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FRONTIERS IN EDUCATION AND TRAINING RESEARCH AND INNOVATIONS FOR ECONOMIC RECOVERY

## INFLUENCE OF IMPROVISED INSTRUCTIONAL RESOURCES ON TEACHING OF EARLY CHILDHOOD DEVELOPMENT AND EDUCATION LITERACY SKILLS IN KIAMBAA SUB-COUNTY KIAMBU COUNTY KENYA

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### **ABSTRACT**

The purpose of this study was to establish the influence of improvised instructional resources on teaching of Early Childhood Development and Education (ECDE) literacy skills. This was as a result of limited empirical evidence on the extent and influence of use Improvised Instructional Resources (IIR) on instructional process generally and among ECDE learning specifically. This is particularly important for developing countries such as Kenya with limited financial resources for provision of standard resources. The study adopted descriptive survey research design. A census survey was conducted to collect data from 130 ECDE teachers using questionnaires and classroom observation checklist. Descriptive and inferential statistics were used to analyze quantitative data with the aid of SPSS version 25.0 while qualitative data was analyzed thematically. Findings indicated that most teachers engaged learners to interact freely with improvised instructional resources (IIR), the most commonly used IIR being charts and flash cards which are visual aids. Chi-square results  $\chi^2(1) = 33.69, p < 0.001$  indicated a significant influence of IIR on teaching of literacy skills, Contingency Coefficient measure of association (CC) illustrating a 48.1% variation in teaching of the literacy skills based on use of IIR. The study therefore recommends that ECDE teachers utilize a variety of IIR during teaching and learning of literacy skills to provide multi-sensory learning experiences to the young learners. **Keywords:** Literacy skills, Improvised instructional resources and Early Childhood Development and Education.

### **INTRODUCTION**

Provision of quality education is essential in ensuring equity and equitability in every society. In appreciation of this, United Nations Conventions on the Rights of the Child (UNCRC, 1990) recognized and enshrined education as a fundamental right of all children. A consensus was also reached at the World conference on Education for All (EFA) in Jomtien, Thailand (1990) on providing educational services to every child. In addition, the World Education Forum (WEF) in Dakar, Senegal in 2000 and Sustainable Development Goals (SDGs) in September 2015 also emphasized on providing education to all including the vulnerable children. The instruments jointly advocate for the right to an equitable and inclusive education system and provision of continuous support to learners throughout their schooling to promote and sustain development.

In response to these initiatives, most governments, Kenya included, committed themselves to provide high standards of educational practice as a right for all their children at the basic education level. In Kenya, this commitment is enshrined in the government's policy documents for education including The Kenyan constitution, Sessional Papers and the Education Act (Kenya Education Act, 2013). For instance, the Constitution of Kenya (2010) articles 43 and 55(a) states that education is a right of every Kenyan child. Attainment of this policy involves provision of compulsory and free education of all children at the elementary level although attainment of this at the ECDE level remains a challenge.

Early Childhood Development and Education (ECDE) refer to a program which provides young learners with a motivating environment that encourages wholistic development. It is a service that offers diverse programs that broadly combine education and care in one coherent experience for young learners (ECDE Policy Guideline, 2006). This is achieved through provision of resources, care and first-hand experiences to the young children. This is achieved through provision of resources, care and first-hand experiences to the young children. Shonkoff and Richmond (2009) noted that allocating and providing both financial and human resources in pre-school education lays a firm basis for a sustainable and prosperous community. Studies on pre-school investments as observed by Heckman (2004) shows that learning during the early years is important as it lays a foundation for learning during the middle or high level. Hence, high quality investment in education has lasting effects on learning especially considering the fact that it is in pre-school level that children learn fundamental skills that form the foundation for further learning (Skinner, Hyde, McPherson & Simpson 2016). These fundamental skills forming the foundation for further learning include numeracy, life skills, environmental skills and literacy skills.

The ECDE curriculum is designed with reading and writing at its heart because of the ability of learners to grasp such concepts this early in their development (ECDE Policy Guideline, 2006). Literacy skills are gained by involving ECDE learners in literacy activities such as tracing letters, listening to stories, reading picture books, news telling among others. Literacy activities are among the major learning areas offered in all ECDE set-ups. They aim at equipping learners with skills such as reading, writing, listening, speaking, comprehension, vocabulary and spelling (ECDE Policy Guideline, 2006). Literacy refers to the ability to use language proficiently especially while reading or writing. UNESCO, 2004;2017 cites that literacy involves the creation, interpretation, communication, identification and understanding of a text associated with varied contexts.

The National ECD Policy Framework (2015) cites that to succeed in education, an enabling quality environment which is learner friendly need to be created. This includes accessibility and use of relevant instructional resources. According to Engida (2012) there are two types of instructional resources: conventional (standard) and improvised. Conventional resources are imported or factory made and they are designed to serve a specific purpose during instruction. They include text books, stencils, photographs and electronic media. Standard resources lack versatility in their use as they may not be prepared to serve various purposes such as photographs. The teacher may not have the option of customizing the resource to fit the lesson objectives. For example, while introducing letters to learners in Kenyan ECDE centers, a procured chart with 'A' for 'alligator', 'Y' for yacht may not suit the learners needs and interests. On the other hand, a chart that is made from locally available materials will portray things that are familiar to the learners and can be observed in the surroundings such as 'A' for Ant, 'B' for Ball 'C' for Cat among others. This justifies the need to develop various ways by which locally available materials can be used for improvising instructional resources.

Improvised instructional resources (IIR) refer to a range of teaching and learning materials collected from the surroundings with familiar content and with a high application to the syllabus. They are also known as self-made teaching and learning resources. Examples include flip charts, mystery bags, flashcards, sand paper sounds. Due to socio-economic factors such as insufficient funds, teachers and learners face several challenges during acquisition of standard instructional resources required for use during literacy activities. This therefore, necessitates the need for improvised resources to serve as substitutes for the scarce standard resources.

Improvisation refers to the process of selecting and development of appropriate IR for instructional purposes to facilitate the achievement of the expected learning outcomes (Enigda, 2012). This means that the teacher improvises instructional resources based on the specific lesson objectives. Therefore, IIR helps in meeting the teacher's unique instructional needs. Improvisation allows learners to participate in developing resources and this promotes skills such creativity and innovation which promote learning in all areas. In the same breath, improvisation help instructors to utilize affordable, effective and efficient pedagogies of facilitating the instructional experiences thus making it easier for learners (Attah, 2014). Improvised instructional resources are collected from the surrounding environs whether at home or school. According to KIE (2008) improvised instructional materials helps young children to cope with schooling once they find familiar objects in school. This makes learning relevant as they connect new knowledge acquired at school to their own daily life experiences.

Resources for instruction in pre-school are carefully chosen, collected and prepared prior to the lesson since pre-school

learners have very short attention span to sit and wait for the teacher to prepare resources during the lesson. This is achieved through lesson planning which is done the day before and it allows the teacher to gather the necessary resources. However, Abdullahi (2015) noted that accessibility of materials is highly dependent on the teacher's own usage habits and the available storage of materials after use or after improvisation. The use of instructional resources involves two processes; resource preparation and resource implementation. Resource preparation deals with what the teacher needs to prepare before teaching while resource implementation is the actual use of resources in class (Byrd, 2001). On the other hand, Graves and Bonnie (2003) posited that resource implementation refers to the actual use of resources in class by both the teachers and the learners. It includes resource organization and the degree of use of various types of instructional resource

According to Bolick.C., Berson, M., Coutts, C. & Heinecke, W. (2003) productive teaching process is closely related to the use of teaching resources. Bolick et al. (2003) argued that "... while some educators have been fascinated by the potential of instructional materials to enhance teaching and learning, teachers lagged behind in using instructional materials during teaching and learning. Others expressed doubts that instructional materials will ever incite teaching reform on participation". Instructional resources are crucial elements of teaching-learning process since they not only complement instruction but also supplement its process (Karak, 2007). Therefore, use of instructional resources is necessary for effective and efficient instructional process.

Instructional resources have been shown to play critical role in teaching and learning. For instance, Landu (2010) cites that instructional resources perform significant roles such as providing diverse multi-sensory experiences, reinforce and concretize the teacher's oral presentations thus improving the learner's understanding of abstract and complex concepts. Use of the sense of sight, touch, smell and hearing are the features of improvised instructional resources and are the gateways of children's instruction in the 21<sup>st</sup> century (Adipo, 2015). In addition, Thungu (2008) stated that instructional materials help in content delivery, cater for individual differences and make the learning process more efficient. The utilization of instructional resources during the instruction process encompasses the sense of hearing, sight as well as touch. Based on the educational practices as cited by Eneh (2004) the Chinese proverb says that; I hear-I overlook, I see-I remember, I do-I comprehend. This saying additionally underscores that the learner should take an active part during reading and writing activities in the classroom.

Research has previously endeavored to examine the relationship between the use of IIR and management of instructional process. At the global level, existing literature show studies linking use of IIR with learning activities. For example, Culclasure. B., Fleming. D. & Riga. G. (2018) undertook a study to assess the effect of the Montessori curriculum on learners' achievement among public schools in South Carolina, USA. The study compared the Montessori and non-Montessori learners' achievement in various aspects including numeracy, literacy and life skills. The findings indicated that Montessori learners performed better in all activities. The study attributed the huge discrepancy in achievement to the varying classroom environment in terms of availability of resources. The Montessori classes had sufficient and diverse materials for use during the instructional process. In a study on methods of teaching math's lessons in USA, Leone. P., Wilson. M. & Mulcahy. C. (2010) posits that the use of instructional resources influences the learner's interest to actively participate in mathematics activities. The study observed that use of instructional resources promoted students' active participation in classrooms and promoted inclusion of all learners.

Research done in Nigeria by Fakomogbon. M., & Adegbija M. (2006) posited that instructional resources have the capacity to influence the motivation, perceptions and attitudes of the learners. IR helps the teacher to achieve the following during instruction: motivation and attention, classroom control, content delivery, retention, recalling and evaluation of performance. To concur these findings, Kadzera (2006) cited those instructional resources are seen as significant elements during instruction. Utilization of IR in teaching promotes effective learning since learners are active participates in the instructional process not just mere recipients of knowledge.

While studying on the role of instructional materials as a tool of effective early childhood education in Agona region, central Ghana, Frimpong (2021) observed that most public ECE center lacked adequate instructional resources. The inadequacy of instructional resources resulted to minimal use of IR during the teaching and learning process. This implies that when instructional resources are unavailable, teachers and learners cannot utilize them during the instructional process and this affects the quality of early childhood education.

A study conducted in Winneba, Tanzania by Ghanney (2008) sought to determine the extent to which instructional resources were utilized during instruction primary schools. The study findings indicated that eight out of ten teachers in primary schools used only text books and chalkboard during the teaching and learning process. Instructional resources were unavailable for use during instruction. The study observed that the unavailability of IR resulted to teachers using only chalkboards and text books as the only IR and this led to reduced interest in learning activities thus poor academic performance

In Kenya, Muiruri (2014) carried out a study to establish the effect of instructional materials on number writing among ECDE learners in Kamukunji District. The researcher adopted quasi experimental design. Learners who utilized instructional materials during number writing exercises scored higher marks than their counterparts in the control group. The children's skills in writing numbers, number sequence, number shaping, number sizing and number alignment performance improved tremendously due to active involvement in activities that used instructional materials. The children's level of number reflection errors, number omission, number sizing, number spacing

significantly reduced. The use of instructional materials helped the children use their senses and develop children with motor muscles and eye-hand coordination. To assert these findings, Chepkoech (2019) conducted a study on the effect of instructional resources on learner's early literacy performance in public ECDE centers in Kaduyi sub-county Bungoma county. The study employed descriptive survey design and it was based on Jean Piaget's constructivist theory. The study concluded that the use of instructional resources had a positive effect on the learners' acquisition of literacy skills.

In addition, Gitau (2013) carried out a study to establish the impact of instructional resources on the implementation of ECDE science curriculum in Naivasha Sub County, Nakuru County, Kenya. The study used the descriptive survey research design. The target population consisted ECDE teachers and ECDE learners. The researcher observed that availability and use of instructional resources had a positive impact on the effective delivery of ECDE science curriculum. In the same vein, Wambui (2013) conducted a study on the effect of utilization of IM on learner involvement in environmental activities in pre-school in Kiine Zone, Kirinyaga County, Kenya. The study discovered that instructional materials were not utilized effectively in teaching and learning due to overcrowded classes and this affected how the learners participated in science activities.

Similarly, Okune, Gudo and Odongo (2016) conducted a study on the impact of instructional resources on early childhood learners' oral skills in central zone Kisumu County Kenya. The target population consisted of 42 headteachers, 126 teachers and 3180 learners. The study findings indicated that the use of IR significantly increased the learners' performance in various learning activities such as recognition of letters, repetition of words, and the ability to write dictated words. The learners' performance improved from 11% to 18%. The findings corroborate with Omaiyo (2013) who opined that good instructional materials stimulate the thinking of children and motivates them to participate in classroom activities thus improved performance. From the foregoing, it is evident that scarce literature on the influence of use of improvised instructional resources and teaching of ECDE literacy skills exists. Thus, this study sought to contribute by attempting to provide empirical evidence on the existing relationship between the elements. The study sought to establish the influence of use of IIR and teaching of ECDE literacy skills with a specific focus on public ECDE centers in Kiambaa Sub-County, Kiambu County Kenya.

## **THEORETICAL FRAMEWORK**

The study was guided by the constructivist theory based on the work of Jean Piaget. Constructivism is a principle in ECDE which views learners as active participants in the process of constructing knowledge and meaning rather than mere recipients of knowledge. The child experiences the physical environment through interaction with concrete objects which helps the child to conceptualize, develop creative thinking and problem-solving skills. The child therefore acquires skills that help in solving complex. Jean Piaget's cognitive development theory of learning indicates that mental abilities increase with age following an innate maturational schedule. There are two mental processes helps in promoting cognitive development in children. The cognitive processes that complement each other and they include assimilation and accommodation. In assimilation, learners use what they already know as a framework for assimilating new experiences through the use of IIR from the local environment. On the other hand, accommodation involves the modification of what we already know so that new knowledge can fit in better. Therefore, for children to assimilate new information, they should be encouraged to carry out hands-on activities and actively explore their environment (Onwioduok, 2012). This implies that children should be given variety of IIR to enable them acquire literacy skills on their own.

The theory comprises of four stages of cognitive development including sensory-motor (0 to 2 years), pre-operational (2 to 7 years) concrete operational stage (7 to 11 years) and formal operational (12 and older). This implies that ECDE teachers should use instructional resources which are developmentally appropriate for the learners of a particular age. When the IIR are too complicated for the learners, the learners easily get frustrated while too simple IR may lead to boredom among learners. Therefore, learning materials should be matched with the learner's developmental age if the learners are to benefit. Piaget also perceived children as individuals. The theorist cites that children are born with individual differences and therefore, each child should be attended to as an individual.

According to Piaget's theory, ECDE learners are in pre-operational stage. Learners at this age have difficulties in thinking abstractly or doing mental manipulation exercises. They have to be practical activities by availing IIR to them and this will assist them to understand complex concepts during the learning process. Piaget (1980) posits that learners at

pre-operational stage are self-centered. This means that children at this stage have difficulties with sharing materials during teaching and learning. Therefore, ECDE teachers should provide adequate IIR during instruction to minimize conflicts as the children fight for the insufficient IIR. Once the instructional resources are adequate, lessons become enjoyable and learner's attention is sustained throughout the lesson. The theory also posits that symbolic and abstract concepts should be taught after the learners have had several concrete experiences through experiential activities hence making abstract thinking easier for the young minds (Rotumoi & Too, 2012). The teachers' role therefore, include provision of IR, catering for individual differences, providing varied activities and ensuring that all learners are safe and they fully participate in learning activities.

### Research Questions

The study sought to answer the following questions.

What is the extent of use of improvised instructional resources during the teaching of literacy skills in ECDE classrooms in Kiambaa Sub-County?

What is the influence of improvised instructional resources on the teaching of literacy skills among ECDE learners in Kiambaa sub-county?

### METHODOLOGY

The study adopted descriptive survey research design. Census survey was used to include 130 ECDE teachers from 26 public ECDE centers in Kiambaa Sub- County. Data was collected through questionnaires and classroom observation checklist. Qualitative data obtained was analyzed thematically while quantitative data was screened, coded and analyzed with the aid of SPSS version 25.0 computer software using descriptive and inferential statistics Descriptive statistics such as frequencies and percentages were applied while inferential analysis involved Chi-Square analysis to establish the influence of IIR on teaching of ECDE literacy skills.

### Study Variables

The study utilized the following variables:

*Extent of use of IIR* was assessed using a set of twelve Likert scaled statements where 1=None to 5=Very great extent. The variable attained reliability index of 0.859 thus was found to be reliable for use.

*Teaching and Learning of Literacy skills* was assessed using a set of six Likert scaled statements where 1=None to 5=Very great extent. The variable attained reliability index of 0.673 thus was found to be reliable for use.

### Results and Findings

Information on respondents' demographics illustrated that all ECDE teachers were females, a majority (42.0%) being middle aged (30-45 years old) who were trained as ECDE teachers with at least 5 years teaching experience. Findings imply that female teachers are preferred as teachers for young learners due to their inherent caregiving qualities of compassion, politeness and warmth toward young children compared to their male counterparts.

### Extent of Use of Improvised Instructional Resources

The study sought to inquire on extent to which ECDE teachers used IIR during the teaching of ECDE literacy skills. The findings are presented in Table 1.

Table1: Extent of Use Improvised Instructional Resources

Statement	S		V	To	
Teachers engage learners to interact freely with IIR	3	1	1	6	10
Teachers and learners use IIR to demonstrate concepts during literacy activities	2	1	2	5	10
Teachers use IIR to assess learners during literacy activities	1	3	3	1	10
Teachers involve learners in literacy projects using	7	1	3	4	10

Key NE-No extent SE-Small extent AE-Average extent GE-Great extent VGE-Very great extent.

Data obtained show that majority of teachers (84.9%) engaged learners to interact freely with IIR during the teaching and learning of literacy skills. Similarly, teachers and learners used IIR to demonstrate concepts during literacy activities at a great extent (83.1%) while most teachers (73.2%) involved learners in literacy projects using IIR.

However, teachers who used IIR during assessment of learning during literacy activities were slightly below average (48.2%). Findings indicate that most teachers used IIR during the teaching and learning of ECDE literacy skills. The resources were frequently used for teaching, demonstrations, projects and assessment of learners. This is in consistence

with Omwonyo (2003) who asserted that instructional resources enable the teacher to simplify complex content with ease thus enhances learner's understanding. Similarly, Fuller (2016) cited that availability of appropriate instructional materials facilitates learner-centered instructional process which equips the learners with exploration and self-discovery skills which enables them to construct their own knowledge and skills.

In addition, the respondents were also asked to indicate the extent to which they used the specific instructional resources during the teaching of literacy skills and the responses are presented in Table 2.

Table 2: Extent of use of Specific Types of IIR

Type of IIR	SE	A	G	VGE	Tot
Sandpaper sounds	31.3	7.	2.	2.7	100
Letter models	31.3	19	19	7.1	100
Letter stencils	41.1	9.	4.	2.7	100
Flash cards	9.8	8.	35	44.6	100
Charts	2.7	4.	17	75.9	100
Pocket boards	29.5	20	9.	1.8	100
Voice recording	56.3	9.	0.	0.0	100
Video recording	29.5	2.	0.	1.8	100

Key: NE-No extent SE-Small extent AE-Average extent GE-Great extent VGE-Very great extent.

Data obtained show that sand paper (5.4%), letter stencils (7.2%), voice recording (0.9%) and video recording (2.7%) were used by very few teachers to a great or very great extent. Resources such as letter models (26.1%) and pocket boards (11.6%) were used by few teachers to a great or very great extent. However, flash cards (80.3%) and charts (92.9%) were used by a majority of the teachers in teaching literacy skills to a great or very great extent. This means that the most commonly used IIR in teaching literacy skills were flash cards and charts. Data obtained from classroom observation indicated that voice and video recordings were very few in most schools thus their low use.

The findings are consistent with those of Gitau (2013) who carried out a study to establish the link between instructional resources and delivery of ECDE science curriculum in Naivasha Sub County. The study used the descriptive survey research design with a target population comprised of ECDE centers, ECDE teachers and ECDE learners. The researcher concluded that availability and use of IR is important for successful science lessons. On the contrary, Kitheka (2005) observed that schools with adequate materials may not always use them efficiently and thus fail to improve the learner's achievement in education. However, schools with insufficient materials may utilize what is available thus improving the learner's academic achievement. Therefore, teachers and learners should be able to use the available resources maximumly so as to adequately improve the learners' academic achievement. These findings affirm the fact that ECDE teachers should not only improvise instructional resources, but should also use them during teaching and learning in all activity areas.

### Influence of Improvised Instructional Resources

The second objective sought to establish the influence of use of IIR on teaching of literacy skills. To achieve the study objective, cross-tabulation of the data on extent of use of IIR and teaching of literacy skills was done. The results were as presented in Table 3.

Table 3: Influence of IIR on Teaching of ECDE Literacy Skills.

Teaching of literacy skills		Negative	Positive	Total
Extent of use of IIR	Low	43.8%	17.0%	60.7%
	High	6.2%	33.0%	39.3%
Total		50.0%	50.0%	100.0%

Generally, more respondents (60.7%) reported low extent of use of IIR compared to those reporting high extent of use of IIR (39.3%). Cross tabulated results show that very few respondents (6.2%) with high extent of use perceived that influence of IIR on teaching of literacy skills to be negative compared to those who reported low use (43.8%) of the IIR. However, about twice as many respondents (33.0%) who used the IIR highly reported their positive influence on teaching of literacy skills compared to those indicating low use. Chi-Square results in Table 4 provides the interpretation of this observation.

Table 4: Chi-Square Results on the Influence of IIR

Value	d	Sig.	CC
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<b>Pearson Chi-Square</b>	33.690 <sup>a</sup>	.000	.481
<b>Continuity Correction<sup>b</sup></b>	31.481		
<b>Likelihood Ratio</b>	36.141		
<b>Fisher's Exact Test</b>			
<b>Linear-by-Linear Association</b>	33.389		
<b>N of Valid Cases</b>	112		

Chi-square results  $\chi^2(1) = 33.69$ ,  $p < 0.001$  indicated a significant influence of IIR on teaching of literacy skills. Contingency Coefficient measure of association (CC) illustrated a 48.1% variation in teaching of the literacy skills. Findings imply that use of IIR influences the teaching of ECDE literacy skills. These findings were consistent with the findings of a study conducted by Culclasure et al. (2006) which observed that Montessori learners performed better in all activity areas as compared to those who attended non-Montessori schools. The study attributed the huge discrepancy in achievement to the varying classroom environment in terms of availability of assorted resources. The study findings also agree with what Fakomogbon et al. (2006) concluded who posited that instructional resources have the capacity to influence the motivation, perceptions and attitudes of the learners. IR helps the teacher to achieve the following; improving learners' motivation and attention, maintaining classroom control, enhancing lesson delivery, boosting retention and recalling and facilitating evaluation of learners.

## CONCLUSION

Based on the findings, a majority of teachers engaged learners to interact freely with IIR. Specifically, flash cards and charts were reported to be the most commonly used IIR. It can therefore be concluded that visual resources such as flashcards and charts are the most commonly integrated IIR in teaching literacy skills among ECDE teachers in Kiambaa Sub-County. In addition, the study sought to establish the influence of improvised instructional resources on teaching of ECDE literacy skills in Kiambaa sub-county. Inferential analysis based on Chi-Square indicated a significant influence of IIR on the teaching of ECDE literacy skills. It can therefore be concluded that the use of IIR significantly influences the teaching of ECDE literacy skills in Kiambaa sub-county. The study therefore recommends that public ECDE centers should be equipped with adequate instructional resources to ensure that every learner has access to instructional resources thus increasing the frequency of interaction with the resources. ECDE teachers should also utilize various types of improvised instructional resources during teaching and learning of literacy skills. Specific attention should be given to utilization of concrete, audio and audio-visual in addition to visual resources. This will provide multi-sensory learning experiences to the young learners and improve the teaching of ECDE literacy skills.

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