DIGITAL DIVIDE AMONG PRIMARY SCHOOL STUDENTS ON THE ISLAND OF LESVOS. A RESEARCH ASSESSMENT

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ABSTRACT— The use of Information and Communication Technology-ICT in primary education can be beneficial not only for students but also for educational system as a whole. The purpose of this research study is to explore the particular areas where digital divide exists and to specify potential inequalities when primary school students use ICT, in the island of Lesvos.

The qualitative research applied uses two methodological techniques; namely, participant observation and semi-structured interviews. Seventeen semi-structured interviews were conducted with primary school teachers and participant observation method was carried out in thirteen primary schools, all taken place in Lesvos. The aim was to examine the acceptance of ICT by the school environment as well as the digital divide between pupils.

Keywords: ICT, primary education, students, qualitative research

1. INTRODUCTION

Schools nowadays, due to the rapid technological development, attempt to prepare the students to become active citizens in a society that is constantly evolving. The primary learning skills of the 21st century are associated to information and communication, critical thinking and problem solving. As the flow of information keeps getting larger and rapidly produced, students have to learn how to effectively control and utilize their abilities.

The introduction of digital media encourages interactivity and interconnectivity, and the whole educational community is called to apply the new technological tools (Rajakumar, 2006: 12-14; Leask & Younie, 2006: 127-128). The use of ICT in primary education can be beneficial not only for the students but also for the educational system.

2. DIGITAL DIVIDE AMONG STUDENTS IN PRIMARY EDUCATION

Especially after 1995, digital divide is the research subject of a plethora of studies regarding the divergence in the modern digital environment. The high penetration of new technologies was expected to bridge the gap between those who had digital literacy and those who didn’t, albeit new technologies ultimately led to the widening of the digital divide (Schradie, 2011:149-150).

Organizations and scholars define digital divide as the distance among individuals, households, businesses and geographical areas with different socioeconomic status, in relation to their access to ICT. (OECD, 2001:5; VanDijk, 2006:235; Rafaeli et al, 2018:12-19). Research data from official European studies (European Union, 2018: 7; Negreiro, 2015: 5) demonstrate that the Greek education system retains many inequalities regarding digital divide, especially in primary education. However, European Commission (2014: 3) recognizes the fact that serious progress in the recent years had been achieved.

Digital divide in school communities is related to whether the new technologies are active in student’s environment. A very important factor is that Greek public educational system has not
yet adopted ICT in teaching and learning. Moreover, technical infrastructure and inadequate equipment are crucial issues, since many public schools, if not the majority of them, do not retain the necessary infrastructure and appear to have serious shortcomings (Tziafetas et al, 2013: 207). Additionally, ICT’s cost and the family’s income seem to be factors that shape and maintain digital divide (Dodonts & Dodonts & Dodonts, X.X.: 1856-1861).

Higher income has a positive impact on the adoption of ICT, as well as the parents’ educational status (Alessi & Trollip, 2001: 30). Moreover, social and cultural background, especially the mother one’s, affects the digital skills of the younger family members (Abdel-Basset et al, 2019:7; Rafaeli et al, 2018:19; Bikos et al, 2018:26-31). Finally, spatial, geographical (Karydas, 2007:17, 32, 34) and linguistic factors attracts the scholars’ research interest (Shampa, 2010; Nemati – Anaraki & Heidari, 2010). Urban areas and consequently urban schools have better infrastructure and easier access to ICT, in contrast with the province (Karydas, 2007:17, 32, 34).

3. NECESSITY OF INTEGRATION OF MODERN TECHNOLOGIES IN EDUCATION

The proper utilization of ICT presupposes the sophisticated and methodical preparation of the educational community. Their inclusion in primary school aims to identify and further specialize the knowledge, skills and values that might be developed by all students and are vital for the continuation of their studies.

The Informatics as a subject in the educational curriculum was introduced in Greek schools from 1984 onwards, initially- and somehow experimentally - in some classes of Secondary education. Several years later, Informatics was introduced in Primary Education, which aimed at the utilization of ICT as a means of communication, information and didactic purposes. This fact significantly influenced the educational teaching, partially transforming it from teacher-centered to student-centered.

The teacher is certainly the key-figure who has to train students to advocate a critical attitude towards all kinds of information, control the various sources and qualitatively understand their content (Hellenic Informatics Union, 2006: 6-7). However, there are many teachers who overlook the fact that ICT has the power to support and enrich the educational process with new elements, making it autonomous and exploratory (Gouvias, 2007, p. 50-53).

The ICT application literature includes a large number of factors that negatively affect it and largely contribute to the difficulty of using ICT in the classroom. These basically concern the over-packed curriculum, the lack of sufficient time within class, and the absence of clear instructions on how to use ICT. Furthermore, they regard the discouragement of motivation, low sense of competence and technical-pedagogical self-efficacy and insufficient state and administrative and technological support (Pelgrum, 2001. Depover et al., 2010 pp. 224-225).

Additional factors include the lack of specialized teaching staff with advanced technological training, the insufficient understanding of technological education by teachers and school counselors and ambivalent attitudes of the general population regarding technological education per se (Wicklein, 2004).

Research in Greece advocates that the delayed entry of ICT in classrooms is due to the fact that the number of teachers trained in the use of ICT is not enough. Besides, even fewer of them practically introduce what has been taught, despite the fact that research has clearly maintained that, parents, teaching staff and students recognize the positives in the use of ICT. Thus, it is basically upon teachers to be informed about the continuous changes in ICT and their pedagogical usefulness. Empirical evidence as well demonstrate insufficient financial support from the state regarding the supply, preservation and advance of schools with appropriate technological equipment (Mouzakis, 2011).
The general purpose of the integration of ICT in Primary School is to assist students to improve the quality of education or even to provide equal opportunities to them, regardless of their geographical distribution or class background.

4. METHODOLOGY

4.1 Research Purpose and objective

The purpose of this study is to detect the various levels of digital divide in primary schools of Lesvos and to specify inequalities in the use of ICT by students. In this context, specific research questions were raised concerning: (a) students’ interpretative patterns regarding courses conducted with ICT (b) factors affecting the use of ICT by the students (c) if students’ social class background affects the use of ICT and (d) their perception of courses conducted with digital technology’s help.

4.2 Methodological framing

In the present research, which was carried out in different phases from October 2017 until June 2018, a qualitative approach was applied, and data collection was carried out through semi-structured interviews (Iosifidis, 2017:74), since it was necessary to study in-depth the participants’ interpretive patterns and practices (Savvakis, 2013: 170-175). Seventeen primary school teachers in Lesvos, eight men and nine women, who had basic computer skills participated in this research. The selection was made using the "deliberate sampling" method to ensure that each member had an equal chance to be included in the sample.

The research tool had thematic modules, related to the integration of ICT in schools, the students’ approach towards it, the educator’s difficulties, the role of educational policy and family, and socio-economic factors that cause digital divide. This participant not-controlled observation (Iosifidis, 2017) took part in thirteen schools, selected as to cover the majority of the island of Lesvos.

The observation’s data, activities and all incidents within the classroom were recorded on the researcher’s personal logbook (Babbie, 2011). Utilizing the teaching observation key, we recorded 52 teaching hours spanning across 10 different disciplines.

Principles of triangulation were applied, namely data triangulation for temporal and cross-sectional reliability reasons, and methodological triangulation, since a variety of data collection tools were used to obtain a most comprehensive understanding of the subject (Cohen et. al, 2007: 190-194; Iosifidis, 2017: 194).

5. RESEARCH RESULTS

From the interviews and the observation, it was detected that if the teacher applies ICT in the daily educational process, then his/her students are gradually introduced in this way of teaching and in the digital world. Otherwise, they become relevant ignorant of the potential of ICT and are content with the traditional way of teaching, with all that entails. Most primary school teachers on the island of Lesvos have adopted the ‘inactive teaching practice’ by distancing themselves from ICT, thus students have limited access to new technologies throughout the educational process (Stamati, 2018: 407).

During the observation, although teachers who used ICT in their courses were few, it was clear that students were satisfied with the educational process and their high level of familiarity with ICT. As confirmed by the European Commission’s research (2015), creating an attractive learning environment based on communication and interaction between students and teachers is absolutely essential (Koutsogiannis, 2014: 21).
The knowledge of students in the primary schools of Lesvos, as evaluated by their teachers and appeared in the field, in the majority is superficial and poor regarding the basic ICT tools and how to use them, although their school structure is staffed and there is a computer science teacher. Otherwise, their familiarity is limited, finding with which part of our bibliography agrees regarding the cognitive technological level of students in primary education (Gouvias, 2007: 50-53; Pesmatzoglou & Papadopoulou, 2013).

The digital divide is intensifying among students with low socioeconomic and cultural background and minority students, as their access to tools and services related to ICT is reduced (Araka & Koutras & Makridou, 2014: 394-401; van Dijk, 2012: 57). Our findings are consistent with researches showing that children from more affluent backgrounds have higher digital performance due to their access to ICT in general and educational digital resources in particular, thus intensifying digital inequalities and widening the social gap (Araka & Koutras & Makridou, 2014: 394-401; OECD, 2001: 5; Dodontsi & Dodontsi & Dodontsi, XX.: 1856-1861). Parents with high educational and cultural capital spend more time on acquainting their children with ICT, while families who do not meet these characteristics are significantly more likely to stay away from these modern abilities (Riley, 2002; Alessi & Trollip, 2001: 30; Dodontsi & Dodontsi & Dodontsi: 1866-1867, 1872).

Technological non-homogeneity and staff shortage are a strong manifestation of a gap between students in the city and in rural areas, where there are variations and inequalities regarding the access and use of technology, both at home and school. As we move away from the city of Mytilene, both shortages in specialized personnel (PE86) as well as in infrastructure- equipments are increasing. This phenomenon is observed not only in Lesvos but also in other geographical areas of the country, as many studies have demonstrated (Pelgrum, 2001; Bracey, 2002; Riley, 2002). This happens because the educational practices that are followed in their entirety have a geographical and economic distribution, where especially in rural areas, traditional teaching methods are applied, without the use of ICT. This is because educational practices hold a geographical and economic distribution, especially in rural areas traditional teaching methods are used without the application of ICT.

At the same time, contemporary Greek educational system is difficult to compensate digital divide, because: a) the official policies are considered insufficient and disorganized, b) there is a strong pressure from the education system to meet specific teaching objectives, c) learning time to prepare the appropriate material is not sufficient, d) the use of ICT in the educational process is applied by teachers without significant technological support, e) there is a lack of teachers’ training, and when applied it relies more on the technocratic model and f) several teachers due to age, feel fear, tension and anxiety about the integration of ICT in teaching practice.

One-dimensional focus of educational policies on digital skills is not enough to tackle digital illiteracy. In Greece, unfortunately, the actions for the computer literacy of teachers seem to be limited and unilateral as long as official practices pay attention to technocratic and issues, related to material equipment and technical support (Sianou-Kyrgiou, 2010). Although teachers recognize the necessity of ICT and their contribution to contemporary information and technological developments they are largely discouraged to familiarize themselves with technology.

Teaching with ICT cannot be fully successful if teachers do not have the appropriate pedagogical training in terms of their integration and utilization (Wicklein 2004). This would probably assist them to restrict their technophobia for the new changes, an aspect that is notably quoted in similar research (Pelgrum, 2001. Dodontsi et al., 2010). The education system, seems unable to systematically follow the rapid changes that occur in the information society, reproducing social, cultural and educational inequalities between individuals, schools and educational districts (Araka et al., 2014. Purcell et al., 2013. Shampa, 2010).
6. CONCLUSIONS

Differences in economic, cultural and social capital among students confirm the initial assumptions about inequality leading to an increasing digital divide. Students in rural areas are far behind in owning a computer at home, but the equipment in the school building that they attend in the countryside is inadequate. The socio-economic and cultural capital of the family is related to the access to ICT. In particular, the digital illiteracy of these children increases the digital divide in education since they do not have the opportunity to use ICT as a part of their educational process.

In this case, there is a social digital divide, which due to the inequalities between social groups and the different family influences degrades individuals as well as entire population groups. Thus, the significance of the modern teacher becomes even stronger in order to partially reduce inequalities among students. As both the teachers’ interviews and the participatory observation explicated, ICT is not yet actively integrated in the educational reality of the primary schools of Lesvos, to such an extent as to largely affecting the students’ attitude as well as the teaching and learning process. The early and equal access to technology, always in combination with quality utilization and the right guidance from teachers will provide students with knowledge and confidence to move forward in the modern digital world of knowledge.

In conclusion, technology in the classroom promises to be a great equalizer of social inequalities. For this reason, the effort to integrate ICT into teaching is a difficult goal that requires a combination of school policy and teacher support in order to bridge this digital divide (Dotterer et al., 2016: 3). As a result, students will acquire abilities and develop skills in the use and utilization of ICT with security, confidence and creativity to integrate into information society.

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