and mentor them in my subject area" (Manning). Clearly, many school districts and local governments are underestimating the impact and influence that a teacher, as a human being, has on a child versus even that of a super computer.

Money Matters

Technology is not a quick fix for the problems that public schools experience in academics. However, any teacher, even Travis Manning, will tell you that

technology is useful and should be utilized in schools. If a public high school decides to purchase laptops for every student in their school, this program would have to be implemented over a period of several years because of the cost. If the school was fairly small and had only about 800 students, and the average laptop cost 600 dollars, then the total cost would be almost a half million dollars. For some schools, 800 students is the size of one grade, but for the sake of this example, it will remain the size of the school as a whole. On top of those costs, the school must offer wireless internet so that everyone will be able to use it for their classes. Now that the wireless internet has been opened to all of the students rather than just teachers, the school is also going to need to purchase massive firewalls, filters, and other protective technology so that the school cannot be held responsible for the inappropriate use of the internet. Anti-viruses must also be installed, but all of those precautions probably will not be enough, the school will still need to hire someone who can handle repairs and technical problems. Protection in a public school is essential, but protection always comes with a price.

At this point it is evident that the laptops themselves are not the only financial cost of these programs. The school will have to pay for much more than that. Where does this money come from? Every student is entitled to a free public education. This means that schools are not allowed to make students pay for the laptops or the programs that are needed to run them properly and protect the students. The money must come from the state. Eleanor Chute, a writer for the Pittsburg Post-Gazette, interviewed a school in Pittsburg that had utilized laptops into their school. In her report she states that

> "The school began with providing laptops to seventh-graders in the second half of the 1998-99 school year. By the time $9.9 million in school renovations were completed in December 1999, pupils in all three grades, and their teachers, had them. The technology cost $1.9 million, or about $300 more per student more than a plan that would have provided three computer labs and six desktop computers in each classroom" (Chute).

Many teachers believe that these six desktop computers and three brand new computer labs would be a fabulous way to incorporate technology without letting it overrun the classroom. For some school districts, the cost is more than they can afford to spend, especially when the yearly cost of

"You have to put your money where you think it's going to give you the best achievement."

repairs can fluctuate drastically depending on unexpected circumstances. The New York Times reported that "Northfield Mount Hermon School, a private boarding school in western Massachusetts, eliminated its five-year-old laptop program in 2002 after it found that more effort was being expended on repairing the laptops than on training teachers to teach with them" (Hu). Another school that chose to shut down the program did so on the grounds that, "The students…have used their school-issued laptops to exchange answers on tests, download pornography and hack into local businesses. When the school tightened its network security, a 10th grader not only found a way around it but also posted step-by-step instructions on the Web for others to follow (which they did)" (Hu). Students are not stupid, as we all too often think. Because of this, it requires a lot of effort to keep up with them and even more to stay one step ahead of them; this can become very time

consuming. These issues bring us to the next cost of laptops: classroom time.

Time

In order to effectively use laptops, teachers and students both must be trained to use them. Even if an entire classroom has laptops and the students understand how to use them, if the teacher does not, the laptops will serve the students no purpose. Teachers must be very proficient when it comes to using this technology. They are not trained in college to use them, however, so it is left up to the school districts to pay for the necessary classes that teachers may need in order to understand how to use the laptops in their content area. This type of training would especially be needed for schools such as the one Chute interviewed in Pittsburg. This school purchased special laptops called StudyPros. These laptops are highly protected from external damage than regular laptops and include other various enhancements; this gives the teacher more control of laptop use in class. "The teacher can control the StudyPros within a classroom, including shutting off calculators, e-mail and spelling checkers during an exam" (Chute). These laptops also have the capacity to store up to 300 web documents so students without internet access at home may still take home the research they did in class (Chute).

These laptops are an English teacher's dream in the fact that every child could take their research home with them, type their papers at home, send their paper via e-mail at school, and the teacher would still remain in complete control of everyone's laptop use during class time. Poems or pictures to be examined by the class could immediately be pulled up on every student's screen. However, this type of complex technology requires training, and teachers must take time out of their planning, their grading, and personal lives to receive such training. They also must take time out of their lessons in order to demonstrate to their students how they are to use technology.

In Chutes interview, the principal of the school using StudyPros makes the following remarks about the program, "Lots of logistics are necessary to make a program like this work. They include teaching ethical computer behavior, and identifying and tracking each machine. It took six school days to distribute the computers—one at a time. 'This is not the easiest thing to do,' Principal Kozusko said" (Chute). Even the principal of a school where the program has proved successful states that setting up the program was not easy and it took six days (just over one school week) in order to issue every student a laptop. It is probably safe to assume that it also took a lot of effort, and at least an hour of classroom time to go over the very basic rules of how the laptops were to be used, treated, and what restrictions would be put in place. In order to learn to use the laptops, Chute reports that, "Every seventh-grader gets 12 weeks of training during the school year. Teachers receive ongoing training. The district pays for a NetSchools trainer—Ed Markiewicz, a retired Greater Latrobe High School teacher—to work with teachers about two days a week. Just as some teachers have study hall duty, some spend a period a day fixing laptops. One teacher is in the repair area each period, and a NetSchools technician makes repairs two days a week. The school has about 30 backup laptops for pupils" (Chute).

Twelve weeks of training for students is a lot of time that could be spent in a classroom learning required curriculum. That is equivalent to three of the eight or nine months in a school year. Is it worth spending that much time to teach them how to use the new technology if it takes away

from their academic learning? Additionally, the teachers take an entire period out of their day in order to fix all of the laptops that are having issues. They must attend ongoing training during the school year. This is time that could be spent writing up lesson plans, grading papers, or researching new ideas and materials to use for class. Is this really the most effective use of the students' or teachers' time? Are there enough benefits to laptops to make them worthwhile?

> *Money holds value, but teachers value time*

Research Results

Despite the drawbacks, some schools seem to think that there are enough benefits to outweigh the costs and justify making the move to using laptops. Schools such as the one in Pittsburg have said that their testing scores, in writing especially, have shown significant increase since brining laptops into the school. Assistant Superintendent Stephen Sarokon states the following, "Initial reports from test scores and writing samples show the laptops are making a difference." He goes on to say, "it was hard to establish a direct cause and effect because the district is working in a number of ways to improve its schools, but he thought the technology had something to do with it" (Chute).

The school saw a definite increase in scores, but they admit that they cannot be sure that this increase is directly related to using laptops, they only *think* it is. However, a study done on the impact of laptops on student achievement, published by the Technology and Assessment Study Collaborative at Boston College, reported very positive findings as well. In their research, they concluded that the schools they studied showed that students using laptops were more engaged in collaborative work, wrote more things of higher quality(?), and were more willing and able to engage in problem solving and critical thinking. Their GPAs also increased along with their test scores, especially in English related skills. The results also reported that teachers felt more empowered to teach, spent less time lecturing, and used a more constructivist approach to teaching (Gulek).

Many schools using laptops do seem to be showing improvements in more ways than just test scores, "laptop use not only reinforces the utilization of successful learning strategies, but also enables students to transfer the knowledge across disciplines…Research provides evidence that students who engage in collaborative work, participating in more project-based learning, have higher levels of motivation" (Gulek). Definite improvements in motivation has appeared in many reports and studies, but is it a surprise that these first years of offering a free laptop to high school students is exciting and cool for these kids? Will the motivation remain as high once laptops become just another type of required textbook or calculator rather than a new and novel teaching tool? Granted, having technology at their fingertips does make it possible for students to learn in interactive and creative ways, such as writing a pirate blog or making a video using a scene from a Shakespeare play. The fact that we see no reports in these studies on negative behaviors, however, leaves room for many to wonder if the research took all of the variables into account. One study, released by the United States Department of Education, showed no difference at all in academic achievements between students with laptops and students without them (Hu). This leads people to wonder, are the only schools being studied by other researchers the more financially secure schools in nice suburbs and towns with

students who tend to excel, or are they also looking at minority schools where more children lack the support or pressure from parents to succeed in school?

Given the discrepancies between research reports, it seems that there are indeed factors that may have been overlooked by these studies. In an article by Sidney Levesque, she admits that laptops were useful in the school she observed, but that it is terribly difficult to find funding for these types of programs. If it is difficult to find funding in general, then minority schools have no chance of acquiring this technology that would supposedly benefit them greatly. It is hard to say that these schools would be benefited at all because of reports such as the one found in the New York Times by Winnie Hu. She states that, "Matoaca High School just outside Richmond, Va., began eliminating its five-year-old laptop program last fall after concluding that students had failed to show any academic gains compared with those in schools without laptops. Continuing the program would have cost an additional $1.5 million for the first year alone, and a survey of district teachers and parents found that one-fifth of Matoaca students rarely or never used their laptops for learning. 'You have to put your money where you think it's going to give you the best achievement results,' said Tim Bullis, a district spokesman" (Hu). Matoaca High School is not the only school that has found this program to be worth less than originally predicted. A private boarding school in western Massachusetts also eliminated its plan for a laptop program when it found that within the first couple of years the costs of laptop repairs and training for teachers to teach with them became overwhelming (Hu).

Luxuries

It appears that some schools are indeed excelling with the use of laptops. These are schools that have the funds to do so, and have teachers who are creative and familiar enough with technology to be able to utilize this technology and implement it. These schools have developed plans to make the students responsible for their laptops as well as their use of the internet. These classes correctly use laptops as a tool rather than a teacher; but, it seems that these schools may be the outliers. Different research reports show such drastically different results. What are they really measuring? Is it fair to measure only the elite in this case, when more than likely it is only the elite who can afford such programs? Are the financial costs, the time consumption of teachers, students, and classrooms, really worth the hassle of individual laptops?

Other options may not offer the capabilities that a laptop does, but students have been learning from paper, papyrus scrolls, clay tablets, oral traditions, and even just by example for thousands of years. It does not seem necessary to hand every teenager in America a laptop. If learning came only through reading and writing, then maybe laptops would solve all problems in academic achievement. The fact remains, however, that learning involves more than that. It involves interpersonal relationships, the opportunity to be creative and do hands-on project. Perhaps some schools will decide to keep their laptops, but it is clear that they are not a necessity in schools; rather, they remain a luxury.

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