



Classroom Transformations and New Learning Environments

Dr . N. Sujata

Assistant professor

University College of Education

Adikavi Nananaya University

Rajahmahendravaram

Andhra Pradesh

ABSTRACT

Educational environment influences students' learning attitudes, and the classroom conveys the educational philosophy. In effective classrooms, class masters care for students, pay attention to teaching, do not use force or punishment but do create a good classroom climate with their

Professional knowledge, personal morality, and personality. Physical environment and psychological environment are both important; a good classroom environment is highly correlated with student affective performance. By referencing the design and implementation components of the Intel® education initiatives for education transformation, this paper will illustrate the key intervention considerations and challenges associated with technology integration, policy recommendations, and sustainable resources. Transforming education systems and supporting national competitiveness are challenging, long-term endeavors and require a holistic multi-dimensional approach. On-going support, embedded monitoring and visionary leadership can inform policies, teaching and learning processes and professional development to enable reform efforts that support real change.

Keywords: Classroom, Environment, New Leanings. ICT

Introduction:

Some of the earliest research on the role of technology as a transformational agent was conducted during the 1980s and 1990s on the Apple Classrooms of Tomorrow (ACOT). This project, which involved over 100 schools in a variety of settings, resulted in numerous evaluation reports. The overall guiding question for the project was "What happens when teachers and students have constant access to technology?" Much of the research was formative or qualitative in nature; however, there were a few studies conducted on traditional student outcomes, such as test scores, that sometimes showed mixed and sometimes positive results. Taken as a whole, the evaluation reports document the important role that the computers and related technology played in changing the classrooms over time.

David Dwyer summed up the classroom transformations this way: We came to understand that personal computers, printers, laserdisc players, VCRs scanners, Mac Recorders, and general purpose tool software could play a far more powerful role in learning. These technologies provided an excellent platform—a conceptual environment—where children could collect information in multiple formats and then organize, play, visualize, link, and eventually construct new ideas about relationships among facts and events. The same technology could then be used powerfully by students to communicate their ideas to others, to argue and critique their beliefs, to persuade and teach others, to add greater levels of understanding to their own growing knowledge.

Other ACOT research reports contain phrases such as, "a more dynamic learning experience" and "greater focus on problem solving." For example, Baker, Gearheart, Herman, noted, "more importantly, informal observation suggests the experience of ACOT itself appears to be resulting in significant new learning experiences for students and greater attention to complex higher level processing." However, hard data were lacking and the researchers from UCLA concluded that new evaluation tools capable of measuring the complexities of ACOT effects are needed.

An emerging body of evaluation research in the last three years gives support for the contention that computers and technology can be important for reforming education and that it has the potential to alter or transform classrooms, changing what and how teachers teach and the types of Although many educators and policy analysts consider educational technology a vehicle for transforming education. relatively few teachers reported feeling very well prepared to integrate educational technology into classroom instruction (20 percent). In the previous 12 months 78 percent of the teachers participated in professional development activities designed to integrate educational technology into the grade or subject taught, but only 23 % of these teachers felt well prepared to do so.

Computers, New Learning Environments, and Technological Literacy:

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 Twenty-First 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. Much of the general public supports increasing technology in the schools for this reason. An interesting finding emerged from a program evaluation in Washington State. When 50 parents were interviewed, the reasons given for believing in the importance of increased technology in the schools focused almost exclusively on the ideas that "technology is the wave of the future" and that "these kids will need technological skills to get good jobs when they get out into the real world." Even when pressed on the topic, only two of the fifty parents (a medical doctor and a mother who was herself an elementary teacher who used technology in her classroom) could articulate the importance of computers and technology for helping to reform education and change the nature of classroom activities, teaching and learning.

The development of the new learning environments is dependent to some degree on having students with technology literacy skills (such as word processing and on-line capabilities) sufficient to function in the environments. Functioning in the environments over time should further develop the technology skills. In current practice this has led to the tendency to teach the technology skills "just in time," that is, just preceding the need for the skill within the environment or integrated with the learning activity.

Surprisingly, there has been little research conducted in this entire area. Results from a variety of program evaluation studies show that students at a variety of ages are quite capable of learning a wide range of technology skills, but the research has not yet focused on technology as a basic skill with standards set for specific ages. A few states have adopted technology standards for various grade levels. The International Technology Education Association has produced *Technology for All Americans: A Rationale and Structure for the Study of Technology*, and the International Society for Technology in Education has released the product from the National Educational Standards Project (NETS), *National Educational Technology Standards for Students-Connecting Curriculum and Technology*. However, at this point in time there is little evidence that researchers have focused on the relationship between the new learning environments and technological skills. The new standards in this area should provide clear outcomes suitable for research and evaluation purposes.

Computers, Technology and Distance Learning:

Distance education has been part of the educational landscape for generations. From the earliest days of correspondence courses, to the days of electronic course delivery through radio, television, and satellite, to the more recent developments of electronic course delivery via the Internet, educators have asked if students who take courses away from the teacher and the traditional classroom setting learn as much or as well as do students who are face to face with the teacher and/or part of a larger learning group.

The research on the effectiveness of electronic delivery of courses is entwined with the research on the effectiveness of distance learning in general, although much of the research on distance education in recent years involves electronic media. The distance learning research has been compiled for a number of years by Tom L. Russell at North Carolina State University. The publication is now in its 5th edition and available in book format. The essence of the research findings on the effectiveness of distance education is captured in the title of the work, *The No Significant Difference Phenomenon*. There is also a bibliography available on the

Internet that is updated regularly with new studies. Russell has catalogued and summarized 355 research reports from 1928 to the present that show a consistent pattern throughout the years-students in distance learning, irrespective of the delivery system, perform equally as well as do students receiving traditional classroom instruction. Time and time again through his catalogue of studies the statistical phrase "no significant difference," or its equivalent is highlighted in bold print. Three recent examples of the findings are typical:

There were no significant differences in the test scores for the classes measured... same class, same instructor, same audience, same exam-just different format. The findings appear to provide evidence that cyberlearning can be as effective as traditional classroom learning... Results from t-tests indicated no significant differences on six of the eight academic variables.

When virtual lectures are used in place of traditional delivery methods there is no significant difference in the attainment level as measured by end of year examination marks.

It must be pointed out that many of these studies were conducted on college students, but a sufficient number have been conducted using high school students with identical findings to provide a broad generalization about the efficacy of distance education and electronic media delivery formats. The research suggests that student can learn equally well when instruction or learning activities take place apart from the traditional classroom setting.

As often seems to be the case in the educational research area, the research and these conclusions are not without its critics. The Institute for Higher Education Policy was commissioned by the National Education Association and the American Federation of Teachers to conduct a review of the research. In that review, *What's the Difference: A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education, the Technology as Transformational Agent*. This is the broadest area for further research. Considerable work has been done in this area, but there is still much left to do.

Research over the last several years has shown that technology can be a valuable force for creating a new learning environment. We have learned some of what it takes for the technology to be used in a way to help transform the classroom. Certain factors greatly increase the likelihood of classroom changes, including lower student to computer ratio, teacher ownership of the reform efforts, extensive teacher training and planning time, and high levels of technological and administrative support. However, there is still much we do not know. Continuing research is needed to answer questions in a number of areas.

There is evidence from earlier research on computer assisted instruction and from qualitative evaluation studies on the new learning environments that the technology seems to be particularly beneficial to low achieving or at-risk students. Kirkpatrick and Cuban synthesized the research on gender differences and computer use and found that "the inequalities are alarming". There is also a strong need for researchers to identify the most appropriate technology activities and types of learning that can be enhanced with technology. The recent brain research findings strongly suggest that different intellectual skills are developmental, with learning windows at various age levels. All of these student characteristics provide areas for further research.

New Learning Environments:

The development of the new learning environments is dependent to some degree on having students with technology literacy skills sufficient to function in the environments. In current practice, this has led to the tendency to teach the technology skills just in time that is just preceding the need for the skill within the environment or integrated with the learning activity. The new standard in this area should provide clear outcomes suitable for research and evaluation purposes.

Distance Learning:

There is evidence that traditional distance education delivery modes have produced similar levels of learning, among at least some students. However, technological advancements have provided the opportunity for new forms of distance education through on-line opportunities, and interactive and

video conferencing. The challenge will be to develop compelling curricula and to use the technology in such a way as to provide a comparable type of learning experience as that provided in the new learning environments based on constructivist ideas.

Technology as an Educational Efficiency Tool:

Technology has transformed the work and work environment in many other sectors of society. It has, and will continue to have, the potential to redesign and automate business processes, create new business formats, products and services, to reduce costs, to improve quality, and to improve access to information and communication. It has allowed the transformation of organizations from hierarchical command/ control to flat/fast learning organizations. Understanding this transformational potential is an important area of "design research" drawing from "best practices" in other sectors.

Conclusion:

The timing has never been better for using technology to enable and improve learning at all levels, in all places, and for people of all backgrounds. From the modernization of E-rate to the proliferation and adoption of openly licensed educational resources, the key pieces necessary to realize best the transformations made possible by technology in education are in place.

Educators, policymakers, administrators, and teacher preparation and professional development programs now should embed these tools and resources into their practices. Working in collaboration with families, researchers, cultural institutions, and all other stakeholders, these groups can eliminate inefficiencies, reach beyond the walls of traditional classrooms, and form strong partnerships to support everywhere, all-the-time learning.

Although the presence of technology does not ensure equity and accessibility in learning, it has the power to lower barriers to both in ways previously impossible. No matter their perceived abilities or geographic locations, all learners can access resources, experiences, planning tools, and information that can set them on a path to acquiring expertise unimaginable a generation ago.

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