THE SOCIOLOGY OF EDUCATIONAL TECHNOLOGY

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Sociology as a discipline focuses on the ways how individuals define their lives as members of organizations or groups, how they form new groups, how their status as members of one or another group affect how they live and work. Sociology also deals with the questions such as how the social and organizational contexts determine how and why humans organize themselves and their actions in particular ways and what effects those social and organizational contexts have on their thoughts and actions? Also, what constrains and limitations might those organizations impose on humans and human action?

My primary interest in this paper, therefore is how technolgy, including educational technology affects the ways that people work together in schools. How educational technology influence the ways that schools are structured including the administration of schools, the content of their curricula, the organizations of classrooms and the interactions of among administrators, teachers, students and parents? Secondly, I will focus on sociology of groups and classes, more specifically how educational technology deals with such groups as those based on class, race and gender and how educational technology interacts with those groupings. Thirdly, I will consider sociology of educational technology in relation to social movements and social change. Social institutions change under certain circumstances and education is currently in a period of continuing change. The educational technology is often perceived as a harbinger or facilitator of these changes, and so it is useful to examine the sociological literature to determine the educational technology's role in these great changes.

Sociology of Organizations

Schools are thought of as bureaucratic organizations trying to achieve some specific goals. They have well-defined set of procedures for processing students, for dealing with teachers and other staff, and for adressing the public. These procedures include rules for student qualifications, admissions, assignments and so forth. They also cover issues of curriculum standards, textbook selection practices, rules for teacher certification, student conduct etc. Additional procedures deal with how the schools are to be run (administrator credentialing, governance structures, procedures for financial issues, etc.) There are also procedures as how the public may participate in education, how disputes are to be resolved, and how reawards and punishments are to be decided upon and distributed.

While bureaucratic forms of organizations are not necessarily bad, the current popular image of bureaucracy is exceedingly negative. The disciplined and impersonal qualities of bureauracy, admired in the last century, are now frequently seen as irrelevant and a barrier to institutional change. Today, more flexible and more responsive system of school organizations in education are applauded by many people (Kerr, 1994).

With the introduction of educational technology into the schools, new types of organizations have come into being and existing ones have begun changing their form and functions. Educational technology which is often portrayed as a solution to the problems of bureaucracy, not only has created more flexible and responsive organizations, but also has had potential impact on the individuals who work there. Although there isn't much consensus about what precisely the nature of such impact on organizations and the people, the applications of some models of educational technology have loosened bureaucratic structures (Hutchin, 1992; Kerr, 1989; McDaniel, McInerney, ve Armstrong, 1993). For example, the use of technology has allowed teachers and administrator to communicate more directly and thus, weakened the existing patterns of one-way, top-down communication. The educational technology has also established networks linking teachers and students, either within a school or district, or across regional or national borders, thus breakened the old pattern of isolation and parochialism and lead to greater collegiality (Tobin and Dawson, 1992). The educational technology has also linked schools, parents and community by using various social and educational networks. Today, school administrators

and teachers use educatioanl technology to communicate with parents by using e-mail. School principals and teachers increase and share their knowledge and experience with their colleagues through internet and various educational web sites. This improved communication among administrators, teachers and parents by using educational technology leads to greater involvement and feelings of ownership on the parts of educators and parents. The technology's role of allowing wide acsess to information, free exchange of ideas.

The Educational Technology and the New Roles of Teachers

New educational technologies such as overhead projectors, televised instruction and computers have buttress tecahers' roles and authorities in the classrooms. Computers and related devices have become as helpmates and liberators of teachers from drudgery, although a small number of people still consider computers as a threat to the presence and worth of the teachers. It would be more productive, therefore, to think of computers not simply as devices that would take the place of teachers, but rather as new sources of energy within the school, energy that might be applied in a variety of ways to enrich teachers' roles. About Instructional Design and Development there are also some supporters and some critics. A group of educational technologists view Instructioanl Design including educational software as providing a stimulus for teachers to think in more logical and connected ways about their work and education, while some critics see them as simply another plot to move control of the classroom away from the teacher and into the hands of "technicians" (Kerr, 1990).

Some sociological studies of classroom organization have pointed out that with the advent of contemporary educational technology, the teacher's role and position from being the center of classroom have been changed to being more of a mentor and guide for students. The teacher is no longer viewed as being the only source of knowledge, instead the student is encouraged to take the responsibility for his/her own learning. In addition, with the introduction of computers to the classroom, the social relationships within classrooms have been significantly altered and students have began to control and direct their own learning.

Sociology of Groups and Access to Educational Technology

The contemporary sociology have recently come to focus more and more groups that are perceived to be in a position of social disadvantage. These groups include racial minorities, women, and those from lower socio-economic strata. The sociological studies have raised some important questions concerning educational technology such as: Are the schools providing equal access to educational technology ? Do all groups get the same kinds of experience in using technology in schools? Are the experiences of males and females with educational technology the same in quality?

With the advent computers in early 1980's, the access of minorities and low income groups to educational technology in schools has become a central issue in almost every country. Minorities and low socio-economic status groups wanted their children have an equal access to new technologies especially to computers because they rightly linked these new technologies with a better future and economic opportunity for their children. The studies about the access of minorities to new technologies in schools have shown that children in poor schools (schools where a majority of the children were from low-socio-economic status) had no computers available to them. Even though they had one or two computer classes, the experiences they had included rote memorization and practices of how to run some basic programs in the absence of computers. Whereas children in schools with a wealtier student base were offered opportunities to learn programming and to work with more flexible software.

Gender, Social Class and Educational Technology

With the rise of the women's movement and in reaction to the perceived "male bias" of technology generally, technology's relationship to issues of gender is one that has been explored increasingly in recent years (Kerr, 1994). Several studies have raised the question of how women are accommodated in a generally male-centric vision of how educational technology is to be used in schools (Kerr, 1990; Damarin, 1991). Becker's

study found that girls tended to use computers differently, focusing more on such activities as word processing and collaborative work, while boys liked game playing and competitive work (Becker, 1986).

Today, there is much evidence that males and females differ both in terms of amount of computer exposure in school and in terms of the types of technology-based activities they typically choose to undertake (Kerr, 1994). Some studies points out that boys' and girls' prior experiences with computers may determine their interest and depth of involvement with computers at the present (Ogletree ve Williams, 1990).

There are only a few studies addressing directly the question of access to educational technology and social class. For example, Persell and Cookson (1987) found that computer knowledge represents a "new form of cultural capital," and that faculty and administration at elite boarding schools, in adopting new technologies, tend to think less about instructional uses and more about the need to master new technologies as a general strategy for social protection of their own class interest. Many people still perceive computers as expensive toys that poor school districts and low socio-economic groups can not affort to buy for their children.

Despite the little attention has been paid to the relationship between social class and educational technology in current literature, there have been serious concerns in the area of educational technology about equity in access to computers and other educational technologies. For example, Kerr (1991) argues that certain kinds of information became less accessible when print-based information was transformed into electronic form.

Educational Technology as a Social Movement

Some sociologists have viewed social movements as a response to social strains and some considered social movements as a reflection of individual dissatisfaction and feelings of deprivation. But, social movements more generally have been seen as a reflection of trends and directions throughout the society. The studies of social movements have concentrated on the process by which such movements emerged, how they recruited new members, defined their goals, and gathered the initial resources that would allow them to survive.

Many educational sociologists have conceived educational technology as a social movement. In order to consider educational technology as a social movement, it is necassary to think about the professional interests and goals of those who work within the field of educational technology. Until the advent of microcomputers, the field of educational technology was not characterized as a true profession and most of the educational technologists did not consider their work as the works of other professions. But, with the advent of microcomputers, the situation was changed considerably. Computers and technology based programs were began to be seen as the keys to future academic, economic and social success. One consequence of this new interest was an increase in the number of professional groups interested in educational technology. With the advantages of this new status, educational technologists began establishing new educational organizations and numerous academic research involved in design, production and evaluation of educational programs was started. Educational technology as a field has also come to affiliate with other fields such computer and software manufacturers and defence industry.

According to Kerr (1994), teachers themselves also had a role in defining educational technology as a social movement. A number of studies noted that some knowledgeable teachers in schools typically assumed the role of "educational technologists who willingly became the source of information and inspiration about educational technology for other teachers. Similiarly, some school principals and superintendents played a significiant role among their peers not only for describing specific ways of introducing and using computers in the classroom, but also providing teacher training about how to use other educational technologies in the classroom.

Kerr (1994) argues that a further indication of the success of educational technology as a social movement is seen in the widespread acceptance and support of technology based projects, and in the increasing participation in projects and campaigns to introduce technology into schools by citizens and corporate leaders.

The examples above suggest that educational technology has had some success as a social movement, and some of the claims about the use of technology in the classroom are attractive not only to educators but to the public at large. Nonetheless, it is also necessary to review the ideological underpinnings of the movement, the sets of fundamental assumptions and value positions that motivate and direct the work of educational technologists.

The field of educational technology is mostly characterised by having a world view as scientific, value-neutral, and therefore easily applicable to the full array of possible educational problems. The focus on science and scientific method not only mark educational technology but also instructional design. Instructional design is defined as the science of creating detailed specifications for the development, evaluation, and maintenance of subject matter. It is a common assumption among educational technologists that if correctly interpreted and applied, technical and analytic procedures of instructional design are useful in any educational setting.

The assumption undergirding the definitions and models of educational technology and its component parts, instructional design and development is that the procedures the field uses are scientific, value neutral and precise. The leading figure of educational technology, Gagne (1987) wrote that "educational technology generally fundamental systematic knowledge derives form the research of cognitive psychologists who apply the methods of science to the investigation of human learning and the conditions of instruction" (p.9). And instructional design involves "carrying out a number of steps beginning with an analysis of needs and goals and ending with an evaluated system of instruction that demonstrably succeeds in meeting accepted goals. Decisions in each of the individual steps are based on empirical evidence, to the extent that such evidence allows. Each step leads to decisions that become inputs to the next step so that the whole process is as solidly based as is possible within the limits of human reason" (p.5).

As it is seen from these definitions, educational technology and instructional design as movements are scientific, value-free and neutral enterprise and the field search for efficiency in education. But, the these perceptions of educational technology are in question in the era of post-modernism. In recent scholarship from varied disciplines argues that tendency of computers and materials developed in the same line influence social systems of administration and control in directions that are rarely predicted and are probably deleterious to the feelings of human self determination, trust and mutual respects. The installation of an electronic mail system, for example, may lead not only to the more rapid sharing of information, but also to a management of a work environment in which all actions of the individuals are monitored and controlled.

One of the strong criticism of the current line of thoughts of educational technology and the production of educational materials comes from Apple who sees this process as intensely asocial and apolitical in nature. Apple argues that "technical" and non-political curriculum specification and design may serve to the interests of dominant groups and ideologies, not always to educational ends. According to Apple, certain views of science and social life are selected as the most legitimate knowledge in the curriculum in schools or in the ideological functions of science as justification for conservative research and decision making. Thus, Apple (1979) argues, we shall have to inquire into how the vision of education as a science functions ideologically today. He wrote: "For just as hegemony is maintained within schools through the tacit teaching that goes on, so too is an acritical view of institutions and an overly technical and positivistic view of science made an aspect of an effective and dominant culture by the "intellectuals" whose action makes it legitimate, who make it seem like a set of neutral categories that gives meaning so that we may act appropriately to help children" (p.105).

Technical and pragmatic overtones are so overwhelming in the field of educational technology that professional interests and academic research emphasise utilitarian aims over intellectual pursuits. Stressing this, Apple (1991) argues that the more the new technology transforms the classroom into its own image, the more a technical logic will replace critical political and ethical understanding."

Educational technology should not only be considered as merely a technical and value-free process, but should pay attention to social and cultural values. Hooper (1990), a pioneer in the field, comments that "much of the problem with educational technology lies in its attempt to ape science and scientific method... An arts perspective may have some things to offer educational technology at the present time." In Hooper's mind an arts perspective "focuses on values, where science's attention is on proof (11).

Kerr (1994) argues that educational technologists are encouraged to see the process they employ as beneficent, as value-free, as contributing to improved efficiency and effectiveness. But the critics noted above present different value positions and different stances of education and educational technology. Educational technologists in the field need to take into consideration these critics if the field is to develop further as a social movement.

CONCLUSION

In this paper, I focused on how educational technology has affected the organisations of schools and school administrations. It was argued that educational technology has had tremendous impacts on the existing organisational structure of schools. The application of some models of educational technology into the school has loosened bureaucratic structure and created more flexible and responsive organisations. It has also had potential impact on administrators and teachers. The use of technology weakened the existing patterns of one-way, top-down communication and allowed administrators and teachers to communicate more directly. The educational technology has established networks linking teachers, students and community, breakened isolation and individualism and led to greater collegiality and cooperation between schools and community.

Educational technology is served as a catalyst for the general improvement of students' experiences in classrooms and school efficiency. Computers has changed the ways in which classroom life is organised and conducted. Instructional design has provided a variety of instructional approaches and materials which kept students' interests and desires alive in learning. The use of computers in school settings has eased the teachers' task of classroom management and eliminated some discipline problems created by students in traditional educational settings.

The wider availability of computers and their linkage through networks has made a significant difference in educational practice. Teachers use computers and internet to collect and use data in support of their teaching. Teachers learn about educational research and share information among teachers in different schools, districts, states, or even countries. Teachers may participate in collaborative research projects.

Despite all of these developments resulted by the use of educational technology, we should not be so optimistic about the spread of such technologies as computers, electronic mail and wide access to networked information will quickly change school organisation. Kerr (1994) argues that the evidence form fields outside of education has so far not been so persuasive that improved communication will lead to better management, improved efficiency or flexible organisational structures. Rather, the technology in many cases merely seems to amplify processes and organisational cultures that already exist. It seems most likely that the strong organisational and cultural expectations that bind schools into certain forms will not be easily broken through the application of technology. As some researchers(e.g. Cohen, 1987; Sheingold and Tucker, 1990) suggest, these forms are immensely strong, and supported by tight webs of cultural and social norms that are not shifted easily or quickly. Thus we may be somewhat sceptical about the claims by enthusiasts that technology will by itself bring about a revolution in structure and school effectiveness overnight. Its effects are likely to be slower, and to depend on a complex of other decisions regarding organisation taken within schools and districts (Kerr, 1994).

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