Computer Education

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Abstract

Computers and related technologies are now in almost every school across the nation. State reform efforts include the integration of technology in curriculum standards and sometimes make Technology skills a separate standard for students to achieve. As the focus on technology expands, policy makers and tax payers are asking researchers in educational practice to provide the data for thoughtful decision making on the use of technology for learning. At this time the decision-making is often hampered by the lack of adequate research, although there is considerable work from previous years to guide future study. The evolution of technology use The computer was introduced into education in the 1970s and its first use had teachers and students learning to program. Since that time there has been an evolution of best practices. As software gained in sophistication, the computer became the tutor or surrogate teacher. Students followed the commands on the computer screen receiving rewards for correct answers. They also began to learn through playing games and simple simulations. Teachers of writing discovered the value of using a word processor and soon students were writing more and revising with ease. Other teachers saw the value of the computer in creating a rich learning environment and had students using databases, spreadsheets, and presentation and research tools across all subject areas. Next the Internet impacted technology use. Suddenly there was a volume of knowledge available to students with access and a network of people throughout the world that enhanced communication and the exchange of ideas. Real problem solving in collaborative groups became the norm in some classrooms. Online courses were available and students in rural areas had expanded learning opportunities in a variety of subject areas. Previously abstract concepts could now be illustrated and manipulated because of technology advancements. A whole new learning environment became possible.

Introduction: As the new millennium begins schools throughout the country are in the midst of reform efforts—the term "restructuring" often being used to imply a deeper, more fundamental change in the nature of schools and schooling than that implied by "reform." These efforts often involve a rethinking of the very nature of schools and the educational experience for children. Resulting changes may be structural in nature, such as a revision of the school day or the school year, or they may be more fundamental in nature, resulting in a very new curriculum that asks students to learn and perform in ways much different than before. A driving force of these restructuring efforts is the belief that a school system built on a Nineteenth Century industrial efficiency model is inadequate to meet the needs of the society of the Twentieth-First Century that has been transformed by technology. Because technology has transformed businesses and many other components of daily life, many are relying on technology to help transform the nature of the school experience. As the new millennium begins that transformation is still incomplete.

In October 1999, at the National Education Summit states were asked to fully implement the final stage of their reform efforts by adopting policies that held schools and educators

accountable for their successes and for their failures. Results matter and therefore determining what best produces desirable results is an important part of the accountability efforts. There is evidence that computers and the related technologies have made major inroads into the schools. There are now an estimated 10 million computers in the schools

with annual school expenditures for technology of about 6 billion dollars. There is one instructional computer for every 5.7 students and more than half of the nation's classrooms have been connected to the Internet. A 1999 national survey conducted by Education Week in collaboration with the Milken Exchange found that 97% of all teachers surveyed use a computer for educational purposes, either at home or at school, and 53% use software for classroom instruction. Virtually every state reform plan includes technology as an integral component, and student school access to technology is higher than ever before. At the same time, the views surrounding technology in the schools are diverse. Some advocate the expansion of technology use to enhance student technological literacy, while others believe its primary purpose should be as a learning tool. "The romanticized view of technology is that its mere presence in schools will enhance student learning and achievement. In contrast is the view that money spent on technology, and time spent by students using technology, are money and time wasted Yet, many proponents of increasing the role of educational technology in the schools admit that our current knowledge about the educational affects of that technology is rudimentary at best. This is due to the fact that much of the evaluation that has taken place has been in classrooms with mixed or partial deployments of technology with varying levels of training and limited content. Full implementation has been hampered by a lack of capital budgets and insufficient research and development funds necessary to create fully integrated learning environments. There is perhaps no other profession that is so subject to "the new and innovative "as is education. The tendency for educators to tout first one innovation and then another and the failure of these innovations to make any marked improvement in student learning has been well documented. And, rightly or wrongly, there are many today who are skeptical of the educational value of the new technologies, or at least skeptical of the schools' abilities to use them effectively or to deploy them sufficiently to transform the learning environments. Educational policy-makers are responsible for determining the direction, nature and scope of educational programs, and for determining how scarce resources are to be allocated. Ideally, educational policy will reflect the "best practices" of the profession. By best practices, we mean the educational approaches, programs, materials, etc., that have proven to be of the most educational benefit and value to the greatest number of children. But where exactly do computers and related technologies fit into this realm of "best practice?"

Determining "best practices" is not a simple matter. In fact, there is no shortage of differing opinions about what the schools should be doing and how teachers should be teaching. Advocates of the various views are sincere in their beliefs that what they are advocating for is "best" for the children. It is important to note that the beliefs that influence policy are often times only that—beliefs. It may be that they are all true (although that seems unlikely), or at least true to some limited degree (which seems more probable). Empirical evidence that these claims are true is many times lacking. As Carl Sagan once said, "We sometimes pretend something is true not because there's evidence for it, but because we want it to be true.

Does it make a difference? It depends…

Research in traditional classrooms has shown that technology can have a positive impact on student achievement if certain factors are present, including extensive teacher training and a clear purpose. In recent years researchers have found that the technology can be an important component for creating exciting new learning environments for students, once again dependent on other factors such as:

· Lower student to computer ratio;

· Teacher ownership of the reform efforts;

· Extensive teacher training and planning time;

· High levels of technological support.

Unfortunately, these factors are often missing in school technology implementation efforts, resulting in inconclusive research findings of the effects of these environments on student learning. Sometimes schools make large purchases of technology for classrooms but ignore the accompanying teacher training. At other times resources are wasted as teachers receive training only to return to a classroom with limited or no access for the students. This leads many observers to question the benefits of technology in the schools.

The research challenge is to construct viable studies where all the necessary factors are in place. The critical questions for the future as educators and researchers look to the future they are no longer asking the question, "Should technology be used in education?" Instead the focus is "How technology should be used to help students achieve higher levels?" Across the country there are fine examples of technology use in scattered classrooms and a few schools, but the challenge is to bring a technology rich learning environment to every student. In the era of new standards and high performance schools, technology must be linked not only to student learning but also the efficient management of schools and districts. Littlere search is available in this area. The potential of learning anywhere, any time is just beginning to be tapped. Online courses and virtual schools, learning communities, apprenticeships and internships will change the concept of school in this century.

Computer Education as Tutor: Over the past several decades technology has been used in a variety of ways for a variety of purposes. Researchers have employed varying research methods in an attempt to understand the role that technology can and does play in the education of Children. Consequently, there are a number of differing lines of research that have been conducted and many of the lines of inquiry may overlap with others. This has resulted in a large amount of research, but so varied in method and treatment that at times is difficult to categorize. There are areas for which there is little, if any, information available, meaning that there is much that we do not yet know about the effect of this technology on student learning. Because there are a variety of ways in which technology has been used in the past and a variety of ways it is being used today in education it is important to consider each line of research individually in an attempt to sort out the status of what is known and what research is yet to teach us. As new technologies have emerged they have often times replaced or have been used concurrently with earlier technologies, thus dramatically changing the nature of the way the technology has been used in the classrooms. Computers and related technologies have been used as tutors, surrogates

and supplemental teachers of the regular curriculum, as tools for the purpose of transforming the classroom, as delivery modes for distance education, and for educational management applications, including improved planning, data analysis, communication and personal productivity. One of the earliest uses of computers in classrooms was to teach the traditional curriculum and basic skills, often operating as a means to deliver instruction, sometimes as a supplement to the teachers' classroom instruction, and sometimes in lieu of the teachers' instruction. Much of the software focused on basic skills and knowledge in the various content areas, used programmed instruction and drill and practice, and was often based on behaviorism and reductionism for its instructional design. As time progressed, the software and usage changed and the line between the computer as a tutorial and the computer as a tool became blurred. For example, as word processors became more sophisticated and available, the computer was often used to produce student writing. Other types of programs, such as Logo, soon further blurred the line between tutor and tool. With the change of usage came questions about how best to evaluate the effect of the technology on student learning, but in most instances, the researchers relied on standardized test scores or other traditional measures of achievement. It is important to note that not all of the computer usage in schools during these decades was focused on the teaching of basic skills and content based on behavior theory. Those educators who envisioned a more student centered curriculum and learning environment did attempt to employ the computers in different ways. For example, there were efforts in some science classrooms to use the computers to provide simulations and modeling of problems to aid instruction and to foster a deeper understanding of method.

Computer Education as a Learning Tool

In these settings the computer and related technologies are serving at least four distinct purposes:

(1) They are used as previously to teach, drill and practice using increasingly sophisticated digital content;

(2) They are used to provide simulations and real world experiences to develop cognitive thinking and to extend learning;

(3) They are used to provide access to a wealth of information and enhanced communications through the internet and other related information technologies; and

(4) They are used as productivity tools employing application software such as spreadsheets, data bases, and word processors, to manage information, to solve problems and to produce sophisticated products.

These new learning opportunities should take place in learning environments that are student entered, knowledge centered, assessment centered and community centered, and the new technologies are seen as consistent with the principles of a new science of learning.

Conclusion: Computers are useful tools in different field of applications. Computers are very much useful in the field of engineering and architecture specially in the aspects of design and calculations. These machines are also beneficial in their application in the field of business and economics as it allows users to store and retrieve large amount of data in a less amount of time. Computers are now use in different fields of education. In the field of teaching in particular, the wide use of computers are evident in different school in elementary, high-schools, colleges and

universities. The use of computers in learning provides both advantages and disadvantages in the learning processes. Computers are advantageous in the sense that these machines teach more effectively in technical sense, they can reach and teach more students and kept students more focus with the subject. The use of computer technology in learning allows the teacher to individualize the learning instructions as well as the technology grants the students the autonomy and making them to learn with their own. With the access of the internet, it is also possible to teach those students or learners that are located in the remote or far places provided these places have internet signals. These technological capabilities make the teacher to reach as well as to teach more learners. The internet access will also allow the students to get different educational resources from all over the world, thus making the world like a classroom of learning. It enables him or her to access different ideas as well as learning's and knowledge coming from abroad. In teaching kids or young learners, the use of computers in the teaching processes is very much advantageous. The use of computer machines could catch the attention of the kids, making them attentive as well as participative in teaching and learning activities. Making use with this technology will allow the teachers to enhance his/her teaching style that could possibly enhance the learning of the students. The use of computer technology in education makes us prepared for the future. Computers as used in education allow the learners to learn modern tools and knowledge that will make him or her ready for the possible technological changes in the future. Even though the computer technology and the internet provides advantages in the teaching and learning process, we cannot deny the fact that still these technology also provides disadvantages in the educational processes and these things should also be considered. Because many new technologies are interactive, it is now easier to create environments in which students can learn by doing, receive feedback, and continually refine their understanding and build 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 nonschool 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.