Marianne DeMarco

Foundations I

Dr. Joanne Clemente

Impact of Educational Technology

Since the introduction of microcomputers into schools in the late 1970's and the invention of the Internet in the mid 90's, Educational Technology has had an ever-growing influence on teaching and on learning. Educational Technology has a positive impact on student achievement in all major subject areas while also having a positive effect on the student's motivation to learn. And, integrating technology into the classroom makes the learning process more student-centered while increasing teacher's interaction with students. Educational technology helps prepare students by teaching them the skills they need in today's technologically-based world.

According to its website, the North Central Regional Educational Laboratory (NCREL) is a "not-for-profit organization dedicated to helping schools—and the students they serve—reach their full potential." The NCREL lists the book "*How People Learn: Brain, Mind, Experience and School*," edited by John Bransford, Ann Brown, and Rodney Cocking as an "important resource in that it questions the beliefs and practices in schools, based on emergent brain research, cognitive learning theory, and technology." The book concluded that technology impacts the way in which people learn in the following ways:

- "Because many new technologies are interactive, it is now easier to create environments in which students can learn by doing, receiving feedback, and continually refining their understanding and building new knowledge.

- Technologies can help people visualize difficult-to-understand concepts, such as differentiating heat from temperature. Students are able to work with visualization and modeling software similar to the tools used in non-school environments to increase their conceptual understanding and the likelihood of transfer from school to non-school settings.
- New technologies provide access to a vast array of information, including digital libraries, real-world data for analysis, and connections to other people who provide information, feedback, and inspiration, all of which can enhance the learning of teachers and administrators as well as students."

The May 2002 issue of Learning & Leading with Technology, the article "How Does Technology Influence Student Learning" emphasizes the importance of using technology in conjunction with collaborative learning. The Center for Applied Research in Educational Technology (CARET) has gathered compelling research about how technology influences student achievement and academic performance in relation to three primary curricular goals:

1. "Achievement in content area
2. Higher-order thinking and problem-solving skill development
3. Workforce preparation"

In addition to student achievement in major subject areas, Educational Technology helps develop "high-order thinking and problem solving skills (i.e. information research, comparing and contrasting, synthesizing, analyzing and evaluating.)" The article also states that the teacher's role is "fundamental in guiding the students through the activities in which they develop these skills". A 1996 study by the Center for Applied Special Technology (CAST) researched the effects of Internet use and student performance. The research and evaluation showed that students who used the Internet showed higher scores on their project and an increased development in critical thinking skills. Preparing students for a career is another crucial area. Students get the basic tools they will need

when entering the workforce by using various software applications such as word processing, spreadsheet and graphic design software.

Technology has most definitely allowed for more efficient use of teacher's time. Teachers use technology in many ways: for record keeping, creating instructional materials and/or to organize teacher resources. This efficient use of a teacher's time allows for more quality time to work with students. Although teachers may use technology for their professional tasks, teachers can also integrate technology into everyday curriculum. Teachers have a multitude of multi-media to choose from when integrating technology into the subject areas including: Instructional Software, Word Processing, or video-conferencing, just to name a few.

Schools today are trying to keep up with the fast-paced industry of technology. School budgets are one of the major issues in keeping schools up-to-date. Upon visiting PS 135 in Queens Village, I found that with 1600 students in grades K-5, this school is one of the more technologically advanced schools in Queens. Not only does this school have a Technology Coordinator, but it has two computer teachers (one for its lab and one for its mobile labs) as well. With a significant grant from the Dell Foundation, this school created a brand new computer lab and four mobile laptop cart labs. The stationary lab hosts 36 laptops, 2 printers (1 color inkjet, 1 black & white laser,) and a wireless network complete with Internet access. Each class in the school's 50 classrooms meets in the lab, at least 1 time per week. The lab has an innovative layout in which all students can sit at their computers while also viewing the teacher's large projector screen. The school also has four laptop carts, each with one wireless printer per cart. Classrooms take turns using the carts. Each classroom obtains a mobile lab for one month at a time. The

Technology Coordinator and one instructor spend a week (the first time a class has a cart) giving technical instruction on the computers. During the following weeks the classrooms use the computers primarily for research. Although the school's website is currently under construction, plans are in the works to include some of the teacher's most popular websites as student resources. Some of the websites include: World Book Online, Time for Kids, PBS for Kids, and Kids Domain. The younger students at PS 135 have breakaway time for use of programs such as Jumpstart and Leapfrog. In additional to the labs, almost all classrooms have small computer workstations with approximately 2 computers each. This school shows an instrumental use of technology in its classrooms.

The Federal No Child Left Behind Act (NCLB) is placing a newly needed emphasis on required scientific research in order for schools to choose specific programs. According to the National Educational Technology Plan, "states and school districts across the country have to re-examine their standards, set targets for improvement, introduce rigorous testing and give options to parents." One of the goals of the No child Left Behind Act is that students will be computer literate for the 8th grade. The National Educational Technology Plan states:

- "Today's students feel strongly about the positive value of technology and use it in nearly every aspect of their lives.
- They are more comfortable with computers than their parents – and their teachers.
- What they are telling us is they want to help us understand this great new world of technology and its vast possibilities.
- And they want us to listen to them."

With the newly placed emphasis on research and planning, technology will continue to have a serious effect on what and how students today learn.

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