The Nexus Between School Environment and Pupils' Learning Outcomes Within the Framework of the Unlock Literacy Program in Handeni District, Tanzania

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Abstract: *This study employs a quasi-experimental design to examine the influence of the school environment on pupils' learning outcomes within the Unlock Literacy Program in Handeni District. Data from 200 pupil respondents were collected through surveys and key informant interviews with teachers. The analysis utilized STATA 17 software for descriptive statistics to assess educational infrastructure and resources and ordinal regression to evaluate the school environment's impact on pupil learning outcomes. The findings indicate significant disparities in access to infrastructure and resources between treatment and control groups. Treatment schools had superior access to toilet facilities, classroom conditions, books, and libraries, with 37.5% having good classroom environments and similar percentages reflecting adequate book and library access. In contrast, control schools exhibited deficiencies, with 50% reporting inadequate books and 37.5% lacking library facilities. Ordinal regression revealed that factors like teacher encouragement, peer interaction, homework management, borrowing books, and engaging in fun activities significantly improved learning outcomes when integrated into a structured program. Conversely, the absence of such support led to less effective or negative impacts on pupils' learning. Based on these findings, the study recommends adopting structured educational programs integrating supportive activities like teacher encouragement and peer interactions to enhance learning. Emphasizing positive teacher-pupil relationships through targeted training, improving access to essential resources, and regularly evaluating educational programs are crucial for fostering effective educational environments and improving pupil success.*

Keywords: *School Environment, Learning Outcomes, Unlock Literacy Program, Quasi-Experimental Design, Educational Infrastructure, Ordinal Regression, Pupil Engagement, Structured Educational Programs*

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1. Introduction

The relationship between the school environment and the academic performance of pupils is a multifaceted issue that has garnered significant attention from educators and policymakers globally. This relationship encompasses various factors, including the quality of teacher-pupil interactions, the qualifications and experience of teachers, the availability and utilization of educational resources, and the socio-economic backgrounds of pupils (Mick, 2018). These elements collectively shape the physical spaces within schools, ranging from classrooms to laboratories, libraries, and outdoor areas, all of which can influence pupil engagement, motivation and ultimately, academic achievement Ahmad *et al*. (2018).

Initiatives such as the Unlock literacy program, spearheaded by organizations like World Vision, are designed to address educational disparities and improve learning outcomes by enhancing literacy skills among primary school pupils. Through structured curricula and targeted interventions, programs like these aim to bolster reading comprehension, language proficiency, and overall academic performance (Language and Reading Research Consortium, 2019). However, the success of such initiatives depends not only on their content and delivery but also on the broader context within which they operate.

Numerous studies have explored the intricate relationship between the school environment and academic performance. For instance, Byers *et al.* (2018) investigated the impact of different classroom layouts on teaching and learning dynamics, while Korir and Kipkemboi (2014) examined the influence of both the physical environment and peer interactions on pupils' academic outcomes. Rafiq *et al*. (2011) delved into the university level, exploring how the school environment affects academic achievements in higher education settings.

Despite efforts such as the Unlock Literacy Program in Handeni District, concerns persist about the effectiveness of such programs within the broader school environment. While the importance of a conducive learning environment is recognized globally, understanding the specific interactions between initiatives like the Unlock Literacy Program and the unique contextual factors in Handeni District is crucial. This study aims to fill this gap by deeply identifying the relationship between the Unlock Literacy Program and various aspects of the school environment in Handeni District, specifically focusing on the learning outcomes of Standard Three (Std 3) pupils. It seeks to understand how the program's implementation and effectiveness are influenced by factors such as teacher-pupil interactions, the availability of resources, the physical condition of classrooms, and the overall school culture.

Through meticulous and comprehensive analysis, this study endeavors to identify the specific facilitators or barriers within the school environment that impact the success of the Unlock literacy program. By examining these factors in detail, the research aims to provide insights into how the program can be optimized to better meet the educational needs of Std 3 pupils in Handeni District.

Aligned with sustainable development goal 4 (quality education) of the United Nations' 2030 agenda for sustainable development, this study underscores the importance of ensuring inclusive and equitable quality education for all. By focusing on an underprivileged area like Handeni District, where educational opportunities may be limited, the research emphasizes the critical role of improving learning environments and enhancing educational opportunities to achieve sustainable development.

By addressing the specific challenges that hinder educational quality in public sector schools, particularly in the context of the Unlock Literacy Program and Std 3 pupils in Handeni District, this study analyzes the role of the school environment, including teacher-pupil interactions and physical infrastructure, in the program's effectiveness and seeks to identify barriers and facilitators within the school environment that influence the success of the Unlock Literacy Program contributing to the broader global effort to advance education as a catalyst for sustainable development. The research also intends to inform policy and practice through its findings and recommendations, ultimately fostering positive change and improving learning outcomes for all pupils.

2. Literature Review

2.1 Theoretical Framework

This study uses two theoretical perspectives to assess the Unlock Literacy Intervention Program's impact on student learning outcomes and engagement with the school environment: Ecological Systems Theory and Self-Determination Theory. These theories give a formal framework for understanding the mechanisms that support the intervention's success by investigating how external and internal factors influence pupil engagement, teacher adoption, and overall academic performance.

2.1.1 Ecological Systems Theory

Developed by Urie Bronfenbrenner, ecological systems theory emphasizes the importance of multiple interacting systems in shaping human development. In the context of this study, the school environment serves as the mesosystem within which the Unlock literacy program operates (Ingalls and Stedman, 2017). This theory helps to conceptualize how various factors within the school environment, such as teacher-pupil relationships, resources, and peer interactions, influence the implementation and effectiveness of the literacy program, thereby impacting the academic performance of Std 3 pupils.

2.1.2 Self-Determination Theory

Self-determination theory focuses on intrinsic motivation and the fulfillment of basic psychological needs, namely autonomy, competence, and relatedness (Deci and Ryan, 2012). Within the school environment, pupils who perceive autonomy in their learning, feel competent in their abilities,

and have positive relationships with teachers and peers are more likely to engage actively in literacy activities and exhibit higher academic performance. This theory provides insight into the motivational factors that may influence the effectiveness of the Unlock literacy program and its interaction with the school environment.

2.2 Empirical Review

Barrett *et al*. (2019) researched the impact of school infrastructure on learning. The results from the study revealed that Infrastructure, teacher-pupil interactions, and resource availability all have a substantial impact on students' academic success in the school setting. Moreover,well-maintained infrastructure, such as classrooms and libraries, has a significant impact on students' involvement and achievement, hence the research emphasizes the value of proper infrastructure and a supportive school atmosphere. Another study by Yangambi (2023) underlines how inadequate facilities in underdeveloped nations maintain educational inequalities, particularly in rural regions. Similarly, Kidger *et al*. (2021) emphasize that improved physical and mental settings in schools are critical for promoting better learning outcomes, particularly in underserved communities.

Rafiq *et al*. (2022) investigated how the interaction of literacy interventions and school culture influences academic attainment. Gan *et al*. (2021) emphasize the importance of instructor feedback within structured literacy programs in maintaining student engagement and enhancing outcomes. Both of these research highlight the necessity for context-specific adjustments, by suggesting that the effectiveness of such programs depends on their alignment with the broader school environment which remains underexplored in rural Tanzanian contexts. Unlock Literacy program aims to bridge educational gaps by enhancing reading and writing skills.

According to Yuan *et al*. (2023), teacher encouragement fosters creativity and intrinsic motivation, which are critical for academic success. Pianta et al. (2012) point out that these relationships require supportive structures, such as training and resources, to yield positive outcomes. Mohzana *et al*. (2023) extend this discussion, demonstrating that supportive teacher-pupil relationships not only improve academic outcomes but also enhance pupil engagement when integrated into well-structured literacy programs.

Inuen (2020) conducted a study in Nigeria that explored the relationship between the learning environment and student outcomes, concluding that the quality of the learning environment significantly influences students' learning outcomes. This finding underscores the importance of

creating a conducive and supportive environment for effective learning. Similarly, Netshidzivhani and Molaudzi (2024) demonstrated that the optimal utilization of educational resources—such as well-maintained school facilities, up-to-date instructional materials, and the availability of qualified teachers—is positively correlated with higher levels of student achievement. These findings suggest that resource allocation and proper maintenance of school infrastructure are critical for fostering academic excellence.

Adding to this evidence, Nisa (2022) highlighted that the learning environment plays a foundational role in shaping student achievement in MTS schools in Nigeria. This emphasizes the necessity of investing in environmental factors that promote child development and educational success. Additionally, Kweon et al. (2017) provided a unique perspective by examining the impact of green spaces within school environments. Their study revealed that schools with a higher number of trees demonstrated significantly better proficiency rates in Mathematics and Reading standardized tests. These results remained robust even after controlling for variables such as school size, student-teacher ratios, and free lunch enrollment. This finding points to the broader implications of environmental design and its impact on cognitive development and academic performance.

Ahmad and Hassan (2024) further identified multiple dimensions of the school environment that significantly impact student achievements. These include school climate, availability of amenities, extracurricular activities, quality of administration, effective security systems, and regular parent-teacher meetings. Their findings highlight the need for a holistic approach to school improvement that incorporates both academic and non-academic aspects.

In another study, Palangda and Watung (2023) provided multifaceted insights into the influence of the school environment on student outcomes. They reported that the school environment alone influences student outcomes by 74%, while the combined effect of the school environment and student interest in learning contributes 66% to learning outcomes. Furthermore, the interaction between the school environment and interest in learning accounts for 78% of the variation in student learning outcomes. These findings emphasize the synergistic effect of the school environment and intrinsic motivation, suggesting that fostering both can lead to substantial improvements in student performance.

The collective findings from these studies underscore the critical role of the school environment in shaping student outcomes. Despite extensive studies on the school environment and literacy programs, there are still significant gaps in understanding how they interact in underserved and rural communities. While the mainstream

of these studies provides insights into systemic issues, they frequently neglect the specific mechanisms by which interventions such as Unlock Literacy work. Furthermore, the empirical evidence about how these programs adapt to specific socio-cultural and economic contexts is lacking, particularly in areas like Handeni District.

2.3 Conceptual Framework

The conceptual framework (Figure 1) guiding this study delineates the intricate relationships between various key variables, shedding light on how they interact to influence the academic performance of Std 3 pupils in Handeni District. At the core of this framework lie the independent variables; Unlock literacy program implementation and school environment, both of which exert direct influence on the academic outcomes of pupils. The Unlock literacy program implementation encompasses factors such as the quality of program content and delivery, the effectiveness of teacher training, and the allocation of resources. Concurrently, the school environment encapsulates the physical facilities within schools, the dynamics of teacher-pupil relationships, the availability of resources, and the socioeconomic context of the pupils.

These independent variables interface with mediating factors such as pupil engagement and teacher practices. Pupil engagement reflects the active participation and motivation levels of pupils in literacy activities, which are influenced by the quality of program implementation and the supportive school environment. Similarly, teacher practices encompass the pedagogical approaches employed by teachers and their management of classroom dynamics, both of which are shaped by the broader context of program implementation and the school environment. Moreover, contextual factors and program adaptation serve as moderating variables within the framework. Contextual factors, including cultural norms and community support, influence how the Unlock literacy program and the school environment impact pupil outcomes. Additionally, program adaptation considers the flexibility and sustainability of the program within the local context, further shaping its effectiveness in improving academic performance.

Ultimately, these interrelated variables converge to impact the academic performance of Std 3 pupils in Handeni District. Through empirical investigation, this study aims to elucidate the complex dynamics within this conceptual framework, providing insights for optimizing program implementation, enhancing learning environments, and ultimately improving educational outcomes for pupils.
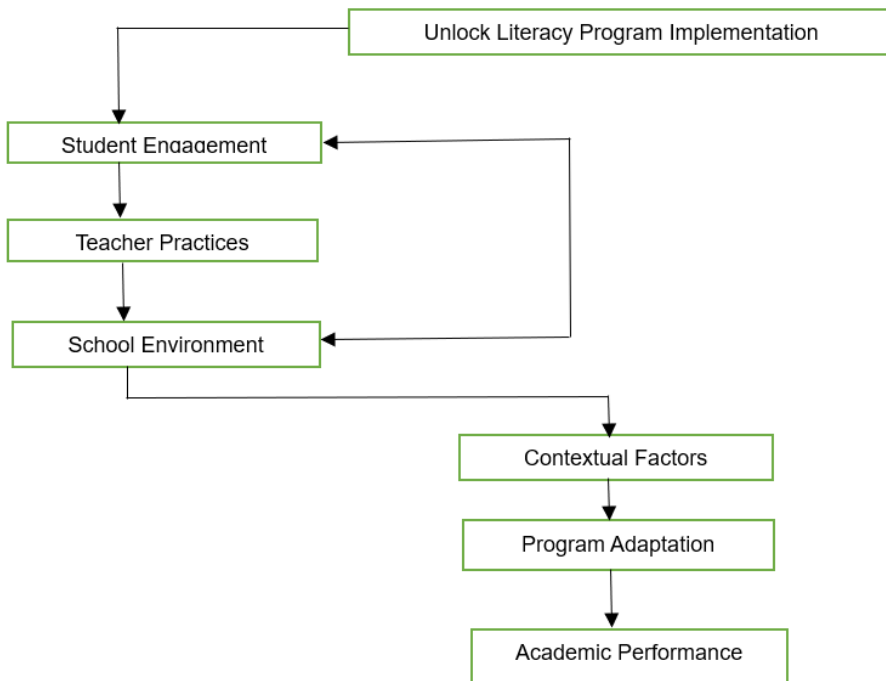

Figure 1: Conceptual Framework for the study

3. Methodology

3.1 Description of the study area

The study was conducted in Handeni District, Tanga region (Figure 2), one of the 11 districts of the Tanga region in Tanzania. It was bordered to the west by Kilindi District and the Handeni Urban District, to the north by Korogwe District, to the east by the Pangani District, and to the south by Pwani Region. The district covered an area of 6,534 km^2 (2,523 sq mi), with its administrative capital in Mkata town. According to the 2022 Population and Housing Census, the population of Handeni had increased from 276,646 to 384,353 in 2022, which represents a 38.93% growth over the 10-years period. The justification for the study area was the presence of schools that had participated in the Unlock Literacy program.
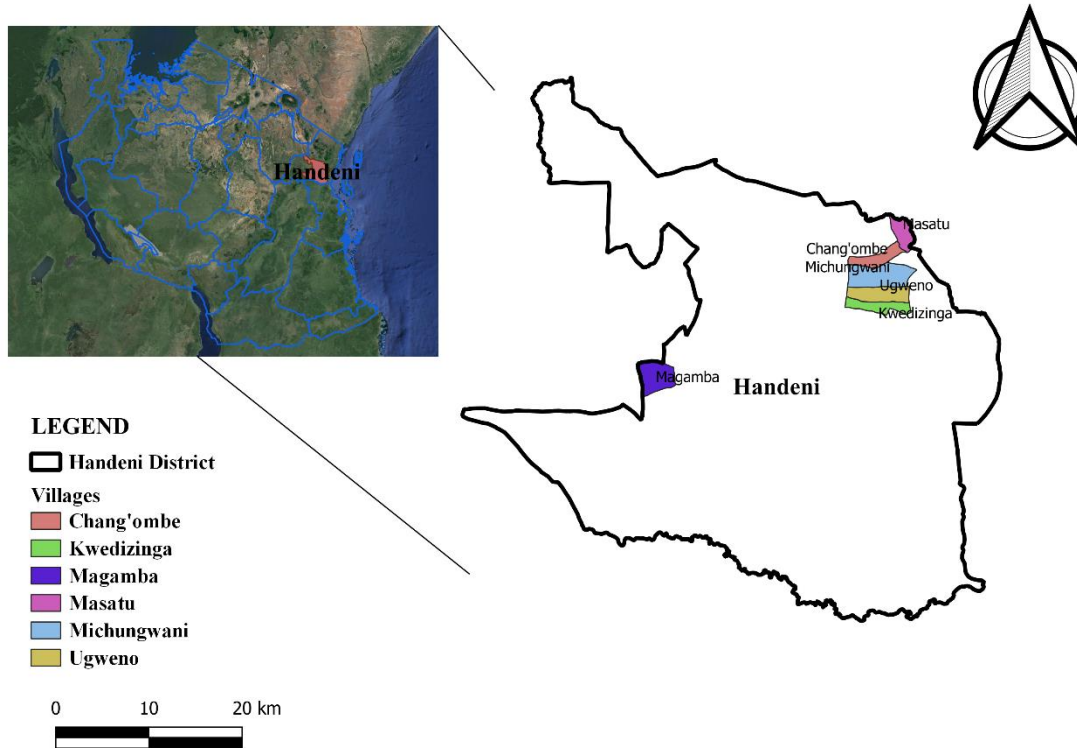

Figure 2: Map of Study Area

3.2 Research design

The study used a quasi-experimental design to assess the influence of the Unlock Literacy Intervention Program on student learning outcomes in the Handeni District. This design is frequently employed in educational research when random assignment to treatment and control groups is not an option due to ethical or practical restrictions. Instead, the study used pre-existing groups: schools that took part in the intervention (treatment group) and those that did not (control group). This approach ensures that the study mirrors real-world educational contexts while also allowing for the assessment of causal linkages (Tadayon and Pottie, 2021).

3.3 Target Population and Unit of Analysis

The study's target population was grade 3 students enrolled in primary schools in Handeni District, including both Unlock Literacy Program participants (treatment group) and non-participants (control group). Literacy teachers from participating schools were also asked to submit contextual information on the program's implementation

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and impact on student learning outcomes. Grade 3 students were chosen as the primary emphasis because this stage marks a vital phase for building core literacy abilities, which are required for later academic achievement.

3.4 Sampling techniques and sample size

The study involved 200 Grade 3 pupils from eight primary schools. Four schools participating in the Unlock Literacy Program were designated as the treatment group, while the other four schools, that did not participate, formed the control group. A stratified sampling technique was used to ensure a balanced representation of pupils. The pupils were first stratified into two groups: those in schools with the literacy program intervention and those in schools without it. Within each stratum, pupils were purposively selected based on specific criteria aligned with the study objectives. These criteria included reading proficiency and classroom engagement, as they directly relate to the impact of literacy programs. This purposive selection ensured the inclusion

of participants who could provide valuable insights into the effectiveness of the intervention. Furthermore, purposive sampling was also used to select teachers that participated in the study. The sample size of 200 respondents was determined using Cochran's formula (1963) for infinite populations. Cochran's formula is represented as;

$$n = \frac{z^2 * p * (1 - p)}{(d)^2}$$

n = size of sample size,
z = 95% confidence interval (i.e., 1.96),
p = Presumed highest possible variation in the population proportion is 15.4%,
and d= The allowable margin error (i.e., 0.05).
Therefore, n, representing the sample size, was:

$$n = \frac{1.96^2 * 0.154 * (1 - 0.154)}{(0.05)^2}$$

$$n = \frac{3.8416 x 0.1030284}{0.0025} = 200.1996 = 200$$

<div align="center">Table 1: Samples from eight schools</div>

Ward	School Name	Sample size
Segera	Chang'ombe Primary School	25
	Masatu Primary School (T)	25
	Michungwani A Primary School	25
	Michungwani B Primary School	25
	Mkumburu Primary School	25
Kwendizinga	Kwendizinga Primary School (T)	25
	Ugweno Primary School (T)	25
	Kwaguru Primary School (T)	25
Total		**200**

3.6 Data Collection

A structured questionnaire was created and utilized to gather primary quantitative data from grade 3 students. The questionnaire consisted of closed-ended questions with pre-determined response options intended to elicit specific information such as teacher-pupil relationship, peer interaction at school, behavior of borrowing books, homework management and fun teaching activities. These questions were simple and easy, making them suitable for younger respondents. Direct observations were also used, allowing researchers to observe instructional tactics and student involvement during literacy classes while capturing visual data. Prior to data collection, the instruments were pre-tested in the study area to ensure that the data was familiar, clear, valid, and reliable. Teachers were also interviewed to provide information on school infrastructures and resources.Direct classroom observations was also applied inorder to document

teaching strategies and pupil engagement during literacy lessons, providing context for the study's results.

3.7 Data Analysis

Data collected from structured questionnaires were coded and analyzed using STATA software version 17. An ordinal logistic regression model was employed to analyze the influence of the school environment on pupils' learning outcomes within the framework of the Unlock Literacy Program. This method was chosen because the dependent variable had three categories with meaningful sequential order, where one category was 'higher' than the previous one. In this study, the dependent variable (learning outcome) was measured in terms of scores categorized as "good", "average", and "poor" learning outcome. The values of the independent variables for parental involvement are presented in Table 2.The model can be summarized into an equation that predicts learning outcomes based on various pupil characteristics,

represented by the independent variables and the explanatory variable. The ordinal logistic regression model can be expressed as;

$$\text{Log}\left(\frac{P(Y \leq j)}{P(Y \leq j)}\right) = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_6 X_6)$$

Where:

α_j are the thresholds (or intercepts) for the cumulative logits, specific to each cut-off between outcome categories. β_i are the coefficients of the predictor variables, indicating the effect of each variable on the log odds of achieving a higher category in the learning outcome, relative to achieving a lower category. These effects are logged in odds ratios when the predictor changes.

Y = Learning outcome (Test scores) (2= 70%-100%, Good,)

(1= 40%-69%, Average)

(0= 0%-39%, Poor)

β_0 = Constant variable
X_1 = Teachers encouragement (1= Yes)
(0= No)
X_2 = Fun teaching Activities (1= Yes)
(0= No)
X_3 = Homework management (1= Yes)
(0= No)
X_4 = Borrowing books (1 = Yes)
(0 = No)
X_5 = Peer interactions (1= Yes)
(0= No)
X_6 = Teacher-pupil relationship (1 = Positive)
(0 = Negative)

The above model equation setup predicts the probabilities of each category of learning outcomes based on the inputs for each explanatory variable under the Unlock Literacy Program.

Table 2: Variables Description

Variables Description	Type	Unit of measurement	Expected sign
Dependent Variable			
Learning outcome (reading and writing skills)	Categorical	2=Good learning outcome (70%-100%) 1=Average learning outcome (40-69)% 0=Poor learning outcome (0%-49%)	
Explanatory Variables			
Teachers encouragement	Dummy	1= Yes 0= No	+
Fun Teaching Activities	Dummy	1= Yes 0= No	+
Borrowing Books	Dummy	1= Yes 0= No	+
Homework Management	Dummy	1= Yes 0= No	+
Peer Interactions	Dummy	1= Yes 0= No	+
Teacher pupil relationship	Dummy	1= Positive 0= Negative	+

4. Results and Discussion

This section presents and discusses the results of the study, focusing on the influence of the school environment on pupils' learning outcomes in Hnadeni District. The findings are grouped into topic sections, beginning with the respondents' socio-demographic characteristics, which give context for the investigation. Key data including literacy outcomes, school environment characteristics, and the program's overall success are then given and evaluated in light of the study's aims and relevant research.

4.1 Socio-Demographic Characteristics of Respondents

Different characteristics of respondents were used in this study as shown in Table 3. The characteristics of the respondents included gender and age. The results indicate that a majority of the respondents (pupils), specifically

68%, were male while 32% were female. These findings are consistent with Glick and Sahn (2000) who claim that in many rural areas, societal norms and economic concerns frequently emphasize the education of male children above females. Cultural beliefs see males as future breadwinners, while females are expected to take on domestic roles. Limited household resources exacerbate this issue, with families perceiving higher returns on investing in boys' education. Studies, such as those by Desai (2007), Versluys (2023), and Thelma (2024), highlight higher dropout rates among girls due to poor infrastructure and entrenched gender biases. Addressing these disparities requires shifting cultural perceptions, offering financial support for girls' education, and improving school infrastructure to ensure equal access and opportunities for both genders. Girls in such contexts are more likely to face impediments to education, such as early marriage, home obligations, and cultural biases. For example, in Tanzania, girls from rural

areas are typically kept at home to help with housework or care for siblings, which reduces their chances of attending or remaining in school (Emmanuel, 2015).

The results presented in Table 3 also indicate that over half of the respondents (60%) were aged above 11 years, while the remaining 40% ranged in age from 0 to 10 years. This is consistent with the findings of Showalter *et al*. (2019), who discovered that students in rural communities typically begin or enroll in school at a later age than the global average. Financial restraints, large distances students must go to school, and limited access to early childhood education programs are all factors that contribute to delayed enrollment. These hurdles are prominent in rural areas, where families may struggle to fund school-related fees or prioritize education for older children.

Table 3: Respondents Demographic and Socio-economic Characteristics (n = 200)

Characteristic		Frequency	Percentage(%)
Sex	Male	136	68
	Female	64	32
Age	0 -10 years	80	40
	> 11 years	120	60

4.2 The Assessment of Educational Infrastructure and Resources

The results in Table 4 show differences in the adequacy of toilet facilities across treatment and control groups among eight schools. In the treatment group, 3 out of 4 schools, representing 37.5%, reported adequate toilet facilities, whereas only 1 school, or 12.5%, had inadequate toilet facilities. This contrasted with the control group, where an equal distribution was noted: 2 schools, or 25% each, were classified under both adequate and inadequate categories. The presence of adequate facilities in a higher proportion of treatment group schools (37.5% vs. 25%) suggests a potentially positive impact of the Unlock literacy program on infrastructure improvements or better management practices. Adequate toilet facilities are essential for maintaining hygiene and supporting a conducive learning environment, which is critical for optimal pupil learning and health. The fact that 50% of the schools in the control group lacked adequate facilities highlights a significant area for intervention, aiming to ensure equitable access to essential amenities. Similar results were reported by Barret *et al*. (2019) and Yangambi (2023), that several important observations that are critical to determining academic performance in schools include good infrastructure such as

adequate toilet facilities which have a serious impact on pupil learning.

For the variable concerning classroom conditions, results in Table 4 display that there are notable differences between the treatment and control groups. In the treatment group, three schools, or 37.5% of the total, reported having adequate classroom conditions, while only one school, equivalent to 12.5%, reported inadequate conditions. Conversely, in the control group, the numbers reveal a greater disparity: only one school, representing 12.5%, had adequate classroom conditions, and three schools, or 37.5%, faced inadequate conditions. Similar findings by Ming and Degol (2015) reported that pupil academic and behavioral outcomes are also a result of the desired classroom condition.

The data suggests that the schools in the treatment group, which are part of the Unlock literacy program, have significantly better classroom environments compared to those in the control group. Adequate classroom conditions are vital for effective teaching and learning as they likely include aspects such as sufficient space, lighting, ventilation, and necessary classroom materials, all of which contribute to a more conducive learning atmosphere.

This difference in classroom adequacy between the treatment and control groups (37.5% adequate in treatment and 12.5% adequate in control group) implies a potential positive impact of the literacy program on school infrastructure or better maintenance and management practices in the treatment schools. Meanwhile, the high percentage of inadequate classrooms in the control group underscores a critical area for improvement. Providing an adequate learning environment in all schools is essential for promoting equitable learning opportunities and enhancing pupil engagement and success.

Findings in Table 4 indicate that significant differences were observed in classroom conditions between the treatment and control groups. Within the treatment group, 37.5% of schools (3 out of 8) reported 'Good' classroom conditions, and only one school, representing 12.5%, was rated as having 'Bad' conditions, with no schools falling into the 'Average' category. On the other hand, the control group showed a more concerning scenario; no schools were rated as 'good,' two schools (25%) had 'average' conditions, and the same percentage (25%) were considered to have 'bad' classroom conditions. This comparison highlights a possible positive impact of the Unlock literacy program on improving classroom environments in the treatment group, whereas the control group's lack of any 'good' rated classrooms underscores an urgent need for interventions aimed at enhancing the educational infrastructure.

Moreover, the results in Table 4 portray that the availability of books presents a notable disparity between the treatment and control groups. Within the treatment group, there was an equal distribution regarding the availability of books: 2 schools, accounting for 25% of the group, reported 'adequate' book availability, while another 2 schools also making up 25%, reported 'inadequate' book availability. In contrast, the control group exhibited a more significant deficiency in book resources. None of the schools in the control group reported 'adequate' book availability, and all four schools, representing a substantial 50% of this group, described their book availability as 'inadequate.' This distribution highlights potential challenges faced by the control group in accessing sufficient educational resources, which is critical for effective learning and literacy. Similar findings by Gwako (2020) reported that books and other academic materials play a vital role in the facilitation of better academic attainment among pupils.

Lastly, findings in Table 4 indicate that the presence of libraries in the schools revealed significant differences between the treatment and control groups. For the treatment group, libraries were present in 3 out of the 8 schools, accounting for 37.5%. Only one school in this group, which represents 12.5%, didn't have a library. This indicates a relatively high availability of library facilities among the schools receiving the literacy program, suggesting that the program was positively influencing the establishment or maintenance of library resources.

Conversely, in the control group, only 1 out of 8 schools, accounting for 12.5%, had a library, while the majority, 4 schools or 37.5%, did not have a library. This stark disparity emphasizes a significant resource gap in the control group schools, which could potentially impact the effectiveness of educational outcomes due to the limited access to a variety of learning materials and a conducive study environment. The difference in library availability between the treatment school and control schools highlights the need for focused interventions to establish and support library services in schools, particularly those not currently benefitting from the Unlock Literacy Program. Similar results were reported by Adeyemi, 2010; Williams *et al.* 2001 on the influence of libraries on pupil learning outcomes.

Table 4: Evaluation of Educational Infrastructure and Resources Across Schools

		Treatment		Control	
		N	(%)	N	(%)
Toilet Facilities	Adequate	3	37.5	2	25
	Inadequate	1	12.5	2	25
Classrooms	Adequate	3	37.5	1	12.5
	Inadequate	1	12.5	3	37.5
Classroom	Good	3	37.5	0	0
Conditions	Average	0	0	2	25
	Bad	1	12.5	2	25
Books	Adequate	2	25	0	0
Availability	Inadequate	2	25	4	50
Library	Yes	3	37.5	1	12.5
	No	1	12.5	3	37.5

4.3 The influence of School environment on Pupils' learning outcomes

Ordered Logistic regression was performed to create a model of the relationship between the predictor variables (environmental factors) and the dependent variable (learning outcome). For the treated group, based on 100 observations, the likelihood ratio chi-square test yielded a chi-square value of 51.49 and the pseudo R-squared value was 0.52, indicating that approximately 52% of the variability in the ordinal outcome variable was explained by the predictor variables (Table 5).

For the control group, also based on 100 observations, the likelihood ratio chi-square test resulted in a chi-square value of 41.49 and the pseudo-R-squared value was 0.457, suggesting that approximately 45.7% of the variability in the ordinal outcome variable was explained by the predictor variables. Overall, both models demonstrated statistically significant results, with the treated group showing slightly higher explanatory power (pseudo R-squared of 0.52) compared to the control group (pseudo R-squared of 0.457).

Table 5: Summary of Ordered Logistic Regression Results

Learning_Outcome	Treatment				Control			
	Coefficient	Std. err.	Odds Ratio	P>|z|	Coefficient	Std. err.	Odds Ratio	P>|z|
Teacher_Encouragement								
Yes	1.961	1.706	7.105	0.000	1.072	0.789	2.920	0.000
Peer_Interactions								
Yes	0.362	1.217	1.437	0.024	-1.599	0.662	0.202	0.016
Homework_Management								
Yes	1.056	0.835	2.874	0.041	0.432	0.688	1.540	0.530
Borrowing_Books								
Yes	1.035	0.897	2.815	0.011	0.975	0.807	2.650	0.014
Fun_Activities								
Yes	1.269	0.943	3.560	0.026	-0.871	0.668	0.419	0.192
Teacher_Pupil_Relationship								
Yes	0.252	0.827	1.286	0.346	-0.779	0.627	0.459	0.688
No of Obs = 100 **LR chi2 = 51.49** **Pseudo R2 =0.52**					**=100** **=41.49** **=0.457**			

The findings in Table 5 demonstrate the significant effectiveness of structured interventions like the Unlock Literacy program in enhancing the educational benefits of teacher encouragement. Specifically, pupils in the treatment group, who participated in the Unlock literacy program, exhibited a remarkable increase in the odds of achieving higher learning outcomes, with an odds ratio of 7.105. This indicates that pupils who were encouraged by their teachers were 7.105 more likely to have higher outcomes compared to those who were not.

In contrast, while the control group also benefited from teachers' encouragement, the effect was less pronounced, with an odds ratio of 2.920. This suggests that pupils in the control group who experienced teachers' encouragement were 2.920 as likely to have better learning outcomes compared to those without it, but still significantly less effective than in the treatment group. These numerical distinctions highlight the added value of integrating teacher encouragement within a comprehensive Unlock literacy program. It is clear that the program not only supports but significantly amplifies the positive impact of teacher encouragement on pupil learning outcomes. This finding aligns with the work of Yuan *et al.* (2017), who reported that pupil creativity is positively associated with teacher encouragement and intrinsic motivation, highlighting the mediating role of creative process engagement in facilitating pupil creative performance. Furthermore, findings by Kitchen (2012) reveal that pupil encouragement may contribute to better performance. Additionally, a study by Gan *et al.* (2021) points out that both teacher and pupil feedback behaviors significantly influence course satisfaction.

Results from Table 5 on the effects of peer interaction on learning outcomes showed a significant positive influence on the treated group and a negative influence on the control group. The findings in the treated group show an odds ratio of 1.437. This suggests that pupils who interact with their peers by reading together and listening as they read were 1.437 times more likely to have better learning outcomes compared to those who don't. This finding suggests a moderate but positive impact, affirming that within the structured environment of the program, peer interactions effectively enhance learning.

In contrast, the control group exhibits a negative coefficient of -1.5986, indicating that peer interactions can negatively

affect learning outcomes in the absence of structured intervention. The corresponding odds ratio of 0.202 suggests that pupils who interact with their peers were 0.202 less likely to have better learning outcomes. This suggests that without the guiding framework provided by the Unlock literacy program, peer interactions may be counterproductive, detracting from educational achievement rather than supporting it.

These findings underscore the critical role of structured educational frameworks in mediating peer interactions. The Unlock literacy program appears to successfully harness and enhance peer dynamics to support educational outcomes. Conversely, unstructured peer interactions in the control group led to significantly poorer outcomes, illustrating that the effectiveness of peer interactions is highly dependent on the context and implementation within educational programs.

Similar findings by Zepke (2018) and Sampaio *et al.* (2016) demonstrate that learning with peers, active citizenship, and pupil engagement has a positive impact on learning outcomes, creating a collaborative learning environment that can adapt to pupils' learning needs according to their preferences.

Results in Table 5 highlight the significant role that structured homework management plays in enhancing learning outcomes. In the treatment group, effective homework management almost tripled the odds of achieving better learning outcomes (odds ratio of 2.874), showcasing the effectiveness of structured educational practices incorporated into the program. These findings suggest that pupils who receive effective homework management from teachers were 2.874 more likely to have better learning outcomes compared to those who didn't. In contrast, while the control group also showed benefits from effective homework management, the influence was not significant. The contrasting results between the treatment and control groups underscore the importance of structured and guided homework practices as part of educational interventions. It also suggests that programs like the Unlock Literacy program are particularly effective in leveraging homework management to boost educational outcomes. Similar results were reported by Rosario *et al.* (2015) whose findings showed that homework follow-up practices such as checking homework orally; checking homework on the board; and collecting and grading homework had a positive impact on pupils' performance. Moreover, results by Mbogo (2021) and Komba (2017) indicated that pupils whose homework is checked and supervised properly were more significantly effective than those who don't in enhancing English language learning, and academic performance. Cooper's (1998) results showed that positive relations were found between the amount of homework pupils completed and achievement.

Results in Table 5 also indicate that in both treatment and control groups, consistently borrowing books significantly boosted pupils' likelihood of achieving better learning outcomes. In the treatment group, the effectiveness of book borrowing was slightly more pronounced (odds ratio of 2.815) compared to the control group (odds ratio of 2.650). These results showed that pupils who borrowed books from peers and the library were approximately 2.815 and 2.650 times more likely to have better learning outcomes compared to those who didn't respectively. This slight variation suggests that while book borrowing is inherently beneficial, its integration into a structured literacy program like the Unlock literacy program" can further amplify its positive impact.

The importance of access to reading materials such as books is evident from the substantial odds ratios observed in both groups. This aligns with extensive research showing that access to books and other reading materials is crucial for literacy development. Similar studies conducted by Wang *et al.* (2022) and Lingard (2013) noted that the indicator of pupils' book borrowing has significantly improved academic performance.

Moreover, results from Table 5 highlight the contrasting effects of fun activities between the treatment and control groups, underscoring the importance of the educational context and how such activities are integrated into learning. In the treatment group, where fun activities were likely well-structured and aligned with educational goals could be seen to notably enhance pupil's learning outcomes (odds ratio of 3.650). These findings suggest that pupils who were taught reading through the use of fun reading activities like plays and chanting/songs were 3.650 more likely to have higher learning outcomes compared to those who didn't.

Conversely, in the control group, encompassing fun activities did not show a significant influence but the absence of a structured approach to integrate these fun activities appears to have a very low likeness of learning effectiveness evidenced by an odds ratio of 0.419. Similar results were reported by Byamugisha (2010) and Adigun (2023) who said that important factors such as the presence of fun activities like songs and stories played a crucial role in the prediction of achievement in reading skills. These findings suggest that while fun activities can be a powerful tool for improving engagement and learning outcomes, their implementation needs to be carefully designed and monitored, especially in educational environments lacking the structured support of programs like the Unlock literacy program. Similarly, Mohzana *et al.* (2023) and Yuan *et al.* (2017) reported that alongside improving pupil learning outcomes, teaching through fun and engaging methods can also boost pupil participation. This increased engagement

can ignite a passion for learning, thereby enhancing academic performance.

The findings from the treatment and control groups highlight the nuanced role that teacher-pupil relationships can play in educational outcomes, particularly within differing educational frameworks. In the treatment group, positive relationships modestly enhanced learning outcomes (odds ratio of 1.286), suggesting that the program facilitated effective interactions and communication between teachers and pupils that support learning. Conversely, in the control group, the lack of programmatic support undermined the potential benefits of good teacher-pupil relationships, as evidenced by the negative influence on learning outcomes (coefficient= -0.7789, Odds ratio of 0.459). This indicates that positive relationships alone may not be sufficient to improve learning outcomes; the context and structure within which these relationships are crucial. Similar results posted by Pianta (2012) showed that the quality of interactions between teachers and children is fundamental to understanding pupil engagement and altering learning outcomes in pupils. Similarly, Lee (2012) and Song *et al* (2016) results showed that the teacher-pupil relationship was a significant predictor of reading performance.

These insights underscore the importance of integrating structured educational programs like the Unlock literacy program that not only foster positive teacher-pupil relationships but also create an environment where these relationships can effectively contribute to learning.

5. Conclusion and Recommendations

5.1 Conclusion

The study on the influence of the school environment on pupils' learning outcomes within the framework of the Unlock Literacy Program in Handeni District revealed critical insights. It highlighted significant disparities in access to educational infrastructure and resources between schools participating in the Unlock Literacy Program (treatment group) and those that do not (control group). The treatment group demonstrated superior access to toilet facilities, classroom conditions, books, and library resources, indicating that the program positively influences educational infrastructure, ultimately contributing to improved academic performance.

The analysis further emphasized the importance of structured support activities, such as teacher encouragement, peer interaction, homework management, borrowing books, and engaging in fun activities. These factors were shown to positively influence learning outcomes when integrated into a structured program. In contrast, the absence of such support often led to less

effective or negative impacts on pupil learning outcomes. The findings align with the principles of the Ecological Systems Theory and Self-Determination Theory, underscoring the role of supportive and interactive environments in enhancing educational outcomes. The study confirms that a conducive school environment, characterized by adequate resources and supportive teacher-pupil relationships, is vital for the successful implementation of educational programs and for improving pupil academic performance.

5.2 Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Improve educational infrastructure: schools should provide adequate and functional toilet facilities, ensure classrooms are well-maintained with proper lighting, ventilation, and furniture, and supply enough books and library resources to support students' learning. It's also essential to promote equitable access to these facilities, ensuring that all students, regardless of their background, can benefit from a conducive learning environment

2. Adopt Structured Educational Programs: schools should use supportive activities like instructor encouragement to engage students and provide individualized attention. They should also encourage peer relationships through group projects and joint efforts to improve collaboration and critical thinking. Furthermore, schools should use effective homework management systems that ensure assignments are relevant, sufficiently difficult, and allow for autonomous learning and practice.

3. Enhance parental and community development: Parents and guardians should be actively involved in the educational process through regular communication, parent-teacher meetings, and updates on student progress. Encouraging parental support at home, such as creating a conducive study environment and setting educational goals, can significantly boost student motivation. Schools should also foster strong partnerships with the community, including businesses and organizations, to provide additional resources.

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