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Keywords: *technology, preschool education, teacher, administrator.*

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The use of Technology in Pre-School Education: Teachers' and Administrators' Views

Elif Ünal Bozcan [α], Münevver Yalçinkaya [σ] & Seral Özturan [ρ]

Abstract- The aim of this study is to examine the opinions of teachers and administrators about the use of technology in preschool. For this purpose, the opinions of teachers and administrators about the technological tools and equipment they use in their classrooms, the purpose and the activities in which they use the technology, the advantages and disadvantages of the use of technology in preschool education, their competence in the use of technology, and the support they receive regarding the provision and use of technological equipment have been taken. The study group consisted of 20 preschool teachers and 5 administrators, determined by convenience sampling method, who work in public and private preschool education institutions in the TRNC. Qualitative research method was used in the study. Data were collected through an interview form consisting of semi-structured questions. Accordingly, 9 open-ended questions were asked to teachers and 8 open-ended questions were asked to administrators and their opinions were received. Content analysis technique was used in the analysis of the data and interpreted in accordance with the relevant literature. As a result of the research findings, it was determined that the opinions of teachers and administrators about the use of technology in preschool education were positive, teachers could get support from their administrators and other teachers at school as they needed, and they look at the technological developments in a positive light. The results of this study are thought to be important in terms of strengthening the belief that including the use of technology in education is one of the necessities of our age. For this reason, it is extremely important that technology can be applied by both teachers and administrators starting from the very early stages of education in line with new developments with an understanding integrated with pre-school education programs.

Keywords: technology, preschool education, teacher, administrator.

I. Introduction

As in many countries around the world, technological developments majorly affect the social life in our country (Karip, 2016). Education is one of the fields where technological tools are preferred for the future of communities. The relation between education and information technology was mainly discussed with regard to the use of technology in education. This approach focuses on the ways of using various audio-visual materials during lessons or how student would use computer (Jonassen, 2000; cited: Güven and Kartal 2006). However; after 1980s, this perspective was evolved to the communication of students with information technologies, that students developed a way of thinking on how they can solve problems via such technologies and that they developed their skills to build and design what they want the computer performs (Papert, 1993). On the other hand, it is possible to say that educational practices still bear the 1980s perspective.

A study on the use of educational technologies (Şimşek, 2005) shows that the problems on educational technologies are not different in other countries. The problems are considered to be perceptual diversity due to the scattered nature in almost every country, insufficiency in practices and developing technological products and lack of momentum in academic literature.

The related literature emphasizes that the communities desiring to be successful in the future should keep up with the developing technologies while using the technologies in the appropriate and effective manner (Robb, 2013; Sayan, 2016; Kılınç, 2015; Küçükoğlu, 2013). Pursuant to researches, the developments occurred due to technology are one of the most significant indicators of development level in a community (UNESCO, 2003).

Students need to develop their skills in safe and efficient use of technology as well as generatesolutions for their daily life problems. Hence; with the developing technologies, the integration of information technologies into lessons from pre-school up to university has become a requirement (UNESCO, 2003).

The educators state that the most suitable time in bringing children with technology and providing early trainings on technology use is during the pre-school education (NAEYC, 1996; Tekcan, 2009; Keengwe and Onchwari, 2009). The appropriate technology models to be determined by early childhood period contribute to the learning of children. While technology is not the solution in the elimination of all educational problems, it is nowadays required to be used in education and training (Erdemir, Bakırcı, Eyduran, 2009; Keengwe and Onchwari, 2009; Bahçekapılı, 2011; Kılınç, 2015; Karaoğlu, 2016).

Student encounter with a student group that have devices like computers, cell phones, tablets in their daily lives. Educational technology promotes the

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curiosity of pre-school children and allows them to learn by living, experimenting and failing while positively affecting the development of problem-solving, planning, reflective thinking, visual thinking, logical thinking, creative and critical thinking skills, and psychomotor abilities and vocabulary and memory developments. Therefore, technology is widely used in various fields of pre-school education. When correctly used, technology has a crucial power in improving the success of students. The use of technological tools from the early ages is noted to influence all development areas (Bahçekapılı, 2011; Keengwe and Onchwari, 2009).

In addition to the studies emphasizing that technology use in pre-school education has a vital role in the education of children (NAEYC, 1996; Demiriz, Karadağ and Ulutaş, 2003; Keengwe and Onchwari, 2009; Sert, Kurtoğlu, Akıncı, Seferoğlu, 2012; Türk, 2012; Yılmaztekin and Olgan, 2013; Gök, Turan, Oyman, 2016), there are also some studies that do not support such view. For instance, the statement of American Academy of Pediatrics – AAP, the Council on Communication and Media on 2011 policies underlined that children under the age of 2 should not be exposed to any media (i.e. TV, computer, tablet), and playtime in early childhood have major structuring effect in developing brain. Moreover, technology use brings developmental (physical, socio-emotional, mental and moral) disorders as well as many other problems even eating disorders (American Academy of Pediatrics Council on Communication and Media, 2011; Cit. Epstein, 2013; Cordes and Miller, 2000; Şen, 2013). Similarly in the year of 2000, an American organization called "Alliance for Children" declared to stop purchasing computers to preschool units except for disabled children (Kartal and Güven, 2006). Besides, the American Academy of Pediatrics Council on Communication and Media mentioned the benefits of technology use under their statements on 2011 policies. They accepted the fact that quality interactive media improves "social skills, language skills and even readiness to school levels" among children with educational benefits (American Academy of Pediatrics Council on Communication and Media, 2011; Cit. Epstein, 2013). Under a publication, the National Association for the Education of Young Children" (NAEYC) emphasized the significant place of technology in child development (NAEYC, 1996). It is also indicated that children start "playing computers" in their early ages and adults believe that "playing computers" contributes to mental development. The authors from various studies reflected that technology assisted teaching significantly supports children in the acquisition of time and space concepts, develops creative thinking skills, makes learning much fun, motivates children positively towards school and allows children to actively participate in learning environment (Demir, 2007; Akpınar, 2005; Arı and Bayhan, 2003; Li & Atkins, 2004; Aksoy, 2006; Fish et.al 2008; Küçükoğlu, 2013; Köroğlu 2014; Kılınç, 2015; Çeliköz and Kol, 2016).

In terms of educational systems, teachers are at the focal point of changes happening in education. As technological tools are increasingly preferred at schools and technology use has become popular, the active use of technology by teachers in education and training environments has become a hot topic. It is crucial that teachers should have the skill to adapt general and inclusive curriculum into his/her conditions and the ability to develop local programs and create content respectively. The competences and skills of teachers designate whether teachers show the flexibility given to them through curriculum.

Considering the previous researches, teachers actively use information and communication technologies music, Turkish and playtime activities. The introduction of technological tools to preschool children at their educational institutions under teacher guidance and the continuation of such guidance even when children are allowed to use technological tools on their own are vital accordingly. Hence, teachers should take the developmental characteristics of children into consideration when they introduce technology use in education and consequently choose the materials that would assist children while being suitable for educational purposes. Technological tools used in education support learning but it is also important to follow technological developments and use the appropriate technological tools in daily life. "Learning with computers" becomes effective in establishing an education environment based on student oriented/ constructivist learning principles and meeting individual needs (Demiriz, Karadağ and Ulutaş, 2003; Keengwe and Onchwari, 2009; Sert, Kurtoğlu, Akıncı, Seferoğlu, 2012; Türk, 2012; Yılmaztekin and Olgan, 2013). Within this context, it is inevitable that teachers should be aware of the benefits of technology in educational environments and utilize such benefits in their fields.

A research by Akarsu and Akbıyık (2012) concluded that teachers have problems in using numerous basic tools, programs and media at schools like word processor and presentation software. The research data showed that technology literacy levels affecting the success in information access is not satisfactory in general. The findings from another similar study (insufficiency of educational technology based practices, inadequate efforts in education design) conducted on educational technologies (Şimşek, 2005) supports this indicators respectively

In addition to teacher competences for technology use at schools, the qualifications and support of administrators are also important. The related technological developments changed the roles and responsibilities of school administrators. This role called "technology leadership" is closely related with the effective use and adoption of technology by

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administrators. Through technology leadership, the administrators become examples for teachers by showing them how to use technology while supporting and giving them advices. In other words, the administrators support teachers in using technology while undertaking the mission to be an example for them, solve the associated problems or provide guidance for solution and follow new developments. The school resources, infrastructure and teachers' perspectives towards technology use are crucial for administrators in providing technological assistance (Akbaba-Altun, 2002; Anderson and Dexter, 2005; Sincar, 2009).

Recently, "coding" courses provided by primary education stand out in the world, Turkey andthe Turkish Republic of Northern Cyprus. "Coding" courses, which are considered as important in terms of showing the levels that the use of technology in education can reach, and have increasingly become significant, have been added to the curricula of many departments at universities (YÖK, 2018). Some of the private school in the Turkish Republic of Northern Cyprus have started to include coding courses in their curricula starting with primary education in accordance with such innovative practices in educational technologies (Halkınsesi Gazetesi, 2018; Kıbrıs Gazetesi, 2018).

Considering the related literature, there are limited number of researchers regarding thesignificance and use of educational technologies in preschool education. This research, which aims to make a realistic assessment on technology use in preschool education and suggest proposals highlighting its importance, is expected to make contributions towards eliminating a major gap in the field.

Therefore, it is important to evaluate the views of teachers and administrators regarding technology use in preschool education. Additionally, this study is also vital since it highlights the significance of sound and correct use of technology in preschool education. Hence, this study aims to reflects the views of educators regarding the significance of technology use in preschool education institutions and their adequacy in their knowledge on such technologies and how to use them. Moreover, another aim of this study is to develop functional proposals for further studies based on the findings.

Within this framework, teachers are administrators were asked to give their views on the definition and significance of educational technology, type of technology used by teachers in their classrooms, their purpose and ways of using technology, advantages and disadvantages of technology use in preschool education, their adequacy in technology use and type of assistance given to them in the provision and use of technological tools.

II. Method

This part of research covers study group, data collection tool, data collection and analysis respectively.

a) Research Model

This study is in general survey model as a descriptive study that analyzed with qualitative research model. Qualitative research covers the use data collection tools such as acquisition of data from observations, interviews, stories, myths, case studies and narratives, and document analysis where a qualitative process is followed to reflect the perceptions and events in a realistic and holistic way. Qualitative researches aims to understand the human behaviors that happen in natural environment. The views of interviewed individuals are dramatically reflected with direct citations in order to present the findings collected under descriptive studies in an edited and interpreted approach (Yıldırım and Şimşek, 2011; Sönmez, Alacapınar, 2014).

b) Study Group

The study group is comprised of 20 preschool teachers and 5 administrators from public and private preschool education institutions in TRNC. Convenience sampling was utilized since teachers and administrators were selected from accessible and suitable units during the study group selection process. Convenience sampling means to select the research population from the most accessible persons and groups (Büyüköztürk, Kılıç Çakmak, Argün, Karadeniz, Demirel, 2009; Sönmez and Alacapınar, 2014).

Considering the demographic characteristics of teachers, majority of teachers (n=8) graduated from preschool department of universities and child development departments of vocational schools (n=6). The majority of them (n=11) also have 6-10 year and 1-5 year-experience (n=8). They are mainly (n=14) teachers at private schools. Almost all of them (n=19) did not get any course or seminar on technology. Similarly almost all of them (n=18) use more than one technological tools in their classrooms. In terms of the technological tools, many of them use laptops, TV, radio, smart phones and electronic toys (n=11). Additionally, teachers use desktop computers, projectors and smart boards (n=7) as well. However, overhead projector (n=2) is a less popular technological tool.

In terms of the demographical characteristics of administrators, three of them graduated from a field that is not related with preschool education, two of which graduated from primary school teaching and the other from the department of literature. Majority of the administrators (n=4) have 6-10 and 11-15-year experience. 2 of them attended to courses or seminars related with technology while 3 of them did not. All of them indicated that more than one technological tools

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are used at their schools. They noted that the most frequently used tools are laptops (n=5), desktop computers (n=5), TV, radio, smart phones and electronic toys (n=4) and projector (n=3). Smart boards (n=2) and overhead projectors (n=1) are used less respectively.

c) Data Collection Tool

For this research, a scale with two parts was developed to collect data accordingly. The first part is comprised of personal information while the second part includes 13-semi-structured interview questions. The related literature and expert opinion were consulted during the development of questions. Three experts in the related literature were consulted to check whether the questionnaire is understandable and viable. The expert feedbacks can be summarized that the question statements are open-ended; the questions were not asked in the way to answer with yes or no; "technology integration" concept might be added, and some modifications in the sentences. The questionnaire were completed upon the amendments based on experts' feedback. Consequently, the questionnaire covers the views on the definition of technology, care to use technology, activities where technology is used, types of technological tools used in classrooms, utilization of technological facilities at schools, assistance provided at schools for technology use, teacher adequacy for technology use, whether administrator were asked for assistance, what type of assistance should be provided by the administrator, administrator adequacy for technology use, preschool education curriculum in TRNC and support of the Ministry of Education towards technology use.

d) Validity and Reliability of Data Collection Tool

Within the scope of qualitative research, the researcher should use additional ways like participant confirmation, peer confirmation in order to interpret the outcomes generated based on the data as much objective as possible. As a peer review, the partial researcher triangulation was also used to check the reliability/validity in this research (Creswell, 2014; Merriam, 2009). Therefore, data generated from all teachers and administrators were analyzedseparately by two researchers. Different methods like getting from experts, participant confirmation and long term interaction for detailed interviews with participants were utilized to ensure internal validity/trustworthiness. Additionally, the findings generated from the collected data were checked for consistency to enhance trustworthiness with the aim ofchecking the compatibility between the theoretical framework as the basis of questionnaire, and findings. Three different researchers attended to the interview process to prevent apotential data loss. The process was described in all details from every dimension so that the external validity, namely transmissibility of research can be ensured respectively. In order to enhance the reliability, namely consistency of research, the generated findings were firstly presented without discussion and interpretation. Moreover, the interview data were individually coded by both researchers and a lecturer experienced in qualitative research field. Then these codes were compared for reliability calculation. With the purpose of improvingthe external reliability or confirmability of research, detailed explanations on the interest of researchers for the subject, their experience, contributions of participants, educational-social environment where the research was held, theoretical framework used for the reference to generated data and methodologies used in analyses were covered as well. Raw data were also stored to be used if needed for different purposes at different times, which aimed to improve the external reliability of research.

e) Data Collection

The questionnaire was applied to a total number of 20 teachers and 5 administrators. It took 15-20 minutes to answer the questions. The open ended questions developed for the research were asked through semi-structured interviews. The interviews were held at the schools that the participants' work on the designated appointment time. The questions were asked to every participant with the same words in the way of giving same meaning. Voice recording and note taking methods were used during the interviews with teachers.

f) Data Analysis

Descriptive analysis and content analysis techniques are used for this research. Descriptive analysis "*is the technique where the generated data are summarized by the designated themes; direct citations are widely used to dramatically reflect interviewee, and the generated data are interpreted in the framework of cause and effect relationship"* (Yıldırım and Şimşek, 2005). Descriptive analysis is comprised of three steps as data reduction, data display and drawing conclusion and verification (Türnüklü, 2000). In data display, the criterion as *"remarkability"* (different view), *"explanatoriness"* (suitability to theme), *"diversity"* and *"extreme examples*" were considered for the selected citations (Ünver, Bümen and Başbay, 2010).

The data generated from interviews were firstly transferred to Office software and coded after being reviewed several times. Afterwards, the related codes were gathered, which determined the themes/categories as the main elements of research findings, and descriptive and content analysis were conducted respectively. The consistency between coders was calculated to identify the reliability of content analysis. After drawing out interview minutes, a coding key was developed based on interview questions. Two interview minutes were selected randomly in order to identify the reliability of interview coding key, and researchers

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reviewed both minutes separately. The evaluation of each researcher was calculated in accordance with "Agreements" and "Disagreements" formula where "same" evaluations from researchers were deemed as agreements while "different" evaluations as disagreements. Lastly, the reliability was calculated with agreement percentage as "Reliability = Number of Agreements/(Number of Agreements + Number of Disagreements) x 100" (Miles and Huberman, 1994). Pursuant to Yıldırım and Şimşek (2005), the agreement percentage of 70% and above is considered as reaching to expected reliability. For this study, the reliability of teacher data was determinedas 82%.

The qualitative answers of teachers and administrators were quantified, which allowed researchers to make comparison between categories and provided a perspective on the identification of emphasis in the answers.

25 pages of data were obtained from the analysis of interview records in voice recording and note taking. Firstly, the breakdown of data was verified through documentation; data was processed based on the certain themes, and the interview records were analyzed respectively. The findings were interpreted through direct citation. The teacher participants were coded as Ö1, …, Ö20 and administrator participants as Y1, …, Y5 for the analysis of answers given to the questionnaire.

III. Findings

The findings generated under this part were analyzed by the aim of research, sub-problems and related literature. The themes and sub-themes on the views of teachers and administrators regarding the significance of technology use in preschool education and their support are given under Table 1.

Table 1: Themes and Sub-Themes Generated from Teachers' Data1.

1. Teachers' views on educational technologies
Tools assisting learning Tools integrated to education
2. Teachers' views on the significance of technology use in education
It is important/it should be used
3. Teachers' views on the purposes of using technologies in the classroom
For cognitive development For emotional development For psychomotor development
4. Teachers' views on the types of activities using educational technologies
Music/art activities Science/nature activities Language/ foreign language activities
5. Teachers' views on the types of technologies used
Visuals Audial Audiovisual tools Toys
6. Teachers' views on the advantages and disadvantages of educational technologies used in classroomAdvantages
They enhance motivation towards school and learning They attract attention They materialize learning They improve memorability They improve creative thinking skills They make learning fun They prepare students for higher-level institutions Disadvantages They prevent cognitive, emotional and motor development They prevent creativity
7. Self-assessment of teachers on technological knowledge, skills and use
Qualified Need for improvement/assistance

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8. Teachers' views on the assistance and support provided to them on the access and use of technological tools
They get support and assistance from administrator
They get support and assistance from other teachers
No support and assistance

Table 1 covers the teachers' views on the significance of technology use in preschool education and the assistance provided to them. Each question under the questionnaire comprises a theme while each view is considered as sub-themes. The related literature was used for the determination of sub-themes. Teachers use technological tools (laptops, desktop computers, projector, smart board, overhead projector, smart phone, electronic toys etc.) and prefer using more than one technological tools in theirclassrooms. It is identified that teachers perceive technology as *"tools assisting learning"* and *"tools integrated to education".* Teachers stated that technology should be used in education to support *"cognitive development, emotional development and psychomotor development".* Teachers noted that they prefer to use educational technologies for *"music/art, science-nature/mathematics and language/ foreign language"* activities. They also indicated that they use *"visual, audial, audiovisual and electronic toys"* as technological tools in their classrooms. All teachers reflected that technologyis important for education and it should be utilized. Pursuant to teachers, the advantages of technology use in classroom as *"they enhance motivation towards school and learning; they attract attention; they materialize learning; they improve memorability; they improve creative thinking skills; they make learning fun; they prepare students for higher-level institutions"* while the disadvantages as *"they prevent cognitive, emotional and motor development; they prevent creativity"*. Teachers reflected that they mainly get support and assistance from administrators and other colleagues with regard totechnological equipment. Teachers stated that the assistance from their administrators for technology use is towards *"provision of educational technology tools (reinforcement of school's technical facilities)* and *support for use (be an example, providing information and guidance, giving advices).* Teachers stated that they *"find themselves qualified"* and *"need to improve/be supported"* on technology use.

Table 2 covers the administrators' views on the significance of technology use in preschool education and the assistance that they provide. Each question under the questionnaire comprises a theme while each view is considered as sub-themes. The related literature was used for the determination of sub- themes.

Table 2: Themes and Sub-Themes Generated from Administrators' Data

1. Administrators' views on educational technologies
Tools assisting learning
Tools integrated to education
2. Administrators' views on the significance of technology use in education
It is important/it should be used
It is not so important/it should not be used otherwise necessary
3. Administrators' views on the purposes of using technologies in the classroom
For cognitive development
For emotional development
For psychomotor development
4. Administrators' views on the types of assistance that they provide at school and classroom on technology use
To provide tools
To provide user support
5. Administrators' views on the provision of technological tools required by school
From school budget
Through donations
6. Self-assessment of administrators on technological information, skills and use
Qualified
Need for improvement/assistance
7. Administrators' view on how they evaluate teachers regarding technological knowledge, skills and use
New graduated/ teachers with undergraduate degree
New generation teachers
Teachers interested in technology

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8. Administrators' views on the technological facilities in their schools
Qualified Need for improvement/support

Table 2 reflected that administrators perceive technology as *"tools assisting learning"* and *"tools integrated to education"*. Administrators stated that technology should be used in education to support *"cognitive development, emotional development and psychomotor development"*. Some of the administrators stated that using technology in education "*is important and should be used while some said it is not that much important and should not be used unless necessary"*. Administrators indicated that they provide "*provision of tools and user support"* in classrooms and school for educational technologies and they supply the required technological tools through *"school budget and donations"*. The administrators considered themselves as *"qualified and need for improvement"*. While they noted that their school teachers are qualified in terms of technological knowledge, skills and use, and particularly *"new graduated teachers / teachers with undergraduate degree, new generation teachers and teachers with interest in technology"* are more qualified in this matter. In terms of technological facilities, they identified their schools as "*qualified and needed to be improved"*.

IV. Results

The following results are generated through the research findings, and they were interpreted within the framework of related literature.

In terms of the findings regarding the perception of teachers about technology, teachers consider it as tools assisting learning and tools integrated to education, and the administrators gave similar answers too. Under the related literature, there are studies compatible with research findings reflecting that technology should education and training activities (Demiriz, Karadağ and Ulutaş, 2003; Keengwe and Onchwari, 2009; Sert, Kurtoğlu, Akıncı, Seferoğlu, 2012; Türk, 2012; Yılmaztekin and Olgan, 2013; Gök, Turan, Oyman, 2016) and there are some studies in parallel with the other finding arguing that technology should be properly integrated to all stages of education (Akbaba-Altun, 2002; UNESCO, 2003; Çavaş, Kışla and Twining, 2004; Altun, 2007). In consideration with such findings, the views of preschool teachers and administrators on the types of educational technologies are parallel with the related literature.

Pursuant to the findings on the significance of technology use in preschool education, all teachers and four out of five administrators indicated that the use of technology in education is important and necessary, while one administrator thinks that it should not be used unless necessary. In terms of the related literature, there are a variety of views on the significance and necessity of using technology in preschool education. While some views emphasize the benefits of using technology (NAEYC, 1996; Demir, 2007; Akpınar, 2005; Arı and Bayhan, 2003; Li & Atkins, 2004; Aksoy, 2006; Fish et.al 2008; Küçükoğlu, 2013; Köroğlu 2014; Kılınç, 2015; Çeliköz and Kol, 2016), some studies underline its disadvantages (Weikart, 1995; Cordes and Miller, 2000; Kartal and Güven, 2006; American Academy of Pediatrics-AAP, 2011; Şen, 2013). The most prominent point under the studies supporting to use technology in preschool education is that it should be used in a "correct" and "effective" way and at "certain" levels, which would bring many educational benefits at early ages. Otherwise, it may cause harms rather than benefits (becoming antisocial, technology addition). Similarly, the researches underline that technology should be suitable for the developmental characteristics of children and be integrated with curriculum. Additionally, it is emphasized that technology cannot substitute one-to-one communication (Sayan, 2016; Halmatov, Akçay, Ekin, 2017). Based on the related studies (Haugland, Wright, 1997; Espinosa, Laffey, Whittaker, Sheng, 2006, Sayan, 2016) and results from this study, the general opinion is that the use of technology in preschool education should be used appropriately where applicable.

Majority of teachers noted that they use technology to support cognitive development, and they mainly use technological tools in science/nature-mathematics activities and secondly in music/arts activities. A few of teachers mentioned that they use technological tools in language/foreign language activities. The related literature includes some views that technology support cognitive development. Korkmaz and Ünsal (2016) concluded that where preschool stage developmental characteristics are taken by the mental development stages, it is important to effectively use teaching materials that are suitable for cognitive, emotional and psychomotor developments of preschool students.

The study by Gök, Turan and Oyman (2016) identified that preschool teachers effectively use the technological tools frequently (%80) in Turkish language activities, reading activities, mathematicsand science activities and concentration activities. A study by Demir (2015) on the information technology levels among preschool teachers concluded that teachers use such technologies for the activities in Turkish, Music, Science and Math lessons at the most.

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Korkmaz and Ünsal (2016) consider preschool materials as significant since they attract the attentionof children; they are dynamic; they stimulate more than one sense in the body; they materialize the topics and make learning more permanent. They also emphasized the necessity to use technological tools in education stage. Similar studies indicate that technology assisted education is effective in the development of different abilities and skills such as mental, language, verbal and non-verbal abilities and conceptual development, problem solving, long term recall etc. (Sayan, 2016; Li & Atkins, 2004, Fish et.al, 2008). Moreover, a holistic approach on the role and significance of using technology in classroom has become important (Sayan, 2006; Kartal and Güven, 2006) since the objective is to support all child development dimensions and that all developmental areas are considered and progress together.

Teachers reflected that they mainly use audial/ visual tools like laptops, desktop computers, TV, radio, electronic toys, projector and smart board together. Even a few, some of them mentioned that they use overhead projectors. Other research findings that support such findings showed that computers, TV, projectors, smart boards are used as classroom tools (Kol, 2012; Demir, 2015, Korkmaz, Ünsal, 2016; Halmatov, Akçay, Ekin, 2017). One the other hand, some studies even note that a number of different tools like cassette-players, radio, overhead projectors, camera, fax, electronic story books and toys are also used (Sayan, 2016, Korkmaz and Ünsal, 2016). Hence, it is possible to say that study findings are in compliance with the related literature. Consequently, it is interesting that some technological tools like overhead projectors, radio, which are behind the high paced technological developments of our time, are still used at schools. Another interesting observation is that some teachers refer to the intensive use of their smart phones in their classrooms, which can be considered that teachers use technology only for the sake of using it without considering its educational value.

Under the related literature, one of the most crucial issues that majority of teachers is the adequacy of teachers in using technology. Pursuant to the literature, it is important that teachers consider themselves as qualifiedin using technology; they have positive attitudes towards technology; they want to learn how to use technological tools frequently and actively, and they have a desire to keep up with the technological developments (Öztürk Yılmaztekin and Olgan, 2013; Demir, 2015; Gök, Turan, Oyman, 2016; Halmatov, Akçay, Ekin, 2017). Within the framework of this study, majority of teachers deem themselves as having sufficient qualification on technology use while they also state that they need improvement as well. The relevant literature also has other research findings that complement findings from this study (Öztürk Yılmaztekin and Olgan, 2013; Demir, 2015; Gök, Turan, Oyman, 2016; Halmatov, Akçay, Ekin, 2017). Considering this study, teachers reflected that they have a positive attitude towards using technology in education and consider themselves as qualified but alsothey have the desire to be up-to-date with the latest developments, which are in parallel with study findings. Thus, the teachers from this study stated that they perceive themselves as qualified on the knowledge, skills and use of technology, and they need improvement on this matter. Additionally, the administrators indicated that the technology qualifications of teachers in their schools vary whether they are "new generation", "undergraduate" and "interested in technology". Institutions such as International Society for Technology in Education (2000), Ministry of National Education (MEB) (2006) reiterate that in order to utilize information technologies efficiently and effectively, teachers must be "technology literate", follow technological developments, open to cooperation for professional sharing, be an appropriate example in using technology and have the awareness for effective use of technology. The significance of pre-service and in-service trainings is underlined in the acquisition of aforementioned qualifications by teachers and utilization of potential advantages of technology (NAEYC, 1996).

Similarly, the administrators also indicate that they perceive themselves as qualified and need for improvement in terms of knowledge, skills and use of technology. There are some studies (Akbaba-Altun, 2002; Ertmer et.al, 2002), which emphasize the improvement in school efficiency with the improvement of technology qualifications among administrators. Hence, it is possible to say that there is a direct effect of technological qualifications among administrators on the technological qualifications of school.

With regard to the advantages of using technological tools in classrooms, teachers stated that such tools materialize learning, enhance memorability, make learning fun, attract attention, improve creative thinking skills and increase positive motivation towards learning. In terms of disadvantages, technology prevents development areas of children and their creativity when it is not used properly and correctly. In consideration with these findings that are in parallel with the related literature (Kacar, 2006; Demir, 2015; Li & Atkins, 2004; Aksoy, 2006; Fish et.al. 2008; Küçükoğlu, 2013; Köroğlu 2014; Kılınç, 2015; Çeliköz and Kol, 2016; Gök, Turan, Oyman, 2016; Weikart, 1995; Cordes and Miller, 2000; Kartal and Güven, 2006; American Academy of Pediatrics-AAP, 2011; Şen, 2013), teachers agree that technology brings mainly advantages in preschool education, and this attitude is also supported by the administrators.

Teachers stated that they frequently get support from their administrators about the provision of

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technological tools and their use. Some teachers mentioned that they get assistance from their colleagues at school or they do not get any support at all. There are some studies that emphasize the support of administrators and other teachers given to the teachers (Akbaba-Altun, 2002; Anderson and Dexter, 2005; Sincar, 2009; Gök, Turan, Oyman, 2016). The related literature consider the support of administrators given to the teachers as important. Pursuant to the literature, the administrators are expected to be examples in using and adopting technology, and supporting teachers accordingly. The technological support of administrators is based on the school resources, infrastructure and perspectives of teachers about using technology. The study findings showed that the answers of administrators are parallel with teachers in terms of supporting teacher in providing technological tools and how to use them. The administrators stated that they supply the technological tools required at their schools from school budget and through donations. MEB (2001, 2003) and the General Directorate of Educational Technologies under the Ministry (2001) reflect some duties for school administrators for effective use of information technologies at schools, one of which is about showing all kinds of efforts towards establishing informatics infrastructure at schools and working towards finding necessary funding. The availability of budget is also required respectively. Considering such findings, it is possible to say that the support of administrators to teachers is vital in using and providing technology at schools.

According to research findings, four administrators mentioned that their school is sufficient in terms of technological equipment while one of the administrators said there should be improvement. The related literature covers some studies showing that the technological facilities at schools are directly correlated with the technological qualification perception of administrators (Akbaba-Altun, 2002; Sincar, 2009). From this perspective, the perception of administrators on technology qualification affect their perception on the technological equipment sufficiency at their schools.

As a result of research findings, the views of teachers and administrators regarding the use of technology in preschool education are positive, and teachers can get support from their administrators and their colleagues at their schools as they need, which is in parallel with the related literature.

V. Recommendations

A number of recommendation that may be proposed in accordance with the research findings can be summarized as follows:

Teachers identified themselves as *"qualified"* about using technology yet they need improvement. Therefore, the deficiencies and associated topics should be determined, and some activities andcourses may be organized to meet such need.

Some of the teachers stated that they use "overhead projectors" and smart phones in their classrooms. For such teachers, some adjustments that would allow them to use more modern and functional tools may be undertaken. Since some teachers argued about disadvantages of using technology in preschool education as it prevents cognitive, emotional and motor development as well as creativity, such teachers may be provided with awareness raising activities that may lead them change their minds. Administrators indicated that some teachers at different statuses require more need about technology. Trainings can be organized for such teachers accordingly. Additionally, the contents of computer applications and technology courses, which are taught to all departments under education faculties of universities may be reviewed per departments and be restructured respectively. Some of the administrators indicated that the use of technology in education is *"important and it should be used while some think the opposite and should not be used unless necessary"*. Different activities can be organized for the administrators, who deny the significance of technology use in pre-school education. The future studies may cover the significance and use of technology in preschool education from different dimensions with different study groups.

In consideration with the significance of innovative practices emerged by the technological developments, "coding" trainings that have recently become popular and reflected in curricula may be ensured to grow more.

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