

**TEACHERS' PERCEPTIONS AND PRACTICES ON  
COMPUTER USE IN EARLY CHILDHOOD DEVELOPMENT  
SETTINGS: A CASE STUDY OF THREE SELECTED  
PRESCHOOLS IN MASVINGO URBAN**

**Dzviti Vesta**

**Du.be Lekani**

**Abstract**

*Even though many early childhood development centres are equipped with the latest computer technologies, multiple studies seem to be pointing to the fact that these are not used functionally for the benefit of the learners. This qualitative study explores the teachers' perceptions and practices regarding the use of computers for instruction in early childhood development settings. The study employed the case study research design and used the purposive sampling strategy to select twenty teachers who participated in the study. Data was collected using the observation, questionnaire and interview. The major findings of the study were that: teachers had a limited understanding of the value of computer education for young children, they also lacked requisite knowledge and skills in computer operations, and as a result most of them did not use computers for instruction. The study concluded that computer education at early childhood development centres is not being effectively implemented due to various challenges. It is recommended that relevant school authorities and stakeholders find ways of providing quality computer facilities, equip teachers with the necessary knowledge and skills in computer literacy, and supervise the implementation of computer education in preschools.*

**Key words**

Early childhood development settings, computer, perceptions, practices.

## 1.0 Introduction and Background

It is widely known that in recent years technologies have assumed an important place in many educational settings the world over. The computer and advanced technologies developing rapidly all over the world have started to be one of the basic elements of the education since the last quarter of the 20<sup>th</sup> century (Cakir, 2014). McPake, Stephen and Adey (2011) state that many countries stress the expansion of technology-integrated curricular that are developmentally appropriate for young children and that help to bridge young children's digital experiences at home and in school. In Zimbabwe, the government has made strides to invest on computer equipment and as such its efforts should yield benefits for the future through having technologically literate citizens beginning from an early age (Government of Zimbabwe, 2004). Ertner (2005) notes that the decision to use or not to use computers in the classroom depends to a large extent upon the teachers' perceptions and practices. Kapur (2011) argues that, in ECD centres unlike other higher level educational settings, teachers' beliefs and practices are essential for setting up a better understanding of whether teachers will use computers for teaching and learning or not. Thus, an investigation of the teachers' perceptions and practices regarding computer use in ECD centres becomes critical.

There are many reasons why computers matter in the teaching and learning of young children, for example, Siraj Blatchford and Whitbread (2003) are of the view that computers present novel opportunities that help strengthen many aspects of the young child's learning. This is because early years are considered critical and a window of opportunities in the child's all-round development. In this regard, the Zimbabwean government through its ZIMASSET blueprint (2013) recognises ECD as a strategic area for national development that attempts to ensure that every child becomes computer literate. However, Ertmer (2008) argues that teacher attitudes and pedagogical beliefs exert personal theories about teaching and learning that influence their own interpretations of curricula and instructional methodologies. Hence, the need by this study to explore the extent to which teachers' perceptions and practices influence computer use in ECD settings.

The current researchers argue that in order for young children to become competent and active participants, who would represent an essential computer curriculum entitlement for the 21<sup>st</sup> century, must be given a chance to develop technological literacy from an early age. Teachers' perceptions and practices are fundamental because computer use in ECD settings does not refer to merely placing computers in the classroom but, using them for instruction (Smaldino, Lowther and Russell, 2008). Although the recommendations of the Nziramasanga Commission (1999) have resulted in the improvement of the ECD curricula and design (Dyanda, Mudukuti, Makoni and Kuyayama, 2006), there seems to be a deficiency of essential research on computer use in Zimbabwean ECD settings. Moreover, very little is known about the teachers' level of skilfulness, comfort and knowledge particularly relating to computer use at ECD level. These attributes are important because teachers present a unique position to provide young children with an effective introduction to computers. With these ideas in mind, an exploration of the ECD teachers' perceptions and practices was deemed necessary bearing in mind that technology and ECD are both growing entities of any developing contemporary society.

### 1.1 Statement of the problem.

Due to the role of technology in general and advancement of society and the educational sector in particular, effective technological integration in the teaching and learning circles has become the focus of many educators (Norton and Wilburg, 2003). In spite of the flurry of technological infrastructure and the advancement in other education sectors in Zimbabwe, there seems to be a minimal use of computers in ECD settings. This state of affairs presents an untapped potential for both learners and their teachers, hence the issues of equity and access remain unresolved (Dyanda et al, 2006), thereby creating a digital divide in ECD. Even though there is a need to incorporate computers in the ECD curriculum, this integration has been haphazard and without any specific goals and direction. This study argues that in order to develop children's computer literacy skills, there is need to explore teachers' perceptions and practices in order to inform policy toward effective use of computers at ECD level.

### 1.4 Research questions

- What are ECD teachers' perceptions and practices regarding computer use in ECD settings?

- How are teachers implementing the computer programme in ECD classes?
- What computer knowledge and skills do ECD teachers possess?
- What are the opportunities and challenges for computer use in ECD settings?

### 1.5 Review of related literature

The debate on making computers an integral component of the early childhood curriculum has resulted in the polarisation of opinions. One group campaigning for the use of computers whereas the other group rejects them. For example, Bitter and Pierson (2002) assert that technology and computer use in developing countries is seen as a dissemination of knowledge from advanced economies and adapted to the conditions of a developing country. Unwin (2009) argues that computer technologies can be used to help underprivileged and marginalised individuals and communities in order to make a difference to their lives. Similarly, Avgerous (2010) avers that computers can make a difference to the marginalised depending on the ways in which the same people use them to transform their lives and livelihoods.

Drent (2008) is of the idea that using computers in ECD classes enhance children's access to understanding through multi-model representations of otherwise difficult to grasp concepts. However, Cakir (2014) points out that the relative advantages of computer use depends largely on teachers' perceptions on the advantageous nature of the innovation. This implies that if teachers view computer use as beneficial, then it is more likely that the technology will be adopted. The perception of relative advantage might also depend on the way in which the innovation is presented to teachers as well as whether the technology suits their culturally acceptable norms and beliefs (Kapur, 2011). NAEYC (2012) affirms that computers can be incorporated in ECD classrooms to develop children's cognitive and social abilities. Nevertheless, it is important to note that there are conflicting opinions and professional disagreements that have given birth to varied beliefs that have since generated into myths (Marinovic, Cindric and Katic, 2001). NAEYC further maintains that some beliefs have since become obstacles or barriers to using computers in ECD. Hence, the researchers explore ECD teachers' perceptions and practices regarding computer use for instruction in preschool.

Contemporary ECD centres are considered to be those that keep abreast with modern technological changes for the purposes of effective teaching and learning processes. Computer technology has been found to have numerous advantages for children's all-round development. For example, Bender and Waller (2011) assert that computers develop constructive abilities in young children. Piaget describes young children as constructors of their own knowledge (Dacey and Travers (2004). This implies that as children actively interact with computers they make discoveries and hence become active participants in their own learning. Siraj-Blatchford and Whitbread (2003) aver that computer use in ECD settings fosters children's communication skills as they play with language and as such they develop the language arts skills of speaking, listening, reading and writing. Norton and Wilburg (2003) state that computers also aid the development of young children's social, physical as well as cognitive skills. Additionally, engaging in computer activities has the potential of facilitating and stimulating imagination and creativity in young children Ertmer (2005), and also promoting children's problem solving abilities (Mayer,2001). On the whole, developmentally appropriate computer technology fosters holistic development in young children.

In spite of the numerous benefits of computers established by research, critics of computers use in early childhood maintain that the technology brings with it socialisation problems and other negative outcomes in young children's development. Chen (2008) reveals that some researchers have argued that ICT may impede young children's social skills because they develop such skills in-person interaction and the use of various technologies keeps them from such interactions. Marinovic, Cindric and Katilc (2001) report that preschool teachers in Croatia listed considerably more drawbacks, for example, harmful health impacts, insufficient physical activity, and the negative impact on emotional development compared to the possible benefits from computer use. However, the advantages of computer technology to children's development outweigh the demerits, hence their importance in the ECD curriculum. Consequently, an exploration of the teachers' perceptions and practices regarding the use of computers in ECD was deemed suitable by this study.



### 1.6 Research methodology

The study was largely qualitative and employed the case study research design. Creswell (2011) states that the case study approach helps the researcher to build a rich picture on an entity using different data collection tools and diverse individuals relating to the case. This was done in order to describe, understand and interpret multiple realities that were specific to computer use in ECD centres (Battacherjee, 2012). The case study design helped the researchers to obtain first hand experiences on the issue under study. Cohen and Manion (2011) assert that qualitative researches are focused on explaining the big picture experiences with an emphasis on understanding their social contexts with no interest on predicting and controlling.

Data collection was obtained through the observation, questionnaire and interview. These methods contextualised the teachers' perceptions and practices on computer use at ECD level. All the 20 teachers selected using the purposive sampling strategy, responded to the questionnaire and interview which sought to find out their perceptions and practices towards computer use in ECD settings. The participants were chosen on a laid down criteria on knowledge and experience of working with young children. Observations of classroom activities were done in order to determine the extent and frequency to which computer were used for instructions. The observations were done over a period of ten days at each centre.

The interview was the principal source of data collection that allowed the researchers to obtain in-depth detail about the research topic as well to co-construct knowledge (Creswell,2011) .In order to understand the determinants of computer use for teaching and learning, the feelings, opinions, attitudes and perceptions of the participants in the study, had to be taken into account. Teachers as human beings have feelings, emotions and perceptions hence the qualitative research model was suitable to in order to probe such inner feelings. Through interviews, the study was able to gather in-depth data on the teachers' perceptions and practices regarding computer use, extent to which computers were employed for instruction, opportunities and impediments to effective implementation of computer education in the ECD curriculum.

## 1.7 Data presentation, analysis and discussion of findings.

This section presents data basing on the research questions. This will be followed by a discussion of findings.

### 1.7.1 Teachers' perceptions regarding computer use in ECD classes.

All the twenty teachers responded to the questionnaire and interview. Teachers were asked to briefly outline the need for computer education in ECD. Six teachers said that computers were very necessary especially in this technologically advanced world. One of the six actually said that she did not see anything wrong in using computers at ECD level since they help children to be problem solvers and critical thinkers and for that reason she used them regularly in instruction. Ten of them strongly believed that computers were not essential for young children. For example, one of the ten teachers said “computer use in the ECD teaching and learning environments erodes children’s morals due to the influence of foreign cultures. A second teacher from this category said that she had reservations on computer use claiming that they deprive children of quality verbal interactions with both the teacher and other pupils. However, four of them said that computers were necessary although they could not elaborate further. The finding that could be drawn here is that the teachers’ perceptions are impacting negatively on computer use in ECD settings.

### 1.7.2 Teachers' practices regarding computer usage in ECD settings

In response to a question that sought to find out whether computers were mandatory in the ECD curriculum all the participants revealed that it was compulsory since it is stipulated in the ECD syllabus. Most of the data from both the questionnaire and the interview indicated that computers were not being utilised in all facets of the curriculum. Observations of ECD class activities revealed that even though computers were available in some settings, they were not used for teaching and learning purposes. Six teachers revealed that although they make lesson plans for computer technology in ECD they only conducted oral lessons. However, one teacher said “because we are a private ECD centre we use computers to lure parents to bring their children to our centre. Neither do we instruct using computers nor do we have computer programmes and software for young children.” A few teachers indicated that they hired computer experts to

teach children computer literacy. Although this is a positive move, one wonders whether these computer experts actually teach children developmentally appropriate material since they may not have specialisation in teaching young children. An analysis of the data presented reveals that computers are used minimally as instruction tools in ECD centres.

### 1.7.3 ECD teachers' computer knowledge and skills

Data from the questionnaire indicated that fifteen teachers did not have any computer knowledge and skills. One of the teachers said "I really doubt my ability to use computers especially for teaching young children and after all they do not matter since these skills are not examined, even at grade seven levels." These sentiments strongly undermine teachers' motivation to use computers for instruction. Five teachers said they were computer literate but were not equipped with information on computer programmes for young children. One of the five teachers actually said, "What I can only do with a computer is typing and I wonder whether this could benefit young children". Analysis of the data reveals that teachers lack requisite knowledge and skills on computer education for young children.

### 1.8 Opportunities and challenges for computer usage in ECD settings

Information gathered through all the data collection methods revealed that computers were available in only two of the three schools under study. In the two schools, computers were normally placed in the school computer laboratories. The computers were not specifically for use by ECD classes, but for all grades. One of the teachers said "We only go to the computer laboratory when we want the children to get acquainted with computers." Another teacher said, "In my classroom there are many computers but, I don't know how to use them and I usually ask the computer teacher to teach my class computer lessons." The majority maintained that they did not use the computer laboratory because it was meant for upper grades. Although computers were available in most schools, there were not being fully utilised for instructing children at ECD level.

Major findings drawn from the results were:

- Teachers' perceptions were impacting negatively on computer usage in ECD settings.
- Computers were used minimally as instruction tools in ECD centres.



- Teachers lacked requisite knowledge and skills on computer education for young children.

## 1.9 Discussion of findings

### 1.9.1 Teachers' perceptions were impacting negatively on computer use in ECD settings.

To successfully initiate and implement computer technology in the ECD programme depends strongly on the teachers' perceptions. It is believed that if teachers perceive computer programmes as neither fulfilling their own needs nor their students' needs, it is likely that they will not integrate the computer technology into teaching and learning (Buabeng-Andoh, 2012). Research has established that teachers' perceptions influence successful integration of computer technology into teaching. Keengwe and Onchwari (2008) are of the view that if teacher's perceptions are positive towards the use of computer technology, they can easily provide useful insight about the adoption and integration of computer technology into teaching and learning processes. Hence, this study explores teachers' perceptions toward use of computers in ECD classrooms.

Several studies have established the relationship between teachers' perceptions and the use of computer technology in instruction. Simonson (2004) investigated the beliefs of primary school teachers on the use of ICT in teaching. He found that teachers' beliefs and attitudes were related to their use of technology. Another study conducted by Drent and Meelissen (2008) that explored factors which influence the innovative use of ICT by educators in the Netherlands, revealed that amongst other factors, pedagogical approach and positive attitudes towards computers have a direct positive influence on the innovative use of ICT by the teacher. Thus, (Woodrow, 1992) argues that for successful transformation in educational practice to occur the user has to develop positive attitudes towards the innovation.

### 1.9.2 Computers were used minimally as instruction tools in ECD centres

Although computers were available in some of the ECD settings under study, they were not used optimally. A study conducted by Jumiaan, Ihmeideh and Al-Hassan (2012) to determine the

status of computer education in Jordanian preschools settings established that the number of teachers who use computers in their actual classroom was limited. This finding is contrary to Oubrey and Dahl's (2008) study which revealed that computers were used widely among teachers in the United Kingdom. The similarity in the findings of the Jordan study and the present one could be attributed to lack of adequate computer technologies due to socio-economic challenges experienced by the two countries.

### **1.9.3 Teachers lacked requisite knowledge and skills on computer education for young children.**

Appropriate use of computers depends on the skill and knowledge of the early childhood practitioner. Milner (1988) opines that educational opportunities are being missed because most teachers do not know how to use the computer nor can they teach learners about the impact of computers on society. Supporting this view are Kirschner and Selinger (2003) who say that in some cases children are more adept at using necessary tools for acquiring and transmitting knowledge than teachers. It is also argued by Aduwa-Ogiegbaen and Iyamu (2005) assert that teachers' incompetence and lack of confidence in the use of computers greatly influenced the implementation of computer education in schools. Kupir (2011) avers that absence of trained teachers in computer science to teach children practical aspects of the computer and non availability of computers in schools have been militating against the implementation of the computer technology curriculum.

This study notes that those who are assigned to teach computer education in Zimbabwean schools, do not get sufficient training, and at worst do not receive any training at all. Similarly, one of the major findings of Jumiaan et al's (2012) study which sought to determine the extent to which computers were used in Jordanian preschools revealed that teachers lacked technological skills to use computers effectively. One of the reasons cited by participants was that they did not do courses on how to use computers in the classroom during their teacher training, implying that they get into the teaching profession without adequate preparation for computer education in early childhood.

## Conclusions and Recommendations

In general, ECD educators' perceptions and practices regarding computer use in early childhood, lack of computer knowledge and skills and appropriate computer facilities are hampering the full implementation of computer education programmes in preschool settings. The current researchers therefore recommend that the Ministry of Primary and Secondary Education play their vital role of increasing the use of computers in ECD settings. The ministry needs to provide ECD teachers with extensive preparation on the suitable use of early childhood computer expertise, boost the number of computers in ECD settings, make available to ECD developmentally appropriate software, and most significantly, provide ECD teachers with in-service training programmes in order to transform their perceptions towards technology and increase their knowledge, awareness and practices in the use of computers in instruction. The in-service programmes, however, should give attention to practical applications of ECD computer technology rather than theoretical ones. According to Russel, Bebell, O'Dwyer and O'Connor (2003) teachers should be trained on specific instructional use of technology instead of general use of computers. Finally, preschools should be provided with adequate technological resources, technical support and administrative support to encourage teachers to successfully use computers in classrooms.

## References

Bhattacharjee, A. (2012) *Social Science Research Principles, Methods and Practices* (2<sup>nd</sup>

Ed) Creative commons Attribution-Non Commercial-Share Alike 3.0 Florida

Bender, W. N. and Waller, L. (2011). *The teaching revolution: RTI, technology, and Differentiation transform teaching for the 21st century*. Thousand Oaks (California): Corwin, cop.

Bitter, G. G. and Pierson, M. E. (2002). *Using Technology in the Classroom*. Boston: Allyn And Bacon.

Buabeng-Andoh, C. (2012). An Exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools. *Contemporary educational technology*, 3(1), 36-49.

Cakir, T. (2014). The attitudes of preschool teachers and principals towards computer using. *Anthropologist*, 18(3), 735-744. Kamla-Raj 2014.

Creswell, J.W. (2011) *Research Design Qualitative, Quantitative and mixed methods approaches* 2<sup>nd</sup> edition. Sage: Thousand Oaks.

Dacey, J.S. and Travers, J. F. (2006) *Human Development across the Life Span*. McGraw-Hill: Boston.

Davis, N., Preston, C. and Sahin, I., (2009) Training teachers to use new technologies Impacts multiple ecologies: Evidence from national initiative. *British Journal of Education Technology*, 40(5), 861-878.

Drent, M. and Meelissen, M. (2008) .Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education*, 51(1), 187-199.

Dyanda, C., Makoni, R.D., Mudukuti, A. & Kuyayama, A. (2006) *Evaluation of the national ECD programme*. Harare: UNICEF.

Ertmer, A. P. (2005) Teacher Pedagogical Beliefs: The final Frontier in our Quest for Technology Integration? *Educational Technology Research and Development*, 53 (4), 25- 39.

Government of Zimbabwe (2013) *Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET): "Towards an Empowered Society and a Growing Economy"*. October 2013- December 2018. Harare: Government printers

Government of Zimbabwe (2004) *Information and communication technology (ICT) policy*. Harare: Government Printers.

Jumiaan, I.F., Ihmeideh, F.M. & Al-Hassan, O.M. (2012) Using computers in Jordanian pre-School settings: The Views of Pre-school Teachers. *Australian educational Computing*, 27(1), 28-33.

Kapur, A. (2011). *Transforming Schools – Empowering Children*. New Delhi: Thousand Oaks, London.

Keengwe, J. & Onchwari, G. (2008). Computer technology integration and student learning: Barriers and promise. *Journal of Science Education and Technology*, 17, 560–565.

McPake, J., Plowman, L., & Stephen, C. (2013). Pre-school children creating and communicating with digital technologies in the home. *British Journal of Educational Technology*, 44(3), 421-431.

Marinovic, M., Cindric, A., & Katic, V. (2001) *Computers in Pre-School Institutions: Students' Attitudes*. <https://bib.irb.hr/datoteka/405611.MIPRO02.pdf>

Mayer, R. E. (2007) *Multimedia learning*. New York: Cambridge University Press

Norton, P. and Wiburg, K.M. (2003) *Teaching with Technology*. Toronto: Thomson Wadsworth

Nziramasanga C.T. (1999) *The Presidential Commission into the Education and Training* Government Printers: Harare

Simonson, M. (2004). Technology use of Hispanic bilingual teachers: A function of their beliefs, attitudes and perceptions on peer technology use in the classroom. *Journal of Instructional Technology*, 31(3), 257-266.

Smaldino, S.E., Lowther, D.L and Russell, J.D. (2008) **Instructional Technology and media for learning** Upper saddle River: Pearson

Russell, M., Bebell, D., O'Dwyer, L. and O'Connor, K. (2003). Examining teacher technology use: Implications for pre-service and in-service teacher preparation. *Journal of Teacher Education*, 54(4), 297-310.

Siraj-Blatchford, J., and Whitbread, D. (2003) *Supporting Information and Communications Technology in the Early Years*. Open University Press, Berkshire.

Unwin, T. (ed.) (2009). ICT4D, Information and Communication Technology for Development. Cambridge, UK: Cambridge University Press.

Woodrow, J. E. (1992). The influence of programming training on the computer literacy and attitudes of pre-service teachers. *Journal of Research on Computing in Education*, 25(2), 200-219.