



PERCEIVED EFFECTIVENESS OF COMPUTER USE ON THE INTELLECTUAL DEVELOPMENT OF EARLY CHILDHOOD LEARNERS. FINDINGS FROM A SCHOOL IN WATERFALLS, ZIMBABWE

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Abstract

The use of computer technology has increased in today's schools in Zimbabwe. Children as young as two years are exposed to computers and games in phones. It is important that the exposure should be developmentally appropriate. The objectives of the study were to determine perceptions of early childhood development facilitators on the effectiveness of computer use on the intellectual development of learners in Waterfalls, to explore the usefulness of computers on language and problem solving skills of early childhood learners in Waterfalls, to develop mechanisms of incorporating computers among early childhood learners at pre-school level. Using a qualitative approach, the research used phenomenological research design. A total of 5 Early Childhood Development (ECD) teachers at a school in Waterfalls in Harare were interviewed on their perceptions on using computers in the classroom setting. Non-probability purposive sampling approach was used as the sampling strategy. Major findings of the research encompassed: computers result in enriched critical development as it be easy to execute duties at work or tertiary education. Computers lead to socialization through teacher student interaction or through peer to peer interaction through scaffolding others less competent. Computers enables language and problem solving skills among learners as visualizing images, videos, colors or sounds, playing games, animations can draw the attention of learners thus, learning takes place. Parents, teachers, policy makers and the government should be united to ensure that technology resources such as computers are made available for learners to grow up with open and creative minds. One of the recommendations of the study was that the government and policy makers should take a holistic method to move

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with technology. Therefore, the government should unveil resources for acquiring and upkeep of computers beginning at ECD level to promote intellectual development of ECD learners.

Keywords: early childhood development; learners; computer; effectiveness; teachers; intellectual

Introduction

There is a steady increase in the arrival, adoption and widespread use of new mixed technologies for improving student learning. Teachers who incorporate theories of Piaget into their teaching strategies are assumed to increase student achievement (Piaget's stages in cognitive development). Piaget's theory encourages hands-on learning. However, his theories have not been universally accepted by all. Some have noted that the stages of his theory have inconsistencies. Although research on the influence of technology on human development is on the increase, it is relatively limited.

In the past, researchers have been debating whether young children should utilise technology at school (Alper, 2011). Numerous writers have articulated the opinion that compute use is not suitable for young children's social, emotional, cognitive and physical development. Conversely, there is no strong evidence in backing this assertion and this understanding has progressively been substituted by the opinion that when computers are used correctly they might be a valuable instrument to assistant young children's learning and development (Bolstad, 2004).

Currently, it is being witnessed to observe toddlers and preschool children viewing videos, playing games on computers or explore on the internet. As a result of such dynamic improvements, there is a need to create an enhanced understanding of the procedure of using computers in day to day play and learning events of preschool children. Some new study findings stated out the extraordinary capabilities of computers is to improve the learning and additional developmental procedures of children (Kalas, 2013). As indicated by Kalas (2013) research has shown that digital technologies might deliver children with fresh potentials to be involved in attractive and applicable play, learning, communication, exploration, and growth. Correctly combined digital instruments might empower younger children through providing children with a voice, particularly with inadequate literacy competences at their young age (Kalas, 2013).

In addition, pre-service early childhood teachers are restricted of individual beliefs when it comes to computers in early childhood surroundings and that they might have false impression about the opportunities of computers in teaching and learning (Angeli, 2004). Though they engage technology in their role as student teachers for instance, to prepare lessons schedules teachers struggle to see technology as a part of their connection with children and express little wish to utilize computers with children, as upcoming teachers (Laffey, 2004). Moreover, Kiridis, Tsakiridou, Kaskalis, and Golia (2004) posit that pre-service early childhood teachers have optimistic opinions regarding utilization of computers in early childhood surroundings. Such observations have made us to see how computers boosts teaching hence, computers should be utilized throughout all kindergarten activities. Their results have commended the introduction and utilization of computers have progressive outcomes for young children for instance, greater attentiveness and participation in educational system, improvement of learning outcomes as well as easing of communication.

Conversely to teachers' opinions and beliefs, parents are keen to utilize various materials of digital technologies and majority of researches indicate that there is a robust relationship among parents' diverse habits and effect to their children. Research has indicated that today parents are not using more quality time with their children and the extent of time spent by parents to read to their children is quite minimal (Shin, 2015). Research has indicated that parent technology utilization or attitudes near media to be positively allied with their children's utilization of technology. Additional investigates show that child screening time utilization seems to be an outcome of communication among child and parent features and is extremely influenced by parental attitudes (Genc, 2014). Generally, parents indicated positive attitudes concerning media, to the degree that they believed media experience to be significantly to children's growth, and several parents disagreed with commendations from professional sources about age-appropriate screening time (Vittrup, Snider, Rose, & Rippy, 2014).

Moreover, it is widely accepted in the educational field that children must go through the process of learning to think and thinking to learn. Computer technology use is being witnessed in schools and the world at large. Although research on the use of technology is on the increase, the use of computers by ECD pupils is limited and conflicting reports exist. The purpose of this research is therefore to have an insight on the perceptions of ECD teachers at a local school in

Waterfalls on the usefulness of computers during learning and teaching to the intellectual development of learners.

Research questions

1. To what extent does computers aide to the intellectual development of early childhood development learners?
2. How are computers useful on language and problem solving skills of early childhood learners?
3. What strategies can be done to incorporate computers to early childhood learners in a pre-school setting?

The specific objectives of the study are to:

- i) Determine perceptions of early childhood development facilitators on the effectiveness of computer use on the intellectual development learners in Waterfalls.
- ii) Explore the usefulness of computers on language and problem solving skills of early childhood learners in Waterfalls.
- iii) Develop mechanisms of incorporating computers among early childhood learners at pre-school level.

Delimitations

The study focused on a qualitative study rooted on the phenomenological research design. Heterogeneous purposive sampling type was considered as more applicable. The research targeted (ECD) teachers on their viewpoints regarding incorporating computers in the classroom set up in developing intellectual ability of learners. Participants selected were those who had been directly implementing computer technology at the school that is, part of government e-learning programme and teachers who were computer literate at the school. The study was done at a local school in Waterfalls 13.7 km from Harare central business district, Zimbabwe.

Research methodology

Sample

A total of 5 participants aged 25 years old and above including 2 males and 3 females at a local school in Waterfalls who were purposively selected took part in the study.

Data collection instruments

The researchers employed semi-structured in-depth interviews and the questions were open-ended in nature. The set-up permits the abilities of the investigator to ask the interviewee appropriate research lines of inquiry. Seaman (1987), postulates that the semi structured interview can capture in-depth information and also allows collection of very specific information within a particular area of research. For suitable follow-up inquiries, numerous probes were included into the data gathering tool. Using interviews helped the researchers with the "insider" perspectives allowing direct communication from participants.

Sampling strategy

The research took use of purposive sampling technique. Heterogeneous purposive sampling type was deemed as the most applicable, as the method is used to have an understanding on a wide range of viewpoints in relation to the idea one is interested in studying. In this instance, the study largely focuses on understanding how teachers view the incorporation of computers in the educational setting I developing intellectual abilities of ECD learners. Purposive sampling enabled the researchers to identify participants to partake in the study. Ary, Jacobs, and Sorensen (2010). Stated that the premise behind purposive sampling process is that mistakes in decision making in the selection of participants will counter balance one another.

Research design

This research used a qualitative approach explicitly using phenomenological research design. A phenomenological research design was seen appropriate as it permits combination of instruments comprising of interviews, documents and watching videos to collect data. According to Creswell (2013) Phenomenologists emphasis is to describe what all participants have in common as they experience a phenomenon). In this particular study, the researchers wanted to get an insight regarding usefulness of computers on the intellectual development of early childhood learners. Phenomenological method was thus suitable as it allowed the researchers to gain in-depth understanding of the phenomena under research.

Procedure

The researchers firstly brain stormed to come up with a proper topic for the research. Recent literature was incorporated to come up with the problem statement of the research. Study questions were created and study objectives

were drawn from the research questions. The researchers used a qualitative research approach to fulfill the study. Phenomenological research design was explored for the study. Heterogeneous purposive sampling technique was deemed as most applicable. A sample size of 5 teachers were involved in the research. Participants were informed of the interviews on time. Scheduling of participants' interviews was done in collaboration with the participants so as to avoid inconveniences. Thematic analysis was utilized to analyse data by means of the grounded theory approach and came up with themes which were of great importance in the discussion section. Recommendations were drawn from the findings of the study.

Data analysis

The researchers used qualitative analysis which includes analysis of qualitative data for example, text data from interview transcripts. Once transcribed and translated semi-structured interviews, grounded theory approach was utilized to analyse qualitative data. Grounded theory uses specific coding methods, a procedure of categorizing and grouping text data information into a set of codes (concepts), categories (constructs), and relationships (Glasser & Strauss, 1967).

Research findings and discussion

Enhanced critical skills and development

The findings of the study revealed that at the school, they utilise computers to their ECD learners. Computers aid learners to develop cognitive abilities through being creative and having problem solving skills. If children are nurtured at an early age, it will be easier when they grow up as they will be well versed with computers. Computers also help in improving social interaction among learners as those who are brilliant can scaffold other peers having difficulties. Therefore, learning takes place. This is shown in the sentiments below;

“At our school, we use computers to our students. In my personal view, I think computers are important as they improve cognitive development among our children for example, to be creative and improves problem solving abilities.” ZY
“The school utilize computers starting at ECD level. Children’s lives and future jobs will require them to use technology every day. I feel that computers should be taught from as early age as possible. There are programmes designed for all ages.” AJ

“Yes, as a school we do use computers to our learners. In order to thrive in this 21st century economy, learners regardless of age needs an education system that embrace creativity skills and critical thinking skills and a range of software has been designed with children in mind.” BG

As noted in the background of the study when used correctly, computers might be a valuable instrument to assist young children’s learning and development (Bolstad, 2004). As indicated in the findings of the study, computers bring collaboration as learners can scaffold each other, for those who are more competent to less competent peers.

Socialization

“computers encourage social interaction among children.” CM

“Computers encourage socialization and as children they can scaffold each other for instance, those children who come from wealth families already know how to use these gadgets can help their peers from under privileged society.” DX

According to Giddens (2009), postulates that socialization processes routinely shape personalities of people. As indicated in the findings of the study, computers encourage learners to socialize with each other and encourage collaborative learning. As said by one of the participants, computers facilitate social interaction among learners.

Language and problem solving development

The findings of the study indicated that computers helps to develop language development through phonology, semantics, syntax and pragmatics. Through the use of computers learners are keen to use computers through visualising images, sounds, and colour. Thus, the computer has multiple functions done at the same time. Mathematic is said to be irritable to students but using computers through playing games it will be easier to recall and comprehend concepts. These sentiments were expressed in the following comments;

“Language development is another strength of technology use with young children. Four basic components, that is phonology, semantics, syntax and pragmatics should be mastered at an early stage of schooling. Personally, I look for programs that I can use for 5 year olds and whether it helps to achieve curriculum goals.” ZY

“Children are highly motivated to learn phonics when technology is involved. If technology is used meaningfully and appropriately there will be great gains for

ECD learners. The gains include long term memory, problem solving skills and verbal skills.” DX

“Yes, as a school we do use computers to our learners. Learners develop fine and gross motor skills when they use computers and those with learning barriers who find writing certain letters difficult find it motivating writing using a keyboard. Images, color and sound makes learning enjoyable for most learners.” CM

“Mathematics is boring and tough. Maths might be made easier and pleasant though playing computer games. Given the fact that pre-scholars’ level of conceptions is minimal the child will be grasping concepts and ideas at the same time.” BG

“The use of computers helps in preparing ECD learners on spreadsheets data handling which might be completed in a least amount of time and effort, permitting the learners to interrelate with the data focusing on the interpretation of it. Therefore, learners might understand data more effortlessly, the purpose is to get rid of numerous pointless calculations that may inhibit the student of vital mathematical concepts which are the chief goals of a mathematics lesson.” AJ

“Computers help learner at ECD level to identify images, recognize accurate answers, learning alphabet, correct arrangement of numbers as well as day to day items. This helps boost language and problem capabilities of learners.” CM

“Computers can incorporate various elements for example, text, graphs, animation, video and sound. Thus, computers play a significant role by improving initiatives and activities learners and teaching outcome in the classroom setting.” ZY

As indicated in the background of the study, a number of current researches point out the extraordinary abilities of computers is to increase the learning and additional developmental processes of children (Kalas, 2013). Kalas (2013), posit that study has revealed that digital technologies can bring children with new possibilities to take part in attractive and relevant play, learning, communication, exploration, and growth. This concurs with the findings of the study as teachers indicated that computers are vital in Language and problem solving skills to learners through making inferences from graphs, visual animations, colour, or sounds.

Parents and the government should be brought on board on the importance of integrating computers among ECD learners

The research revealed that learners should be directly involved at the onset rather than for them to be passive. In that way, learner can use computers in a positive sense. The Ministry of Education is being encouraged to rise funding towards technology resources in ECD classrooms. There is need to empower parents through awareness campaigns or during meetings at school to purchase computers for their children at home as it pave way to more practice. Thus, practice makes perfect. This is shown in the following sentiments;

“Children must be actively involved into the activities which they are exposed to. In that manner students might utilise a computer in the positive way. Contrary to passive learning which is enriched by the readymade packages, the student might have improved learning experiences.” BG

“If computers are to be used as tool to aid teaching and learning, the Ministry of Education should increase funding for technology resources in ECD classrooms.” ZY

“Parents must be educated through awareness campaigns or set up meetings at school to empower them on the importance of incorporating technology in schools so that learners will be well versed later in life at work places or furthering their studies because some parents are quit ignorant.” AJ

As shown in the background of the study, usually, parents specified optimistic attitudes about media, to the level that they believed media experience to be meaningfully to children’s development (Vitrup et al., 2014). One of the mechanisms suggested by participants is that parents to be empowered so that they have positive thoughts toward incorporating computers to ECD curriculum. Empowering parents involves having awareness campaigns or during attending school meetings.

Conclusion

Findings in this study shows that teachers are very much optimistic on the use of computers among ECD learners. When planning instruction teachers should consider what they already know and move to the unknown aspects. All teachers should be well versed on integrating technology in classrooms. Potter, Johanson, and Hutinger (2006) said”, selection of technology in early childhood should follow the principles of early childhood practices. Aspects such as software to be used should match the goals of the curriculum first. It was noted from this study that most teachers understand the role of technology in early childhood classrooms.

Most teachers their level of integration of computers in classroom is below average. Teachers should have beforehand an assumed knowledge of ECD learners with regards to technology use and ways to differentiate instruction when using computers because needs of learners are always different.

Recommendations

Based on the findings of the study, the following recommendations have been suggested:

- Teachers should be thoroughly trained on information communication technology (ICT) so that they become competent to teach and scaffold ECD learners on how computers are used for learners to develop intellectually.
- Teachers should be creative enough to incorporate visual images, videos, sounds, colors and so forth in order to draw attention of learners as their level of concentration is quite minimal.
- The government and policy makers should take a holistic approach to move with times as the world of today is based on technology. Hence, the government should unveil funds towards purchasing and maintenance of computers at starting at ECD level.
- Parents should be empowered by the Ministry of Education on the benefits of using computers through awareness campaigns, seminars or during school meetings, the purpose being to let learners to grow with open minds.

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