

REFLECTING ON CLASSROOM PHYSICAL DESIGN AND LEARNER'S LITERACY OUTCOMES FROM EARLY YEARS OF EDUCATION IN KENYA**Wasike K. Phyllis¹****Muluka Ogonji Kevin²****Luhombo Adema Calistus³**¹ Postgraduate student at Masinde Muliro University, Kenya.² Adjunct Lecturer, Jomo Kenyatta University of Agriculture and Technology, Kenya.³ Adjunct Lecturer, Masinde Muliro University of Science and Technology, Kenya**Abstract**

Literacy-rich environment has a significant effect on what goes on in the classroom. Learning environment has a great impact on the learners' literacy outcomes. Factors such as the physical design of the classroom have a big influence on the learners' literacy outcomes. The study investigated a group of grade three learners' literacy outcomes in lower primary schools in Bungoma central sub-county in relation to the factors that influenced the learning environments of the classroom. Descriptive survey design was used to sample out participants in the study. A sample size of 91 participants was involved consisting of 48 Grade three learners, 24 Grade three teachers, 12 head teachers, 6 parents and Sub-County Education Officer. Simple random sampling was used to sample out grade three teachers, parents, head teachers and Sub-County Education Officer. Data was analyzed using descriptive statistics. Unstructured questionnaires were used to investigate the physical design of the classroom and their influence on literacy outcome among learners in Early years learning in Bungoma Central Sub- County. Findings of the study indicate a negative correlation between learners' literacy outcome and physical design of the classroom (class size) ($r = .513$, $p < .05$). Based on this finding it recommended that Grade three teachers should individualize teaching based on assessment results, embrace whole-class curriculum materials, and recognize individual differences. Policies must be established to guarantee that classrooms are conducive to learning and motivate learners to strive for higher academic accomplishment.

Keywords

Physical design of the classroom, Learners' literacy outcomes, Early years of education

INTRODUCTION

A literacy-rich environment is vital for developing early literacy skills as well as equipping learners to acquire specialized topics. Currently, learners' performance is slipping due to a lack of appropriate literacy skills during the early years of schooling according to a study conducted by Uwezo East Africa in 2016 (Monk, (2020), Urwick, (2022). Physical and social classroom aspects all contribute to a literacy-rich environment, depending on the learners' proficiency and the content area. However, learning environment characteristics are not the only ones to consider (Francis and Barnett, 2019).

According to the National Reading Panel (2001), children begin learning a language and developing literacy skills from birth. Moreover, to keep up with their peers, learners who lack prior experience with skills such as print awareness, alphabetic principle, and phonemic awareness require extra education. As a result, early childhood educators are responsible for creating an atmosphere in which learners should access the experiences they have in the classroom. Most of the information learners require after they reach fourth grade is provided in text format, when the emphasis shifts from teaching readers to learning through reading (Felicia, 2019). In addition, how a classroom is set up, the materials that are available, and how interaction with these materials is modeled, will all have an impact on how learners engage with literacy in it (Kundu *et al.*, 2021). Marcos *et al.* (2020) opines that many classrooms lack an environment that encourages textual involvement in the forms of reading, writing, listening, and speaking. She further asserts that classrooms with limited books and materials for learners to read will not help us fulfill the new requirements, nor will they assist learners' learning. It is therefore recommended that learners should have easy access to both print and online resources that provide stimulating reading material. In the same vein, Hettiaarachi, *et al.* (2018) confirm that learners should have access to well-designed classroom libraries, they read more, spend more time reading, have a more positive

attitude toward reading, and perform better on reading tests. Classroom libraries also help to promote a well-rounded approach to literacy instruction Fisher (2016). Grade three teachers can teach literacy abilities and content-specific reading skills, but if learners do not have access to engaging books that they can successfully read, they will never realize their full literacy potential (Gambrell, Malloy, Marinak & Mazzoni, 2013). According to Cox (2019) good grade three classroom management teachers, who grasp the subject content, and their enthusiasm for their work are more likely to have a substantial impact on teaching. In the same vein, a 2016 report by education professionals highlighted that the physical design of the classroom and its constituent features such as color, light, sound, and equipment, as well as other factors, have a significant impact on learners' literacy and academic progress. Lewin *et al.* (2019) report on classroom prints, creating libraries and displaying reading materials on the walls as the main factors that facilitate a literacy rich environment.

LITERATURE REVIEW

A well-arranged environment enhances children's development through learning and play. It also enhances classroom management and supports Grade three teachers' implementation of curriculum goals and objectives (Mikami, *et al.*, 2017) When Grade three teachers design and configure their classroom, this influences learners' behavior, feeling and action, hence, they are motivated to read (Catron, 2017).

According to Higgins *et al.* (2012), the physical conditions of the classroom have an impact on teacher and learner conduct, learning and teaching, and academic achievement. While some aspects like noise and temperature are the focus of empirical investment. While suitable lighting in educational environments and schools' open space have a favorable impact on elementary school Learners' learning and academic achievement (as shown by the results), noise in educational institutions has the opposite influence (Francis & Barnett, 2019).

Marsha (2019) and Gilmour (2018) have focused on classroom setup on learners' literacy and prints as a supportive variable for learners' literacy achievement. Jufrida *et al.* (2019) assert that stress on class size, availability, and use of resources is a major predictor of learners' success in literacy outcomes. In the same vein, Gilmour, (2018) views literacy achievement as being embedded by classroom managements. There is relatively a dearth of literature on physical design of the classroom on learners' literacy outcomes in early year's education.

Mikami, *et al.*, (2017) state that well -designed classrooms have more benefits both to the learners and the teachers as respect for boundaries between learners 'area, activities, teachers' working areas and resources. Appropriate furniture is determined to be essential for ensuring that a learning environment is conducive and safe (Mathase, 2021). The learning environment of a classroom should minimize permanent and built-in furniture in favor of movable furniture whenever practical (Memari, 2020). This is because immovable furniture limits flexibility and arrangement options. When planning a classroom, it is essential to consider the impact of seating layouts. Spencer & Moore *et al.* (2016) note that when learners are placed in rows, it indirectly improves their reading skills by reducing the frequency of unfavorable interactions between the teacher and learners. This is because learners seated in rows are better able to concentrate and are thus less likely to attract the teachers' negative attention. Parson (2012) believes that rows of desks improve learner achievement by increasing the amount of time spent on a task. Therefore, it was observed that learners listened intensively in clusters or rows but produced more work when seated in rows.

However, in a classroom where there are no desks, children are seated on the floor does not enable them to acquire handwriting skills and this makes the learners uncomfortable, and unsafe in the learning environment. This implies that when schools have enough facilities in the classroom learners are found to participate in class activities that enhance literacy acquisition. Musungu (2021) observes that free primary education has brought a lot of havoc in Kenya. Classrooms are overcrowded and congested resulting in shortage of teachers and instructional resources leading to low academic performance (Kisirkoi & Ronoh, 2021). The size of a flexible learning environment is crucial, as it needs to be able to support many various types of instruction.

Francis and Barnett (2019) opine that literacy skills acquisition apart from being influenced by class size also reveals that learners' motivation to read has a significant influence on beginning readers in early years of education. According to McCartney (2010), meaning of words read by learners are constructed and negotiated within uniqueness of classroom culture. He looks at adults' actions in literacy-related classroom setup as those of a more knowledgeable person that focus especially on grade three teachers 'role in literacy-related skills to be accomplished through the interaction of between grade three teachers, peers, and learners in the classroom context. However, Eccles and Wigfield (2020) argue that a teacher's role on young children in the well class set up is to support the contention that beginning reading instructions should occur in a natural context. Grade three

teachers are to create motivational factors to target with due consideration of the diversity in schools. This research is guided by bio-ecological theory of learning and psychological as it presents its principally in the work of Brenfonbrenner which articulates several assumptions that forms the study of literacy learning as a social process (Elzaatari & Maalouf, 2022).

One of the aspects that plays a significant role in acquisition of learners' literacy is learning resources. Moore *et al.* (2016) argue that many advantages are noted when learning resources are used appropriately by grade three teachers in the process of teaching and learning literacy skills. These includes promoting, recalling, retaining of learned concepts in the classroom, offer cognitive and affective experiences, hence, maintain learners' interest findings was concluded that when learners are seated in cluster were more effective than when seated in rows. According to Gwendolyn (2015) disruptive classroom behavior leads to many schools implementing positive behavioral strategies intending to create orderly classroom setup.

METHODOLOGY

The study adopted the descriptive survey design. The study was conducted in public primary schools in Bungoma central sub - county in Bungoma County in Kenya. The population was drawn from all public schools in Bungoma central sub-county. A total of 72 primary schools with their head teachers were targeted. Other participants from the target population were 4,316 grade 3 learners, 144 Grade three teachers, 72 parents and 1 County Education Director. Simple random sampling technique was used to select schools and grade three learners, head teachers, grade 3 teacher and parents who are sampled from the selected schools. Data was collected using questionnaires and interview schedules. The instrument's validity was assessed based on the response from the pilot test. To reduce the threat to content validity experts in the field of study are asked to give their opinion on the Simple random sampling technique was used to select schools and Grade three learners, head teachers, grade 3 teacher and parents who are sampled from the selected schools. Data was collected using questionnaires and interview schedules. To reduce the threat to content validity experts in the field of study are asked to give their opinion on the instruments to judge the appropriateness while reliability was set at Cranach's coefficient alpha which was used to measure the reliability in relation to operationalization of the constructs. In this regard, the resulting alpha coefficients of ($\alpha = .801$) for grade three teachers' questionnaire was above the recommended threshold value of 0.7, implying that the study questionnaires were reliable. Three primary schools in the sub county were picked for the piloting test. The participants who were involved in the pilot study included 10 grade three teachers with their learners.

Teachers' Influence of class size on learners' literacy outcomes.

The other parameter about the physical design of the classroom has on learners' academic performance in lower primary level in Bungoma Central Sub-County was the influence of class size. Class size was reported as crucial factor in many schools. It was an issue for parents, teachers, administrators, and the government. Parents and Grade three teachers argued that smaller class size led to more effective teaching and improved learning for children. On the other hand, the government argued that substantial induct Grade three teachers' profession in class size was too costly and not effective. The dimension of class size was measured using the ability of learners to set reading habits and set targets towards good academic performance, where they participated in class activities like Oral language (listening and speaking) Pronunciation and fluency in reading and guided writing. The results are presented in table 4.13.

Table 1: Parameters contributing to Grade three teachers' influence on class size and learners' literacy outcomes.

Classroom Activities	Mean points	Percentages	standard /Deviation	Participation Mean Points SD
Listening	38.84	54%	28.5415	0.5285
Speaking (Pronunciations)	12.34	28%	6.5297	0.2332
Reading Fluency	9.66	12%	3.3463	0.2789
Writing	8.72	6%	2.1360	0.356

The findings imply that teaching a child to read English involves teaching them to make a link between the 26 letters of the alphabet and the approximately 44 phonemes (sounds in English). This was because letters on their own have no significance unless they are combined with phonemes to form words. Grade three teachers in the primary grades need this skill so that they should help their learners learn to read, because helping learners comprehend what they read is the main goal of teaching reading. However, studies by Kisirkoi and Ronoh (2021) reported in contradiction that not only class size that influences learners' achievement but also availability and use of resources influence learners' literacy achievement. Report analysis of reading scores on criterion test of literacy skills suggest that of the 48 learners' comparisons, 54 % scored are achievement in listening skills, 28% self- concept as measured of speaking skills, 12% masterly of reading skills and finally 6% writing skills.

Pearson Product moment correlation was also used to establish whether a relationship exists between physical design of the classrooms and learners' literacy outcomes. Therefore, the mean of physical design of the classroom in terms of libraries and prints are correlated with learners' literacy outcomes. The findings are presented as shown in Table.

Table 2: Correlations between physical classroom design (class size) and Learner's literacy outcomes

Correlations	Literacy outcomes	Class size
Literacy outcomes	Pearson Correlation	1
	Sig. (2-tailed)	-.513**
	N	.000
Class size	Pearson Correlation	1
	Sig. (2-tailed)	-.513**
	N	.000
	N	12
	N	12

** . Correlation is significant at the 0.01 level (2-tailed).

The findings in table 4.15 indicates that there is a negative significant correlation between physical classroom design (class size) and grade three learners literacy outcomes ($r=.513$, $p<.05$). This implies that literacy outcomes are negatively associated with classroom size such that as classroom size increases, learners have poor outcome in their literacy. Moreover, when classroom size is small, learners tend to gain a positive outcome in their literacy.

This implies that if the physical design of the classroom is insecure and hostile, to the learners it increases deviant behavior truancy and absenteeism hence decline in performance. From these results, it can be concluded that some learners learning in unfavorable learning environment for instance temporary buildings, no desks, less parental support in class work, low level of motivation and inadequate competencies of Grade three teachers may result to low performance in Sub- County schools. The dimension of equipped libraries, good learning classroom facilities, motivational support from Grade three teachers and peers are major influential factors to adjusting to overall classroom environment.

This implies that Teachers' performance thus the way the teacher uses specific ways of instruction and application of creative skills on available materials in classroom had a positive influence on learner's literacy acquisition. The controversial issue of class size has been a noteworthy educational issue for decades. This was reported to be one of the factors that led to a decline in performance in the Sub-County. The objective of reading instruction was to equip children with the abilities necessary to comprehend and appreciate written language. The role of the teacher was to assist learners in comprehending written content at a level commensurate with their general intellectual skills. In addition to the findings from observational schedules, teachers concurred. This finding is consistent with the views of (Francis, 2014; Jeruto & Okirima, 2020) who found out that, a class size of 20 was good for implementing reading and writing skills, this was because large classes made it harder for Grade three teachers to track learners' attendance as well as progressive in literacy skills. According to the conclusion of the study, it was noted that large classes promoted learners' absenteeism and low quite of feedback in learners' literacy outcomes.

RESULTS AND DISCUSSION

The majority of grade three teachers in the survey thought that the physical layout of the classroom was useful in enhancing Grade three learners' literacy abilities. Most classrooms where literacy skills are taught are, according to reports from head teachers, organized into groups. According to inferential analyses, the distance

between the teacher and learners, the kind of furniture, seating arrangements, and the distance between pupils had a significant influence on the reading achievements of Grade three learners. Accessibility to diverse learning environment is related with positive learners' outcomes. To last longer, furniture and equipment should be adaptable to meet the needs of a variety of learners, as well as flexible and easy to clean. According to the research on the association between class size and learner participation in literacy activities, there is a correlation between class size and learner participation in the classroom. Classes with fewer learners allow for more concentration, which results in enhanced performance. When a teacher adapts instruction to meet the unique needs of each learner, reading skills improve. Creating a pleasant learning atmosphere will raise literacy levels as well.

To determine the relationship between class size and teacher preparation, the study showed a negative correlation between class size and reading outcomes in the lower grades of public primary schools. However, the comments of Grade three teachers in a study about the problems of teaching literacy in the lower Grades in public primary schools indicate that Grade three teachers find it difficult to devote particular attention to each learner due to the large class sizes and to get a sufficient understanding of learners' needs.

Various public primary schools cannot afford to build a functioning library system, necessitating immediate government assistance for libraries. Even though a few public primary schools in the Sub-County have acquired textbooks, and some schools even get contribution programmes from Aid International and other Education Organizations, the books are not preserved in good condition. Another issue involves theft protection in numerous instances, the head teachers promoted the use of books and materials, such as prints and labelled walls, as tools for improving reading skills. Grade three teachers who often use teaching and learning resources in the classroom had pupils with higher reading scores. A significant correlation exists between the utilization of teaching and learning resources and the acquisition of reading skills.

CONCLUSION

The majority of grade three teachers reported that their learners engage in reading activities, whereas those who do not read in their early years of schooling do not achieve future success. According to inferential statistics, there was a significant correlation between the use of libraries and printed materials and the acquisition of literacy abilities by grade three. This indicates that learners should have access to literacy materials, including books, age- and content-appropriate materials, and scalable technologies that develop literacy abilities. These library materials educate learners through the acquisition of fundamental reading and writing abilities and create a vital link between skills acquisition and meaningful literacy use. Therefore, physical classroom design has an influence on grade three learners' literacy achievements.

Evidently, learners' literacy outcomes influence academic achievement in the learning environment, as demonstrated by the study's findings. Therefore, it is crucial that learners gain literacy skills early on in their education.

Grade three teachers should comprehend how to individualize education based on assessment data, adopt curriculum materials geared toward whole-class instruction, and recognize individual variances.

Libraries must be an integral component of the long-term policy framework for the entire education sector, which encompasses literacy, information provision, and lifelong learning.

To ensure that the classroom atmosphere in all schools is conducive to learning and designed to push learners to compete effectively for higher academic achievement, policies must be enacted.

To improve academic achievement, attention should be placed on providing classroom facilities, enhancing the quality of teaching methodologies, and fostering teacher-learner engagement.

SUGGESTIONS FOR FURTHER RESEARCH

From the findings of this study the following suggestion was made by the researcher for further research. A further study should be conducted to evaluate the effect of class size on Grade three learners' literacy outcomes. Other studies should replicate other areas not covered in this study.

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