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INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGY IN PLANNING FOR INSTRUCTION IN EARLY LEARNING IN BUNGOMA COUNTY, KENYA

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ABSTRACT: *There is a growing recognition of the many different ways that Information Communication Technology can contribute to, or transform, the activities, roles, and relationships experienced by teachers and in early childhood education settings. The objective of the study was to examine the integration of Information Communication Technology (ICT) in planning for instruction in early learning in Bungoma County, Kenya. The study was guided by Technological Pedagogical Content Knowledge Framework (TPACK) by Punya Mishra and Matthew J. Koehler's. The study population included Early Childhood Development (ECD) teachers, education officers in charge of ECD in the county and public primary school headteachers. Simple random sampling was used to obtain 177 ECD teachers which is 10% of 1,768 ECD teachers from 884 public primary schools in Bungoma County. The study adopted a descriptive research design. With regard to ICT integration in instruction planning, ECD teachers in Bungoma County perceive that use of ICT is helpful in the pre-planning and post-planning of instruction and the use of ICT helps to make learning concepts more concrete. In addition, the teachers indicated that the use of ICT helps in the preparation of teaching records, such as a teaching plan and a work plan. Teachers, however, perceived that the use of ICT in instruction planning reduced the teacher-learner interaction of the classroom. Providing incentives for a smooth incorporation of technology into education involves students, school managers, curriculum coordinators, and parents to take an active role in assessing the value of curriculum inclusion in the classroom. The study recommends that the government improves the numbers of ICT devices in school to improve on the ratio of the ICT devices per pupil, facilitate ICT training for teachers and lastly, development of local content.*

KEYWORDS: planning, integration, instruction, information communication technology

INTRODUCTION

ICTs refer to the tools that allow individuals and companies to manage their knowledge loads and communication needs digitally through the use of programmable devices (such as computers, cellphones, digital cameras) and networked infrastructure (such as the internet and

other local communication network infrastructures like LANs and WANs) (Booker, 2003). Their ability to increase the ease of communication and enhance collaboration is what makes them so flexible in the development and delivery of learning programs and material, but is also what complicates their integration particularly in early childhood education (Bray, Gray and White, 2004). If there is to be any meaningful headway in the endeavor, it is important that the integration be more holistic and take into account student's previous interactions with technology, the learning outcome goals the system intends because of the importance this has on performance evaluation, and the role that all the pieces in previous traditional learning processes play in the new system. In this way, it should enhance overall ICT competence among learners' way into their lives after school by ensuring that there is a continuity in their safe and healthy interaction with technology in and out of their institutions of learning (Clements, 2002).

Most of the recent literature on the topic also indicates that students who start their interactions with ICTs early in their learning development improves their aptitude for the use of the different systems they encounter outside of school, and more so those they interact with in the work place (Stephen and Plowman, 2002). And, they also suggest that the involvement of more adults involved in the lives of young learners in the process of their education results in significantly higher learning outcomes especially when they involve contextual subjects, such as ICTs. And, while ICT integration in education has been advancing for the past 20 years, most of the development has been geared towards the improvement of the technical aspects of the venture (hardware and software) to make them more accessible (Dunn *et al.*, 2011). As a result, there has been a significant increase in the number of instructional resources that allow learners to indulge at their own pace (Dunn and Stowell, 2011).

Furthermore, there is consensus on undertaking technology in education as a platform rather than as a stand-alone subject because of the convergence effects it has on increasing the ease of their delivery (Kang, Heo and Kim, 2011). As a result, it promises to help teachers and learning institutions to improve the learning outcomes of their students significantly by providing them with the tools to take learning into their own hands and to move at their own pace (Drent, 2015). Also, it allows parents and guardians to take on more active roles in the learning development of their children by allowing them increased access to learning materials, and also allows them to contribute to their development and enhancement and increase learning outcomes further (Grabe and Grabe, 2011).

There are three facets involved in ICT integration in education are dependent on the goals one intends to achieve. First, learning institutions and teachers can develop curricula that teaches students the different tools and how to leverage their features and powers to make their work easier and increase their outcomes. For example, understanding how to use word processors and spreadsheets can help students to make their work more presentable and enhance the accuracy of their computations (Severin, 2010).

Second, different institutions have created learning resources for different applications and operations involving the development and management of both hardware and software resources to create the technical capacity necessary to drive innovation in the sector. For example, major ICT corporations like Microsoft and Cisco have proprietary certification

processes to ensure that they have impeccable support structures for their systems allover the globe. Last, schools can use ICTs to deliver learning material and programs to learners remotely through structured systems such as online learning management systems or through email or document repositories that allow students to download notes and assignments and upload answers and other documents (Drent and Meelissen, 2017). All in all, it is important to note that training teachers in these features of ICTs in education first should be a prerogative of any meaningful integration because of the critical role they play as the lynchpin in the education system (Plomp *et al*., 2015).

Problem Formulation

Other recent international literature reviews of ICT in early childhood education have focused mainly on children's use of ICT in early childhood education (Stephen & Plowman, 2002). This review includes information about children's use of ICT, but takes a much broader view of the role and potential of ICT in the early childhood education sector. According to Keiyoro (2010), there have been concerns raised within the Education sector about how ICT could be integrated into teaching and learning methodology to enhance the acquisition of knowledge and skills in Science. He further notes that no previous research has been carried out on the effective use of computers in teaching and learning the Science curriculum within Kenyan education system; this view is also shared by Gakuu *et al*., (2009). For this reason, Keiyoro recommends (for future research) development of guidelines for ICT integration in teaching and learning; of course, early learning institutes are no exceptional.

This study aims to establish the implications that integrating technology in education can have on learning outcomes and making the country more strategic with regard to the development of its talent supply and solutions to its challenges and problems. It does this by looking at the perceptions and conversations surrounding the paradigm shift necessary to help the country increase the competitiveness of its education system.

Objectives of the Study

This study was guided by the following objective;

i. To examine the integration of Information Communication Technology in planning for instruction in early learning in Bungoma County.

Integration of ICT in Planning for Instruction in Early Learning

Most teachers are wary of the introduction of technology in the classroom because they do not have a lot of faith in the ability of the government to follow through with its implementation to ensure successful rollout. Institutions are also hesitant to pump in the considerable capital investment that the venture requires at the expense of the many more pressing needs that they have currently. These fears stem from the many previous improvements that most governments have intended to make in their education systems but failed to follow through leaving institutions in ruin after spending significant sums of money, and teachers with the impossible tasks of turning around the resulting low learning outcomes of their students (Bredekamp and Copple 1997). Also, the scepticism is advised by the poor structures that governments have used in the past to manage the performance of new projects in education that often sees people who are not involved actively in the process making unilateral decisions that are neither practical nor sustainable. It is especially frustrating when these changes are not accompanied

with curriculum revisions which increases the burden on teachers to pursue an end they do not know using methods they do not have.

As such, to ensure the success of the integration of such programs, strategies should involve all the stakeholders that stand to benefit and hold a stake in the success of education processes and systems (Ertmer, 2005). Also, the implementation processes should take on a top-down approach which increases its ability to develop the user attitudes it needs to ensure process success, and reduces the costs it has to incur in training because of the resulting lower number of people who undergo training. By training teachers, or trainers of teachers, the process also increases its capacity to transmit ICT knowledge to more teachers across more schools exponentially, therefore, ensuring that it build enough capacity in a relatively shorter time (Rodriquez and Knuth, 2000). At the same time, it ensures that the process does not disrupt normal learning activities too much, which ensures the continuity of learning and works to improve overall learning outcomes, and works to help teachers in developing insights into how to merge traditional learning styles with the new digital tools. Also, they help to provide actionable insights into the gaps in both teachers' competence and preparedness to handle the responsibilities of their evolving roles, and in how best to close the infrastructural gaps present in most learning institutions. Moreover, this approach also gives instructors real-life experience in developing contextual integration plans that allow their schools and students to get the most out of the rollout of technology in the classroom.

According to Labbo, Sprague, Montero & Font (2016), proper planning of the process and training of teachers prepares them to anticipate and solve learners' challenges especially where their institutions suffer from a lack of sufficient computer resources. Otherwise, they run the risk of wasting considerable parts of their lessons managing quarrels and fights (referred to as mouse fights) among their students, and not getting much work done. Also, it reduces their ability to enhance equity in the learning environments they are in charge of, therefore, reducing the overall effectiveness of their processes and increases the disruptions learners have to overcome to increase their learning progress. These challenges increase with the reduction of learners' ages, meaning that teachers in the more formative institutions of learning (such as kindergartens and nursery schools) have a heavier burden.

A survey on the use of games to increase learning outcomes indicated that incorporating pictures in the process had more than twice the impact in improving learners, performance. It also established that incorporating games into the learning process improved learners' ability to grasp concepts and retain the knowledge they acquire (Meyer, 2010). Also, it increases their flexibility to assimilate their knowledge contextually and increase their overall capacity to develop practical and sustainable ways to learn. And, since digital platforms provide an easier way to bring these two elements, and so much more, together, it makes a pretty compelling argument for their use in education.

Vocational training also helps teachers to understand the psychology of the different categories of learners they interact with and encounter, and helps them to customize their approaches to increase learning outcomes for all their students. For example, understanding that children's concentration spans increase as they grow older, increases teachers' latitude to customize their

content delivery to accommodate the abilities of all their learners, and ensure that they get the most out of their learning experience (Clements & Nastasi, 1993).

In another study on the influence of technology on math aptitudes, Herron (2010), discovered that students that used online learning resources showed significant improvements in their ability to solve problems they were unable to previously, and even to discuss the procedures involved. He attributed this shift in performance to the setup of online resources that allows learners to consume content at their own pace and speed, unlike the setup of traditional classrooms. These resources also give learners the flexibility to replay, pause, and in some cases even the ability to interact with other learners and the course creator or facilitator, and increase their overall capacity to understand the content more intimately. These resources also give learners the ability to control variables such as volume and speed of speech, therefore, making them more effective for slower learners or those with learning disabilities.

According to Coffey (2012), technology has created tools and platforms that have increased learners' ability to understand new concepts and to assimilate knowledge better by giving the tools to interact with information in real life and in real time. Also, because of the networking feature that is the basis of most devices connected to the internet, learners can communicate and interact with other students from other parts of the globe, therefore, leveraging innate emotions such as pride and competition to further increase their determination to learn and excel. The paradigm shift that these technologies create, reduces the workload teachers have to contend with by increasing learners' investment in their own learning progress.

Baytak and Ayas (2011), established that learners are increasingly understanding the benefits that technology brings to their learning progress and experience, and how the improvements it brings to communication help them to find answers and benchmark their progress against those of their peers across the globe. They also observed that the structure of online learning platforms offers students a more engaging environment because the design incorporates gamification principles that makes learning challenging enough that it encourages higher learning outcomes, but also detailed enough that it improves learners' ability to scale their understanding of concepts.

The self-paced feature of online learning programs increases their capacity to accommodate more categories of learners by giving them more control over how and when they consume content. This feature also makes technology-based pedagogy more suitable for use with learners with learning problems, or other challenges that make it difficult for them to excel in normal settings. Also, the almost limitless space digital platforms provide users, coupled with the abundance of tools they hold increases content creators' latitude to develop several tutorials for a single problem or concept, therefore, giving learners a variety of perspectives from which to learn. These benefits were reported at a school district in California that reported an increase in the learning outcomes from its institutions that host children with special needs (Courduff, 2011).

Technology in the curriculum

Curricula work to ensure that learning programs are beneficial to the overall growth and development of children. They achieve this by testing content and their delivery systems

thoroughly to ascertain if they promote high understanding of their surroundings and the greater world among learners. And, since technology is fast becoming a mainstay of the world in which we live, it makes sense that the structures guiding education should work to incorporate them both in their management and in the learning process itself. However, it is important that there are sound frameworks in place to guide the development of appropriate course materials and structures to increase the benefits that the users of these tools derive from their use (The Kleiman, 2000).

Curricula also lays down structures that ensure that pedagogic processes and resources address learners' evolving needs and predisposition, and increase their level of engagement and interest in the process. Like traditional book-based learning environments and experiences, curriculum for technology-based learning should provide for more mandatory teacher-student interactions in the formative stages, then reduce them as learners grow and become more adept at taking charge of their own learning progress. This technique encourages guided exploration of their environment for younger children and allows them to understand the relationships between objects they see and themselves in the formative years, and encourages more autonomy in the latter years, therefore, giving teachers more time to concentrate on packaging information in ways that make it easier for all students to assimilate (Bredekamp & Rosegrant, 1994).

Psychologically, children have limited attention spans and get tired of activities that are less engaging or harder to accomplish faster that their more mature counterparts in higher classes. Teachers, therefore, provide much needed guidance and act as a beacon that helps children focus on tasks longer by being an authority figure and socializing them to understand responsibility, and by clearing up any challenges and problems they might encounter to help them proceed (Clements & Nastasi, 1993). The same approach should be taken with the teaching and use of ICT in the classroom especially because computer systems are sensitive and can only produce outputs that are as good as the input commands (Davidson & Wright, 1994). As such, teaching them how to be patient when issuing commands prepares children for more beneficial exploitation of computer resources in the future, much in the same way as teaching them to develop healthy learning habits prepares them to consume more knowledge better in their later days. These strategies are especially effective and appropriate for learners in kindergartens and nursery schools or who are between the ages of 3 and 5.

As learners become older and advance into primary school, the role of teachers focuses more on creating an environment where these learners can use their growing communication and reading skills to acquire higher level information and understand how to convert it to knowledge. Learners at this stage can handle a diversity of learning resources and welcome the challenge of longer passages and volumes without a lot of visual cues. The same applies to ICT training and allows teachers to give students more freedom to explore applications on their own and discover deeper functionalities with little instruction and need for active teacher engagement. Easy word processors, for example, are valuable instructional devices when children play with written words. The task of the teacher is to set up the atmosphere and events, to adapt the use of technology to the program as well as to the needs and desires of the child. Teachers are less interested in performing activities and more active in tracking the actions of learners, acting as appropriate to lead and raise questions that stimulate learning (Baytak, Tarman, & Ayas, 2011).

The problems that the increase in the number of tools technology provides does not affect learners only. In fact, the challenges they create affect instructors more by increasing the difficulties they have to go through in curating information and selecting the most appropriate tools that promote inclusion among their learners (Lapadat, 2015). As such, if teachers are equipped poorly, not only will they waste a significant amount of time and develop low impact course material at best, but they can also confuse their students and lower their attitudes toward technology and contribute to their low learning outcomes.

ICTs increase the flexibility with which institutions and teachers can tailor learning programs to increase individual student learning outcomes or create activities and tasks that encourage the cooperation (Kuiper, 2014). Because technology increases the autonomy of functions, it also promotes the evolution of learning styles from the traditional teacher-led-and-dependent types, to the more modern learner-driven models. However, it is important that these developments happen under the strict guidance of sound frameworks to ensure that the processes and rationales advising them are well documented to enhance their replication in other cases, and also to make it easier for review and audit in case something goes wrong or does not go according to plan.

There are four main categories of computer systems that learners and teachers use in their learning processes, and they include informational resources, location systems, constructive tools, and contact systems (Tay & Lim 2003). Informational resources are systems that archive and present a variety of information in all types and formats, and mostly constitute digital repositories. Location systems are platforms that provide immersive content that lets users interact with items in another world, and include games and most recently augmented reality platforms. Constructive tools are the resources that increase users' ability to manipulate data and generate meaningful information that helps them to achieve their goals faster and more efficiently. They mostly include analytics and graphics tools. Contact systems are applications that allow users to communicate among themselves or seek out each other either for social or professional purposes.

Understanding how to use these different tools effectively increases users' ability to develop new insights from ordinary data, and increases the contributions they make to the growth of the body of knowledge (Tay & Lim 2003). They do this by providing users with the means to present the results of the higher-level thinking they achieve from developing effective learning habits and consuming and assimilating a lot of data. Teachers are instrumental resources in learners achieving this level of mental operation because of the experience and knowledge they have on developing healthy learning habits and their capacity to evaluate learners' progress effectively.

According to Hogle (2012), the choice of tool should depend on the need and overall goals learners want to achieve. However, he noted that interactive applications, such as games, recorded higher rates of engagement among learners and increased learning outcomes especially as concerns organization and memory. The immersive environment they create increases learners' capacity to relate with the elements and concepts that make up the learning exercise, and increased their cognitive abilities in the process. Nevertheless, these gains are highly dependent on the reasons these interactive applications are developed and the overall

learning goals for which they are employed. Otherwise, their effectiveness is not guaranteed and their use might actually be counterproductive and affect learners negatively, resulting in the reduction of their learning outcomes. The emerging pattern seems to support the idea that the tools that increase users' ease to manipulate and present information work to enhance their overall cognitive abilities and bring them into higher-level thinking, and those that increase their ease of communication promote the development of more artistic abilities and skills, such as communication and debate (Lapadat, 2015).

Whitebread and Hayes (2013), established that the use of ICTs in the classroom could be broadly categorized into uses aimed at improving cognitive tasks and those aimed at increasing communication. They also argued that since these two features of learning worked in tandem with each other, it was important that learners worked on developing both competencies simultaneously if they wanted to increase their overall performance significantly. Their results indicated that there was high convergence between these two and that they both contributed to the effectiveness of the other in that they increased a learner's capacity to develop great insights, and gave them the ability to communicate these insights effectively such as to create or inspire change in how others operate or think. For example, given a large data file, a skilled learner will use his knowledge of relationships to generate contextual information on different aspects of the population he or she is studying, then use his or her skills in communication to present this information in a format that increases his or her audiences' capacity to assimilate and understand.

According to Schibeci, Cummings, Phillips, Lake, Lowe, and Lee (2010), it is important to train learners on how to establish healthy and high performing learning habits so that they are not distracted by the volumes of content available online. It should also help them to develop the resilience necessary to avoid the temptations created by immoral content and also help them to understand how to protect the computer resources they own and use from attacks. These skills also improve their capacity to focus on their tasks regardless of the distractions that their environment throws at them, which increase significantly when users are connected to the internet. These skills are important and help these learners to be responsible users of technology even when they are out of school and later on in their lives as they work and bring up their own families. They improve users' quality of life by increasing the ability to manage these tools effectively to enhance their social wellbeing instead of being sources of anxiety as they struggle to create plans that enhance balance. This understanding also promotes inclusion by creating platforms where teachers and students can make mutual decisions on whether or not to incorporate these tools into the classrooms and encouraging meaningful contextual discussions about the implications of either decision (Merchant, 2010).

RESEARCH METHODOLOGY

This thesis used a descriptive research design as it allowed the researcher to analyze in detail a single person / case to gain insight into early years learning and teaching. Comprehension of the philosophical paradigm underlying the analysis is very critical and this study adopts a pragmatic framework. The study was conducted in Bungoma County, three counties are bordering it namely: Kakamega in the South, Trans Nzoia in the North, and Busia in the West. It also enjoys a wide shared international border with Republic of Uganda. The study was

guided by Technological Pedagogical Content Knowledge Framework (TPACK) by Punya Mishra and Matthew J. Koehler's. The study population included Early Childhood Development (ECD) teachers, education officers in charge of ECD in the county and public primary school headteachers.

Simple random sampling was used to obtain 177 ECD teachers which is 10% of 1,768 ECD teachers from 884 public primary schools in Bungoma County. This study also used cluster sampling to cluster the 9 sub-counties in Bungoma county. Each sub-county has one ECD education officer and therefore, the study sampled all the 9 officers. Simple random sampling was also used to obtain 9 headteachers, one from each cluster for the purpose of obtaining detailed data from the interviews.

The study adopted a descriptive research design. Self-regulated questionnaires and semi-structured interviews were the main tools of data collection. Using triangulation, the researcher was able to capture a more thorough, holistic and contextual representation and reveal the different dimensions of the phenomena under study. Bias was minimized and validity improved with the use of triangulation. The selection of these tools depended on the nature of the data to be collected, the time for the study, and the study goals. Quantitative data were analyzed using descriptive statistics and presented in both graphical and tabular formats while qualitative data were analysed using thematic analysis.

RESULTS AND DISCUSSION

Integration of ICT in Planning for Instruction

The study sought to identify characteristics of integrating information communication and technology resources into planning for instructions. The study adopted these features based on the notion that it would help in identifying the areas in which ICT is useful in aiding the instructors to develop instructions for learning in early years. The study used a 5 – point Likert type scale of Likert-type scale with a scale:1 - Not at all (N); 2 – Lesser Extent (LE); 3 - Neutral (N); 4 – Larger Extent (L); and 5–Very Large Extent (VLE). The results were reported in frequencies and percentages and aided in interpreting descriptive results of the study.

Table 4.1 sought to determine the integration of ICT into instruction planning by the ECD teacher. The statistics show that instructors require the integration of ICT components in order to pre-plan and post-plan for instruction (Mean = 3.614, SD = 0.952). However, the respondent instructors affirmed that the Use of ICT makes preparation of learning records such as lesson plan and scheme of work more easy (Mean = 3.535, SD = 0.953). Further, the use of technological tools tends to improve the effectiveness of the teachers in delivering instructions (Mean = 3.737, SD = 0.984).

Table 4.1: Use of ICT in Planning for Instruction

Variable	NA %	LE %	N %	L %	VLE %	Mean	SD
ICT helps the teacher pre-plan for instruction before going to class and post-plan for instruction	2.9	5.7	37.1	35.7	18.6	3.614	0.952
Use of ICT makes preparation of learning records such as lesson plan and scheme of work more easy	1.4	12.7	32.4	38.0	15.5	3.535	0.953
Technological tools make the early childhood teachers more effective.	2.9	5.7	28.6	38.6	24.3	3.757	0.984
Technological tools decrease teacher-learner interaction.	1.4	5.8	29.0	40.6	23.2	3.782	0.921
Technological tools help the learner retain new knowledge longer.	4.2	5.6	30.6	36.1	23.6	3.694	1.03
The instructional activities supported by technological tools help improve young children's developmental levels.	2.8	11.1	36.1	31.9	18.1	3.514	1.00
The use of technology positively contributes to young children's development.	4.3	10.0	27.1	48.6	10.0	3.500	0.96
Technological tools are influential in making abstract concepts concrete.	1.4	9.7	27.8	36.1	25.0	3.736	0.99

Source: Research Data (2019)

Regarding the issue touching on how ICT can improve learning activities, the respondent instructors affirmed that the integration of ICT can help in new knowledge retention (Mean = 3.694, SD = 1.03). Further, the use of technological tools to support instructional activities can help in enhancing a child's developmental needs (Mean = 3.514, SD = 1.00). Thus, the respondent instructors affirmed that the integration of ICT into early learning centres can positively contribute to the development of the young child (Mean = 3.500, SD = 1.00). Lastly, the respondents affirmed that the integration of ICT in learning can aid in making abstract concepts concrete (Mean = 3.736, SD = 0.99).

From the findings, teachers in Bungoma County affirm that the use of ICT is helpful in pre-planning and post-planning of instruction and the use of ICT helps to make learning concepts more concrete. In addition, the teachers indicated that utilization of ICT helps in preparation of teaching records such as lesson plan and scheme of work. However, the teachers perceived that use of ICT in planning for instruction reduced teacher-learner interaction the classroom.

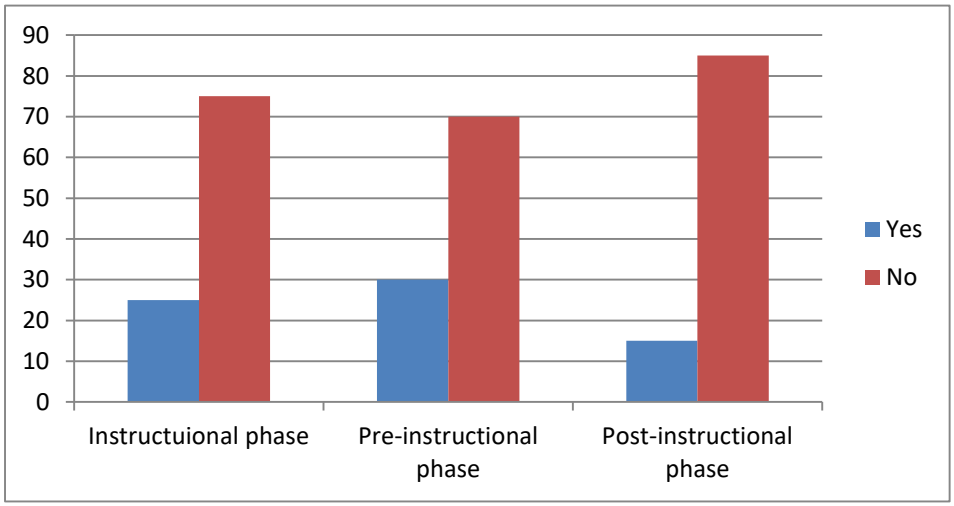

Figure 4.1: Use ICT in Instruction

Figure 4.1 indicate that majority of the respondent do not use ICT in instruction. This is reflected by 25% of respondent use ICT in actual interaction in classroom activities (instructional phase), 30% use ICT in pre-instruction phase (planning for instruction), 15% use ICT during post-instruction phase. Providing opportunities for a seamless integration of technology into instruction requires teachers, school administration, technology coordinator, and parents to play an active role in determining the importance of technology integration in classroom. Ertmer (2005) suggests that in order to affect teacher beliefs, research needs to be conducted where teachers have first-hand experiences with technology, where teachers observe successful implementation, and where change occurs through professional learning communities.

Basing on the interviews, the headteachers and ECD education officers in Bungoma county perceived that technology is very important for planning for instruction in early years education. However, the interview revealed that most teachers expressed concern about competing instructional responsibilities and their technology integration efforts. Teachers need time to plan lessons, time to teach and time to assess and provide feedback to learners. When a teacher creates intellectually engaging technology activity using any piece of software or object, it will promote children's learning and development (Bredekamp and Copple 1997).

CONCLUSION AND RECOMMENDATION

With regard to ICT integration in instruction planning, it's concluded that ECD teachers in Bungoma County perceive that ICT use is helpful in the pre-planning and post-planning of instruction and the use of ICT helps to make learning concepts more concrete. In addition, the teachers indicated that the use of ICT helps in the preparation of teaching records, such as a teaching plan and a work plan. Teachers, however, perceived that the use of ICT in instruction planning reduced the teacher-learner interaction of the classroom. Providing incentives for a smooth incorporation of technology into education involves students, school managers, curriculum coordinators, and parents to take an active role in assessing the value of curriculum inclusion in the classroom.

Based on the findings, the study recommends that teachers should be provided with in-service training on how to use different technology applications, devices and approaches to managing technology in the classroom. Finally, the ministry of education together with the county government to recognizing the critical role of technology in teaching and learning. Provision and facilitation of ICT training and induction of educational software training for instructors in order to improve their ICT capabilities and usage. This can be achieved through regular seminars and workshop training on the type of educational software and the appropriate devices.

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