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

Zuhaira Najjar
The Arab Academic College for Education in Israel-Haifa
Israel

Abstract
This study presents and discusses different points of view about the impact of introducing Information Communication Technology (ICT) 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 educational institution. The role of both the Arab teacher and pupil has changed and indirectly the status of the pupil and woman teacher has improved. These processes are still premature, but their persistence could bring a revolution in the spirit of Arab education.

Introduction
Since the second half of the 20th century, Information Communication Technology (ICT) has developed enormously and the control of information processing has become the primary factor in the determination of the educational level of the individual, society and the state. Indeed, knowledge is becoming the deciding factor in all social interactions. 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, and ICT, complex and rapidly changing, should play a role. With it, comes knowledge and knowledge is power. Without knowledge you will not win a battle, in war or in market competition. Therefore, knowledge is the key to success and with knowledge you can gain power.

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. In contrast with the swift process of modernization within Arab society in Israel, Arab education is characterized by conservative leadership and a school culture which see the teacher as the source of knowledge and the pupil as an object which absorbs knowledge (Alhaj, 1996; Bashi, 1995).

1 This study was carried out at the School of Education, Tel-Aviv University under the direction of Professor David Chen and sponsored by the Ministry of Science.
This system was brought into the world of ICT without any preparation, and educators at various levels of the system were required to carry out pedagogical and deductive drastic changes. During the 1980s, the process of bringing computers into the Arab schools started. Gradually the process has intensified and today computers have entered into most Arab educational institutions.

A lengthy discussion revolved around introducing ICT into the schools and their influence on the educational process and the learning environment. However, computerization of Arab schools received wide interest from scholars and the public alike because computerization is an important element in the process of modernization. The introduction of the new technology to the educational system requires renewal and change in the educational, social and traditional cultural concepts of all those involved in the educational process. Furthermore, ICT represents a modern culture, which is intrinsically different from 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” (p. 42).

This study examines the effects and implications of the integration of ICT into the Arab educational system. It analyzes perceptions of the participants regarding the contribution of ICT to changes in the educational environment and the improvement of teaching and learning. It also considers the empirical implications of introducing ICT into 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, which make up 50% of the educational institutions in the city and serve a socially-economic heterogeneous population, religion and environment. Most of the secondary schools in the city are run by churches.

**Literature Review**

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 Jewish education; the

---

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.
whole system changed completely including employment of teachers and curriculum. Arab schools and Jewish schools segregated and different curricula for the Arab schools were composed. For instance, soon after the founding of the state, only 45 Arab elementary schools and 1 Arab high school remained in Nazareth. Bashi (1995) found that the Arab educational system was inferior compared to the Jewish one in the aspects of equality; productivity, and input.

From its inception, Arab education has been characterized by centralism and closure which is distinguished by commands handed down from above and minimal involvement of Arab educators in curriculum design. When the state of Israel was established, Arab teachers were the elite intellectuals of the Palestinian Arab minority that remained in Israel. These teachers had to cope with professional problems in addition to the difficulties related to their status as part of the Arab minority of Israel. As well, the reality facing the teachers was full of contradicting expectations on three levels: institutional, community and national (Alhaj, 1994). The Ministry of Education and other state authorities adopted a scrutinizing policy for appointments, hiring, promotion, and firing which enabled complete hegemony and control over the teacher population (Lustick, 1980). The policy of control of teachers’ behaviour and the fact they are forbidden to discuss and teach current events in school contributed to the culture of silence with regard to their personal, national, and professional status (Alhaj, 1994).

The school climate also has an influence on the status of the Arab teacher and the pupil, which affects their functioning. Unlike the accelerated modernization process within Arab society in Israel, these schools are administered conservatively (Alhaj, 1996). The relationships between teachers and pupils are still based on obedience; the principle teaching approach is frontal and the pupil’s status is marginal (Bashi, 1995). Such strict hierarchical relationships in educational institutions limit the teachers’ initiative for change (Alhaj, 1996). Fergany (2005) found out that when Arab children enter school for the first time, they face a learning institution with a strict organizational structure that suppresses the child’s ability to disagree with the current situation. Teaching curricula and evaluation methods emphasize the principles of imparting knowledge, repetition and surrender; they do not allow active learning and they depress any free discussion and critical thinking.

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

---

3 In frontal teaching method the teacher stands on the front of the class and the pupils arranged in rows facing the teacher. Distribution of the pupils in classes is mostly according to age groups and all learn the same things at the same time and same way. The teacher mediates between the subject matter and the pupils. The pupil must absorb and understand the study material and to adjust to the school environment and curriculum requirements (Open University, 1978).
Israel (CBS Israel, 2009a), 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. While in the 1960s two thirds of the Arab teachers were unqualified to teach, in 2009 over 90% were certified to teach and the percentage of academically qualified teachers rose to 82%. Likewise, the number of women employed in the field of education has increased. In the late 70s, Mar’i (1978) found that only a third of the teachers in the Arab elementary schools were women, while in 2009 they comprised over 70% of all Arab teachers.

In the late 1980s, 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 which meant providing schools with computer labs which included 20 work stations (Millim & Barta, 1991). The program objective was to have a computer per ten students. In 2000 Phase II of the program started and had the goal of a computer for every five students. Following the implementation of the plan in the Arab schools in 1994, the process of equipping schools with computers has intensified and by 2009, 88% of the Arab schools were equipped with computers and 60% were connected to the Web (CBS Israel, 2009b). However, based on measures prescribed by national computing plan and compared to the Jewish education system, the report of the Knesset Research and Information Center (Vorgan & Fiedelman, 2008) shows that the average number of pupils per computer in the Arab sector is the highest: 23 pupils per computer.

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 to support implementing new technology; and the fear of drastic change in their traditional approach to teaching. Consequently, integration of computers in teaching in Arab schools was based on models which supported traditional teaching methods. Additional and significant problems were also caused by the lack of software in Arabic and the requirement of the Arab education to use three languages: Arabic, Hebrew and English. For Arab citizens in Israel Arabic is their first language, Hebrew is their second and English (the main ICT language) is the third. This issue created additional resistance among the teachers to the computerization process (Baya’a, 2002). Nevertheless, Najjar (1998) found positive attitudes among some Arab teachers towards integrating computers in education.

The Arab educational system has all the special dual characteristics of 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 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. Therefore the following study questions were formulated.
Study Questions
1. Is introducing ICT into Arab schools in Israel perceived as a contribution to the changes and developments in the Arab education system?
2. Are Arab schools ready to integrate ICT into the teaching learning process?
3. Are teachers using ICT aware of the educational potential inherent in the context of teaching and learning?
4. How does ICT contribute to the teaching and learning process in Arab schools?
5. Does the introduction of ICT into the Arab schools affect the interaction between partners at school?

Research 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. In the research, Sabar’s method (2006) of examining individuals’ subjective realities which is found in the perceptions of the participants was followed. Often, the goal is to either describe or understand some aspect of human nature or experience. However, rather than use the objective methods, qualitative investigators adopt a more subjective, personal approach. Flexibility and emergent design are necessary to remain consistent with a subjective reality. The developments and changes found in the educational “act” (the teaching and learning process) due to ICT were examined through participants’ subjective realities — realities that help us understand the educational act as well as other social and cultural phenomenon through the exposure and examination of individual perspectives.

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. Judgment sample, also known as purposeful sample, is the most common sampling technique. In it the researcher actively selects the most productive sample to answer the research question.

Data Collection
The data collection technique in this study used 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 and examine the educational processes occurring in the educational system as a result of this interaction and in order to get an impression 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 ICT was 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 Ministry of Education. The observations were made at schools and the interviews were held 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 as 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:

(a) the school’s readiness to integrate ICT in education,
(b) the contribution of ICT to teaching and learning, and
(c) the educational climate and the interaction between partners in the educational act.

**Findings and Discussion**
The impact of ICT on education is a qualitative rather than 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, active dealing with problem solving, and developing teamwork and pluralistic world view (Chen, 1999).

**The School’s Readiness to Integrate ICT into Education**
The findings show that ICT has been introduced to almost all of high schools in the Arab sector and to all schools in Nazareth. 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 produce dissatisfaction about the general state of computerization. Teachers who teach computer literacy and those who are integrating ICT in their teaching are not satisfied due to the shortage of high-quality educational programs which are suitable for Arab pupils.

This kind of problem is not only found in Arab schools in Israel. Chen (2006) states that education systems across the globe are in crisis. In a standard school, no infrastructure exists to support new technology because the principles underlying the 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 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 computers for an average of 6.5 hours a day while the teachers use them for 2 hour 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 eight private high schools run by the churches which are thought of as high quality in learning conditions and the level of education (Comptrollers Report, 1996). These schools are taking inspiration from the views of the church which 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.

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 ICT and do not have adequate physical and human infrastructure for supporting technology.

Preparing educational institutions for the integration of ICT into the educational process requires not only the proper infrastructure, supply of upgraded equipment and good connections to the Internet but also 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 ICT 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. Solomon (2006) argued that introducing ICT was not accompanied by a significant pedagogical change. The school culture, the definition of the role of teacher and the teacher’s work methods have remained as they were.

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 ICT in their teaching during the years 1994—1996, while Arab teachers had a longer training period than those teachers in the Jewish schools. Najjar (2003) found that Arab women teachers joined training courses in ICT more than men and during the years 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 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 improving 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.

The teacher training institutions are another significant factor affecting the training of teachers to use ICT. ICT is not a central theme in training institutions, perhaps because it is an area which threatens 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 — they assert that training programs must treat ICT as a central part of curricula rather than as an appendix.

The Contribution of ICT to Teaching and Learning

The study findings indicate consensus among the participants about the positive contribution of ICT in the educational process. Particularly among students, the great wealth of information available on the Internet and the ease of storing and retrieving information on a computer hold great sway.

Regarding the effect 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. The efficiency and growth indexes calculated by the Department of Measurement and Evaluation in 2001 found that 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. Shner (2010) claimed that the global communications revolution that changed the face of the global economy, scientific research, culture and more almost never reaches the schools. Schools continue to operate as a closed system, using non-effective outdated teaching methods.

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. Handal (2004) noted that technology has not been adequately adopted in schools and integrating ICT into classroom curricula is not easily accomplished.
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, and 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 it can lead 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 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 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 incorporates ICT in the learning process enables the teachers to apply a wide range of interactive techniques between them and their pupils, and among the pupils themselves. Teaching and learning via ICT requires change in the traditional educational environment but the Arab school still maintains its traditional pedagogy. In the E-Learning lab, the teacher is not the only source of knowledge and the pupils are often more knowledgeable about ICT, especially when it comes to fixing technical problems. This fact requires at least a partial change in the teaching methods but that is only 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, the E-Learning 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 that the changes in 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 teacher-pupil relationship and to reinforce relationships among 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 and 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 not unequivocally the result of isolated involvement of ICT in the educational act, but affected also by other factors such as the teacher’s personality, views, age, 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 these teachers are often more aware of the needs of the pupils in the Information Age. Therefore, they are more flexible and open to change which is called for during this era. Findings show that 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 decreased opportunities for initiative to change. Within the educational institution, the system blocks possibilities of change within the boundaries set in advance for students’ behavior, and in accordance with the school and social acceptable norms of conduct.

**Summary**

This study examines the encounter between the Arab education system in Nazareth-Israel and ICT. It considers the contribution of ICT to changes in traditional educational, social and cultural concepts in the educational process and reports on developments taking place in Arab schools following the addition of new technologies to the classroom.

Regardless of the problematic status of the Arab education system described above, the study’s findings show that ICT has become a substantial part of this system. However, not all schools are completely ready to incorporate it. Many schools have no basic human and physical infrastructure to support ICT and a large number of teachers are not adequately trained to integrate it into their work. Therefore, these schools and their

4 Women aged 22–35 with four-year college degrees.
teachers continue to function in accordance to their traditional skills. Yet Arab schools foresee remedying this situation and developing unique projects in ICT such as safe Internet, online tutorial, and competing in ICT.

In general, participants are aware of the educational potential of ICT to contribute to improved teaching and learning. While most Arab schools still maintain their traditional pedagogy and facilitate it through a frontal teaching style, using ICT in class has brought about more independent, cooperative, and active learning and has created a more flexible and open dynamic between teachers and pupils. It should be noted, however, that factors such as teachers’ personalities and other individual variables also affect these dynamics.

Even though the order in school is maintained, a change in pupils’ perception of the teacher is apparent. The teacher becomes less threatening and more negotiable. This allows informal dialogue and self-expression while the teacher is no longer the only source of knowledge. The positive changes are more common among young women teachers than any other group. Likewise, is a change in the teachers’ perception of their pupils, as the students seem to become more knowledgeable and open to learning, rather than simply objects that must absorb knowledge. In light of these developments, the roles of the Arab teachers and pupils have changed and indirectly the status of the pupil and the woman teacher 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. Undoubtedly the encounter between ICT and Arab education can have much more far-reaching consequences. The massive induction of technology into the Arab educational system in Israel has created processes of change that are still premature, but their persistence can induce an educational revolution in the Arab school culture. In an unmediated sense, processes of social and cultural change in the Arab education institution have been created. The question is how they could be more effectively applied to addressing the challenge of the era.

### Implications for Future Study

If technology is to be adopted in the Arab education then it is equally important to train Arab teachers to integrate ICT in their teaching methods and to use ICT to develop their own teaching support materials.

Knowledge construction via collaboration, interactivity, sharing, reflective, critical thinking, etc. are not part of the education strategy within the Arab education system. Policy makers should set strategic approaches that assimilate new ways of teaching and learning; a new culture for education in the Information Age that addresses not only
issues related to technology, but also to culture, leadership, justification, talent, and change.

The gap between the Arab school culture and cultural reality requires a broad conceptual clarification. Curriculum designers need to take into account the school culture and teachers’ concepts and attitudes in any implementation process. Discrepancies between teachers’ opinions and the ideas supporting a technology-based curriculum innovation need to be more widely analyzed, understood and addressed.

References


Open University. (1978). *Design, development and implementation of curricula. Unit 8, Instructional Strategies* (pp. 1–6).


Zuhaira Najjar is an instructor and head of the internship department at The Academic Arab College for Education in Haifa City. She received her PhD and MA from Tel Aviv University, School of Education. For seventeen years she worked for the Israeli Ministry of Education teaching students with learning disabilities. During the years 2003–2008 she lectured at the Academic Institute for Training Arab Teachers at Beit Berl College in Kfar Saba and chaired the special education department. Also she is working as an instructor at the Open University. Her academic interests include the interaction between education and technology, and the pedagogical challenges and opportunities presented by incorporation of technology in the classroom.