Fostering Educational Technology Support

Abstract

Look around and you will see that technology is all around you, technology is unavoidable; it touches our lives every day in ways we cannot even begin to imagine. So why should we teach our children about technology? Why does technology need to be a part of the education environment? Simply put, so are children can live, learn, and work successfully and responsibly in an increasingly complex, technology-driven society. This is why as educators we have the responsibility to teach and prepare our students for the choices and challenges of the Twenty-First Century.

This paper provides an overview and analysis of some of the many impressive results technology rich schools generate for students, including improved achievement; higher test scores; improved student attitude, enthusiasm, and engagement; richer classroom content; and improved student retention and preparation for future careers.

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Technology plays an important role in our schools and the lives of our students. There are many people who advocate increasing technology in the schools because of the need for our children to be technologically literate for success in the 21st Century, and that this literacy is best achieved in classrooms where the technology is an integral part of the environment and where it is used as a daily tool for learning and solving real-world problems. Many school districts and higher education learning institutes have made a serious commitment to substantial and increasing instructional use of computers. In school districts across the country, there is substantial evidence that technology has become a vital component for the success of the entire educational process. In the following pages the researched evidence has concluded that technology can dramatically enhance teaching and learning, it cannot fill needs for which it was not designed; it cannot, in and of itself, transform teaching or learning. Rather, educational technology is served best when it is used as a tool to facilitate higher-order thinking skills, problem solving capabilities, motivate learners, and most importantly prepare our students for the future. With the Internet and computer technology available to most teachers, educational technology becomes increasingly indispensable in the field of education. Educators who have experienced success with technology suggest that effective integration of technology requires users to exercise creativity and reasoning in conjunction with academic skills.
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Technology Can Bring New Resources into the Classroom

*Since Technology Has Become More Readily Available to Schools, Students Have Access to an Environment that Offers a Wider Range of Learning Modalities*

The emergence of technology brings a world of new possibilities to the classroom and dissolves the physical barriers to experiential learning. 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 (Fouts, 2000). Reports provide considerable evidence that the appropriate use of these new technologies have positive effects on student attitudes, stimulates increased teacher/student interaction, and encourages cooperative learning, collaboration, and problem-solving and inquiry skills (Stratham & Torell, 1996).

*New Resources Provide a Wider Range of Learning Skills*

The use of some technologies, especially those involving multimedia, requires students to combine and exercise their multiple, talents, and abilities along with stimulating the search for
more extensive information on a subject, a more satisfying solution to a problem, and more
generally a greater number of relationships among various pieces of knowledge. One of the
central components of school reform is the desire for higher academic standards and a stronger
focus on higher order thinking, problem solving skills, and learning associated with “real world”
applications. To accomplish these ends a new learning environment for schools is necessary.

Proponents of school technology assert that it is just that type of environment and those types of
learning that are facilitated by the new technology resources available today (Fouts, 2000).

Positive Effects on Motivation and Attitudes Towards School

*Learning with these New Technologies is far More Exciting and Motivating than Traditional Lecture and Practice Modes.*

Educational technology reaches students through a variety of senses, keeping them alert and
interested in classroom activities. It has been concluded that students from computer driven
classrooms show better behavior, lower school absentee rates, lower drop out rates, earn more
college scholarships, and attend college in greater numbers than do students from non-computer
classrooms (Stratham & Torell, 1996). Computer use increases student motivation to learn. In a
review of studies pertaining to rudimentary technology applications, (Coley, Cradler, & Engel,
1997) found that computer-based instruction can individualize instruction and give instant
feedback to students and even explain the correct answer. Increased motivation of students for learning with computers is related to ease of error correction, semi-private environment, increased self-esteem, active control of their immediate environment, and ability to work at their own pace (Underwood & Brown, 1997). In a review of 500 studies, (Kulik, 1994) found that students develop more positive attitudes toward computers when they receive help from them in school and that students usually learn more in classes in which they receive computer-based instruction.

Technology’s Impact on Attitude and Self-Concept

In an extensive literature review, (Cotton, 1992) found computer-assisted instruction results in improved student attitudes in a variety of areas. These areas included improved attitudes towards themselves as learners, the use of computers in education, and towards computers in general, course subject matter, quality of instruction, and school in general. Studies cited by Cotton also indicate that computer-assisted learning results in higher levels of self-efficacy, higher school attendance rates, increased time on-task, and increased prosocial behavior. Consistent findings regarding improvement in student attitude and self-concept. Student attitude toward learning and student concept were both found to be consistently increased in a technology rich environment in 176 studies conducted between 1990 and 1994 (Sivin-Kachala & Bialo, 1994). The positive attitude and motivation to learn can be correlated to the new teaching methods and tools technology brings into the classroom.
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Provides New Teaching Tools and Instructional Methods to Learning

Technology Enables Teachers to Create New Tools to Facilitate Instruction

These tools can often prepare students for the world beyond the classroom, helping them develop higher level thinking skills along with enhancing the opportunities for individual and group learning by providing students with a variety of resources and tools. Teachers, therefore, are allowed to assume the role of facilitator of learning rather than distributor of information. Many educational researchers find this role to be very beneficial to the learning process.

Technology Enables Teachers to Individualize Learning Experiences

A natural evolution of practice occurs that opens up the classroom to learner-directed ways. As a result, as teachers “develop proficiency with the technology, their practice also changes to accommodate more inquiry-based, student directed activities (Linn, Slotta, & Baumgartner, 2000, p. 84). According to Office of Technology Assessment of the United States, “The process is as important as the product, as students develop skills in finding, evaluating, organizing, and communicating many types of information, using new technologies as well as traditional research methods (Schmitz, Prescott, & Hunt, 1996). Instructional technology impacts learning
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by altering options for inquiry, analysis, evaluation, and expression. Students now find they have new roles in and responsibility for their own learning. The availability of educational technology, particularly computer and Internet access, promotes the use of collaborative learning, problem-based learning, active use of a wide range of educational resources, and an emphasis upon student creativity. (Rakes et al., 1999) surveyed 435 K-12 teachers regarding their access to and use of educational technology, and their use of constructivist teaching strategies. They found that "as the amount of technology, the use of technology, and technology skills level increase, the use of constructivist practices in the classroom appears to increase. The implementation of these “new” styles of teaching and learning are what is needed for our children to be competitive in the 21st century workforce we will set them free in.

Successful Preparation of Students for the Future

Every Child in American Needs 21st Century Knowledge and Skills to Succeed as Effective Citizens, Workers and Leaders in the 21st century

There is a profound gap between the knowledge and skills most students learn in school and the knowledge and skills they need in typical 21st century communities and workplaces. To successfully face rigorous higher education coursework, career challenges and a globally
competitive workforce, U.S. schools must align classroom environments with real world environments by infusing 21st century skills into their teaching and learning.

Technology Skills Critical to the Future Employment of Today’s Students

Many economic and social shifts have made technology skills critical to the future employment of today’s students, and more broadly, to the importance of technology innovation to maintaining the economic and political dominance of the United States globally. The recently released report on Learning for the 21st Century, from the Partnership for 21st Century Skills (2003), makes this case strongly, reviewing the impact of technology on the job market, the flow of information and resources in a global marketplace, and the impact of digital technologies on daily life. Perhaps most importantly, both this report and others that have emphasized the global context of the call for all forms of educational improvement (PCAST Panel on Educational Technology, 1997; U.S. Department of Education, 2000c) explain that the ability to expect and adapt to change is fundamental to success in the job market and to active citizenship. The evidence is compelling that the current and future health of America’s 21st Century Economy depends directly on how broadly and deeply Americans reach a new level of literacy that includes strong academic skills, thinking, reasoning, teamwork skills, and proficiency in using technology.
Conclusion

In today’s society it is imperative that students learn how to use technology in order to develop the technical and learning skills, academic knowledge and work habits that are necessary for success in higher education and the workplace. In order to thrive in a digital economy, students will need digital age proficiencies. It is important for the educational system to make parallel changes in order to fulfill its mission in society, namely the preparation of students for the world beyond the classroom.
References


