

COMPUTERIZATION OF THE ARAB SCHOOL SYSTEM IN ISRAEL: EFFECTS AND IMPLICATIONS OF NEW TECHNOLOGIES IN A TRADITIONAL SOCIETY¹

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Abstract

This study presents and discusses different points of view about the impact of introducing ICT (information communication technology) to the Arab educational system in Israel. It analyzes perceptions of the participants regarding the contribution of ICT to changes in Arab schools. Findings show that the encounter between ICT and Arab schools has created processes of social, cultural, and pedagogical change in the education institution. The roles of both the Arab teacher and pupil have changed and indirectly the status of pupils and women teachers has improved. These processes are still premature, but their persistence could bring to a revolution in the spirit of the Arab education.

Introduction

Since the second half of the 20th century, ICT has developed enormously and the control of the information processing has become the primary factor in the determination of the educational level of the individual, society and the state. Therefore, the need for renewal and keeping informed in the educational system is greater today than ever before. Toffler (1992) argued that schools must provide a solution for the world's social needs within which knowledge became power and the changes in ICT are complex and rapid.

The Arab education system is an integral part of a traditional society that serves a minority group which is different from the majority group in social and cultural terms. Since the establishment of the state of Israel, Arab education has been influenced by transition and crises. Its starting point was low in comparison with the Jewish education and when the State was established there were only 45 elementary Arab schools and one Arab high school in Nazareth. From its inception, Arab education is characterized by centralism and closure which is distinguished by commands handed down from above and minimal involvement of Arab educators in curriculum design (Al Haj, 1994).

¹ This study was carried out at the School of Education, Tel Aviv University under the direction of Professor David Chen.

In contrast with the swift process of modernization within the Arab society in Israel, the education system is characterized by conservative leadership, hierarchical relationships and school culture which see the teacher as the source of knowledge and the pupil as an object for absorption of knowledge (Alhaj, 1996; Bashi, 1995). The relationship between teachers and pupils is based on obedience; the main teaching approach is frontal and the pupil's status is marginal (The Ministry of Education, 2001).

However, since the establishment of the state of Israel both qualitative and quantitative changes have taken place. According to data from the Central Bureau of Statistics in Israel (annual 60), the number of Arab educational institutions grew from 46 in 1948 to 711 in 2009, and the number of high quality teachers increased as well; in 2009, over 90% of the Arab teachers were certified to teach and the percentage of academically qualified teachers rose to 82%. Likewise, a rise in women employees in the field of education has taken place. In the late 70's, Mar'i (1978) found that only a third of the teachers in the Arab elementary schools were women, while in 2009 they comprised 75% of the educational employees in the elementary education.

This system was brought into the world of computers without any preparation, and educators at various levels of the system were required to carry out pedagogical and deductive drastic changes.

In the late 80s, computers were introduced into some Arab schools by private initiatives in order to prepare pupils for an advanced technological future. At that time, the ministry of education initiated a national plan to computerize the schools in Israel. Following the implementation of the plan in the Arab schools in 1994, the process of equipping schools with computers has intensified and by 2007, 86% of the Arab schools were equipped with computers and 60% were connected to the Web (Baya'a, 2007).

A lengthy discussion revolves around the introduction of ICT into the schools and their influence on the educational process and the learning environment. However, the computerization of Arab schools received wide functional interest due to the fact that the process of computerizing is an important element in the process of modernization. The introduction of the new technology to the educational system requires renewal and change in educational, social, and traditional cultural concepts of all those involved in the educational process. Furthermore, computerization represents a modern culture, which is intrinsically different from the Arab culture, and Arab society is trying to keep up with it. In this context, Aljabary (1994) wrote "Arabs today are required to be active and innovative in order to overcome the challenges with which modern life faces the Arab world."

Integration of ICT in the Arab schools was met with resistance and close mindedness, primarily because Arab educators were not proactively involved in shaping the policy of computerizing their schools, the lack of awareness, resources and infrastructure that support the implementation the of new technology, and the fear of drastic change in their traditional approach to teaching. Similarly, an additional major problem stemmed from lack of software in Arabic and the requirement to use three languages: Arabic, Hebrew,

and English together. This issue created additional resistance among the teachers to the computerization process (Baya'a, 2002). Today, after thousands of Arabic sites have entered the network, it is possible to overcome the language barrier and Arab schools can benefit from access to the Web.

One can observe that the Arab educational system in general has all the special characteristics of the Arab society in Israel. On the one hand, social and cultural conservatism which is not in accordance with the demands of the modern age and on the other hand, a response to the process of modernization of the Israeli and western society. Introducing ICT into the Arab schools enables a close observation of the complex process of the meeting point between modern technology and traditional school culture.

This study relates to the effects and implications of the integration of ICT into the Arab educational system — a process that began in the late 80s and has continued up until now. It analyzes perceptions of the participants regarding the contribution of the ICT to changes in the educational environment, and the improvement of teaching and learning. It also considers the empirical implications of introducing ICT into the Arab schools on educational perceptions and on reciprocal relationships between the role partners at school.

The development and change were studied in the educational system in Nazareth, which is the largest Arab urban center in Israel. The educational system in Nazareth consists of two main streams: the public “State schools” and the “private schools” under the auspices of the church,² which make up 50% of the educational institutions in the city, and serve a heterogeneous population on a socio-economic level, religion and environment. Most of the secondary schools in the city are run by churches.

The study poses five specific questions:

1. Is introducing ICT into the Arab schools in Israel perceived as a contribution to the changes and developments in the Arab education system?
2. Are the Arab schools ready to integrate ICT in the teaching learning process?
3. Are teachers using ICT and aware of the educational potential inherent in it in the context of teaching and learning?

² Schools run by churches are private schools, which are defined by the Ministry of Education as unofficial and recognized because they are within the criteria of the ministry. In most of the schools the classes start from preschool and continue through to the 12th grade, and all classes are held on the same campus under one administration.

4. How does ICT contribute to the teaching and learning process in the Arab schools?
5. Does the introduction of ICT into the Arab schools affect the interaction between partners at school?

Methodology

The present study was carried out according to the qualitative approach in order to examine processes and events in light of the entrance of ICT to the Arab schools. The developments and changes which are found on various levels in the system have been examined via introspection of the subjective reality which is supposed to contribute to an understanding of the educational processes and social and cultural phenomenon by exposing the perspectives of the participants (Sabar, 2006).

Sample

The sample includes 50 participants: 21 educators, 15 pupils, and 14 parents. The participants were chosen from 14 schools in Nazareth: 8 middle (junior high) schools and 6 high schools. In choosing the sample an attempt was made to create maximal representation of the population being studied via basic and specific characteristics such as: age, sex, education and socio-economic level. This is the judgmental sampling method (Miller & Salkind, 2002) and it is not random as far as the final sample, which will be included in the study, is left to the discretion of the researcher.

Instruments

The data collection technique in this study was based on structured interviews and observations in educational institutions, with the purpose to learn about the interaction between introducing ICT into the Arab schools and the educational act, to examine the educational processes which are occurring in the educational system consequent upon the above interaction, and in order to get an impression from most of the organizational, educational, cultural, and social components of the schools and of the study sample.

Procedure

In the first stage, the extent to which computers were assimilated into the studied educational system was examined. Data on the schools being studied was collected from the school principals. General data about computerization of the Arab schools was obtained through the inspector of computerization in the Arab sector. The observations were made at schools and the interviews were made in accordance at the convenience of the interviewee.

Data processing

The data was processed and analyzed according to the qualitative research method. The empirical material gathered from the interviews was processed into texts and each text was analyzed into content units. The content units were categorized and sub-categorized of joint topics and went through a quantitative process (Ryan & Bernard, 2000). After the

categorical structure was solidified, the findings were surveyed, analyzed and discussed. The primary categories found were:

- The school's readiness to integrate ICT in education
- The contribution of ICT to teaching and learning
- The educational climate and the interaction between partners in the educational act

Findings and Discussion

The influence of computerization on education is qualitative and quantitative because ICT enables the presentation of complex, dynamic, multi-media and virtual knowledge regardless of place and time. The educational goals arising from introducing ICT to the education system include: fostering independent learner, activating and running scientific research skills, dealing with troubleshooting of complex phenomena, and developing teamwork and pluralistic world view (Chen, 1999).

The School's Readiness to Integrate ICT in Education

The findings show that almost all of the high schools in the Arab sector and all schools in Nazareth are computerized and connected to the Internet. However, on the physical level, infrastructure, software, programs, and technical readiness, 75% of the participants reported that schools are only partially ready. The interviewees' evaluation is total but when referred to each school separately, it becomes clear that some of the schools are completely ready. The partial readiness is related to the lack of necessary educational infrastructure for providing a solution to ICT requirements and a huge shortage of resources. These two principal factors create additional problems which drag dissatisfaction from the general state of computerization. The teachers who teach computer literacy and those who are integrating the computer in their teaching are not satisfied due to the shortage of high quality educational programs which are suitable for Arab pupils. Chen (2006) stated that the universal education system is in global crisis. In a standard school there is no infrastructure to support technology because the principles underlying the modern educational system were designed during the industrial revolution and changes committed of mechanization processes were not implemented in education.

Differences were found between the various research groups, especially among the educators and pupils. While the pupils estimate the physical level of ICT at school to be good, the educators find it dissatisfactory, whereas the parents hardly relate to this issue due to lack of knowledge and involvement in this subject area. One can assume that the source of the difference in evaluations of educators and pupils is related to the pupils' updating and intensive use of ICT in comparison with that of the teachers. The pupils use the computer for an average of 6.5 hours a day while the teachers use them for 1.5 hours a day.

Moreover, 71% of the pupils who were interviewed study in private schools. In Nazareth there is one theoretical public high school in the presence of 8 private high schools run by

the churches which are thought of as high quality in learning conditions and the level of education (Alhaj, 1996, Comptrollers Report, 1996). These schools are run from the perspective of the church that realizes the enormous power of ICT and knows to take advantage of this technology in all areas of life where education is a high priority. The observations in these schools support the pupils' evaluations.

Apparently, the state of ICT in public schools in Nazareth is not different from the average public school anywhere else in the modern world, which is characterized by technological progress. According to Bolt and Crawford (2000), most of the public schools in the United States do not have budgets for telecommunication and do not have adequate physical and human infrastructure for supporting technology.

The parameters for preparing educational institutions for the integration of ICT into the educational process do not end with the proper infrastructure, supply of upgraded equipment and good connections to the Internet; but with the adequate training of teachers for the incorporation of this technology. About 30% of the educators believe that using ICT in the schools is more technical than educational. The teachers' knowledge and skills in ICT are not satisfactory and many of them oppose the change. Almost all the pupils (93%) mentioned that the teachers do not use the computer at all in teaching. Educators and parents claimed that most of the teachers are not aware of the educational potential in ICT and their lack of control over the new technology significantly decreases the readiness of the Arab schools for the use of ICT. In addition to the senior teachers' resistance to changes, most teachers are not adequately trained to integrate ICT in their work.

According to the evaluation report of the national computerization plan "Tomorrow 98" (The Ministry of Education, 1999), almost all of the teachers (95%) in the educational system in Israel were trained to incorporate the computer in their teaching during 1994–1996, while Arab teachers had a longer training period than those teachers in the Jewish schools. Najjar (2003) found that Arab women teachers join training courses in ICT more than men and during 1990–2000, 70% of all those who learned computer applications in the technology center in Nazareth were women. However, the training program did not succeed because it did not help the teachers to incorporate ICT in their teaching methodology efficiently. Moreover, the teachers were not exposed to the goals of the computerizing plan and its contribution to improve the education; therefore they continued to function according to their traditional skills. For most of the teachers, the main motivation to join the program was the accumulation of rewards. In addition, the teacher training institutions are another significant factor affecting the training of teachers to use ICT. The field shows that ICT is not a central theme in training institutions, perhaps because it is an area which threatens their traditional teaching methodology. Therefore, they continue to prepare teachers according to their traditional educational perspectives. Bolt and Crawford (2000) claimed that the way educators are taught to use technology must be changed from the reason that all teacher-training programs relate to ICT as an appendix for the curricula and not as a central theme.

The Contribution of ICT to Teaching and Learning

The findings show full agreement among the research sample regarding the positive contribution of ICT in the educational process. The entire research group perceives the computer as a didactic learning tool that attracts pupils to study. Most of the pupils (93%) reported that they like to study by the computer. The great wealth of information that is available on the Web and the easiness that the computer enables for storing information and retrieving it has a great importance in the learning context, especially among the pupils.

Regarding the influence of ICT on teaching methods, all of the educators and the pupils reported that the incorporation of ICT in the Arab schools has not brought a significant change in the teaching methods and the frontal approach of teaching is used in all subject areas and at all age levels. According to the efficiency and growth indexes calculated by the Department of Measurement and Evaluation in 2001, 82% of the teachers in the Arab schools teach frontally (Ministry of Education, 2001). Chen (1996) found that most of the research done on the educational system in Israel and in the world shows that purchasing computers has not brought change in the central elements: teaching methods did not change principally, curricula remained fixed and linear, and the school structure and organization continues as it was.

The data shows that 40% of teachers think that ICT makes teaching easier because it enables the assimilation of various interactive, visual and audio effects. Also it enables distance learning and teaching, which saves time and motivates the pupils to study. In contrast, 60% of the teachers reported that integrating ICT increases the effort and doubles their work load because, on the one hand, teaching via the computer demands a great investment of time, and on the other hand they must accomplish the requested materials according to the formal curriculum.

In general, ICT is perceived among all of the interviewees, young and adults, educated and uneducated, women and men, as a tool which is rich with information, contributes to the improvement of teaching, learning and thinking development, increases the motivation to study, and makes the educational process more efficient. Among 30% of educators, this perception is not unequivocal and depends entirely on structured directions for the ICT users and instructors, clear goals and efficient planning which answers the learners' needs in the specific society, appropriate training and educational steering in choice of the proper programs for both teachers and pupils. ICT is a highly valuable factor in the educational context under the condition that it is used properly, otherwise the progress leads to undesirable results.

This notion is realistic and reflects points of view based on knowledge in education and in ICT and its implications in the educational process. In the studied society, educators are considered to be educated. However, not all educated people make this distinction and not all educators show understanding in this respect. In this context, Solomon (2000) claimed that the learning environment should be guided from a broad educational approach and the computer should be used as a tool to achieve educational goals, because of the accessibility to knowledge which the computer enables is not enough, and may

even can be harmful if not accompanied by guidance activities which put it in a clear study framework.

The Learning Environment and the Educational Climate

A learning environment which educationally incorporates ICT in the learning process enables the teachers to apply a wide range of interactive techniques between them and their pupils, and between the pupils and themselves. Although the Arab school still maintains its traditional pedagogy, the teaching and learning via ICT requires change in the traditional educational environment. In the computer lab, the teacher is not the only source of knowledge and the pupils are often more knowledgeable about computers, especially when it comes to fixing technical problems. This fact requires at least a partial change in the teaching methods but that is the starting point. During the first part of the lesson, the teachers do not give up the traditional way of transferring the information, but the new situation forces them to allow independent learning, cooperation between the pupils, free movement, expression, and mutual help.

Contrary to regular classes, where the teacher is very strict and gives orders, the computer lab lends a more liberal, patient, and flexible approach on the part of the teacher. The physical structure of the class and seating arrangement are different from those in the regular classroom, and the technological equipment contributes to creating new educational and comfortable climate essentially different from the traditional classroom. According to the evaluation report of the national computerization plan (The Ministry of Education, 1999), the lessons which include computers create a challenging learning environment, and the changes on the way teachers work significantly affect the students' motivation and their attitudes toward the subject being studied.

The evidence collected from schools indicates that educators and pupils believe that integrating ICT in teaching and learning is able to create change in the inter relationships between the teacher and the pupil, and to reinforce the relationship between the pupils. The knowledgeable pupils in ICT benefit from a positive relationship and admiration of their teachers and friends, as they are asked to contribute their knowledge to assist other pupils in need of help during the lesson, to prepare materials for the teachers and also to handle technical difficulties. The incorporation of ICT in the educational process requires perceptual changes among the teachers and contributes to creating flexible and open dynamics in the teacher-pupil relationship. Roblyer, Edwards, and Havriluk (2002) found that the integration of ICT in teaching brings about a major change in the way teachers treat their pupils. The teachers become more centered on the pupils — they encourage pupils to find creative solutions for problem solving, cooperation and efficient competition.

However, the substantive change in interaction between teachers and students is unequivocally the result of isolated involvement of ICT in the educational act, but along with other important factors that interfere, such as the teachers' personality, views, age, and openness to change, self confidence, and gender. Teachers who see themselves as informatory will hold back the process and teachers who see themselves as guides and facilitators will contribute to the process. The age gap between younger teachers and high

school pupils is smaller, and the teachers are often more aware of the needs of the pupils in the era of information. Therefore, they are more flexible and open to change which is called for during this era. These positive characteristics are more common among young women teachers.

Despite all of the above, one should not ignore the fact that the educational system being discussed is traditional and characterized by hierarchical boundaries between the partners' roles with authority rising as the position gets higher along with a decrease in opportunities for initiative to change. Within the educational institution, the system blocks any possible change within the boundaries set in advance for students' behaviour, and in accordance with the school and social acceptable norms of conduct. The school uniform is one of the school rules, which is practiced in all Arab schools. This topic is not open to discussion with the pupils regardless of the fact that it is a part of their own life.

Summary

This study relates to processes and development on the pedagogical level in light of introducing ICT to the Arab education in Israel. It examines the significance of the encounter between the Arab education system in Nazareth and ICT and its contribution to changes in traditional educational, social and cultural concepts of all those involved in the educational process. This study is designed to reflect educational developments taking place in the Arab school following its interaction with ICT while highlighting its implications on teaching and learning process, readiness of schools to integrate ICT in education, educational climate and the interaction between partners in the educational act. The developments were examined as they are expressed in the conceptions of different levels in the system: educators, students and parents.

Regardless of the problematic status of the Arab education system described above, the findings show that ICT has become a substantial part of this system. However, not all schools are completely ready to incorporate ICT in education. In many schools there is no basic human and physical infrastructure to support ICT and a large part of the teachers are not adequately trained to integrate it in their work. The training program did not assist the teachers in meeting the challenges of the new technology; therefore, they continued to function according to their traditional skills. Despite the difficulties, today Arab schools are foreseeing developments of unique projects in ICT for the Arab population.

In general, participants are aware of the educational potential of ICT and its contribution to improve teaching and learning. While most Arab schools still maintain their traditional pedagogy, and the main approach of teaching is still frontally, using ICT in class has brought change in teaching and learning methods and contributed to creating flexible and open dynamics in the teacher pupil relationship. However, along with ICT, other personality variables of the teacher, such as points of views, age, openness, self confidence and gender, contribute to the change.

Even though the order in school is maintained, there is a change in the pupils' perception of the teacher, which is becoming less threatening and negotiable, allowing informal dialogue and self-expression and not any more the only source of knowledge. The positive changes are more common among young women teachers. Likewise, there is a change in the teachers' perception of the pupil, who is becoming more estimated, knowledgeable, having learning potential, and not an object for absorption of knowledge. In light of these developments, the roles of both the Arab teacher and pupil have changed and indirectly the status of pupils and women teachers has improved.

From many aspects, the situation in the Arab education is much like many other systems of education all over the world. ICT is irreversibly integrated into the Arab schools, but the integration was not accompanied by a substantial change of school culture and pedagogy. Although, undoubtedly, the encounter between ICT and the Arab education can have far reaching consequences. The massive induction of technology into the Arab educational system creates processes of change which are still premature, but their persistence can induce a revolution in the spirit of Arab education; and in an unmediated sense, processes of social and cultural change in education institution have been created. The question is how it could be more effectively applied to addressing the challenge of the era.

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