SHOULD COMPUTERS BE USED IN EARLY CHILDHOOD EDUCATION? : A CASE STUDY

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Abstract: The purpose of this research is to investigate whether computers should be used in early childhood education. In order to answer this question, the researchers took preschool teachers' perceptions about use of computers in early childhood education and its effects on kindergarten students. Also, the researchers examined the kindergarten teachers' purposes for the use of technology and in what kind of activities they used technology. In this research, a qualitative research design and a descriptive case study approach was used in which data was collected from five kindergarten teachers via interviews and observations. The results of this research showed teachers' perceptions about the effects of computers on preschool children and some suggestions was made about how to minimize computers' harmful effects. Therefore, it will give an idea to the policy makers about how to integrate technology appropriately in kindergartens' curriculum.

Introduction

Technology has a significant role in all aspects of our life. Khan (2001) stated that "advances in information technology, coupled with the changes in society, have created a new paradigm for training" (p.5). Therefore, technology, especially computers, open new and unforeseen avenues for learning since it puts forward "unique opportunities for learning through exploration, creative problem solving, and self-guided instruction" (Clements, 1998, p.5) Nowadays, there is a desire to prepare children of all ages for what is seen as an increasingly complex and technological world (Plowman & Stephan,2005), so a dramatic increase was observed in availability of computers in educational settings (Işikoğlu, 2002). Also, Clements (1998) states that computers are increasingly present in kindergarten settings. In addition, according to Gimbert and Cristol (2004), diverse uses of technology in early childhood curriculum effects children's achievement. Although time consuming, choosing appropriate software or other technological device and observing carefully their activities are so important in order to make appropriate adoptions in children's development and learning. (NAECY, 1996) In order to do this, it is important to consider how the kindergarten teachers use technology. Since teachers have a significant role regarding to use technology for young children, their perceptions is very

important to be investigated. Therefore, the main purpose of this research is to investigate the kindergarten teachers' perceptions about use of computers in kindergarten settings.

Also, there is little documentation about how the technological tools are used in preschool settings. Technology is believed as an innovation to ease our living, it is a much more attractive innovation for the young children since they meet for the first time so many things in their lifetime. Therefore, it is necessary start to teach the use of technology in early childhood children. Since teachers have a significant role regarding to use technology for young children, it is important to investigate their perceptions regarding the use of technology. The main purpose of this research is to investigate whether computers should be used in early childhood education. In order to answer this question, the researchers examined the below research questions.

Research Questions and Sub-Questions

1. What are the kindergarten teachers' perceptions about the use of technology in early childhood education?
2. What are the kindergarten teachers' perceptions about the effects of technology on kindergarten students?
3. How the kindergarten teachers use technology in their daily classroom activities ?
    1.1. What are the teachers' purposes for using technology?
    1.2. In what kind of activities do the teachers use technology?

Review of Literature

When we look at the literature, there are some claims of effectiveness about using technology on early childhood education. For example, Li and Atkins (2004) pay attention to the positive effects of computer experiences on young children's cognitive and motor developments. According to their research results, they claimed that, using computers affect motor and cognitive developments of the kindergarten students. In addition, Haugland (1999) points out that the benefits of computers include "improved motor skills, enhanced mathematical thinking, increased creativity, higher scores on tests of critical thinking and problem solving, higher levels of motivation and increased scores on standardized language assessments"(p.28). Also, these new technologies make construction of content much more accessible to students, and research indicates such uses of technology can have significant positive effects. (Roschelle at all, 2001)

Furthermore, Scoter at all. (2001) explained the effects of computers on kindergarten students under five categories as (1) social effects (2) emotional effects (3) language development (4) Physical and motor development (5) cognitive development. First, computers and different software can serve as catalysts for social interaction and conversations related to children's work (Clements & Nastasia, 1993). Some strategies might be used to increase socialization, such as, placing two seats in front of the computer to encourage children to work together, placing computers close to each other to facilitate sharing ideas, and locating computers in a central spot to invite other children to actively participate to the activity (Clements,1998). Second, the appropriate use of technology increases language and literacy development (Scotter at all, 2001). In addition, it was observed that the use of computers increased verbal communication and collaboration among students (Clements,1994). Third, some studies showed that use of computers has some unfavorable effects on kindergarten students's physical and motor development (Li,2004). Therefore, it is important to have some limitation on children's use of computers and give frequent breaks. Last, the results of some studies showed that computers have positive effects on students' cognitive development. For example, with the use of computers, it is possible to experience something in the virtual world, which may not be possible in the real life. Also, computers can provide representations and actions that is not possible with any other media (Clements, 1998). What is more, according to Clements (1998), integrated computer activities has a positive effect on children's achievement. In addition, use of computers improved children's problem solving, abstract thinking and conceptual skills (Haugland, 1992).

However, there are some against beliefs about computer usage in early childhood education. One of

them is that computer is very limited for young children to construct their knowledge with manipulating. In addition, according to some authors, computers are too symbolic for developmental stage of young children (Vernadakis et al., 2005) These arguments also include that computers or digital media are too discrete for young children and also negatively effects on physical, psychological and social development (Li, 2004).
Examining the literature, Clements (1998) pointed out that it is no longer needed to ask whether technology is "developmentally appropriate" since it is high time to consider implications of technology in kindergarten settings. He stated that "very young children show comfort and confidence in using software" (p.2). One of his previous research showed that they are good at following pictorial directions and utilizing visual and situational cues to understand and think about their activities (Clements& Nastasi, 1993). They also found that children prefer to work with a friend in the computer which fosters peer-teaching and helping each other.

National Association for the Education of Young Children (NAECY), and High Scope Foundation strongly support computer environment in early childhood education and they believe that technology enhances children's learning and development (NAECY, 1996; Hougland, 1997; Hogman, 1990; cited in Işikoğlu, 2002 p, 2). Here, Isikoglu (2002) states that all of the materials can be well used or misused by the instructors, administers, or students. Since there are some promises for improving student achievement and teacher quality with emerging technologies (Gimbert & Cristol, 2004). According to Landerholm (1995), preschools should attach much importance to 'providing a guidebook software' for young children education than computer hardware. As he states that children vary in their interest in the computer, providing software choice is important for children. (Landerholm, 1995). In addition, using technology in kindergartens improve children's social interaction and language skills (Clement & Nastasi, 1993, Işıkoğlu, 2002). Therefore, in order to integrate the computer technology into early childhood curriculum, it is needed to conduct more researches about how to use technology in young children education.

Research Design

In this research, it is aimed to investigate teachers' perceptions about the use of technology in kindergarten schools. Therefore, the researchers decided to use qualitative methods since it involves highly detailed rich descriptions of human behaviors and opinions (Savenye & Robinson, 1996, p.1172). In addition, it is aimed to describe how the kindergarten teachers use technology in their daily classroom activities; therefore, descriptive case study design is used in this study. According to Berg (1989), case studies include systematically collecting needed information about a particular person, social setting, event or group in order to understand subjects' practices.

The researchers conducted this study in a kindergarten school where computers are used very effectively in the classrooms. They asked to the administrator of the school, which classroom might be most appropriate for this study and she recommended a classroom where computers were used very effectively. Therefore, "criterion sampling method was used in order to meet information-rich subjects. This study involved 20 kindergarten students and 5 kindergarten teachers.

In this study, data was collected by participant observations in the lessons and formal interviews with the teachers. First, two researchers observed 10 classroom hours by participating actively to the learning activities in order to effectively interact with the students. During the observation sessions, they took field-notes separately and evaluated the results by comparing two field notes, which helped to increase the trustworthiness of the study. Second, the researchers conducted formal interviews with the teachers in order to have their perceptions about computer usage in kindergarten education. During this interview sections, they triangulated the observed data by asking about how the teachers use computers in their courses.

Findings

The results of this study showed that 2 out of 5 teachers was using computers very effectively in their lessons. They were using it for many different purposes, including for playing games, telling stories, listening music and showing many different pictures. They talked about the benefits of computers for kindergarten children, such as improving learning through its visual ability, increasing students' motivation and improving students' problem solving skills etc...

On the other hand, 3 out of 5 teachers do not support the use of computers in kindergarten education.

These teachers stated that it is better to use some other materials in the lessons instead of computers since they might be harmful for the students in many aspects. One of the teachers talked about the health issues by stating that:

"I don't like children in that age spending many hours in front of computers, since they are disseminating many radioactive elements. They are also very harmful for their eyes since their eyes become red very quickly in front of computers."

One other teacher pointed out that children love playing games in the computer, but most of them include violence and so the children see violence as a good thing to do.

Furthermore, one teacher stated that computers make students unsocial and isolated beings, they spend hours in virtual environments and do not live in the real life. She also pointed out that children use computers because of their loneliness; parents do not want anymore to spare time with their children so that they direct their children toward computers.

Conclusions

The results of the study showed that teachers worry about some harmful effects of computers such as showing violence, making the children unsocial and its bad effect to students' eyes. All those harmful effects can be eliminated by controlling students' use of computers and limiting the time of computer use. On the other hand the teachers talked about its benefits since it improves learning through its visual ability, increases students' motivation and improves their problem solving skills. Although two teachers supported the use of computers in kindergarten settings, other three teachers were against of its use. Examining the results, it was revealed that the teachers who do not have competencies in computer use complained about its use in kindergarten settings, and so they did not use it in their lessons. The teachers, who were good in computer use, supported its use in childhood education. Therefore, not having computer competencies might be one of the reasons for not believing in use of computers in kindergarten settings.

This study might be helpful to show the effects of computers on kindergarten children and how to minimize its harmful effects. Therefore, it will give an idea to the policy makers about how to integrate technology in kindergartens' curriculum more effectively. In addition to this research, there is a need to conduct some further research about teachers' perceptions of computer usage in kindergarten education with some more participants.

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