EĞİLİMLER VE KONULAR: OKUL ÖNCESİ DÖNEMDE TEKNOLOJİ KULLANIMI İLE İLGİLİ YAPILAN ÇALIŞMALARIN GÖZDEN GEÇİRİLMESİ[1]

TRENDS AND ISSUES: A REVIEW OF STUDIES RELATED TO TECHNOLOGY USAGE IN EARLY CHILDHOOD EDUCATION[2]

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Özet: Bu çalışma, erken çocukluk eğitiminde kullanılan teknoloji türleri ile ilgili yapılmış olan çalışmaları açıklamaktadır. Seçilen çalışmalarda hem nitel hem de nicel araştırma yöntemleri tercih edilirken, her iki araştırma yöntemini de kullanan çalışmaların da yer aldığı görülmektedir. Araştırmanın inceleme aşamasında, EBSCOhost, Blackwell Synergy, and ScienceDirect veritabanları sistematik bir şekilde incelenmiş, 2003-2009 yılları arasında basılmış olan çalışmalar seçilmiştir. Çalışmalar üç konu bazında seçilmiştir: (1) teknolojinin çocuk gelişimindeki rolü, (2) teknolojinin öğretmen uygulamalarındaki rolü ve (3) teknolojinin hem okul ortamındaki çocuğun gelişimindeki hem de öğretmen uygulamalarındaki rolü. Sonuç olarak, 30 çalışma ele alınmış ve ayrıntılı analizleri gerçekleştirilmiştir. Seçilen çalışmaların yöntemleri, araştırmış oldukları teknoloji çeşitleri, amaç ve bulguları, basım yılları ve çalışmaların yapıldığı ülkeler gibi kriterler detaylı bir şekilde incelenmiştir. Bu çalışmalar, teknoloji ile ilişkili literatürde bilgisayarın önemli bir yere sahip olduğunu göstermektedir. Ayrıca, öğretmenlerin "Bilgi ve İletişim Teknolojileri" ve eğitim videolarını da

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uygulamalarında kullandıkları saptanmıştır. Erken çocukluk döneminde teknoloji kullanımının tercih edilmesinin gerek öğretmenlerin sınıf-içi uygulamalarına gerekse çocukların gelişimlerine olumlu katkıları bulunmaktadır.

Anahtar Kelimeler: *Teknoloji, Okul Öncesi Eğitim, Bilgi ve İletişim Teknolojileri (ICT)*

Extended Abstract: *Technology has become an indispensable part of life today and children grow up with technology. In fact, they experience computer technology long before they interact with books. Children generally see their parents using computers rather than reading books. There are brightly colored small-scale computers for children so they can imitate their parents. Moreover, computer technology is very attractive for young children because of the color, movement, and sounds. Thus, different technological tools can provide meaningful experiences for them (Saracho & Spodek, 2008). Until 1999, the literature generally focused on the effects of computer usage on the development of young children from the opposing perspectives of positive and negative. Studies were generally related to developmental gains such as intelligence, nonverbal skills, structural knowledge, long-term memory, verbal skills, and problem solving (Haugland, 1992), high level of communication and cooperation skills (Clements, 1994; Haugland &Wright, 1997), written language (Clements & Nastasi, 1993). After 1999, the focus in the literature shifted from computers to Information Communication Technology (ICT) and assistive technology in early childhood education. According to Bolstad (2004), ICT is "electronic or digital tools which aim to gain information, communicate with others, and influence the environment". In early childhood education, ICT involves computers, digital cameras and digital video cameras, creativity and communication software tools, the Internet, telephones, fax machines, mobile phones, tape recorders, interactive stories and computer games, programmable toys, data projectors, and electronic whiteboards (Bolstad, 2004).*

The purpose of this paper is to describe types of technology studies that have been conducted related to young children's early education. A systematic review of studies was undertaken using EBSCOhost, Blackwell Synergy, and ScienceDirect databases, to identify all studies published between 2003 and 2009 according to specific criteria. The studies were selected on the basis of the following three issues: (1) the role of technology in children's development, (2) the role of technology in teachers' practices,

and (3) studies that aimed to investigate the impact of technology usage on not only teacher practices but also young children's development in school settings.

A comprehensive search of three online databases (EBSCOhost, Blackwell Synergy, and ScienceDirect) was conducted to identify all relevant studies published in years between 2003 and 2009. Thirty research studies were chosen since they fulfilled the criteria, dealing with technology usage in early childhood education from 2003 to 2009.

After the selection procedure was completed, the articles were independently analyzed by the first author and her findings were compared with the second author's coding. The agreement rate was high (85%) therefore the reliability requirement was met (Creswell, 2007).

A database was created in order to clearly identify the key features of each article. The categories in the database included the publication year, title, author(s) name(s), independent researcher or university based research, country, purposes of the studies, participants, methods, results, and, if any, the supporting institution or organization.

A descriptive analysis of the key features in the database was undertaken. The three main categories to be analyzed in general were; the methodology of the studies, outcomes of the studies, and types of technology used. Regarding methodology of the studies, 11 studies (36. 7%) were conducted on the basis of qualitative approach, 13 studies (43. 3%) used a quantitative approach as shown in Figure 3.1. Six studies took a mixed approach (20. 0%).

Eight studies (26. 6%) were related to teacher outcomes, 20 studies (66. 7 %) were about child outcomes and two studies (6. 7%) concerned both child and teacher outcomes. Overall, the majority of the studies related to technology usage in early childhood settings mainly focused on children's developmental areas. In terms of the technology types, the 30 studies were grouped, based on their content, into six areas: computer (n=17; 56. 7%), ICT (n=4; 13. 3%), e-book (n=1; 3. 3%), video (n=3; 10. 0%), audio-visual tools (n=3; 10. 0%), and assistive technology (n=2; 6. 7%) In-depth analyses indicated that the focus of the researchers varied, some having a single focus: a relationship between children's development or technology, and teachers' practices and technology, others gave priority to both children and teachers.

The literature evaluated for this study showed that technology appears to influence young children in a more positive way (e.g. Ching et al., 2006; Espinosa et al., 2006).

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Furthermore, it was discovered that technology was useful for early childhood teachers in terms of supporting their professional development (Chen & Chang, 2006a; Downer et al., 2009; NAEYC 1996). The results of these studies suggested that training programs should be provided for early childhood teachers in order that could use technology in ways that were appropriate for their young students. By attending technology-related courses in their pre-service education and became familiar with computer skills they were able to utilize these skills in their professional life. According to the statement from NAEYC (1996), both in-service and pre-service training should be conducted to allow early childhood teachers to benefit from the possible advantages of technology in their teaching.

This study reviewed technology-related articles from journals published from 2003 to 2009. From a content analysis it emerged that the main issues of these studies focused on the different types of technologies using in early childhood classrooms. This study showed that the "computer" as a technology plays an important role on technology-related literature. In addition, other types of technologies such as ICT, assistive technology were selected to be used in early childhood classrooms. Moreover, it was clear that most of the researchers chose the type of methodology on the basis of their research purposes. Therefore, this review can help future researchers to select an appropriate methodology to suit the purpose of their research.

Keywords: *Technology, Early Childhood Education, Information and Communication Technologies (ICT)*

INTRODUCTION

Technology has become an indispensable part of life today and children grow up with technology. In fact, they experience computer technology long before they interact with books. Children generally see their parents using computers rather than reading books. There are brightly colored small-scale computers for children so they can imitate their parents. Moreover, computer technology is very attractive for young children because of the color, movement, and sounds. Thus, different technological tools can provide meaningful experiences for them (Saracho & Spodek, 2008).

Morrison (2007) defines technology as the implementation of tools and information in order to create new things and find solutions to problems.

According to this definition, technology is not limited to computers it also includes television, video recorders, digital cameras, videotapes, cassettes, personal data assistants (PDA), mobile phones, mp3 players and many other devices. Many of these devices can be found not only in educational settings but also in early childhood settings (Morrison, 2007).

Until 1999, the literature generally focused on the effects of computer usage on the development of young children from the opposing perspectives of positive and negative. Studies were generally related to developmental gains such as intelligence, nonverbal skills, structural knowledge, long-term memory, verbal skills, and problem solving (Haugland, 1992), high level of communication and cooperation skills (Clements, 1994; Haugland &Wright, 1997), written language (Clements & Nastasi, 1993). The studies which focused on the negative effects underlined repetitive stress injuries, obesity, inactive lifestyles (Scoter, Ellis, & Railsback, 2001), sensory impressions, movement, and learning problems (Weikart, 1995). Abu-El-Haija (2003), however, claims that these negative impacts can be decreased when technology is used in a meaningful way and within a limited time period. In addition, it can provide opportunities for children to engage actively in learning process and learn cooperatively, interact frequently, receive feedback, and make connections to real life contexts. The National Association for the Education of Young Children (NAEYC) (1996) stated that the attitudes of teachers towards technology usage in early childhood settings are critical to appropriate educational development of children. By ensuring that computers are used appropriately such as setting certain time periods can overcome the negative aspects of computer use.

After 1999, the focus in the literature shifted from computers to Information Communication Technology (ICT) and assistive technology in early childhood education. According to Bolstad (2004), ICT is "electronic or digital tools which aim to gain information, communicate with others, and influence the environment". In early childhood education, ICT involves computers, digital cameras and digital video cameras, creativity and communication software tools, the Internet, telephones, fax machines, mobile phones, tape recorders, interactive stories and computer games, programmable toys, data projectors, and electronic whiteboards (Bolstad, 2004).

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Assistive technology is another area that has been extensively investigated in early childhood settings. This technology can be used to support disabled people to help them overcome physical limitations related to their cognitive, sensory, motor, and communication skills. This type of technology involves speaking calculators, keypads, adaptive keyboards, hearing aids, and portable communication devices (Lewis, 1993). Moreover, computer technology is believed to be an excellent way to supporting children's educational development especially for those with visual, hearing, and movement disabilities (Hutinger, 1998) and intellectual or learning disabilities (Lau, Higgins, Gelfer, Hong, & Miller, 2005). A study by Hitchcock & Noonan, (2000) showed that children with disabilities learned more pre-academic skills with computer-assisted instruction when compared with teacher-assisted instruction. Thus, the literature demonstrates that both before and after 1999, technology has an important role in children's development, whether able bodied or disabled.

The purpose of this paper is to describe types of technology studies that have been conducted related to young children's early education. A systematic review of studies was undertaken using EBSCOhost, Blackwell Synergy, and ScienceDirect databases, to identify all studies published between 2003 and 2009 according to specific criteria. The studies were selected on the basis of the following three issues: (1) the role of technology in children's development, (2) the role of technology in teachers' practices, and (3) studies that aimed to investigate the impact of technology usage on not only teacher practices but also young children's development in school settings. In order to show the recent position of the early childhood technology studies, the main aim of this article was to address technology related studies in early childhood education over six years period-2003-2009.

METHOD

A comprehensive search of three online databases (EBSCOhost, Blackwell Synergy, and ScienceDirect) was conducted to identify all relevant studies published in years between 2003 and 2009. In order to select studies, a three-step process was followed. First, a search for the keywords "Early Childhood" in the title of the journals was undertaken. Then, a search was carried out on

all relevant journals using the inclusion criteria for the selection of studies: "technology", "computer", and "ICT". From 13 journals, seven most related journals, which included the highest number of technology-related studies, were selected for the review process. These journals were "Early Education & Development", "Journal of Early Childhood Research", "Early Childhood Education Journal", "Topics in Early Childhood Special Education", "Australian Journal of Early Childhood" and "Journal of Computer Assisted Learning". Then, by using the same keywords, these seven journals were again examined in detail to locate the articles fitting the determined criteria. As a result, the abstracts of 58 articles were initially screened. In the next stage, full texts of articles about technology in early childhood education were obtained. Eighteen research studies were eliminated from the pool because they did not report empirical evidence about technology usage in early childhood education, they only reviewed existing research or gave the authors own opinions. Finally, 30 research studies were chosen since they fulfilled the criteria, dealing with technology usage in early childhood education from 2003 to 2009.

After the selection procedure was completed, the articles were independently analyzed by the first author and her findings were compared with the second author's codings. The agreement rate was high (85%) therefore the reliability requirement was met (Creswell, 2007).

A database was created in order to clearly identify the key features of each article. The categories in the database included the publication year, title, author(s) name(s), independent researcher or university based research, country, purposes of the studies, participants, methods, results, and, if any, the supporting institution or organization.

FINDINGS

A descriptive analysis of the key features in the database was undertaken. The three main categories to be analyzed in general were; the methodology of the studies, outcomes of the studies, and types of technology used. Regarding methodology of the studies, 11 studies (36. 7%) were conducted on the basis of

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qualitative approach, 13 studies (43. 3%) used a quantitative approach as shown in Figure 3.1. Six studies took a mixed approach (20. 0%).
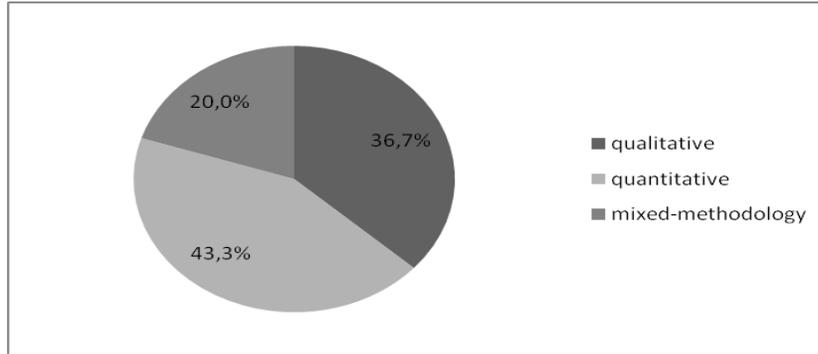

Fig. 1 The percentages of the types of methodology

Eight studies (26. 6%) were related to teacher outcomes, 20 studies (66. 7 %) were about child outcomes and two studies (6. 7%) concerned both child and teacher outcomes. Overall, the majority of the studies related to technology usage in early childhood settings mainly focused on children's developmental areas. In terms of the technology types, the 30 studies were grouped, based on their content, into six areas: computer (n=17; 56. 7%), ICT (n=4; 13. 3%), e-book (n=1; 3. 3%), video (n=3; 10. 0%), audio-visual tools (n=3; 10. 0%), and assistive technology (n=2; 6. 7%)
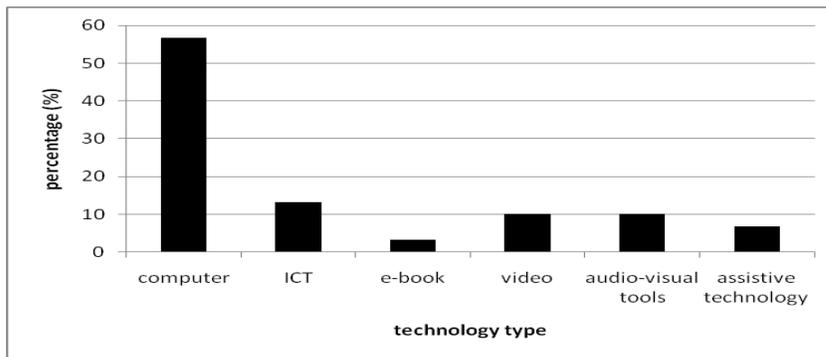
Fig. 2 The percentages of technology type

In-depth analyses indicated that the focus of the researchers varied, some having a single focus: a relationship between children's development or technology, and teachers' practices and technology, others gave priority to both children and teachers. In this paper, for each of these three subgroups the following elements from the database will be described;

- research design of the studies,

- type(s) of technology analyzed,

- purpose of the research and findings

- year of publication

- location of study

Content Analysis of Studies related to Technology's role on children's development

Research design

Both quantitative and qualitative research methodologies were used to analyze the impacts of technology on children.

Table 1: *The percentages of the types of methodology in terms of children*

Types of Methodology	ƒ	%
Qualitative	7	35
Quantitative	10	50
Mixed-Method	3	15
Total	20	100

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Overall, quantitative studies were designed as experimental studies in order to observe the differences between two methods for example, technology-based versus traditional instruction. Surveys were also used to collect more information about children's learning processes. In the qualitative analyses, data collection types such as interviews, observations, field notes, and video recordings provided rich information about the participants, settings, and the nature of the studies. Finally, mixed method studies mainly used a combination of survey and qualitative data methods.

Types of technology

Twenty studies focused on the effects of technology on the development of young children. The results of the studies indicated that there was a strong relationship between the type of technology used and its contribution to children's development.

Table 2*: Types of technology usage in selected articles*

Type of Technology	Number of Articles
computers	11
ICT	3
e-books	1
videos	3
audio-visual tools	1
assistive technology	1
TOTAL	20

Purpose of the research and findings

These studies (N= 20) mainly focused on the positive and negative effects of the use of on young children's development. 13 studies mainly focused the positive effects of technology on young children's development (Baroody, Eiland, & Thompson, 2009; Buckleitner, 2006; Ching, Wang, Shih, & Kedem, 2006; Chung & Walsh, 2006; Espinosa, Laffey, Whittaker, & Sheng, 2006; Hinde

& Wolery, 2006; Korat & Shamir, 2007; Marsh, 2004; Segers & Verhoeven, 2003; Segers & Verhoeven, 2005; Skouteris & Kelly, 2006; Wang & Ching, 2003; Wilcox, Guimond, Campbell, & Moore, 2006). Only four studies showing the negative results of technology usage on young children's development (Bacigalupa, 2005; Lau et al 2005; Luckin, Connolly, Plowman, & Airey, 2003; Plowman & Stephen, 2007). Three studies investigated young children's habits related to technology usage (Stephen, McPake, Plowman, & Berch-Heyman, 2008; Zevenbergen & Logan, 2008; Kent & Facer, 2004).

In depth analyses of these studies revealed that a number of studies found that technology was effective in improving children's language, literacy, social, and mathematical skills.

Table 3: *The positive effects of technology on children's different developmental areas*

Developmental areas	Number of Articles
children's language and literacy skills	5
social skills	3
mathematical skills	3
TOTAL	11

On the other hand, the studies conducted directly related to the negative effects of technology usage on young children's development revealed the impact of computer technology on their social skills (Bacigalupa, 2005; Lau et al., 2005; Luckin et al., 2007). For instance, Plowman (2007) found that when children used computers as a group, they generally preferred to interact non-verbally. Therefore, despite the group activity, children did not show any collaborative verbal interaction with one another. Similarly, Bacigalupa (2005) stated that if one child played a video game, other children preferred to watch his/her video game instead of engaging in alternative activities.

Year of publication

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The majority of the technology related studies were conducted and published in 2006 or before. Eight studies (40 %) were carried out before 2006 (Bacigalupa, 2005; Kent & Facer, 2004; Lau et al., 2005; Luckin et al., 2003; Marsh, 2004; Segers & Verhoeven, 2003; Segers & Verhoeven, 2005; Wang & Ching, 2003). In 2006, seven studies (35 %) were carried out (Buckleitner, 2006; Ching et al., 2006; Chung & Walsh, 2006; Espinosa et al., 2006; Hinde & Wolery, 2006; Skouteris & Kelly, 2006; Wilcox et al., 2006). Five technology-related studies (25 %) were after 2006 (Baroody et al., 2009; Korat & Shamir, 2007; Plowman & Stephen, 2007; Stephen et al., 2008; Zevenbergen & Logan, 2008).

Location of study

In the literature, some researchers gave information related to the study locations, and the name of the country in which the study was conducted. This can be helpful to see the popularity of technology studies among different countries. As presented in Figure 3.3, a higher proportion of technology related studies were investigated in U.S.A (n=6; 30 %) this was followed by U.K (n=3; 15 %), Australia (n=2; 10%), The Netherlands (n=1; 5%), Israel (n=1; %5), and Germany (n=1; 5%). Six authors, however, did not provide any information about the country where the study was conducted (30%).
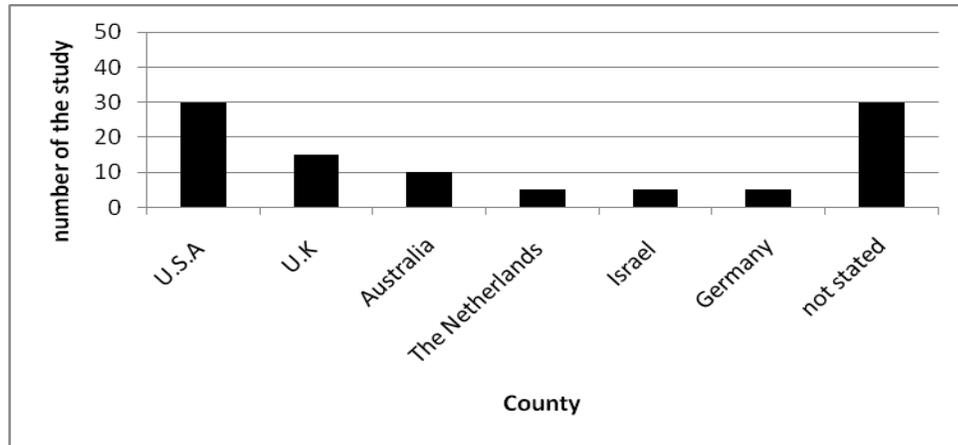

Fig. 3: The number of child-related studies in terms of country

The role of technology in teacher's practice

Research design

Except for two studies which used mixed methodology (Downer, Kraft-Sayre, & Pianta, 2009); Li, 2006), other studies either used qualitative (Boardman, 2007; Lee & Choi, 2008; Ljung-Djärf, 2008) or quantitative (Chen & Chang, 2006a; Chen & Chang, 2006b; Dugan et al., 2006) research methodologies to collect data (Table 4). In these studies, the survey method was generally used to gain information about teachers' attitudes, skills, and their practices related to computers or assistive technology. In a study, researchers conducted interviews with teachers in order to gain more information about their opinions related to digital technology. The researchers also collected observation reports to compare teachers' interview reports and their actual applications in classroom settings (Boardman, 2007).

Table 4: *The percentages of the types of methodology in terms of teachers*

Types of Methodology	F	%
Qualitative	3	37,5
Quantitative	3	37,5
Mixed-Method	2	25,0
Total	20	100

Types of technology

In the literature, there were eight studies that focused on early childhood teachers' technology usage (Chen & Chang, 2006a; Chen & Chang, 2006b; Downer et al., 2009; Dugan et al., 2006; Lee & Choi, 2008; Li, 2006; Ljung-Djärf, 2008; Boardman, 2007). These eight studies were grouped in four main areas: computer (n=5; 62. 5 %), ICT (n=1, 12. 5 %), audio-visual tools (n=1; 12. 5%), and assistive technology (n=1, 12. 5 %). As can be seen in Table 5, one of the most popular topics was computer application in school settings investigating

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both children-related outcomes and teacher-related outcomes.

Table 5: *Types of technology usage in selected articles*

Type of Technology	Number of Articles
computers	5
ICT	1
e-books	0
videos	0
audio-visual tools	1
assistive technology	1
TOTAL	8

Purpose of the research and findings

Within these eight studies, only one was conducted to explore the opinions of trainee early education teachers about the effectiveness of web-based instruction in relation to classroom management issues (Lee & Choi, 2008). The remaining studies mainly examined teachers' opinions about ICT (Li, 2006), their use of computers in the classroom (Ljung-Djärf, 2008), and their attitudes to and skills in computer technology (Chen & Chang, 2006; Dower et al., 2009). Generally, all of these studies addressed the importance of professional development activities in early childhood teachers' school practices. The findings showed that different types of professional development practices helped teachers to understand and effectively use technological tools in their classrooms. In fact, one study revealed that teacher's level of qualification was one of the important factors in relation to their use of integrated ICT activities in early childhood classrooms (Li, 2006). Similarly, the results of another study showed that the Internet positively contributes to the professional development of early childhood teachers (Downer et al., 2009). The findings of

Chen and Chang's (2006) study indicated that early childhood teachers who attended a technology training program felt more confident in using computers in their classroom practices. Technology had two main purposes for teachers: documentation and assessment. According to Boardman (2007), teachers believed that record keeping tools served as powerful devices to collect data from project work in the school environment (Boardman, 2007). All these studies indicated that technology was a practical tool that supported teachers' activities in their classrooms. Furthermore, the teachers' attitude to technology-related activities was influenced by the quality of technology usage in the learning process.

Year of publication

50 % of the studies were published in 2006 (Chen & Chang, 2006a; Chen & Chang, 2006b; Dugan et al., 2006; Li, 2006), the remaining studies were distributed through the years 2007, 2008, and 2009 (Boardman, 2007; Downer et al., 2009; Lee & Choi, 2008; Ljung-Djärf, 2008). The reason for half of the articles being from 2006 might be related to special volumes of journals. In the 17th volume of "Early Education and Development", only technology related studies were published and according to the selection procedure for this review appropriate studies were chosen from this volume.

Location of study

Unlike the studies that focused on children-related outcomes, all of the authors that focused on teacher related outcomes stated the study location, especially name of the country. Five out of eight studies were located in U.S.A. (62. 5 %), the others were conducted in Hong Kong (n=1; 12. 5%), Sweden (n=1; 12. 5%), and Australia (n=1; 12. 5%).

Studies that Focus on Both Teacher and Children

Among all the studies, only two were conducted to investigate the effects of technological tools on both the development of young children and teachers' classroom practices (Bose, 2005; Yin & Yim, 2007).

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Specifically, Bose (2005) chose a mixed methodology in order to examine the appropriate integration of computers into the curriculum and found that if technological tools were integrated with other activities, it was easier to reach the desired outcomes. Yin and Yim (2007) used a qualitative approach to evaluate the effectiveness of multimedia tools on the development of preschool children in terms of musical appreciation and early childhood teachers' classroom practices regarding music activities.

Bose (2005) found that five preschools had qualified teachers while one preschool did not have a qualified computer teacher. However, the computer teachers' qualifications were of concern, in that none of these computer teachers had sufficient experience or qualifications to work with small children. Thus, the author suggested that classroom teachers should learn how to use computers in their classrooms to be able to prepare and plan developmentally appropriate technology-related activities for their young students.

According to Yin and Yim (2007), children showed a positive attitude to musical appreciation activities when multimedia tools were provided. Moreover, they reported that teachers perceived the educational value of multimedia tools as useful in their practices.

Both studies focused on specific issues in their countries. Bose (2005) tried to find how technology was used in pre-primary schools in Botswana. Yin and Yim (2007) conducted their studies with teachers and children in public schools in Hong Kong.

DISCUSSION AND CONCLUSION

Nowadays, there is a wide range of technological tools that can be used in early childhood settings. Some researchers, however, state their concern about the effects of these technologies on the children's developmental progress. Two contrary perspectives the positive (Clements, 1994; Clements & Nastasi, 1993; Haugland, 1992; Haugland & Wright, 1997) and the negative impact (Scoter et al., 2001; Weikart, 1995) of technology on young children. For many years, it was unclear whether it was the positive or negative impact of the technology that was considered to have important consequences for the development of young children. The literature evaluated for this study showed that technology appears to influence young children in a more positive way (e.g. Ching et al.,

2006; Espinosa et al., 2006). Furthermore, it was discovered that technology was useful for early childhood teachers in terms of supporting their professional development (Chen & Chang, 2006a; Downer et al., 2009NAEYC 1996). The results of these studies suggested that training programs should be provided for early childhood teachers in order that could use technology in ways that were appropriate for their young students. By attending technology-related courses in their pre-service education and became familiar with computer skills they were able to utilize these skills in their professional life. According to the statement from NAEYC (1996), both in-service and pre-service training should be conducted to allow early childhood teachers to benefit from the possible advantages of technology in their teaching.

This systematic review indicated different types of studies about technology-usage in early childhood education in terms of the impact on children, teachers, and both children and teachers. The current study covered 30 articles concerning research conducted in different countries in the world; however, none of the reviewed journals contained a report of research carried out in Turkey. It would, therefore, be useful to review studies carried out in Turkey in order to reflect the issue of technology usage in early childhood education. Thus, the recent debate about technology usage in early childhood education can be seen as a guide for further studies.

This study reviewed technology-related articles from journals published from 2003 to 2009. From a content analysis it emerged that the main issues of these studies focused on the different types of technologies using in early childhood classrooms. This study showed that the "computer" as a technology plays an important role on technology-related literature. In addition, other types of technologies such as ICT, assistive technology were selected to be used in early childhood classrooms. Moreover, it was clear that most of the researchers chose the type of methodology on the basis of their research purposes. Therefore, this review can help future researchers to select an appropriate methodology to suit the purpose of their research.

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