

Efficacy of Learning Materials on Learners' Readiness for Primary Education in Kenya

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ABSTRACT

The early years of a child are of utmost importance in terms of development since they provide substantial prospects that influence subsequent achievements in academia. The field of early childhood education (ECE) has significant importance in equipping young children with the necessary skills and knowledge to succeed in primary academic settings, achieved via the implementation of well-designed curricula. Nevertheless, empirical research indicates that early childhood development and education (ECDE) learners frequently commence grade one without enough preparation, primarily as a result of challenges related to insufficient resources, concerns regarding educational quality, and a lack of relevance. Grounded in Gross' theory of curriculum implementation, this research examined how educational resources contribute to the implementation of the Early Childhood Development and Education (ECDE) curriculum in Kenya. The study utilized a descriptive survey approach and a mixed (embedded) research paradigm. The participant pool included a broad group, including 3 Civil Society Organizations (CSOs), 11 Section Heads, 14 ECDE centres-in-charge, and 150 ECDE instructors. The determination of the sample size, consisting of 178 individuals, was conducted utilizing Yamane's formula. This process involved the utilization of purposive, stratified, and simple random sampling procedures. The data collection methods employed in this study encompassed interviews, questionnaires, and focus group discussions (FGD). The qualitative data was subjected to content analysis and thereafter presented in a narrative format, while the quantitative data underwent examination using descriptive statistics. In the context of inferential statistics, parametric tests were employed. Logistic regression analysis determined the impact of educational resources and intervening factors on fundamental reading skills. The model, with a p-value of 5.865, significantly explained 59.9% of literacy skill variability, correctly classifying 68% of instances. Intervening variables increased the odds of learner readiness by 1.314. The obtained Sig values of .011 and .030 for intervening variables and educational resources, respectively, were below a = .05, leading to the rejection of the null hypothesis and indicating a significant effect on ECDE pupils' preparedness for primary schooling. Recommendations include government-led training for educators on resource utilization and increased support for universities to acquire high-quality textbooks, ensuring comprehensive instructional strategies for teacher trainees.

Keywords: Assessment Strategies, Curriculum Implementation, Efficacy, Learners' Preparedness

I. INTRODUCTION

The early years of a child are critical to their development because they offer significant opportunities that impact their future academic success. However, empirical research shows that learners in early childhood development and education (ECDE) often enter grade one without adequate preparation, mainly due to issues with limited resources, worries about the quality of education, and lack of relevance (Vecchi & Giudici, 2004; Chepkewis, 2015; Resnick, 2017; Steiner, 2017). As a result, the goal of the present paper was to evaluate the effectiveness of learning materials and their impact on pre-primary learners' preparedness for primary school education in Sub-County of Hamisi, Vihiga County in Kenya.

Learning resources are essential to education at all levels, but they are especially important for preschoolers, where they help students grasp concepts better through practical and visual experiences (Shankar, 2020). Through first-hand, developmentally appropriate experiences and the depiction of events, these resources help youngsters acquire symbolic knowledge and give them opportunities to learn more.

For pre-primary education, the Ministry of Education, Vocational and Technical Training (MoEVT, 2008) suggests a variety of teaching materials, such as flashcards, pictures, calendars, actual items, money, fruits, balls, films, recordings, soap, instruments, and papers. The proverb "If I hear, I forget; if I see, I remember; if I do, I

understand" (Chepkewsis, 2015) is supported by the fact that visual displays and models assist pupils in forming mental representations of items and concepts.

Ever since Friedrich Froebel founded kindergartens in Germany in the 1800s, educational materials have been an integral part of education. According to Vecchi and Giudici (2004), educational philosophies like Reggio Emilia, Montessori, and Steiner emphasize the use of tactile things in stimulating play and imagination. Children's engagement with real objects at different stages of mental development is another important aspect of Jean Piaget's developmental paradigm.

Educational resources are more than just passive means of self-expression; they are active players in children's creative learning. Different materials offer a variety of learning opportunities, enabling kids to investigate and comprehend the properties of different materials. What and how much students learn is greatly influenced by the caliber of the instructional resources they use (Resnick, 2017; Steiner, 2017). When realia, such as commonplace objects, are used effectively, the learning process is improved and becomes more remembered and interesting for pupils.

In the Kwanza Sub County of Trans-Nzoia County, Chepkewsis (2015) focused on variables influencing the activities of pre-educators in the classroom. The study takes into account a number of variables, such as student enrollment, classroom setup, educational materials, parent expectations, and exam worries. Chepkuto et al. (2018) conducted another study that emphasizes the benefits of having enough and a variety of educational tools in preschool classrooms, since these resources help pupils become more focused, engaged, and motivated.

Azikiwe (1998) highlights the significance of using educational materials appropriately, proposing that they should be accurate, age-appropriate, subject-aligned, and teacher-previewed. Realia, such as physical objects, can assist students connect words or concepts with real-world objects and increase the recall of what they are learning (Chesworth, 2016). Incorporating students into tasks associated with the objects also improves their engagement and comprehension.

Information retention can be enhanced and auditory learners can benefit from sound aids such as music and mental mnemonics (Gardner, 1983; Croft, 2002). Students can become more engaged and have a better overall learning experience when teachers use unexpected and novel sound exercises. A variety of teaching techniques, such as hands-on, visual, and aural approaches, are incorporated to accommodate students' varying learning preferences.

II. METHODOLOGY

The present study employed a descriptive survey research methodology to thoroughly investigate the research inquiry. It utilized a mixed-methods approach, including both quantitative and qualitative data gathering techniques. These techniques included the use of interview schedules, questionnaires, and guidelines for conducting Focus Group Discussions (FGDs). The utilization of mixed (embedded) techniques facilitated a comprehensive comprehension of both quantitative and qualitative elements pertaining to the research issue.

The research study involved a sample size of 772 individuals, consisting of 6 Civil Society Organizations (CSOs), 116 Section Heads, 150 centers-in-charge responsible for supervising the Early Childhood Development and Education (ECDE) curriculum in their respective centers, and 500 ECDE instructors who were responsible for executing the curriculum to prepare pupils for formal schooling.

In order to enhance the dependability and precision of the findings, a range of research instruments, including questionnaires, interview schedules, and focus group discussions, were utilized in accordance with the guidelines proposed by Creswell and Plano Clark (2018). The instruments were carefully chosen in a strategic manner in order to cross-validate the data and acquire a comprehensive understanding of the research subject.

The sample size for this study was determined using Yamane's approach (Yamane, 1967), which yielded a sample size of 178 participants. The application of the proportional stratification technique ensured that the sample size for each stratum was proportionate to the population size of that stratum. This methodology improves the inclusiveness of the sample and guarantees that every stratum is sufficiently represented in the research.

III. FINDINGS AND DISCUSSION

2.1 Effect of learning resources in promoting learners' readiness for primary education

The objective of this study was to determine the extent to which learning resources were used in promoting learners' readiness for primary education. To determine how effective learning resources were being utilized, a 5-point Likert scale i.e., Strongly Agree(1), Agree(2), Neither agree nor Disagree(3), Disagree(4) and Strongly Disagree(5) was used as shown in the subsequent section per learning resource category.

2.1.1 Efficacy of Realia

The study sought to find out the efficacy of realia. The findings are presented in Table 1.

Table 1
Efficacy of Realia

Realia	1	2	3	4	5
i) The realia are recreated.	60(40)	41(27)	6(4)	34(23)	9(6)
ii) Evidence of scavenger hunt is available (pupils learn through collecting materials in the environment)	81(54)	19(13)	16(11)	5(3)	29(19)
iii) The pupils able to follow direction.	53(35)	26(17)	16(11)	51(34)	4(3)
iv) The realia are able to supply flesh and blood mental images to what could be otherwise abstract words.	50(33)	25(17)	42(28)	30(20)	3(2)
v) The learner is able to authenticate an object or experience. (By seeing, handle, taste)	55(37)	35(23)	29(19)	1(1)	30(20)
vi) The realia are able to save instruction time by reducing length of abstract explanations.	56(37)	43(29)	27(18)	2(1)	22(15)
vii) The realia are able to bring realism when distinguishing between the characteristics of objects.	48(32)	36(24)	39(26)	4(3)	23(15)
viii) The realia are able to transfer learning by reducing the gap between learning and application.	61(41)	25(15)	24(16)	38(25)	4(3)
ix) There is good time management considered in the use of realia.	5(3)	19(12)	20(13)	52(35)	54(36)
x) The realia adopted is readily available for further use by pupils.	5(3)	32(21)	41(27)	45(30)	27(18)
xi) The objects are readily accessible.	4(3)	24(16)	21(14)	67(45)	34(23)
xii) The safety of learners is considered in the use of realia.	3(2)	30(20)	27(18)	45(30)	45(30)

The results presented in Table 1 indicates that a majority of the participants, specifically 101 individuals or 67% of the whole sample, recognized the efficient utilization of realia. In a similar vein, it was found that a majority of the participants, namely 100 individuals accounting for 67% of the total respondents, expressed agreement about the presence of tangible indications of a scavenger hunt activity. This particular pedagogical approach involves students acquiring knowledge by actively gathering various items from their surroundings. Furthermore, a majority of participants, specifically 78 individuals representing 52% of the total sample, expressed agreement with the notion that students possess the ability to adhere to instructions. Furthermore, a significant proportion of the participants, specifically 75 individuals representing 50% of the total respondents, expressed their agreement about the ability of realia to enhance the comprehension of abstract words by facilitating the formation of vivid mental images. Additionally, a substantial majority of 90 respondents, accounting for 60% of the whole sample, concurred with the notion that learners can establish the authenticity of an object or event through the utilization of realia. In addition, a significant majority of participants, namely 99 individuals representing 66% of the sample, expressed agreement with the notion that the use of realia in education contributes to time efficiency by minimizing the need for lengthy abstract explanations. Similarly, 84 participants, accounting for 56% of the sample, concurred that realia enhance the authenticity of instructional materials by facilitating the differentiation of object qualities. Furthermore, a significant majority of the participants, specifically 84 individuals accounting for 56% of the total answers, expressed agreement with the notion that the utilization of realia aids in the process of knowledge transfer by reducing the disparity between theoretical learning and practical application. However, a significant majority of 106 participants (71%) expressed strong disagreement on the consideration of effective time management in the utilization of realia. In addition, a significant proportion of the participants, specifically 72 individuals representing 48% of the total respondents, expressed their disagreement over the accessibility of the adopted realia for future utilization by students. In conclusion, a majority of the respondents, namely 102 individuals accounting for 68% of the total, expressed disagreement with the accessibility of items. Additionally, 90 respondents, constituting 60% of the total, did not agree that the utilization of realia takes into account the safety of learners. Based on the aforementioned results, it can be inferred that the utilization of realia in ECDE centers within the Hamisi sub-county is not considered efficacious in appropriately equipping ECDE kids for their transition to primary education.

3.1.2 Efficacy of Print Materials

The study sought to find out the efficacy of Print materials. The results are presented in Table 2 below.

Table 2*Efficacy of Print Items*

Print materials	1	2	3	4	5
i) They are accessible.	5(3)	36(24)	10(7)	42(28)	57(38)
ii) They are clear.	6(4)	16(11)	17(12)	82(55)	29(19)
iii) They are organized in a useful way.	3(2)	35(23)	21(14)	47(31)	44(29)
iv) The materials are appropriate to the learners and the course.	7(5)	26(17)	41(27)	53(35)	23(15)
v) The text is readable.	2(1)	46(31)	18(12)	37(25)	47(31)
vi) The vocabulary and content are appropriate.	3(2)	27(18)	23(15)	74(49)	23(15)
vii) The materials are accurate and free from bias in terms of sex, race, religion and ethnic background.	5(3)	34(23)	32(21)	46(31)	33(22)
viii) The materials are easily portable.	5(3)	25(17)	29(19)	64(43)	27(18)
ix) The materials are distributed well in advance	5(3)	20(13)	34(23)	65(43)	26(17)
x) There is clear instruction for use of materials given.	5(3)	30(20)	27(18)	62(41)	26(17)
xi) The required interaction is designed.	6(4)	23(15)	28(19)	62(41)	31(21)

The data presented in Table 2 indicates that a majority of the respondents, namely 99 individuals or 66% of the total, expressed dissatisfaction with the accessibility of print materials. Similarly, a larger proportion of respondents, specifically 111 individuals or 74% of the total, disagreed with the notion that print materials are clear. In contrast, a significant proportion of the participants, namely 90 individuals representing 60% of the total sample, expressed disagreement with regard to the organization of the print materials, perceiving them as lacking usefulness. Similarly, 75 participants, accounting for 50% of the sample, disagreed that the materials were suitable for both the learners and the course. Furthermore, a significant proportion of participants, specifically 84 individuals (equivalent to 56% of the sample), expressed disagreement with the readability of the text in the printed materials. Similarly, 96 participants (representing 64% of the sample) disagreed that the terminology and content of the materials were acceptable. A majority of respondents, namely 79 individuals comprising 53% of the total, expressed disagreement with the notion that print materials are accurate and devoid of bias with regard to factors such as sex, ethnicity, religion, and ethnic background. Similarly, a larger proportion of respondents, specifically 91 individuals representing 61% of the total, disagreed with the assertion that print materials are easily portable. Furthermore, a significant proportion of the participants, namely 90 individuals accounting for 60% of the total respondents, expressed their disagreement about the adequate distribution of print materials in a timely manner. Similarly, 87 respondents, constituting 58% of the total, disagreed with the notion that clear instructions for the utilization of these resources were provided. Ultimately, a significant majority of respondents, specifically 93 individuals or 62% of the whole sample expressed their disagreement with the notion that the print content necessitated a deliberate and intentional kind of contact.

Based on the aforementioned results, it can be concluded that the print materials utilized in the ECDE centers within the sub-county of Hamisi are insufficient in appropriately preparing kids for primary education in the field of Early Childhood Development and Education (ECDE).

3.1.3 Efficacy of Audio Resources

The study sought to find out the efficacy of audio resources. The findings are shown in Table 3.

Table 3*Efficacy of Audio Resources*

Audio resources	1	2	3	4	5
i) There is clarity of voice.	4(3)	12(8)	46(31)	37(25)	51(34)
ii) It is relevant to the topic.	7(5)	23(15)	18(2)	75(50)	27(18)
iii) There is clear pitch of the audio.	10(7)	29(19)	22(15)	45(30)	44(29)
iv) The length is appropriate.	8(5)	30(20)	44(29)	14(9)	54(36)
v) The language is appropriate.	4(3)	37(25)	29(19)	59(39)	21(14)
vi) The content is appropriate.	3(2)	35(23)	18(12)	55(37)	39(26)
vii) It is able to add, maintain and stimulate interest.	3(2)	27(18)	39(26)	29(19)	52(35)
viii) It is able to stimulate creative thinking and increase imagination.	3(2)	42(28)	17(11)	17(11)	71(47)
ix) The distance between the media and the learners is appropriate.	3(2)	35(23)	33(22)	45(30)	34(23)
x) The acoustical room modification is made to cater for background noise.	2(1)	39(26)	30(20)	63(42)	16(11)

Table 3 above illustrates data that 88(59%) of participants disagreed that audio resources used have clarity of the voice while 102(68%) disagreed that they are relevant to the topic. In the same vein, 88(59%) responders disagreed that audio resources have clear pitch of the audio while 67(45%) disagreed that audio resources length is appropriate. Additionally, 79(53%) and 94(63%) respectively disagreed that the language and content is appropriate. 81(54%) of the respondents disagreed that Audio resources were able to add, maintain and stimulate learners' interest while 87(58%) disagreed that the audio resources are able to stimulate creative thinking and increase imagination. Additionally, 79(53%) of the respondents disagreed that the distance between the media and the learners is appropriate. Lastly, 79(53%) of respondents disagreed that there is acoustical room modification made to cater for background noise. In accordance with the above outcomes, a conclusion is made that, audio resources in the sub county of Hamisi, centers of ECDE are not effective in preparing students in ECDE adequately for primary education.

3.1.4 Efficacy of Audio-Visual Resources

The study sought to find out the efficacy of audiovisual. The outcomes are summarized in Table 4 below.

Table 4

Efficacy of Audio-Visual Materials

Audio-Visual materials	1	2	3	4	5
i) The materials are relevant to the topic and learners.	7(5)	37(25)	30(20)	55(37)	21(14)
ii) The materials are accurate as intended by the lesson objective.	10(7)	30(20)	22(15)	63(42)	25(17)
iii) The materials are comprehensible by learners.	6(4)	31(20)	32(21)	49(33)	32(21)
iv) The materials motivate learners.	5(3)	29(19)	40(27)	56(37)	20(13)
v) The materials develop realism in the learner's mind.	6(4)	33(22)	28(19)	62(41)	21(14)
vi) The materials challenge the attention of the pupils.	3(2)	36(24)	23(15)	56(37)	32(21)
vii) The materials stimulate the imagination and develop the mental imagery of pupils.	3(2)	40(27)	35(23)	37(25)	35(23)
viii) The materials facilitate the understanding of the pupils.	7(5)	24(16)	27(18)	70(47)	22(15)
ix) The materials provide incentive for action in pupils.	5(3)	29(19)	30(20)	53(35)	33(22)
x) The materials develop the ability to listen in pupils.	7(5)	33(22)	43(28)	44(29)	23(16)

Table 4 above indicates from the data, that 76(51%) of responders disagreed materials used are relevant to the topic and learners while 88(59%) disagreed that materials used are accurate as intended by the lesson objective. On the other hand, 81(54%) disagreed that materials are comprehensible by learners. 75(50%) of the respondents disagreed that materials motivate the learners while 82(55%) disagreed that materials develop realism in the learners' mind. Additionally, 87(58%) of those polled disagreed that materials challenge the attention of the pupils while 72(48%) disagreed that materials stimulate the imagination and develop the mental imagery of pupils. Furthermore, 93(62%) of the respondents disagreed that the Audio-Visual materials facilitate the understanding of the lesson by the pupils. Lastly, 85(57%) and 67(45%) disagreed respectively that materials provide incentive for action in pupils and materials develop the ability to listen in pupils.

According to these findings, it can be concluded that, Audio-Visual materials are not effective in preparing ECDE learners adequately for primary education. It is thus elaborated why ECDE pupils are transiting to the first grade when not school ready. According to Uwezo (2020), effective teaching through audio-visual materials avoids excessive, empty and meaningless verbalization in teaching. Research has confirmed that, using AV technologies for teaching and learning effectively has positively affected pupil's performance (Shankar, 2020).

3.2 Inferential Statistics

The objective of the study was to evaluate the utilization of specific instructional materials in order to improve students' readiness for elementary school. The logistic regression test was utilized as the statistical technique to determine the association between the chosen instructor resources and the preparedness of learners for elementary education. The assessment of the obtained null hypothesis was performed at a significance level of 0.05 in the study.

H₀: Utilization of Selected learning materials has no effect on ECDE learners' readiness for primary education.

Table 5a

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	148.106 ^a	.564	.599

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 5b
Classification Table

Observed	Predicted	Basic Literacy Skill	Percentage Correct
		Learner not ready for school for failure to demonstrate basic literacy skills	Learner readiness for school after demonstration of basic literacy skills
Step 1	Basic literacy skill	Learner not ready for school for failure to demonstrate basic literacy skills	0
	Learner readiness for school after demonstration of basic literacy skills	0	117
Overall Percentage			68

a. The cut value is .500

Table 5c
Variable in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Quality of inputs, teacher attitude, school context and policy issues	.273	.173	2.503	1	.011	1.314	.937	1.844
	Learning materials	.178	.102	3.055	1	.030	1.195	.979	1.459
	Constant	-.539	.969	.310	1	.578	.583		

a. Variable(s) entered on step 1: Inputs quality, teacher attitude, school context and policy matters, selected learning resources.

In order to determine the influence of selected educational resources and intervening factors (such as the quality of instructional materials, teacher disposition, school environment, and policy considerations) on fundamental reading skills, a logistic regression analysis was performed. The logistic regression model demonstrated statistical significance, as indicated by a p-value of 5.865. The model effectively accounted for 59.9% of the variability in basic literacy skill, as measured by the Nagelkerke statistic, and appropriately classified 68% of the instances. The inclusion of intervening variables (such as quality of inputs, teacher attitude, school environment, and policy concerns) and selected learning materials increases the odds of learner readiness for school following the presentation of basic literacy competency by a factor of 1.314.

The Wald and Sig entries in the analysis output present the Wald chi-square value and the two-tailed p-value. These statistical measures are employed to assess the null hypothesis that the coefficient is equal to zero. Based on the obtained Sig values of .011 and .030 for the intervening variables and the use of the selected educational resources, respectively, both of which fall below the predetermined alpha level of .05, the research findings lead to the rejection of the null hypothesis. This implies that there is a statistically significant effect of utilizing learning materials on the preparedness of ECDE pupils for primary schooling.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The aim of this study was to investigate the utilization of educational resources in Hamisi Sub-County with the purpose of enhancing students' readiness for primary education. A logistic regression analysis was conducted to examine the impact of selected learning materials and intervening variables, including the quality of inputs, teacher attitude, school setting, and policy concerns, on the development of basic literacy competency. With a p-value of 5.865, the logistic regression model demonstrated statistical significance. The model accurately explained 59.9% of the variability in basic literacy competence (Nagelkerke) and correctly classified 68% of the cases. The likelihood of learners being prepared for school after demonstrating basic literacy competency increases by a factor of 1.314 when taking into account intervening variables such as the quality of inputs, teacher attitude, and school setting and policy concerns as selected learning resources.

The test statistic for the usage of selected learning resources is 0.047, with a corresponding p-value of 0.829. Given that the obtained p-value is greater than the predetermined significance level of 0.05, it can be concluded that the null hypothesis is accepted, hence failing to reject the null hypothesis. This implies that there is a lack of substantial evidence to support the notion that the variation in dependent variables across independent factors is considerably dissimilar, indicating that the three independent variables possess equal variances. Consequently, it may

be deduced that the variances of the dependent variable do not exhibit constancy across different levels of the explanatory factors, thereby fulfilling the premise of homogeneity of variances.

5.2 Recommendations

Based on the findings, the research suggests the following recommendations:

The government should provide for sensitization seminars and in-service training programs for educators to stress the significance of and strategies for making good use of instructional resources. Discussions in these meetings should be on concrete methods for bringing a variety of resources into the classroom.

Try to get the government to chip in more so that universities that provide teacher education can buy modern, high-quality textbooks. By the time they graduate, teacher-in-trainings will have mastered a wide range of instructional strategies and resources.

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