

Computer technology in education and issues of power and equity

Eğitimde bilgisayar teknolojisi: Güç ve eşitlik konusu

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Abstract: *This study aims to use 'techniques of power' classified (based on Foucault's work) by Gore in order to illustrate power relations between supporters (or non-supporters) of computer technology and teachers. For this purpose, six out of eight techniques of power (surveillance, normalization, exclusion, classification, distribution and regulation) is used in formulating thoughts about computer technology and issues of power and equity. In this study, these techniques of power were discussed more detailed both to exemplify how supporters (or non-supporters) of computer technology exercise power over teachers (preservice or inservice) by using of major techniques of power and to show how they are related to the issue of equity.*

Keywords: *computer technology, education, power, equity*

Geniş Özet

Yaklaşık son 20 yıldır bilgisayar teknolojisi bazı eğitimciler tarafından, okul öncesi dönemden yükseköğretime kadar eğitimin bütün kademelerinde öğretim kalitesinin artırılması için en etkili yöntemlerden birisi olarak kabul edilmektedir. Bu eğitimciler, bilgisayar kullanımının sadece öğretimle sınırlı olmadığını, ayrıca öğrencinin farklı boyutlarda düşünmesini sağlayarak ve yaratıcılığını geliştirerek önemli katkılar sağlayacağını öne sürmektedirler. Bu fikre karşı çıkan bazı eğitimciler ise bilgisayar teknolojisinin öğrencilere pozitif anlamda bir şey katmadığı gibi küçük çocuklarda önemli derecede zararlara yol açacağı düşüncesini savunmaktadırlar.

Şu ana kadar yapılmış olan çalışmalar bilgisayar teknolojisinin eğitimde etkili bir şekilde kullanılmadığını göstermiştir. Eğitimde bilgisayar kullanımının önemine inanan eğitimciler etkili kullanımdaki eksiklikleri üç temel nedene bağlamışlardır. Bunlar; üniversite de alınan eğitimin yetersizliği, üniversitelerin bu konuda gönülsüz olması ve alınan eğitim yeterli bile olsa üniversite de alınan eğitim ve kullanılan araç-gereçle, okullardaki gerçekliğin birbiriyle örtüşmemesi. Bilgisayar teknolojisinin eğitimde hiçbir fayda sağlamayacağını düşünen eğitimciler ise bilgisayar teknolojisini savunanların sadece bir hayal dünyasında yaşadıklarını iddia etmekte ve ne yapılırsa yapılsın bu teknolojinin eğitim açısından çok büyük bir fayda sağlamayacağını söylemektedirler. Bu eğitimcilere

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göre, bilgisayar teknolojisinin eğitimde ısrarla kullanılmaya çalışılması sadece büyük bilgisayar şirketlerinin kendilerine yeni iş alanları yaratma çabasından başka bir şey değildir. Yine bu karşı fikirleri savunanlara göre bilgisayarın eğitime sağladığı yararı gösteren çalışmalar çok küçük ölçekte ve dar bir kapsamda ve genellikle bilgisayar şirketler tarafından yapılan çalışmalarla sınırlıdır. Ayrıca harcanan milyonlarca dolardan sonra, gelişmiş ülkelerde bile bu teknolojilere eşit ulaşım olanağının sağlanamamış olması da bu yazarlar tarafından ortaya atılmış diğer bir tartışma konusudur.

Bütün bu tartışmalardan da anlaşılacağı üzere konu sadece eğitimde bilgisayar kullanımı ile sınırlı değildir. Bu aynı zamanda bir güç ve eşitlik konusudur ve bu konuda sağlıklı bir karara varmak için konunun mutlaka her iki boyutuyla da derinlemesine incelenmesi gerekmektedir. Bu amaçla, Jennifer Gore'un (1998) Foucault'un güç çözümlemesi çalışmasını göz önünde bulundurarak oluşturmuş olduğu kuramsal çerçeve, bu çalışmada bilgisayar teknolojisi, güç ve eşitlik üçgeninde ortaya çıkan konuları tartışmak amacıyla kullanılmıştır. Konuya daha uygun olduğu için Gore'un ortaya koyduğu sekiz temel başlıktan altı tanesi (gözetleme, normalleşme, dışlama, sınıflandırma, dağıtma/ayırım ve düzenleme) bu çalışmada detaylı olarak incelenmiş ve güç, eşitlik ve bilgisayar teknolojisi arasındaki güçlü bağ açıklanmaya çalışılmıştır.

Literatür incelemesi yoluyla yapılan bu çalışma göstermiştir ki hem öğretmen adayları hem de öğretmenler bu üçlü ilişkiden oldukça fazla etkilenmektedirler. Bu etki odaklarının başında resmi kurumlar, bilgisayar şirketleri ve okullar gelmektedir. Fakat alanda sınırlı sayıda yapılan araştırma yüzünden bu güç ilişkisinin boyutlarını tam anlamıyla kavrayabilmek mümkün değildir. Bu yüzden en kısa sürede uzun soluklu nitel ve nicel çalışmalar başlatılarak konunun daha derinlemesine incelenmesi faydalı olacaktır.

Anahtar Kelimeler: bilgisayar teknolojisi, eğitim, güç, eşitlik

Introduction

In last two decades, computer technology has been considered as a proper and exhilarating method of improving instruction in K-12 classrooms. During this period, many articles and books were written about the uses of computer technology. On the one side, proponents of this technology claim that computer technology is not only an instrument for receiving and distributing ideas, but also can a method expressing ideas, different perspectives, allowing thoughtful and creative responses (Bennett & Pye, 1998; Braun, 2000; Mason, 2000). On the other side, many intellectuals and educators express reservations about the use of computer technology in K-12 classrooms and preservice teacher education (Clark, 1994; Cuban, 2001; Postman, 1993, 2000; Ross, 2000; Russell, Bebell, O'Dwyer, & O'Connor, 2003; VanFossen, 1999). These

educators claim that the use of computer technology in the classroom may not lead to positive results for students, and may instead have harmful effects in the earlier graders.

This study aims to use 'techniques of power' classified by Gore in order to illustrate power relations between supporters (or non-supporters) of computer technology and teachers. For this purpose, six out of eight techniques of power (surveillance, normalization, exclusion, classification, distribution and regulation) is used in formulating thoughts about computer technology and issues of power and equity since these six techniques of power are seen in educational technology more commonly. In following sections, these techniques of power will be discussed more detailed both to exemplify how supporters (or non-supporters) of computer technology exercise power over teachers (preservice or inservice) by using of major techniques of power and to show how they are related to the issue of equity.

Literature Review

It is possible to see that both proponents and opponents of computer technology are working really hard and using all their weapons to prove what they say is better than others for teachers and students. As one can easily imagine, both preservice and inservice teachers are the leading actors of these heated discussions.

Following two citations may provide deeper understanding to show both sides of heated discussions regarding the use of computer technology in education:

It is impossible to deny the tremendous effect of rapid technological growth has had on our society. This explosion of new technologies has changed the way we live - from the way we do business to the way we communicate with each other. Technological advancements are also affecting the way we teach and learn. The business world demands that our schools prepare educated workers who can use technology effectively in the global marketplace (NCATE, 1997: 1).

Computers are reshaping children's lives, at home and at school, in profound and unexpected ways. Common sense suggests that we consider the potential harm, as well as the promised benefits, of this change. Computers pose serious health hazards to children. The risks include repetitive stress injuries, eyestrain, obesity, social isolation, and, for some, long-term physical, emotional, or intellectual developmental damage. Our children, the Surgeon General warns, are the most sedentary generation ever. Will they thrive spending even more time staring at screens? Yet many schools have cut already minimal offerings in these areas to shift time and money to expensive, unproven technology (Alliance for Childhood, 2007).

Proponents of computer technology argue that the main reason of not using computer technology effectively in education is lack of training in the undergraduate level. A study, by Huinker, Fuller, and Ellwood (1995), was found that computers were hardly ever used in any math and science classes and most preservice teachers have had only inadequate experience on computer technology during their public instruction. This situation carries on at the university level, where 44% of faculty either disagreed or strongly disagreed with the idea that computers could be valuable to the teaching practice (Misfeldt & Stahl, 1991). Also, there is unwillingness on the part of universities to recognize and reward effort put into improving teaching, including both the use and development of computer-based materials (Darby, 1992). The resulting curricular inconsistency in universities causes even new graduates of professional programs to lack adequate understanding and skills in the use of technologies that they will be expected to use in their professions (Hurd, 1988). Many researchers believe one reason for this difference between the objectives of the teacher education programs and the reality in the schools is the fact that new teachers have had very restricted experience to proper models of how the computer can be used in a classroom setting. Therefore, proponents of computer technology argue that method courses may be the most efficient way to advance computer skills of preservice teachers and to integrate computer technology into current educational system (Beisser, 1999; Bennett, 2000; Berson, 2000; Diem, 2000; Kent & McNergney, 1999; Mason et al., 2000). A lack of hardware and software, and a lack of time are also reported as a barrier to using computer technology in the classroom (Cummings, 1998; Whitworth & Berson, 2003).

Opponents of computer technology draw totally different picture than proponents of computer technology regarding the reason why teachers do not use computer technology in a classroom setting. They believe that much of the educational technology literature is grounded more in hope and faith than documented, readily replicable, successful, student-achievement-raising positive and economical practice (Cuban, 2001; Postman, 2000; Ross, 2000). Even several proponents of computer technology accept that no longitudinal study conducts up until now at the elementary, middle, high school, or postsecondary environments in order to evaluate the efficiency of technology on either student or instructional performance in education. Much of the data are short term, single concept research analysis. There is no metacognitive studies

involving technology (Mason et al., 2000; Russell, Bebell, O'Dwyer, & O'Connor, 2003; Whitworth & Berson, 2003). Moreover, despite large expenditures, increased access, and nearly universal use by school-age children and their teachers, some observers have questioned the extent to which technology is affecting teaching and learning (Healy, 1998; Stoll, 1999). Both Healy and Stoll have criticized the investment in educational technologies, arguing that there is little evidence these investments affect teaching and learning in a positive way. These researchers, in fact, asserted that computer use may be harming children and their learning. They also strongly argue that, to integrate computer technology into schools is part of technology corporations' business plan to increase sales. Following examples partly support this claim of opponents of computer technology. For example, Intel's Pat Foy stated, "What we do isn't really philanthropy, which is giving something away. This is about making an investment.... If we don't make those kinds of investments, we're going to go out of business" (Southwick, 1997). Business Week reported that technology corporations, including Microsoft and Toshiba, were stoking the education market: "Penetration of PC's in American homes is stalled at about 40%... Where do you get new users? Enter the education market" (Gross, 1997). Selling to schools has a multiplier effect because parents have an incentive to purchase compatible equipment and software for the home — especially as projects designed to foster home-school communication by e-mail early: "This (education) market is most influential in educating neophytes in the benefits of high tech. And students, once converted, will remain active buyers of computer gadgetry for life" (Tausz, 1996).

All these discussions and researches show that no indication exist the use of computer technology will affect current status of preservice teacher programs and classroom milieus in terms of activity, creativity, motivation and so on. In other words, the findings point out that the existence of computer technology has not changed the current structure of student-teacher power/knowledge relations. However, after spending billions of dollars only one thing is definitely obvious, which is the use of computer technology has affected power relations and equity between teachers (preservice and inservice) and proponents (sometimes opponents) of technology and probably will continue to affect these power relations in the future.

Rather than eliding the role of power in the classroom, or foregrounding how individuals use technology to wield power, we must begin with a more nuanced understanding of power, one that takes seriously the overlapping potentials of discipline and resistance.

Seeking such a perspective demands close attention to the works of Michel Foucault. During his tenure as a leading European intellectual, Foucault (1975/1995) engaged the intersection of agency, structure, and knowledge in a range of sites: asylums, hospitals, schools and bath houses. In exploring the notion of modern discipline, Foucault revealed the body as a site of discourse, a map to articulate the fields of force that shape public life, craft its barriers, and mark its discontents (O'Farrell, 1997).

Through some of Foucault's work, such as *The History of Sexuality, Discipline and Punish* and other later essays, we can find two emergent types of power: sovereign power and disciplinary power. "Sovereign power", or traditional power, is connected with the territorial state, the society laws. Second, "disciplinary power" is exercised through institutions and extended throughout society. Therefore, continuities in power relations are evident not only in schools, hospitals, prisons, factories, and other institutions, but also outside of these institutions (Popkewitz & Brenman, 1998).

There is an intellectual discussion over whether Foucault's analysis of power was specific to penal institutions or intended to describe all of modern society. However, following passage shows that Foucault's analysis of disciplinary power is not limited with penal institutions and it can be a reference to other institutions, he just left the deeply analytic work to those "specific" intellectuals with a closer attachment to education:

Take, for example, an educational institutions, the disposal of its space, the meticulous regulations which govern its internal life, the different activities which are organized there, the diverse persons who live there or meet one another there, each with his own function, his well-defined character — all these things constitute a block of capacity – communication – power. The activity which ensures apprenticeship and the acquisition of aptitudes or types of behavior is developed there by means of a whole ensemble of regulated communications (lessons, questions and answers, orders, exhortations, coded signs of obedience, differentiation marks of the "value" of each person and of the levels of knowledge) and by means of a whole series of power processes (enclosure, surveillance, reward and punishment, the pyramid hierarchy) (Foucault, 1983: 218-219).

Jennifer Gore (1998) has studied how power relations function at the microlevel of schooling. The theoretical framework of the study based on Foucault's analytics of power. She identified 'techniques of power' in the mechanism of schooling: surveillance, normalization, exclusion, classification, distribution, individualization, totalization, and regulation. Gore indicates how diffuse and innocent-looking many of these techniques are in pedagogical practice. Moreover, this functioning of power remains largely invisible in daily practices of schooling.

Techniques of Power

a) Surveillance

Surveillance is one of the most common power techniques that is used either proponents of computer technology or opponents of computer technology. Surveillance is defined as "supervising, closely observing, watching, threatening to watch, or expecting to be watched" (Gore, 1998: 235).

Different governmental agencies, computer companies, and Non-Governmental Organizations (NGOs) are the biggest power and close followers of the use of computer technology in schools. These institutions strictly observe teachers, as well as release several reports to try persuading and forcing preservice and inservice teachers either to use or not to use computer technology. CEO Forum (1999), Apple Computer, Inc. reports (1996, 2002), National Council for Accreditation of Teacher Education (NCATE) report (1997), President's Committee of Advisors on Science and Technology report (1997), Office of Technology Assessment (OTA) report (1995), and Alliance for Childhood report (2007) are some examples of these reports. Following reports will exemplify how these agencies use their power to observe teachers regarding the use of computer technology in schools.

OTA's (1995) report starts with some statistics to show how education department provided public schools with hardware and software. Then, the report continues with some expressions that illustrate how OTA has observed teachers. The report finalized by highlighting the importance of providing with "technological vision" for teachers. For example:

Classroom access to newer technologies like CD-ROM and networking capabilities are also limited. While 75 percent of public schools have access to some kind of computer network, and 35 percent of public schools have access to the Internet, only 3 percent of instructional rooms (classrooms, labs, and media centers) are connected to the Internet. Despite technologies available in schools, a substantial number of teachers report little or no use of computers for instruction. Their use of other technologies also varies considerably.

To use these tools well, teachers need visions of the technologies' potential, opportunities to apply them, training and just-in-time support, and time to experiment. Only then can teachers be informed and fearless in their use of new technologies (OTA, 1995:1).

After the previous report in 1997, NCATE prepared very similar report to remind teachers that they are being observed by faculty and government. The report begins with some statistics similar to OTA's report and continue with some phrases in which they underlined who has the knowledge of teachers' not using computers, just as it was highlighted in OTA's 1995 report. However, they also included the inadequacy of "teacher education programs" into the report.

Meanwhile, opponents of computer technology conducted different research to prove harmful effects of computer technology. They not only do observe teachers, but also watch federal government, schools, and computer companies from different angle. In following report of Alliance for Childhood (2007), the possible side effects are emphasized, and schools, federal governments, and computer companies are warned to release information related to potential harmful consequences of computer technology on children.

Emphasizing the use of computers in childhood can place children at increased risk for repetitive stress injuries, visual strain, obesity, and other unhealthy consequences of a sedentary lifestyle. Some development experts also warn that increasing the time that children spend on computers, given the hours they already sit in front of televisions and video games, may contribute to developmental delays in children's ability to coordinate sensory impressions and movement and to make sense of the results. These health risks to children demand immediate action. But no one pushing the computer agenda - neither high-tech companies, nor the federal government, nor school officials - has yet publicly acknowledged the hazards, let alone taken action to remedy them.

These examples illustrate how surveillance techniques are used by federal government or NGOs to observe teachers regarding the use of computer technology.

b) Normalization

Normalization is another technique of power that we can see in power relations in computer technology. Normalization is defined as “invoking, requiring, setting, or conforming to standard—defining the normal” (Gore, 1998: 237).

The number of computers and computers with the Internet is increasing every year in the U.S. The following statistics may provide basic information about these numbers.

The ratio of students to instructional computers with Internet access was computed by dividing the total number of students in all public schools by the total number of instructional computers with Internet access in all public schools (i.e., including schools with no Internet access).³ In 2001, the ratio of students to instructional computers with Internet access in public schools was 5.4 to 1, an improvement from the 12.1 to 1 ratio in 1998, when it was first measured. This level of access corresponds to the 4- to 5-students-per-computer ratio that many experts consider reasonable for effective use of computers in schools (Kleiner & Farris, 2002: 1).

Indeed, current numbers should be higher than those reflected in these statistics. To make standard computers as a part of classroom milieu is one of the purposes of proponents of computer technology. They claim that in today’s world current necessities of economy and social life make computers a feature of daily live and education should not stay behind of this trend. As providing all hardware and software for schools, these agencies will finish up their responsibilities and they believe that the following steps should be taken by teachers themselves. As Bennett & Pye (1998: 1) claims “technology must be an integral part of the pedagogy of teaching and learning environment” and all teachers should integrate technology similar to their successful counterparts in Virginia, Texas, or North Carolina (CEO Forum, 1999). Supporters of computer technology rarely ask teachers whether they need computers or the Internet in their classrooms because they argue that computers are vital and usual part of classrooms just like blackboard, pencil, or book. Since enough computers and the Internet connections are provided for classrooms, supporters of technology believe that the only way remained to use computer technology in schools either persuade or (may be) force teachers (CEO Forum, 1999, NCATE report 1997, OTA report, 1995).

c) Exclusion

The category of exclusion can be used to mark the negative side of normalization—the defining of pathological. Foucault refers to exclusion as a technique

for tracing limits that will define difference, defining boundaries, setting zones (Gore, 1999: 230).

The category of exclusion may have two different dimensions depending on from whose perspective you are looking at. From proponents of computer technology standpoint, preservice or inservice teachers who refuse to use computer technology can be grouped under this category. Despite the great effort of proponents of technology, the gap between technology presence in schools and its effective use is still too large (CEO Forum, 1999). For example, statistics show that while social studies teachers may have begun to support cooperative use of technology for their students, teacher use of computers still quite occasional, fewer than two every ten teachers are serious users of computers in their classrooms. Three to four are occasional users. The rest, four two five of every ten teachers, never use the machines (Diem, 2000). According to proponents of technology, all these statistics show that the big number of teachers still does not use computers and stay outside as an exclusion; therefore, they offer possible solutions to normalize these excluded preservice and inservice teachers. They argue that preparing new teachers to integrate technology effectively into the curriculum and training current teachers and administrators to be proficient in using computer technology should be the first priority of educational policy to include all teachers into computer technology users (Bell & Tai, 2003; Bennett, 2000; VanFossen, 1999).

However, from opponents of computer technology standpoints, preservice or inservice teachers, who successfully integrated computer technology into their daily instruction, can be classified under the category of exclusion. For instance, to see or to read the success story of West Virginia project in any article or in any report, written by proponents of technology, is not an unusual situation. Mostly, West Virginia statistics are used as a proof to show effectiveness of the use of computer technology on test scores or students' success. However, opponents of computer technology claim that federally funded West Virginia project (Technology Innovation Challenge Grant (TICG) was used for it) cannot go further than to be a single project. As exemplified by Cuban (2001), like past experience with federally funded innovations that slipped off into limbo when funding ended leads a likely scenario for any other projects.

d) Classification

The category of classification is used to define differentiating groups or individuals from one another, classifying them, classifying oneself (Gore, 1999: 239).

This should be the easiest category to define for the use of computer technology because it has already classified inside: the proponents of technology and the opponents of technology. Both sides' missions and approaches are totally different than each other. On the one side, the proponents of technology strongly argue that the effective integration of technology into classroom instruction can and will result in higher levels of student achievement. Moreover, they believe that the computer has the potential to facilitate widespread access to ideas and information. Educators can be empowered through the computer to break down the barriers of isolation and collaborate with broad networks of peers and experts locally, nationally, and globally (Braun, 2000; Easley & Hoffman, 2000; Keiper, Mhyre, & Pihl, 2000/2001; Mason & Berson, 2000; Mason et al., 2000; Whitworth & Berson, 2003). However, they know that all these reforms can start with teacher and that is the reason why they try to persuade teachers to use PCs and use their powers over teachers to reach their aims.

On the other side, the opponents of technology have completely different perspective about the use of computer technology. Either they believe that the computer use is not as effective as in education as asserted by proponents of technology (at least right now), or they believe that the computer use even may be harmful for children. For example, Cuban (2001: 178), in his book *Oversold & Underused*, asserts that "there have been no advances (measured by higher academic achievement)...over the last decade that can be confidently attributed to broader access to computers" have had no discernable impact on practitioners—or on policy makers for that matter. *ImpaCT2*, the report of a 4-year-government-funded study, described as "one of the most comprehensive investigations into the impact of (information technology) on education so far conducted in the (United Kingdom)" concluded that "infusing" schools with technology had failed to improve student achievement (Fielding, 2003).

As these examples demonstrate, computer technology results in classification of teachers, scholars, and institutions and creates strong power relations among them.

e) Distribution

Distribution is defined by Foucault as arranging, isolating, separating, and ranking (Gore, 1999: 240).

In today's world, computer technology mostly separates and ranks schools, states, and nations from each other. These separation and rank create the biggest differences among people and these differences are widely known as "digital divide". What is digital divide? Is the digital divide essentially an issue about access in computers and/or the Internet? From a point of view, as one would expect, the answer is affirmative. Enlarging gap exists between those who have access to information technology and those who don't; therefore, when dealing with the digital divide we need to concentrate on giving more people computer and the Internet access. In another words, the meaning of digital divide is simply having a computer and a network connection. However, this meaning only refers to the second of four consecutive kinds of access "mental, material, skills, usage" (Van Dijk, 1999).

Clearly, public opinion and public policy are strongly preoccupied with the second kind of access. Proponents of technology think that the problem of information inequality in the use of digital technology or computer-mediated communication (CMC) is going to be solved at the moment that everyone has the ability to obtain a personal computer and a connection to the Internet. However, it is just not that simple. Technology access is only one small piece of a much larger problem, a problem that if it is solved might help raise the quality of life for millions of people (Carvin, 2000; Gaillard, 2001). According to Van Dijk (1999), access problems of digital technology gradually shift from the first two kinds of access to the last two kinds. When the problems of mental and material access have been solved, wholly or partly, the problems of structurally different skills and uses become more operative. As a result, increasing differences in the skill and usage of the new information technologies might lead to new inequalities of a nature which is not known before and to be battled, if one chooses to do so, with other means than the traditional ones.

In short, in the information and network society, relative differences in getting information and lines of communication become important for one's position in society, more than in every society in history before. Giving everybody a computer and a network connection, banning the cutting lines of "segregation" in this way, will not remove them. Much deeper and more noticeable differences in skill and usage will appear as both technology and society increasingly differentiate. The fundamental task

of future society will be to prevent structural inequalities in the skill and usage of computer technology from becoming more intense.

f) Regulation

Regulation is defined as controlling by rule, subject to restrictions invoking a rule, including sanction, reward and punishment (Gore, 1999: 243).

It is obvious that all above techniques of power would have regulating effects. However, as one comprehend from the following examples, category of regulation creates big impact on teachers and it sometimes put them under pressure. Source of this power are parents, federal government, school administrators, scholars.

Armstrong and Casement (1998: 2) observed that as viewed from the outside, it seems that the public believes “it’s almost as if nothing worth while goes on in schools unless computers are involved.” Increasingly, as public education is threatened on several fronts, treating the public as the customer who is always right has become synonymous with educational leadership. And it is rarely good business to argue with the customer (Armstrong & Casement, 1998).

In one of the study authors described teachers ’professional discourse as full of “ventriloquating neophilic sentiments” that originate in the “official pro-technology discourse of the ministry, the district and the administration”(Bryson & de Castell, 1998). This image of teachers as puppets is disturbing, but it is not an unfamiliar metaphor to describe how people respond to what they perceive as their own powerlessness or irrelevancy when faced with coercive power in charge of implementing change. Under such conditions, it maybe acceptable to dispute approaches to implementation —the strategy —but it can be seen as treasonous to challenge the goal itself. Bryson and deCastell (1998: 3) pointed out that disagreement can be professionally damaging:

Teachers who are perceived as hesitant, or who experience difficulties with the implementation... will be understood as “resisting” educational innovation; they may be characterized, for instance, as “reluctant users,” or as “Luddites,” in need of some kind of intervention facilitative of an “attitude change” with respect to new technologies.... From this standpoint, refusal to implement new technologies in education is a negative action indicating a refusal to “grow and learn,” that is to say, a falling away from the educational ideal of “The School” as a learning culture.

For some teachers, these risks are hardly abstract (Robertson, 1998). In Robertson's personal communications some teachers have approached her to tell their own stories after she have raised some of these issues in speeches. A first-year kindergarten teacher told Robertson that her principal noted on her evaluation that, on two occasions, she had walked past the classroom and noted that at least one computer was empty and that he found this very "troubling." Another told her of how her principal had instructed her to write a letter of apology to members of the parents' council because she had suggested that instead of buying more computers with the funds volunteers had raised, parents might consider buying books and musical instruments. The principal admonished her that she had compromised the image of the school as living "on the cutting-edge" of educational innovation. Female teachers feel pressure to demonstrate high levels of competency and confidence in technology, especially if they have administrative ambitions (Robertson, 1998).

However, these criticisms are not only for the credibility of individual teachers but also for the validity of schooling itself. The claim that schools are chronically change resistant surfaces all too easily. Seymour Papert compared the school's response to the computer to that of a living organism that, defending itself against a foreign body, digests and assimilates the intruder (Conlon, 2002).

Discussion and Conclusion

Aforementioned illustrations of these categories has been helpful and pertinent the analysis of the use of computer technology in the context of power relations and issue of equity.

As Foucault (1983: 222) indicates that "a society without power relations can only be an abstraction." In today's world, it is obvious that almost everybody familiar with the dynamics of power at least at the microlevel. Power relations regarding the use of computer technology is another part of the microlevel action of power. However, the only problem is that this implementation of power remains almost unseen in daily practices of teacher, unless they pay close attention to it. Also, one of the biggest concerns here is that whether this microlevel action of power will keep remaining at the microlevel, or, will grow up throughout time with the effect of power sources.

Independent from their realization both preservice and inservice teachers are affected by these power relations. They stay under pressure of federal agencies, computer companies, school districts, and so on. However, because of the limited research, we really do not know how these power relations affect teachers' daily instructions and classroom environment. In order to draw a clearer picture of the impact of power relations on teachers, there is a need for both longitudinal quantitative and qualitative research. Until these researches are conducted, many questions about power relations between teacher and power sources will be remain unanswered.

References/Kaynakça

- Alliance for Childhood (2007). "Fool's gold: a critical look at computers and childhood." Retrieved on 15-December-2008, from http://drupal6.allianceforchildhood.org/fools_gold
- Armstrong, A., & Casement, C. (1998). *The child and the machine: why computers may put our children's education at risk*. Toronto: Key Porter.
- Beisser, R. S. (1999, February 28-March 4). *Infusing technology in elementary social studies methods. Paper presented at the Society for Information Technology & Teacher Education International Conference, San Diego.*
- Bell, R., & Tai, R. (2003). Transforming science instruction with technology. In D. A. Sheekey (Ed.), *How to ensure ed/tech is not oversold and underused*. Lanham, Maryland: Scarecrow Press.
- Bennett, L. (2000). Technology standards for the preparation of teachers. *International Journal of Social Education, 15(2)*, 1-11.
- Bennett, L., & Pye, J. (1998, February 18-22). *Technology: Creating a community of thinkers. Paper presented at the National Convention of the Association for Educational Communications and Technology, St. Louis, MO.*
- Berson, J. M. (2000). Rethinking research and pedagogy in the social studies: the creation of caring connections through technology and advocacy. *Theory and Research in Social Education, 28(1)*, 121-131.
- Braun, A. J. J. (2000). A baker's dozen: Ideas and resources in social studies teacher education. *International Journal of Social Education, 15(2)*, 12-30.

- Bryson, M., & de Castell, S. (1998). *New technologies and the cultural ecology of primary schooling: imagining teachers as Luddites In/Deed* (September, 5). Retrieved on 29-March-2009, from <http://educ.ubc.ca/faculty/bryson/gentech/luddites.pdf>.
- Carvin, A. (2000). Mind the gap: the digital divide as the civil rights issue of the new millennium. *Multimedia Schools*, 7(1), 56-58.
- CEO Forum (1999). "Year 2 report professional development: a link to better learning." Retrieved on 14-February-2001, from <http://www.ceoforum.org/reports.htm>.
- Conlon, T. (2002). *Rewiring schools versus re-schooling society* (January, 8). Retrieved on 15-March-2009, from <http://www.spd.dcu.ie/cesi/TomConlon.htm>.
- Cuban, L. (2001). *Oversold & underused: Computers in the classroom*. Cambridge, Massachusetts: Harvard University Press.
- Cummings, C. A. (1998). *Teacher attitudes and effective computer instruction* (ERIC Document Reproduction Service No. ED419 512). Washington, D.C.: Office of Educational Research and Improvement.
- Darby, J. (1992). The future of computers in teaching and learning. *Computers Education*, 19, 193-197.
- Diem, A. R. (2000). Can it make a difference? Technology and the social studies. *Theory and Research in Social Education*, 28(4), 493-501.
- Easley, L., & Hoffman, S. (2000). Creating the electronic classroom a practical guide. *International Journal of Social Education*, 15(1), 80-93.
- Fielding, R. (2003). *IT in schools fails to raise standards* (January, 15). Retrieved on 15-March-2009, from <http://www.vnunet.com/vnunet/news/2121247/schools-fails-raise-standards>.
- Foucault, M. (1978). *The history of sexuality: an introduction* (R. Hurley, Trans.). New York: Random House.
- Foucault, M. (1983). The subject and power. In H. L. Dreyfus & P. Rabinow (Eds.), *Michel Foucault: Beyond structuralism and hermeneutics* (2nd ed., pp. 208-226). Chicago: University of Chicago Press.
- Gaillard, F. D. (2001). *Understanding the digital divide as it relates to electronic commerce*. Unpublished doctoral dissertation, Old Dominion University.

- Gore, J. M. (1998). Disciplining bodies: on the continuity power relations in pedagogy. In T. S. Popkewitz & M. Brenman (Eds.), *Foucault's challenge: discourse, knowledge, and power in education*. New York: Teachers College Press.
- Gross, N. (1997, May 5). A notebook for every student? How Microsoft and Toshiba are scrambling to stoke the education market. Business Week.
- Healy, J. M. (1998). *Failure to connect: How computers affect our children 's minds — and what we can do about it*. New York: Touchstone.
- Huinker, D., Fuller, H., & Ellwood, C. (1995). "Landscape of mathematics and science education in Milwaukee. A study of the Milwaukee public schools." Milwaukee, WI: Center for Mathematics and Science Education Research, Wisconsin University.
- Hurd, J. M. (1988). Technology: an agent for change in education for information science. *Journal of the American Society for Information Science*, 39(5), 323-336.
- Keiper, T., Mhyre, O., & Pihl, P. (2000/2001). Enhancing school-university collaboration through technology. *International Journal of Social Education*, 15(2), 62-75.
- Kent, W. T., & McNergney, F. R. (1999). *Will technology really change education? From blackboard to web*. Thousand Oaks, CA: Corwin Press.
- Kleiner, A., & Farris, E. (2002). "Internet access in U.S. public schools and classrooms: 1994-2001." National Center for Educational Statistics (September, 17). Retrieved on 19-March-2009, from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002018+>.
- Mason, L. C., & Berson, J. M. (2000). Computer mediated communication in elementary social studies methods: An examination of students' perceptions and perspectives. *Theory and Research in Social Education*, 28(4), 527-545.
- Mason, L. C., Berson, J. M., Diem, A. R., Hicks, D., Lee, J., & Dralle, T. (2000). Guidelines for using technology to prepare social studies teachers. *Contemporary Issues in Technology and Teacher Education*, 1(1).
- Misfeldt, R., & Stahl, W. A. (1991). *Attitudes toward computerization in Canadian universities. Technical paper #4*. Ottawa: Canadian International Development Agency.

- National Council for Accreditation of Teacher Education (1997). *Task force on technology and teacher education*. Washington, DC.: Technology and the new professional teacher: preparing for the 21st century classroom.
- O'Farrell, C. (1997). *Foucault resources*. Retrieved on 25-March-2008, from <http://www.qut.edu.au/edu/cpol/foucault/>.
- Popkewitz, T. S., & Brenman, M. (Eds.). (1998). *Foucault's challenge: discourse, knowledge, and power in education*. New York: Teachers College Press.
- Postman, N. (2000). Will our children only inherit the wind? *Theory and Research in Social Education*, 28(4), 580-586.
- Robertson, H. J. (1998). *No more teachers, no more books: the commercialization of Canada's school*. Toronto, ON: McClelland & Stewart.
- Ross, E. W. (2000). The promise and perils of e-learning. *Theory and Research in Social Education*, 28(4), 482-492.
- Russell, M., Bebell, D., O'Dwyer, L., & O'Connor, K. (2003). Examining teacher technology use implications for preservice and inservice teacher preparation. *Journal of Teacher Education*, 54(4), 297-310.
- Seymour, L. (2000). Teachers online but disconnected; many in area lack the time, training to use computers in class. *Washington Post*, pp. A.01.
- Southwick, K. (1997, March). Are corporate technology initiatives more PR than philanthropy? *Electronic School*, p. A13.
- Stoll, C. (1999). *High-tech heretic*. New York: Random House.
- Tausz, A. (1996, October 15). How tech firms court the key education market. *Globe and Mail*, pp. C6.
- Teachers and Technology: Making the Connection. (1995). Washington, DC: Office of Technology Assessment.
- U.S. Congress, Office of Technology Assessment, *Teachers and Technology: Making the Connection*, OTA-EHR-616 (Washington, DC: U.S. Government Printing Office, April 1995).
- Van Dijk, J. (1999). *The network society. Social aspects of new media*. Thousand Oaks, CA: Sage.

VanFossen, P. J. (1999). An analysis of the use of the Internet and World Wide Web by secondary social studies teachers in Indiana. *International Journal of Social Education, 14(2)*, 87-109.

Whitworth, S., & Berson, J. M. (2003). Computer technology in the social studies: an examination of the effectiveness literature 1996-2001. *Contemporary Issues in Technology and Teacher Education, 2(4)*, 472-509.