

Research Article

Deployment of Background Knowledge and Performance in Comprehension Passage Reading among Primary School Learners in Vihiga County, Kenya

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Background. Primary school learners in Vihiga County have been recording a lower mean score in English language examinations than their counterparts in neighbouring counties, with the score being lower in comprehension passage than in grammar sections. Few previous studies conducted in Kenya have investigated the issue from the instructional dimension, thereby limiting stakeholders' understanding of the issue and delaying appropriate interventions. **Aim.** To determine how the deployment of learners' background knowledge influences performance in reading comprehension passages. **Method.** Solomon Four-Group Design guided the study. Data were sourced in mid-2017 from standard six learners and English language teachers. Regression analysis generated two models, one for the experimental and control groups, each. **Results.** In both models, deployment of background knowledge had a significant positive effect on the performance in reading comprehension passages, which prompted rejection of the null hypothesis. However, the effect was stronger in the experimental group than in the control group. The variation was attributed to training provided to the experimental group teachers, which improved their skills in activating learners' background knowledge. **Conclusions.** Activating learners' background knowledge is a vital antecedent to better performance in reading comprehension passages and the English language. Although prereading vocabulary is vital for the activation of learners' background knowledge, overreliance on a single strategy to activate learners' background knowledge undermines optimal deployment of background knowledge skills in reading, albeit with implications on performance.

1. Introduction

The purpose of reading is to extract the meaning of texts and pave the way for learning and academic achievement [1, 2]. Background knowledge is a basic component of interactive instruction that enables learners to extract the meaning of texts and facilitate learning. It includes explicit and tacit knowledge and metacognitive and conceptual knowledge acquired through life experiences [3, 4]. The learning process accelerates when learners are able to connect the content of comprehension passages with relevant knowledge accumulated over time from life experiences. In this regard, an effective instructional method for comprehension passages is one that activates learners' background knowledge about the subject of reading and enables them to understand new information presented by texts [1, 5].

Activating learners' background knowledge entails helping them to link the content of comprehension passages to what they already know about the subject. The process further involves bringing information, knowledge, emotion, and culture to printed words in order to facilitate learning [3, 6]. The assertion implies that learners contribute more information to the reading process than do printed words. Consequently, the effectiveness of the reading process depends on how much background information a learner has accumulated over time and is able to link with the reading subject. As noted by Edwards [7], learners who can connect what they already know with new information are poised for better performance in reading comprehension passages, English language papers, and subjects taught using the language. Dawkins [8]; Smith et al. [2]; and Srisang and

Everatt [9] affirmed that reading comprehension passages supports learning progression in all academic areas because it helps learners to develop skills to understand the content of subjects taught using the English language. Consequently, where learners' background knowledge about a subject is either limited or inactivated, performance in English language papers is likely to suffer, with the effect spilling over to other subjects and overall learning achievement.

The relationship between background knowledge and performance in reading comprehension passages has charmed empirical studies across the globe [3, 10–12]. However, few such studies have explicitly investigated the subject matter in Kenya. The studies whose focus is akin to the theme of this study dwelt on factors underlying poor performance in examinations, including management support to teachers, continuous professional development, physical resources, parents' participation, and access to instructional resources [1, 13–16]. Some of these studies identified ineffective instructional methods and incorrect application of interactive instruction as key constraints to learners' performance in reading comprehension passages. For example, the study commissioned by Kenya reported that only one-third (32%) of standard six learners could read a standard-two-level comprehension passage in English, with questions raised on the appropriateness of instructional methods used by teachers [16].

Vihiga is one of the counties experiencing low performance in English language examinations, going by the Kenya National Examination Council (KNEC) annual reports on performance in the Kenya Certificate of Primary Education (KCPE). The reports suggest that Vihiga County has been lagging behind its neighbours such as Kisumu, Kakamega, and Busia in terms of mean scores for English language papers. A closer examination of the reports reveals that performance was consistently lower for comprehension passages than for grammar sections of English language papers [17, 18]. At the time this study was conceptualised, low performance in the English language was a matter that engrossed the attention of education stakeholders in the county, including education officers, school administrators, parents, and researchers. Despite this, no study had explicitly investigated the relationship between the deployment of learners' background knowledge and performance in reading comprehension passages. This study investigated the matter, from the instructional perspective, particularly by determining how teachers' capacity in interactive instruction influenced the relationship between deployment of learners' background knowledge and performance in reading comprehension passages. The study also focused on how teachers' capacity influences the choice of strategies used to activate learners' background knowledge.

1.1. Significance of the Study. The information generated by the study would be used by education stakeholders in Vihiga County and in similar contexts to improve performance in reading comprehension passages, particularly from the instructional dimension. In this regard, the study was expected to inform interventions for developing teachers' capacity

and facilitating the correct application of the interactive instruction to activate learners' background knowledge and improve performance in reading comprehension passages. The study was also anticipated to inspire further academic investigations on the subject in Kenya and other developing countries.

2. Literature Review

Extant literature presents background knowledge as a skill, a cognitive process, and an element of interactive instruction [1, 2, 9, 19–21]. Srisang and Everatt [9], for example, perceived deployment of background knowledge as a higher-level reading skill that enables learners to connect text contents with what is known about the subject so as to generate information that is not explicit in the text. As a cognitive process, deployment of background knowledge entails retrieving relevant information from memory storage and using it to decode the meaning of texts [19]. In this regard, knowledge gained through interaction with reality is stored as a series of prepositions, which are not only connected but also organised into various schemata [2].

As reading occurs, the schemata associated with a particular subject are activated to enable learners to understand the content and context of comprehension passages. The schemata prepositions differ among learners in terms of depth and accuracy, depending on individual experiences with a particular reality [22]. Learners who either lack or fail to activate relevant schemata may find difficulty understanding texts and performing well in postreading comprehension tests [2]. The extent to which background knowledge facilitates reading comprehension passages depends on the accuracy of schemata prepositions. Where the schemata prepositions brought to the reading process are inaccurate, learners may find difficulty in extracting the correct meaning of texts. As a component of interactive instruction, background knowledge enhances reading by encouraging interactions between learners and various resources, including instructors, texts, authors, realities, and preexisting texts on the same subject [21, 23].

For over four decades, research has consistently identified learners' background knowledge as a significant contributor to performance in reading comprehension passages and overall academic achievement [2, 20, 21, 24]. Vries [24] elaborates that good performers in reading comprehension passages find it relatively easier to cope with reading tasks in nonlingual subjects than below-average performers. Notably, effective deployment of background knowledge provides the foundation for good performance in reading comprehension passages and in nonlingual subjects taught using the English language. Awabdy [25] established a significant positive association between background knowledge of the reading subject and performance in reading comprehension passages among seventh- and eighth-grade learners. Further analysis indicated that background knowledge accounted for 7% to 16% of the variance in reading comprehension performance. Despite this, the study did not bring out the role of teachers' training in the activation of learners' background knowledge and

improvement of performance in reading comprehension passages.

The extent of performance in reading comprehension passages depends on the strength of learners' background knowledge about a particular subject. In this regard, Smith et al. [2] established a direct correlation between the strength of background knowledge about a subject and performance in postreading questions. Arguably, learners with strong background knowledge on specific topics demonstrated better comprehension of pertinent texts than those lacking such background knowledge. However, the study was not explicit about the influence of teachers' training on the relationship between the deployment of learners' background knowledge and performance in reading comprehension passages. As reported by Cho and Ma [26], learners supported to activate and deploy background knowledge (experimental group) demonstrated better performance in reading comprehension passages than those not supported (control group). Similarly, Elleman and Oslund [19] noted that learners with relatively deeper background knowledge about specific subjects achieved higher scores in comprehension reading questions than those with limited or no background knowledge of the same. This suggests that exposure to various life situations is critical for enriching learners' background knowledge with accurate information and enhancing performance in reading comprehension passages. In relation to this, Mansor et al. [27] elaborated that a learner with rich and accurate background knowledge is likely to comprehend text passages better than one with poor or inaccurate background knowledge.

The effectiveness of learners' background knowledge in reading comprehension passages depends on the extent of activation by teachers. In this regard, Mansor et al. [27] established a greater improvement in reading comprehension passages among experimental group learners than among those in the control group. The finding suggested that activation of background knowledge adds value by improving learners' ability to deploy the same skills to understand the content of comprehension passages. On the same note, Nur and Ahmad [21] established that performance was higher for learners whose teachers made an effort to activate background knowledge about the reading subject than for those whose teachers made no such effort. Similarly, Compton, Miller, Elleman, and Steacy [28] found that making the meaning of texts was relatively easier for experimental group learners, whose background knowledge skills had been activated than for those in the control group. The cited findings suggest that teachers play a critical role in developing learners' ability to deploy background knowledge in reading lessons.

The influence of learners' background knowledge on reading comprehension passages also depends on the activation strategies used by teachers [3, 10, 11, 21, 25]. In their study, Ngwaru and Opoku-Amankwa [10] highlighted the need for a manifold approach to activating learners' background knowledge through strategies such as prereading vocabulary, carousel brainstorming, and analogy, as well as Know, Want, Learn (KWL). Arguably, the mastery of these strategies by teachers is essential for consistent usage to

activate learners' background knowledge and to improve performance in reading. Alfaki [3] identified prereading vocabularies, creating suitable analogies, and previewing texts before reading as effective strategies for improving scores in postreading tests. Elsewhere, Nur and Ahmad [21] identified prereading vocabularies and carousel brainstorming as the effective strategies for activating learners' background knowledge; Sadoski and Willson [11] established that prereading vocabulary and analogy accounted for the highest variation in performance, while Awabdy [25] singled out prereading vocabulary as the most effective strategy for activating background knowledge. The findings of these studies suggest that discussing vocabularies with learners and creating suitable analogies are vital for the deployment of background knowledge in reading and improving the odds of higher scores in summative tests. Despite this, little is documented about the extent to which teachers' training influences the choice of strategies used to activate learners' background knowledge.

2.1. Information Gap. Extant literature affirms that learners' background knowledge is a significant and valuable contributor to performance in reading comprehension passages. However, the extent to which interventions such as training of teachers on interactive instruction influences the activation and deployment of learners' background knowledge, as well as performance in reading comprehension passages, remains unclear. The literature is also not explicit about the influence of such training interventions on the choice of strategies used by teachers to activate learners' background knowledge. The study differs from its predecessors by focusing on how developing teachers' capacity in interactive instruction can add value to the deployment of learners' background knowledge and performance in reading comprehension passages.

2.2. Conceptual Framework. In view of the cited gaps, this study was set to determine how the deployment of learners' background knowledge affects performance in reading comprehension passages. Whereas deployment of background knowledge was designated the independent variable, performance in reading comprehension passages was set as the dependent variable. Figure 1 shows the hypothesised relationship between the independent and the dependent variables.

The independent variable was measured using five indicators, namely, evoking the known to understand texts, text previewing, using context clues, meaning guessing, and slow careful reading. In the questionnaire, the indicators were operationalised as perception statements and measured using a five-point Likert scale. The scale was calibrated as "strongly agree," "agree," "undecided," "disagree," and "strongly disagree." Performance in reading comprehension passages was measured in terms of postintervention scores. The independent and dependent variables were connected by a null hypothesis, postulating that *deployment of background knowledge has no significant effect on their performance in reading comprehension passages*. The framework

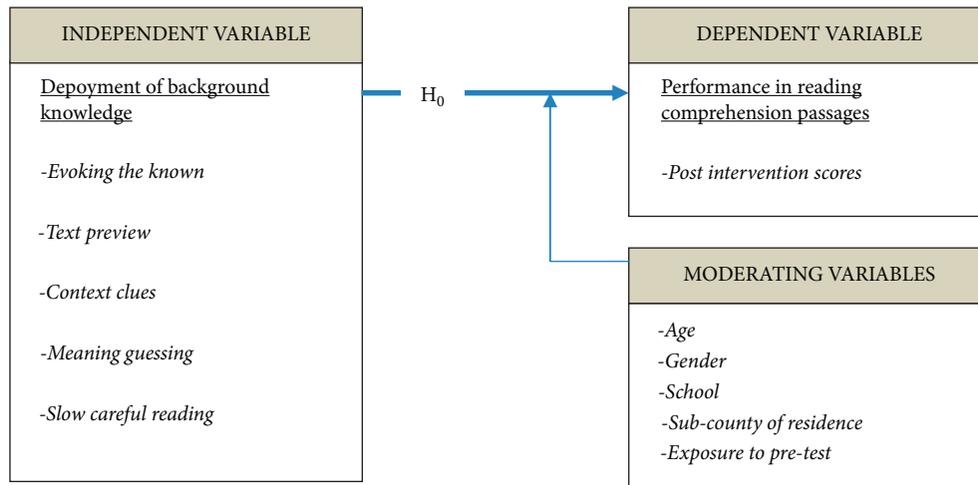


FIGURE 1: Deployment of background knowledge and performance in reading comprehension.

further shows learners' attributes that moderated the relationship between deployment of background knowledge and performance in reading comprehension passages.

3. Methods

The study anchored on the positivist and constructivist ideologies. The positivist ideology postulates that sensory experience with reality is the exclusive source of authoritative knowledge, provided that the observer and the reality observed are mutually independent. Positivist scholars strive to determine relationships between two or more realities by testing null hypotheses to deduce conclusions. In this regard, observation of reality involves breaking down concepts into measurable variables, observing how the variables relate to other variables, and testing whether the outcome confirms or refutes null hypotheses. Contrastingly, the constructivist ideology holds that reality is subjectively constructed, meaning that the observer and the reality observed are mutually dependent. The constructivist observer focuses on determining the relationship between sets of reality through inductive reasoning. The observation process involves various methods, which are deployed to interrogate and validate relationships between two or more realities.

The positivist and constructivist ideologies provided the basis for a mixed methods approach, which was applied to source data about the relationship between deployment of background knowledge and performance in reading comprehension passages. Mixed methods research is one in which data is sourced and analysed using qualitative and quantitative methods in the same study to enhance the validity of the outcomes through corroboration. The two approaches are complementary but unique ontologically, epistemologically, and methodically. Publications such as Brierley [29], Doyle, Brady, and Byrne (2012), Kaushik and Walsh [30], and [31] provide details about the philosophical ideologies underpinning the study.

The *Solomon Four-Group Design* guided the study, which involved eight public primary schools in Vihiga County. Four schools, code-named G, H, I, and J, were randomly

assigned to the experimental group, while another set of four schools, coded as K, L, M, and N, were randomly assigned to the control group. English language experimental group teachers were trained on the correct activation of learners' background knowledge. Besides, a preintervention test was administered to learners in schools G and H of the experimental group and schools K and L of the control group to enable the investigators to determine whether or not, taking the test would influence the postintervention scores. At the end of the intervention period, which lasted for three months, a postintervention test was administered in all the eight schools. Publications such as Boushey et al. [32]; Navarro and Siegel [33]; and Symmons [34] elaborate the principles of the design used in this study.

The study targeted all the public primary schools in the county. According to the Ministry of Education records, the county had 361 registered public primary schools, distributed across the five subcounties, namely, Vihiga, Sabatia, Emuhaya, Luanda, and Hamisi. In the schools, the study targeted standard six learners and teachers of the English language. Regarding sampling and sample sizes, all the 5 subcounties were involved in the study, with 1 randomly sampled for the pilot study and 4 designated for the main study. Two schools in each subcounty were purposively involved in the study, based on previous participation in the KCPE. The process obtained 10 schools, of which 2 participated in the pilot study, and 8 were involved in the main study. In each school, a teacher was sampled purposively by virtue of being an instructor of English language to standard six learners and an employee of the Teachers Service Commission, in addition to having a teaching experience of at least ten years. Besides, 420 standard six learners were involved in the study, including 40 for the pilot study and 280 for the main study.

Six tools, including a questionnaire for learners, a questionnaire and an interview guide for teachers, an observation guide, and two comprehension passages with postreading questions for learners, were applied to source the data. The tools were pilot-tested from January to April 2017. Content Validity Index (CVI) was determined for each

tool, and the outcome was above the minimum threshold of 70% for each tool [35, 36]. The reliability analysis obtained Cronbach's alpha, which was above the minimum threshold for internal consistency for the tools [37].

The study was reviewed and approved by the Department of Educational Communication and Pedagogical Studies Examination Panel, as well as the National Commission for Science, Technology, and Innovation. The latter issued a research permit upon satisfaction with the level of ethical measures to safeguard learners and teachers in the study. Fieldwork was conducted from May to August 2017, and it entailed the administration of the preintervention test in schools G and H of the experimental group and schools K and L of the control group; training experimental group teachers on correct activation of learners' background knowledge, observation of lessons in both groups, and administration of the postintervention test.

The study obtained data, which were analysed using quantitative and qualitative techniques. Quantitative analysis techniques included computation of mean scores, percentages, cross-tabulations, independent sample *t*-tests, and analysis of variance. The null hypothesis was tested using multiple linear regression analysis, which determined the effect of deployment of background knowledge on performance in reading comprehension passages. Linear regression models are based on the premise that *Y* is a function of a set of *k* independent variables (X_1, X_2, \dots, X_k), as indicated in

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k + \varepsilon, \quad (1)$$

where *Y* is the dependent variable; β_0 is the intercept; β_1, \dots, β_k are the regression coefficients; X_1, \dots, X_k are the independent variables; ε is the error term [38]. The model generated standardised regression coefficients (*Beta* weights), *t*-statistic, and ρ values for interpretation.

The effect of deployment of background knowledge on performance in reading comprehension passages was indicated by *Beta* weights. A negative (–) sign before a *Beta* weight indicated a decreasing effect, while a positive (+) sign signalled an increasing effect. Bremer [38] elaborates that, at 0.0, there is no effect; however, the effect increases away from 0.0 in either direction. Quantitative analyses were facilitated by the Statistical Package for Social Sciences (SPSS). Qualitative data were transcribed and analysed using *Atlas.ti 9* software. The qualitative methods applied in this study are detailed in publications such as Best and Khan [39] and Dudovskiy [40].

The study was guided by three ethical principles as first published in the Belmont Report, including respect for participants, beneficence, and justice [41]. The investigators sought informed consent from parents through letters, which detailed information about the study, including purpose; potential benefits to learners, teachers, and the schools; voluntary participation, the right to withdraw consent of participation before or during data collection, confidentiality of the information source, and intended use of the information. Learners and teachers also completed consent forms.

To comply with the ethical principle on justice, control group teachers were trained on correct activation of learners' background knowledge skills, but at the end of the data collection period. In addition to ensuring equal treatment of participants in both groups, the training was intended to improve teachers' competence in activating learners' skills for reading comprehension passages. A feedback session was also organised to share and validate findings with participants and education stakeholders in the county, including education officers, school administrators, and parents. The feedback session was used to explore feasible interventions at various levels to improve teachers' competence in activating learners' background knowledge skills and performance in reading comprehension passages.

4. Results

The results are presented under four subsections, including performance in reading comprehension passages, performance in reading and learners' attributes, performance in reading and deployment of background knowledge, and the effect of deployment of background knowledge on performance in reading comprehension passages.

4.1. Performance in Reading Comprehension Passages. The experimental group consisted of 142 (50.9%) learners, while the control group had 137 (49.1%) learners. Learners in the experimental group obtained a mean score of 35.59 (95% Confidence Interval (CI) = 34.71–37.07), while those in the control group had a mean score of 22.32 (95% CI = 21.46–23.18). The *t*-test for independent samples was applied to determine the significance of the statistical difference between the mean scores obtained by the two groups. Based on Levene's test results, a *t*-statistic of 18.355 with a significance value (Sig. (2-tailed)) of 0.000 was obtained, suggesting up to 99% chance that the mean scores for the two groups were significantly different. In this regard, learners in the experimental group had a better performance in reading comprehension passages than their colleagues in the control group.

Observation of comprehension passage reading lessons affirmed that experimental group teachers adopted a more focused approach than their counterparts in the control group by applying specific strategies to enable learners to connect the reading subject with background knowledge about the matter, as well as encourage reflection among learners. Besides, experimental group teachers were keener than their colleagues in the control group about helping learners to preview texts, identify context clues, guess the meaning of new words, and read slowly for deep interaction with texts. The findings were attributed to the training provided to experimental group teachers.

4.2. Performance in Reading Comprehension Passages and Profile Attributes. The postintervention scores were cross-tabulated with learners' profile attributes, including age, gender, school, subcounty of residence, and exposure to the preintervention test. The results showed that 143 (51.3%)

learners were aged 12 years, 76 (27.2%) were 13 years old, and 43 (15.4%) indicated 14 years. The results in Table 1 suggest up to 95% chance that performance in reading comprehension passages was significantly associated with age ($\chi^2 = 13.082$, $df = 12$, and $\rho \leq 0.05$).

The learners included 130 (46.6%) boys and 149 (53.4%) girls. However, there was no significant association between gender and performance in reading comprehension passages ($\chi^2 = 0.477$, $df = 3$, and $\rho > 0.1$). Learners were drawn from 8 public schools, code-named as G, H, I, J, K, L, M, and N. Thirty-eight (13.6%) learners were based in school I, followed by 36 (12.9%) in schools K and M, each, while 35 (12.5%) were based in school G. Notably, performance in reading comprehension passages significantly varied across the schools ($\chi^2 = 15.719$, $df = 9$, and $\rho \leq 0.05$). Seventy-four (26.5%) learners were natives of Hamisi Subcounty; 71 (25.4%) were based in Luanda; 68 (24.4%) in Emuhaya, and 66 (23.7%) in Sabatia. Performance in reading comprehension passages significantly varied across the subcounties ($\chi^2 = 166.542$, $df = 21$, and $\rho \leq 0.001$). Up to 139 (49.8%) learners took the preintervention test, while 140 (50.2%) did not. However, there was no significant association between exposure to the preintervention test and performance in reading comprehension passages ($\chi^2 = 1.221$, $df = 3$, and $\rho > 0.1$). The results showed that the relationship between deployment background knowledge and performance in reading comprehension passages was likely to be moderated by learners' age, school, and subcounty of residence.

4.3. Performance in Reading Comprehension Passages and Background Knowledge. Learners indicated perceptions on various background knowledge activation practices, which were cross-tabulated against performance in reading comprehension passages. The first practice was about *evoking the known* to understand texts. Cumulative results showed that 177 (63.4%) learners affirmed the perception statement claiming that “*I think about what I know to help me understand what I read,*” reading subject, while 74 (26.5%) did not. Besides, performance in reading comprehension passages is significantly associated with the practice of evoking prior knowledge to understand texts ($\chi^2 = 26.266$, $df = 12$, and $\rho \leq 0.05$).

Cumulative results showed that 135 (48.4%) learners affirmed the perception statement indicating that “*I preview text to see what it is about before reading,*” while 121 (43.4%) did not. The analysis revealed up to 95% chance that performance in reading was significantly associated with the practice of previewing texts before reading ($\chi^2 = 22.313$, $df = 12$, and $\rho \leq 0.05$). Regarding *context clues*, 135 (48.4%) learners agreed with the assertion holding that “*I use context clues to help me understand what I read,*” while 121 (43.4%) disagreed. The analysis revealed up to 99% chance that performance in reading comprehension passages was significantly associated with the use of context clues to understand texts ($\chi^2 = 31.408$, $df = 12$, and $\rho \leq 0.001$).

The results also showed that less than half of the learners, 107 (38.4%), affirmed the perception statement claiming that “*I try to guess the meaning of unknown words,*” while 131

TABLE 1: Chi-square test summary results.

Learners' profile attributes	Test results		
	χ^2	df	ρ
Age	13.082	12	0.023**
Gender	0.477	3	0.924
School	15.719	9	0.013**
Subcounty	166.542	21	0.000***
Exposure to preintervention test	1.221	3	0.374

*, **, ***Significance at $\rho \leq 0.1$, $\rho \leq 0.05$ and $\rho \leq 0.01$ error margins, respectively.

(47.0%) learners did not. Based on this, performance in reading comprehension passages is significantly associated with the practice of guessing the meaning of unknown words when reading ($\chi^2 = 26.995$, $df = 12$, and $\rho \leq 0.001$). Furthermore, 180 (64.5%) learners affirmed the perception statement postulating that “*I read slowly but carefully to understand what I am reading,*” while 78 (28.0%) did not. Based on this, performance in reading comprehension passages is significantly associated with the practice of slow, careful reading of texts to understand the content ($\chi^2 = 23.926$, $df = 12$, and $\rho \leq 0.05$). This section suggests that all the five background knowledge activation practices indicated in Table 2 were likely to influence performance in reading comprehension passages.

Perceptions on background knowledge activation practices were aggregated to show the extent to which learners were consistent in deploying background knowledge skills when reading comprehension passages. The output variable was cross-tabulated with the *learners' group* to determine variation between learners in the experimental and control groups. Cumulative results showed that 116 (81.7%) experimental group learners against 53 (38.7%) in the control group were consistent in deploying background knowledge when reading comprehension passages, while 63 (46.0%) control group learners against 15 (10.6%) in the experimental group were inconsistent. The analysis revealed up to 99% chance that consistency in deploying background knowledge varied significantly across learners' groups ($\chi^2 = 85.344$, $df = 4$, and $\rho \leq 0.001$).

4.4. Background Knowledge Deployment and Performance in Reading Comprehension Passages. Deployment of background knowledge (independent variable) was regressed against performance in reading comprehension passages (dependent variable). Learners' attributes were incorporated in the analysis to moderate relationship between the independent and the dependent variables. The analysis generated two models, one for the experimental group and one for the control group, as indicated in Table 3.

Table 3 shows that, in both models, deployment of background knowledge caused a positive effect on performance in reading comprehension passages (model 1: $Beta = 0.412$ and $t = 1.965$; model 2: $Beta = 0.403$ and $t = 1.902$). However, the effect was bigger among the experimental group learners than among those in the control group. Reading comprehension passages in model 1, the

TABLE 2: Chi-square test summary results.

Background knowledge activation practices	Test results		
	χ^2	df	ρ
Evoking the known	26.266	12	0.010**
Previewing texts	22.313	12	0.034**
Using context clues	31.408	12	0.002***
Meaning guessing	26.995	12	0.008***
Slow careful reading	23.926	12	0.021**

*, **, ***Significance at $\rho \leq 0.1$, $\rho \leq 0.05$ and $\rho \leq 0.01$ error margins, respectively.

results show up to 95% chance that the effect was significant ($\rho \leq 0.05$), while in model 2, the effect was significant at 90% confidence level ($\rho \leq 0.1$). Consequently, the null hypothesis was rejected in both models for being untrue.

The information obtained through key informant interviews and observations indicated that activation of learners' background knowledge was near universal in the experimental group but suboptimal in the control group. This was attributed to variation in the procedures used by teachers in the two groups to activate learners' background knowledge, which was achieved using four strategies, including prereading vocabulary, carousel brainstorming, analogy, and KWL.

The prereading vocabulary strategy was applied by teachers in both groups to activate learners' background knowledge. This entailed teaching learners the meaning of new words before reading comprehension passages, and the majority of such learners were in the experimental group. Even though the use of carousel brainstorming was below average in both groups, it was more common in the experimental than in the control group. Besides, the use of analogies was below average in both groups; however, it was more uncommon in the control than in the experimental group. However, KWL was never applied by teachers in both groups due to the assumption that the understanding of comprehension passages develops naturally as well as teacher domination of reading lessons through lengthy explanations of new words. The dominance of prereading explanations prompted most teachers to avoid strategies perceived to be too demanding in terms of time and instructional resources, such as KWL and carousel brainstorming.

5. Discussions

Even though deployment of background knowledge caused a positive effect on performance in reading comprehension passages in both groups, the effect was stronger in the experimental, than in the control group, judging from the *Beta* weights and t-statistic values. This suggests that deployment of background knowledge was more consistent in the experimental than in the control group. The finding implies that training experimental group teachers enhanced their effectiveness in activating learners' background knowledge, which in turn contributed to better performance in reading comprehension passages. In both groups, the variable's effect was statistically significant, thereby prompting rejection of

the null hypothesis for being untrue. This implies that the deployment of background knowledge significantly affected performance in reading comprehension passages. These findings reflect those reported by Compton et al. [28]; Mansor et al. [27]; and Nur and Ahmad [21], which established the connection between activation of learners' background knowledge and performance in reading comprehension passages. Mansor et al. [27], for example, found differences between experimental and control group learners in terms of performance in reading comprehension passages, while Nur and Ahmad [21] found a higher mean score in postreading tests for learners whose teachers activated background knowledge about the reading subject than for those whose teachers made no effort. Although this study and its predecessors suggest that activating learners' background knowledge adds value to reading comprehension passages, the outcome depends on how well teachers are sensitised and trained to correctly develop learners' skills.

Of the four strategies for activating learners' background knowledge, prereading vocabulary was universally applied by teachers in both groups. However, the strategy's application was more consistent in the experimental group than in the control group. The use of carousel brainstorming and analogies was below average in both groups, but relatively less common in the control group. However, KWL was hardly used by teachers in both groups due to various reasons, including limited awareness among teachers, lack of skills on its application, inadequacy of instructional resources, budgetary constraints, and lack of innovation among teachers, as well as heavy workload, which denied teachers the time required to apply the strategy. These findings echo those reported earlier by Alfaki [3], Awabdy [25], and Ngwaru and Opoku-Amankwa [10], among others. The cited studies also established that prereading vocabulary and analogy accounted for the highest variation in reading performance. This implies that discussing vocabularies with learners before reading and creating suitable analogies are vital for activating learners' background knowledge about reading subjects and improving the odds of achieving higher scores in summative tests. Contrastingly, carousel brainstorming was uncommon, while KWL was rarely applied by teachers, with the underlying reasons being lack of necessary skills, limited awareness, limited budgets for essential instructional resources, and time constraints for schools with low teacher-learner ratio.

This study and its predecessors suggest that training teachers on correct activation of learners' background knowledge is likely to enhance their effectiveness in lesson delivery and motivation to go an extra mile in activating learners' background knowledge. Despite the high potential of training, the overapplication of the prereading vocabulary strategy is a matter that deserves some attention. Activating learners' background knowledge enables them to make interactions with instructors, texts, authors, realities, and preexisting texts on the same subject [21, 23]. Establishing such connections before, during, and after reading requires learners to develop multiple skills, and this may not be accomplished using a single strategy. More overtly, the prereading vocabulary strategy alone is too insufficient to

TABLE 3: Multiple regression analysis summary results.

Model	Unstandardised coefficients		Standardised coefficients	T	Sig.	
	B	Std. error	Beta			
1	(Constant)	32.351	2.745		5.631	0.000***
	Background knowledge deployment	0.623	0.208	0.412	1.965	0.041**
	Age	0.364	0.682	0.045	0.533	0.595
	Gender	-0.002	1.200	-0.000	-0.002	0.999
	School	-1.496	1.198	-0.235	-1.249	0.214
	Exposure to pretesting	4.346	2.665	0.306	1.631	0.105
2	(Constant)	26.574	2.732		4.095	0.000***
	Background knowledge deployment	0.585	0.141	0.403	1.902	0.059*
	Age	0.325	0.405	0.059	0.801	0.425
	Gender	-0.053	0.747	-0.005	-0.071	0.944
	School	-1.350	0.740	-0.294	-1.825	0.070
	Exposure to pretesting	2.770	1.639	0.273	1.691	0.067*

Dependent variable: postintervention test scores. *, **, ***Significance at $p \leq 0.1$, $p \leq 0.05$ and $p \leq 0.01$ error margins, respectively.

activate learners' background knowledge and to optimise performance in reading comprehension passages. This amplifies the need for teachers to apply other strategies, such as analogies, carousel brainstorming, and KWL, to effectively activate learners' background knowledge.

In view of the above, the Ministry of Education, through relevant agencies, should develop appropriate guidelines on interactive instruction training for teachers of the English language, financing of appropriate instructional resources for teachers and learners, innovative pedagogical practices, and collaboration with other stakeholders. The ministry and schools should further prioritise the sensitisation of teachers on the need to diversify strategies for activating learners' background knowledge through planning and budgeting. However, providing teachers with necessary skills may not translate to desired outcomes without logistical support; hence, there is a need for appropriate instructional resources and improved funding to facilitate pedagogical activities. Notably, training teachers and providing instructional resources are capital-intensive interventions, which may take time to be realised, particularly in resource-poor countries, including Kenya. In this regard, encouraging innovative pedagogical practices using alternative resources can go a long way in motivating teachers to diversify strategies for activating learners' background knowledge for better performance in reading comprehension passages.

6. Conclusions

Deployment of learners' background knowledge and performance in reading comprehension passages are positively and significantly related. This means that activating learners' background knowledge is a vital antecedent to better performance in reading comprehension passages and the English language. Despite this, the magnitude of the effect depends on the extent to which teachers are prepared in terms of skills and supported to activate learners' background knowledge consistently during reading lessons. Although prereading vocabulary is also vital for activation of learners' background knowledge, overreliance on a single strategy to activate learners'

background knowledge undermines optimal deployment of background knowledge skills in reading, with implications on performance. This amplifies the need for diversification and support in terms of correct information, skills, budgets, and instructional resources. Therefore, improving learners' performance in reading comprehension requires concerted efforts by all stakeholders in terms of appropriate sensitisation and training to teachers, funding for pedagogical activities, and instructional resources, in addition to innovative pedagogical practices in resource-constrained contexts.

6.1. Limitations. Even though the study focused on standard six learners and teachers of the English language, the findings may not provide an accurate picture of the entire education system because the experiences, needs, challenges, and priorities vary within and between the primary, secondary and tertiary tiers. Besides, the study generated weak regression models, with the explanatory power (R^2) of 12.5% for model 1 and 7.2% for model 2.

6.2. Areas of Further Research. The study focused on the experiences of standard six learners and teachers of the English language; hence, it may be fallacious to assume that the findings are generalizable to the entire education system. Future studies will add value by targeting the secondary and tertiary tiers because the experiences, needs, challenges, and priorities vary within and between the subsectors. Future studies should also adopt better designs and bigger samples to generate more robust models for estimating the relationship between deployment of learners' background knowledge and performance in reading comprehension passages.

Data Availability

The quantitative and qualitative data supporting the findings of this study are included within the supplementary information file(s) to facilitate access.

Additional Points

Highlights. What is already known about this topic? (i) Learners' background knowledge is a significant contributor to performance in reading comprehension passages and overall academic achievement in nonlingual subjects. (ii) Performance in English language examinations is a function of factors such as management support to teachers, continuous professional development, physical resources, shortage of instructional resources, incorrect application, and inappropriate instructional methods. What this paper adds. (i) The paper demonstrates how training teachers on the correct application of the interactive instructional method can improve the deployment of background knowledge by learners and performance in reading comprehension passages. (ii) The paper also demonstrates implications for theory, policy, or practice. Theory: the study contributes to the advancement of the Interactive Theory of Reading by testing the significance of the relationship between one of its components (background knowledge) and performance in reading comprehension passages in Vihiga County, Kenya. By establishing that deployment of learners' background knowledge positively and significantly affected performance in reading comprehension passages, the study confirmed the theory. This is likely to inspire further application in future academic discourses to either confirm or falsify the theory. Policy: the study contributes to policy by amplifying the need for guidelines on interactive instruction training for teachers of the English language, financing appropriate instructional resources for teachers and learners, innovative pedagogical practices, and collaboration with stakeholders. Practice: the study provides information that can be used by education practitioners to train teachers on the correct activation of learners' background knowledge, facilitate teachers to access refresher courses, update teacher training curriculum, promote innovation, initiate appropriate sensitisation, initiate teacher collaboration, and strengthen supervisory support to teachers.

Ethical Approval

The research proposal was reviewed and approved by the Departmental Examination Panel. The proposal was further reviewed and approved by the National Commission for Science, Technology, and Innovation, which issued the research permit upon satisfaction with arrangements for ethical requirements.

Disclosure

The article has been developed from one objective of the first author's doctoral thesis. Although it has been edited extensively, it is possible to find that it shares some words and references with the thesis and articles published earlier or submitted to other publishers for consideration.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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Supplementary Materials

The data were sourced using a survey questionnaire between May and August 2017 from 279 primary school standard learners, including 142 (50.9%) in the experimental group and 137 (49.1%) in the control group. The data were also sourced from 8 teachers of English language, teaching standard six learners in the targeted schools, using a key informant interview guide. Whereas quantitative data were compiled, processed, and analyzed using the Statistical Package for Social Sciences (SPSS) and Ms-Excel. Qualitative data were transcribed and analyzed using ATLAS.ti 9 software. (*Supplementary Materials*)

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