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## **Facilitating Learning and Self Esteem of Lower Socioeconomic Groups with Technology**

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### **INTRODUCTION:**

In this analysis I will show the benefits that technology in the classroom brings to students in lower socioeconomic groups. A large body of data exists that shows technology does indeed increase learning and self esteem.

### **ISSUE:**

In the course of my career I have found that technology helps to facilitate learning and self esteem. I have observed that many school districts treat technology as more a luxury than a necessity. I would argue that having technology in today's classroom most certainly should be viewed as a necessity, essential to providing students the necessary skills needed to be successful in their future academic and adult lives. However, technology itself is not an all-encompassing panacea. Consideration needs to be given to the types of technologies used, the infrastructure systems that support it, the methods by which technology is integrated to the curriculum and the unforeseen double binds (Bateson, 2005) that technology usage creates when applied to hierarchies (Bloom, 2007) typical of today's schools.

### **CONTEXT of PROBLEM:**

I have found that most of my students frequently use technology in their everyday activities and most are quite proficient in its use. Why would they want to learn a curriculum still using pencil and paper? Today's children have been raised, immersed in a technology-rich environment and have been stimulated by animation, simulations and interactive experiences. My student's conversations often revolve around the latest gadget, game or cell phone application. In particular, my students from lower socioeconomic groups who lack or have limited exposure to technology find themselves disconnected from their more technologically proficient peers, leading to lower levels of motivation and self esteem. My belief and thrust of this paper is that integrating technology into the curriculum will facilitate learning and increase self esteem.

### **RESEARCH:**

Through my research I have found that the *way* in which technology is used as well as the *types* of technologies used can have a large impact on its effectiveness in our classrooms. The low socioeconomic cultural and economic frames (Posner, 2004) are typical in the study areas. In

1985, Apple Computer initiated a study called Apple Classrooms of Tomorrow (ACOT). The study was done as a research collaboration between public schools, universities and Apple Computer. Five ACOT's were setup in sites across the United States. In these ACOT classrooms students used technology as a medium to collect, organize and analyze data. From this data the students generated enhanced presentations and even conducted simulations to solve complex problems. An unexpected observation seen over the course of the study was that the lower achieving students, those who were not being reached by traditional teacher-centered learning responded positively to these new methods of expressing what they had learned. Sandholtz, Ringstaff, and Dwyer (1997) found this technology based curriculum not only raised the student's self esteem, but it also increased their status with their teachers and peers.

Another study (Mouza, 2008) evaluating the outcomes of a laptop program initiative done at a predominantly low socioeconomic, minority school was done in 2002-03. In a program sponsored by Microsoft called the "Anytime Anywhere Learning Program" (<http://www.microsoft.com/en-us/news/features/2000/sept00/09-11aal.aspx>) technology was implemented at the Mott Hall Middle School of New York in the Harlem/Washington Heights area of Manhattan beginning in 2000. The school's racial makeup was 80% Hispanic, 12% African American, with the remaining 8% Caucasian and Asian. The ethnicity at the school closely mirrored the surrounding neighborhood, with a majority of the students being of Dominican decent.

Two laptop and two control classrooms in the third and fourth grades were selected. All students in the laptop classrooms were provided a refurbished laptop computer. Due to budget limitations, the laptops were not networked so they had no internet connectivity nor printer access. Internet searches and printing were handled by the room's standard issue desktop PC computers with network connectivity. Each of the two laptop classrooms had a respective control classroom of the same grade level. Classroom selection was done to assure students in both classroom types were from similar socioeconomic backgrounds. All laptop and control classrooms provided instruction in English only. Technology in the control classrooms consisted of the school's two desktop PC's per room standard. As with the laptop classrooms, each desktop PC was network connected allowing internet access and printing. Teachers for both groups were selected on basis of academic credentials and professional development specific to computer technology. All had both a Bachelors and Masters degree in the education field and all had recently participated in a yearlong professional development program on the use of technology.

As the study commenced, students in the laptop groups began to use their laptops at home and began to explore the software. Many shared the laptop with their families and as a result the laptops were in high demand not just by the students but for family members who were discovering the newfound capabilities the laptops provided them. The laptop students became more proficient and began using their newfound skills to graph results, construct PowerPoint presentations, make flyers and perform advanced functions they would never have had the opportunity to do before. Teachers in the laptop classrooms found themselves changing their

lessons from 45 minute blocks to prolonged group activities that were increasingly morphing from teacher-led to student-led learning. As this occurred it was observed that the self esteem and the thought processes of these students were changing for the better. The students were mastering higher level concepts and learning to problem solve rather than just answer questions. Such changes to the curriculum enabled the subject students to master higher level skills and develop critical reasoning not demonstrated before.

Students in the control classrooms were observed to use the class desktop PC's for more mundane activities. In most cases they were answering multiple choice tests or filling out standardized forms. Despite their professional training on the advanced use of technology, teachers in these classrooms were apparently not using the desktops in a way that challenged their students and continued to use the PC's to facilitate the standard, teacher-led curriculum. In these classrooms, the technology added no appreciable gains in motivation, self esteem or learning. From these results, we learn that adding technology alone is not the answer.

For the 2002-03 school year extensive data using multiple gathering methods was used to evaluate students from both classroom types. Not surprisingly, results indicated the laptop classrooms academically outperformed and exhibited increased self-esteem compared to the control classrooms. However, several interesting observations accompanied the study's results:

1. The school lacked the basic infrastructure for all the students to access the internet from their laptops. As a result, even students in the laptop classrooms were limited to using the classroom's standard issue PC's with internet service.
2. Double Bind situations occurred as students grappled with the responsibilities of owning a laptop computer and going to/from school through some very rough neighborhoods. Students loved their laptops but were initially very scared about being beaten-up and/or robbed as they traveled to and from school. Policy was implemented, instructing the students to surrender their laptops if challenged. Interestingly, the students learned to travel in groups or coordinated with parents or trusted adults to escort them home as they chose not to easily surrender their laptops.
3. It was observed that teachers in the two control classrooms used technology to continue traditional teacher-led curriculums. No appreciable increase of self esteem or proficiency in learning was measureable. In the classrooms with laptops, students embraced their laptops and were eager to learn its capabilities. Their enthusiasm was contagious, spreading to family members as well as their teachers. Measurable increases in self esteem and self-guided learning in these classrooms was observed. The results show that not only is technology important, but so is the way it is administered.

Another study, "Technology-Enriched classrooms: Effects on Students of Low Socioeconomic Status" (Page, 2002) was done to make a correlation between socioeconomically disadvantaged young children's self esteem and their academic performance. In particular, the study elaborates

on how technology makes a positive impact upon these non-traditional learners. The group includes the low achieving, at-risk, learning disabled, low socioeconomic status, educationally disadvantaged, language minority or those in need of instruction with English as a second language. (Burnett, 1981; Wood, Buescher & Denison, 1979) The study was done in a Louisiana grade school with 211 students from 10 classrooms in grades three and five. All participants were classified as being of low socioeconomic status and were typical of other students in their respective grades in terms of academic prowess. As with the Mouza study, five of the classrooms were immersed in a technology-enriched curriculum (experimental), while the other five classrooms had the school's traditional curriculum (control). The experimental classrooms had teachers fully trained in the newest and latest technologies. The teachers integrated technology into every lesson throughout the school year. Students in the experimental rooms collaborated in groups and would gather data from science software or the internet and present their findings via PowerPoint presentations. As the experimental classrooms did not have enough laptop computers for each student, all shared the available equipment equally. The teachers in the experimental classrooms followed the same curriculum as the control classrooms. Control group teachers taught in the traditional teacher-led manner. Little or no technology was used or provided to these classrooms, however each room did have a computer for the teacher's use. Results of the yearlong study show mixed results between the experimental and control classrooms for reading. However, profound levels of achievement in mathematics were demonstrated in the experimental classrooms compared to the control classrooms. The study references (Lehrer & Randle, 1987; Reglin, 1989) findings that suggest such computer environments should be seen as an important step "to help these citizens rise up from poverty." Gardner, Simmons, and Simpson (1992) suggest that such computer enriched environments "encourage lifelong learning habits and increase commitment for further learning or learning to learn." Signer (1991) concluded that "classroom computing, self-esteem levels, dropout rates and lifelong learning... are all very much intertwined."

### **REASONS FOR CHANGE:**

If educators use technology to simply continue traditional Victorian-era curriculums, then the expenditure of time, resources and money are likely to be a waste, as there would not be any appreciable benefit. Only when educators embrace technology and facilitate student-led learning will students of low socioeconomic backgrounds achieve higher levels of self esteem, critical thinking skills. Recent technology developments make this is an exciting time to be an educator and only underscore the potential to improve students from such backgrounds.

While many above referenced studies discuss the use of laptops as the prime technology, smaller, lighter, more feature-packed devices such as tablet computers are rapidly becoming the norm. The devices are sized somewhere between a conventional Smartphone and an iPad, incorporating features of both devices. Such devices are much more affordable, provide better utility and are likely to replace laptop computers as the technology of choice.

Another technology rapidly gaining momentum is Cloud Computing. The idea of this technology is that all software applications as well as personal data typically stored on any computer, laptop, PC, iPad, iPod, etc., is now available wirelessly anywhere there is internet connectivity. Cloud technology means we can access our programs, applications and personal data virtually anywhere on the planet. Storing this information in the cloud frees devices of the need for disc drives, large memory chips and will surely drive down the cost, size and weight of computing devices in a dramatic way. We have not even begun to see the new uses and possibilities this technology is creating.

### **SOLUTION:**

Solutions to low self esteem and poor critical thinking skills require a combined use of technology and updated teaching methodology. Traditionally framed teacher-led instruction must yield to student-led curriculums with an emphasis and integration of the latest modern technology. In the above examples, students were able to lease laptops for reduced costs that even low income households could afford. The advent of cloud-based computing and increased use of tablet-style devices will continue to drive down the cost of modern technology, making it easier for those in lower socioeconomic groups to afford them.

An innovative solution to the problem of implementing technology is being explored by my school district is a program called "Bring Your Own Technology" (BYOT). BYOT allows all students to bring their own Laptops, Smart phones, iPods and iPads, all of which allow them access to the internet, freeing them from having to await availability of school provided technology. A program such as this can easily be duplicated at low income, at-risk schools.

Another solution is a financial investment from a large corporate sponsor. In this scenario, a sponsor such as Intel would provide needed funds for the purchase of technology. As technology alone is not the answer, Intel offers programs such as the Intel® Teach Program U.S. a course designed to help teachers engage technology to not only assist in state mandated testing, but to cultivate student problem solving, critical thinking, interactions, communication and group participation skills.

([http://www.intel.com/about/corporateresponsibility/education/programs/intelteach\\_us/program.htm](http://www.intel.com/about/corporateresponsibility/education/programs/intelteach_us/program.htm))

While none of these solutions alone will solve the issue, a combination of them applied together would likely produce a fundamental difference in the availability of technology. One of the quotes that personifies the landscape upon which I have chosen to build my classroom is "*Give a man a fish and you feed him for a day, but teach a man how to fish and you'll feed him for a lifetime*". I have chosen to teach students how to learn so they will have the skill sets needed to learn for a lifetime. The use of technology is a key component in my accomplishing this goal. Technology in schools helps to level the playing field for all socioeconomic groups and provides

the necessary interactions and skills for all my students to work and succeed in today's and tomorrow's global society.

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