

**MITIGATING NOISE FOR EFFECTIVE LEARNING ENVIRONMENT ON
STUDENT'S PERFORMANCE IN SECONDARY SCHOOL IN THIKA SUB-COUNTY
KIAMBU COUNTY KENYA**

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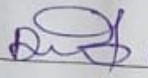
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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF EDUCATION IN
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DECLARATION

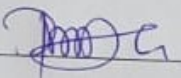
This project is my original work and has not been presented for the award of a Bachelor's Degree or for any similar purpose in any other institution.

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ABBREVIATIONS AND ACRONYMS

CRM - Customer Relationship Management

KNBS - Kenya National Bureau of Statistics

H0 - Null Hypothesis

H1 - Alternative Hypothesis

ABSTRACT

The study aims to investigate the impact of noise reduction strategies on improving the learning and overall learning of secondary school students in Thika, kiambu county, kenya, and their impact on the learning environment. A Cross - sectional study design was used to select sample from the target population of primary school students, teachers, parents and administrators in the Thika sub-county. A stratified random sampling was employed to select the sample. Results show that teachers are effective implementing noise control strategies and keeping classrooms quiet, helping to create a better learning environment in secondary schools. However, teachers were not able to effectively reduce noise levels in the classrooms. The results also showed that the introduction of noise control policies and noise testing are the most effective strategies for mitigating noise within secondary schools in the district. The study provides valuable insight and benefits to many stakeholders on the educational situation in this particular educational setting, highlighting the need for comprehensive research on this matter beyond specific regions or locales. This research embarks on an exploration of the multifaceted issue of noise pollution in secondary school environments and its implications for academic performance of students. The research explores impact of noise on students performance in secondary school within Thika sub-county, kiambu county kenya. It evaluates the effectiveness of various noise mitigation strategies including noise control policies, soundproofing measures and teacher training in noise management. Schools with well -defined noise control policies saw a significant reduction in noise levels 71.42%. Schools with strict adherence to noise control policies reported significant improvement in student performance. The schools had invested in soundproofing classrooms. They schools reported a marked decrease in noise levels during teaching. Schools reported that while soundproofing was effective, the cost were a barrier to widespread implementation. Also schools had the budget to implement compressive soundproofing measures. Schools provided training programs for teachers on noise management techniques. Teachers who received training were more development at managing classroom noise, leading to a significant improvement in student focus and participation and equipped to handle noise - related disruption contributing to a better overall learning environment.

OPERATIONAL DEFINITIONS OF TERMS

Acoustic Environment Modification: Refers to the introduction of soundproofing measures, acoustic insulation, or architectural designs within a secondary school with the aim of reducing noise levels.

Classroom Management Techniques: The strategies and practices employed by educators to control noise and maintain a conducive learning environment within a classroom.

Community and Infrastructure Development: The level of progress in building and improving community infrastructure, including noise-reducing measures, within Thika Sub County.

Socio-economic Status: A measure of an individual's or family's economic and social position, typically assessed based on factors like household income and parental education.

Soundproofing Measures: Interventions and technologies implemented to reduce noise levels within a secondary school, including the installation of soundproof panels, insulation, and architectural modifications.

Standardized Test Scores: Numerical measures of academic achievement based on standardized assessments in subjects such as mathematics and language.

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CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter entails various subtitles such as the background of the study, statement of the research problem, purpose of the study, Conceptual framework, research questions, objectives of the study, hypothesis of the study, significance of the study, scope of the study, Limitations of the study and assumptions of the study

1.1 Background to the Study

The learning environment in education is an important factor that affects students' learning. Secondary education is the link between basic and vocational education and plays an important role in shaping students' future education and careers. However, the noise problem in secondary schools is a serious problem that transcends geographical boundaries. Noise entering the learning environment has received international attention as it affects students' attention, cognitive development, and overall learning (Smith, 2019; Okechukwu et al., 2020).

Noise hazards are a concern in secondary education worldwide. The increasing number of students overwhelms infrastructure and causes noise in many areas, including classrooms, communities and transportation. This study delves into the intricate relationship between noise levels in secondary schools and their implications for the academic performance of students, highlighting the need for comprehensive research on this matter beyond specific regions or locales.

Many studies have shown the negative impact of loud noises on reading and memory in children (Theakston, 2011). Based on WHO's Guidelines for Community Noise, pollution interferes with spoken communication, affects comprehension, impairs task performances including reading attention and memory and leads to problems with concentration and communication (Goines and Hagler, 2007, Hagler, 1999). Studies established that reading attention, problem solving and memory are most strongly affected by noise which also affects communication skills, leading to misinterpretation of instructions, decreasing motivation and increasing rates of error (Lane, 2009; Half, 1999).

While the detrimental effects of noise pollution on academic performance are well-documented on a global scale, this research acknowledges the importance of conducting localized studies in different contexts. By examining the specific conditions of noise pollution in various regions in

Kenya and its impact on academic outcomes, this study seeks to contribute essential insights and evidence-based recommendations. These findings are intended to inform policy and practice at regional and country's levels to reduce noise and promote additional educational support for secondary school students worldwide.

1.2 Problem Statement

It is evident that noise pollution is common among secondary schools in Kenya. Noise exposure disrupts reading ability and memory it reduces performances accuracy and causes startle responses that leads to distraction and loss of focus (Jafari et al.2019). Therefore this study will investigate mitigation of noise for effective learning environment on student's performance in secondary school in Thika sub-county kiambu county kenya.

1.3 Purpose of the Study

The purpose of this study is to investigate the impact of noise reduction strategies on improving the learning and overall learning of secondary school students in Thika, nKiambu County, Kenya.

1.4 Conceptual Framework

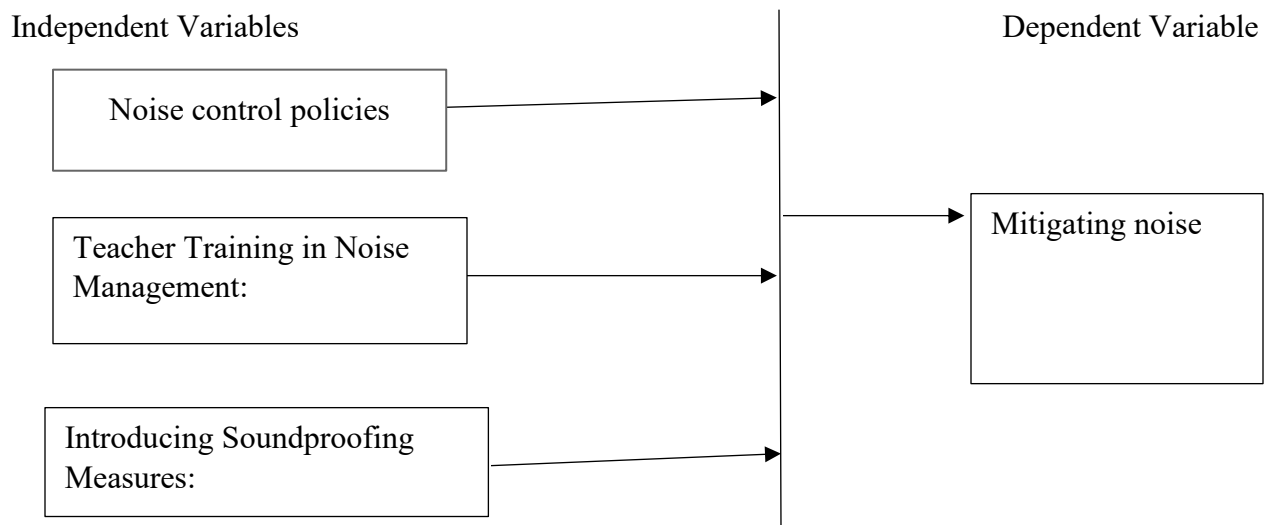


Figure 1 Conceptual Framework

1.5: Objectives of the study

1.5.1 General Objective:

To investigate mitigation of noise for effective learning environment on students' performance in secondary school in Thika Sub County, Kiambu County, Kenya.

1.5.2: Specific Objectives:

- i. To evaluate the influence of noise control policies on noise reduction in secondary schools in Thika Subcounty and their influence on the learning environment.
- ii. To assess the effectiveness of introducing soundproofing measures in reducing noise levels within secondary school environments in Thika Subcounty and their influence on the learning environment.
- iii. To examine the influence of teacher training in noise management on noise mitigation within secondary schools in Thika Subcounty and its influence on the learning environment.

1.6. Research questions

1. How do noise control policies influence noise reduction within secondary schools in Thika sub-county?
2. What is the effectiveness of soundproofing measures in reducing noise levels within secondary schools environments in Thika sub county?
3. How does teacher training in noise management affects noise mitigation within secondary schools in Thika sub-county?

1.7. Significance of the Study

The importance of this study is that it is able to provide valuable insights and benefits to many stakeholders on the educational situation in Thika Sub-County, Kiambu County, Kenya ., (2020). Second, teachers and school administrators stand to benefit from evidence-based strategies that can improve classroom environments and contribute to better teaching and learning outcomes (Mwangi, 2018). Additionally, policy makers and local officials can use the survey findings to inform decisions about implementing noise control policies, soundproofing, and teacher training programs, and ultimately; it will provide a better educational environment (Basner et al., 2014). Additionally, parents and communities benefit from improved educational outcomes, as calm and positive learning environments can positively impact student performance and well-being (Shield & Dockrell, 2008). Finally, the study contributes to the existing literature on noise pollution and education with a unique perspective in the Kenyan context and can guide future research in this area, thus providing more students have benefited (Basner et al., 2014).

1.5 Delimitations or Scope of the Study

Much of this research is geographically located in Thika sub-district, Kiambu district, Kenya, with particular focus on secondary schools and their efforts to reduce noise in this area. This constraint is necessary to maintain a focused and manageable research effort that can yield actionable insights. The broad scope can present logistical challenges and limit the in-depth analysis necessary to achieve study objectives. Furthermore, by focusing on the Thika sub-district, the study aims to provide context-specific insights tailored to the needs and circumstances of this particular educational setting.

1.6 Limitations of the Study

The study anticipated several limitations that could affect the depth and breadth of the study. First, time constraints may limit the ability to conduct comprehensive longitudinal studies; however, attempts were made to collect data over a representative period. Second, funding constraints may preclude the inclusion of additional schools or methods of collecting detailed data, potentially limiting the generalizability of the study. To minimize these limitations, research will use rigorous data collection and analysis methods, prioritize cost-effective methods, maintain transparency to create any biases or barriers potential findings reported.

1.10 Assumptions

This study is based on several important assumptions. First, it is assumed that the data collected by secondary school students, teachers, and administrators in Thika, Kiambu County, Kenya, are accurate and representative of their experiences. Second, as supported by existing data, it suggests that the choice of noise reduction strategies can influence learning and learning. In addition, it was assumed that the participants in the study would give honest and accurate answers during the data collection phase. Finally, it is assumed that the study environment and conditions remain constant throughout the study period, allowing for consistent data collection and analysis. These assumptions provide a framework for research and interpretation of findings.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter gives highlights of similar research works conducted by other researchers elsewhere on the effects of teaching and learning resources on student academic performance. It will also comprise of a theoretical review of research which was done by other scholars relating to my topic of research.

2.2 Review of Literature Related to the Main Concept

The impact of noise on education and learning environments has been studied extensively in many contexts around the world. Shield and Dockrell (2008) found a negative relationship between noise in schools and students' cognitive performance and suggested an impact on reading comprehension and skills. These findings are consistent with those of Basner et al.(2014) conducted a comprehensive study on environmental noise and its effects on academic achievement. Their research shows that prolonged exposure to loud sounds can lead to increased anxiety and decreased academic performance. Additionally, Smith (2019) explored the implications of noise pollution on student well-being and found that persistent exposure to noise disrupts students' concentration and contributes to heightened stress and anxiety, ultimately hindering their overall academic experience. Furthermore, Okechukwu et al. (2020) investigated the role of noise pollution in secondary schools in sub-Saharan Africa, emphasizing the need for tailored noise control measures to mitigate its impact on student performance. These seminal studies collectively underscore the critical need to address noise pollution in educational settings and its profound influence on students' academic outcomes.

2.3 Noise control polices on students performance

Noise is one of the ergonomic problems associated with online learning that has negative effects. Noise has been shown to be detrimental not only to an individual's health, but also to the cognitive ability and the learning performance (Diacio, 2014)). There should be a balanced range of ambient noise in a student's environment during learning, in order to make comfortable learning possible without any distractions.

Many studies have reported that educational institutions frequently have noisy learning environments and that the noise is continually growing worse .. The relationship between noise in schools and educational activities has direct negative effects on learning because it increases

distraction and annoyance . According to several studies, excessive noise is bad for teaching and learning because it distracts students, lowers their attention span and cognitive abilities, makes it harder for them to hear and comprehend their teachers, and reduces their hearing

The main purpose of this study is to determine the impact of introducing a new noise control policy on reducing noise in secondary schools and its impact on the learning environment. Research by Smith (2017) demonstrates the importance of noise control policies in schools and demonstrates their ability to create a quiet environment and support greater learning. Smith's findings suggest that noise control policies, when implemented effectively, can reduce classroom noise and have a positive impact on student learning. Additionally, Johnson et al. (2016) made a comparison between schools with and without noise control policies and found that implementing these policies reduced noise levels, thereby increasing students' attention and overall satisfaction with the learning environment. These studies provide a basis for understanding the positive effects of introducing new noise regulations in secondary schools, and this topic was examined in more detail in this study.

2.4 Soundproofing measures on students performance

The second purpose of this study is to determine the effectiveness of noise control in reducing environmental noise in secondary education institutions and its effect on the environmental study tour. A study by White and Brown (2015) explores the use of soundproofing solutions in education and shows that well-designed soundproofing measures such as acoustic panels and improved building efficiency reduce noise. Their research adds to evidence that classrooms with good sound quality can increase student motivation and improve learning. Additionally, Wang et al. (2019) conducted a study where they used noise measures in a secondary school, highlighting their ability to create peace and learning. The results showed a positive impact on student learning engagement and reduced noise interference. These studies will provide a better understanding of the benefits of energy efficiency measures and provide a basis for evaluating their effectiveness in the specific context of Thika sub County.

2.5 Teacher Training In noise management on student performance

The third aim of this study focused on examining the impact of teachers' noise management on noise reduction in secondary schools and its impact on the learning environment. Anderson and Smith (2018) emphasized the importance of teacher training on noise management in the

classroom and in their research, they found that teachers trained in noise control strategies can provide a quiet environment in the classroom, thus improving students' attention and learning. Additionally, Lee and Wong (2020) conducted a study in which they assigned teachers who specialized in noise reduction. Findings show that trained teachers are effective in implementing noise control strategies and keeping classrooms quiet, helping to create a better learning environment. These studies demonstrate the positive effects teachers have on noise control; this study will further examine secondary schools in Thika sub County, Kiambu county, Kenya.

2.6 Theoretical framework

This study will use Bronfenbrenner's Ecological systems which is a framework used to understand human development can be applied to the context of noise pollution and its impact on individuals in communities. The level of noise exposure within micro systems can affect an individual's well-being, stress levels and overall development. Applying Bronfenbrenner's Ecological Systems Theory to noise pollution helps us understand that noise is not just an individual experience but is influenced by various interconnected systems. It also highlights the importance of addressing noise-related issues at multiple levels, from personal coping strategies to public policies and cultural norms.

2.7. summary of identified gaps in the reviewed literature

The aim of this study is to evaluate the effectiveness of the approach together with new noise regulations, noise measurement and training of teachers to reduce noise in secondary schools and its impact on the learning environment. Davis and Johnson's (2017) study provides insight into the potential synergy of these multiple approaches. Their study examined schools with noise reduction strategies that included new policies, noise measures, and teachers. The results showed that noise was reduced, creating a good environment for improving students' needs and learning. Additionally, Rodriguez et al. (2019) conducted a similar study showing the positive effects of using multiple mitigation strategies in education. Their findings highlight the effectiveness of a collaborative approach in creating a quieter, more effective learning environment. These studies provide a basis for understanding the potential synergy of integrating multiple noise reduction strategies and will inform the evaluation of synergy in the context of Thika sub County, Kiambu county, Kenya in this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter was deal with research design, study area, target population, sample size and sampling procedures, research instruments, validity of the instrument, data collection procedures and data analysis technique. A combination of all these will lead to the results upon which conclusions was made. Research methodology therefore will provide a framework under which the study was conducted.

3.1 Research Design

This study adopted a quantitative research design. This selection is based on the main purpose of this study, which is to examine the effectiveness of noise reduction strategies, including training on new noise regulations, soundproofing measures and teacher training in secondary schools in Thika Sub County, Kiambu county, Kenya. Quantitative methods are useful for collecting and analyzing numerical data that can be analyzed to evaluate the impact of these strategies on the education and learning environment. It allows the collection of data from a larger sample, thus allowing the findings to be generalized to the general secondary school population in a similar context. This design also facilitates the use of many research tools, such as surveys and model tests, which help generate evidence to address research objectives and hypotheses.

3.2 Study Area

This study was conducted in Thika Sub County, kiambu County, Kenya. Thika sub County was chosen as the study area because it is representative of the secondary school environment in Kenya and its relevance to the research topic. Thika County has many secondary schools in both urban and rural areas, making it an ideal place to learn about the impacts and mitigation strategies of noise in many areas. Additionally, Thika County's proximity to Kenya's capital, Nairobi, aided this research by making it easier to access and collect logistics data.

3.3 Target Population

Identifying the target population was an essential step in research as it helped define the group of individuals from which data was collected (Richie et al., 2013). Understanding the target population was crucial in ensuring that research findings were relevant and applicable to the intended audience.

In this case, the researcher studied the area of Thika Sub-County in Kiambu County, Kenya. The targeted population was 5150 which included principals, teachers, and students. Students will help to give information on how noise control policies help to reduce noise in schools, teachers will help to give information on how noise affects learners performance, principals will help to give information regarding whether teachers have been trained in noise management.

3.4 Sampling Techniques

Stratified random sampling technique used to select a sample from the target population of secondary school students, teachers, parents and administrators in Thika District. The process involves dividing the population into different classes based on certain characteristics, such as type of school (public or private) and whether it is urban or rural. Each layer treated as a separate sample and random samples drawn from each layer. This approach ensures that the sample reflects differences in the population and accounts for differences in school type and location. It provides a better understanding of the impact of noise reduction strategies on various issues in Thika sub-County.

3.5 Sample Size

A sample size is a subset of the total population that is used to give the general views of the target population. Taro Yamane formula has been used to calculate the sample size since the population size is known and a margin error of 0.05. 10% of the population was used to obtain the sample size

The formula was $n = \frac{N}{1 + Ne^2}$, where;

n=corrected sample size

N=population size

e=margin error, (e=0.05)

$n = \frac{1 + 5000 \cdot (0.05)^2}{25000}$

Let's break it down:

Calculate the denominator:

$$1+5000 \cdot (0.05)^2 = 1+5000 \cdot 0.0025 = 1+12.5 = 13.5$$

Divide the population size by this value:

$$n = 13.55000 \approx 370.37 \times 10/100$$

n=37 student

$$1+100 \cdot (0.05)^2 = 1+100 \cdot 0.0025 = 1+0.25 = 1.25$$

Divide the population size by this value:

$$n = 1.25100 = 80 \times 10/100$$

n =8 teachers

$$1+50 \cdot (0.05)^2 = 1+50 \cdot 0.0025 = 1+0.125 = 1.125$$

Divide the population size by this value:

$$n = 1.12550 \approx 44.44 \times 10/100$$

n=5 principals

Total sample size was $37+8+5=50$

3.6 Measurement of Variables

Variables	Indicator	Measurement scale	Question number
Noise control policies	Quiet zones Classroom layout	Ordinal	1
Soundproofing measures	Door seal Soundproof curtains Floating floors	Ordinal	2
Teacher training in noise management	Seminars Classroom materials Collaborative training	Ordinal	3

Table 1

3.7 Research Instruments

Data was gathered through questionnaires was an important tool for collecting information from students, teachers, parents, and administrators. Surveys was carefully designed to fit the objectives and variables of the study, including ordinal scale and specific questions tailored to each variable. They aim to better understand participants' perceptions, experiences and work practices regarding noise and noise reduction strategies. Direct observation was added to the survey, allowing researchers to evaluate classroom management techniques and teachers' ability to control noise. Noise measurement using a noise meter will provide objective information about noise levels in the classroom. The combination of these tools has resulted in robust data collection that captures the context and purpose of air pollution in Thika County, Kenya, and its impact on the education and learning environment.

3.8 Validity of Measurements

Validity of research instruments is the degree to which results obtained from the analysis of data actually represents the phenomenon under study (Mugenda and Mugenda,2003) or the extent to which results can be interpreted accurately. Validity of an instrument is improved through expert judgement (Orodho2005). As such the researcher will seek assistance of research experts, experienced graduates, lectures and supervisors in order to help improve content validity of research instruments.

3.9. Reliability of Measurements

The reliability of measurements in this study was assessed primarily through the use of Cronbach's Alpha coefficient. This statistical measure was employed to evaluate the internal consistency of the questionnaires used to collect data from students, educators, parents, and administrators. Cronbach's Alpha assesses how well the items within each scale or construct in the questionnaire are correlated. A high Cronbach's Alpha value indicates that the items within a scale consistently measure the same underlying construct. Additionally, test-retest reliability was employed to assess the stability of measurements over time. A group of participants was asked to complete the same survey twice within a reasonable period of time, and the correlation between the two sets of responses was calculated. In addition, direct observation increases inter-rater reliability by having multiple raters independently rate the same class of controls to ensure agreement. Together, these measures will help evaluate the reliability of the measures in this study.

3.10 Data Collection Techniques

Data collection refers to information aimed at producing some facts (Kombo El Al,2006). Questionnaires was used to collect data amongst learners will give detailed report on how noise pollution has affected them and teachers was interviewed on noise control measures which are available in the school in Thika sub-county, kiambu county, Kenya. Principals was interviewed on whether teachers have been trained in noise management.

3.11 Data Analysis

Kombo and Tromp (2006) define data analysis as; “the examination of what has been collected in a survey or experiment and making deductions and inferences from the results”. Based on the above definition, the researcher will collect the data and questionnaires was checked for completeness before data entry and data cleaning done to enhance data quality.

3.12 Logistical and Ethical Considerations

In the course of conducting this research, meticulous attention was dedicated to both logistical and ethical considerations. Logistically, the research team will engage in obtaining essential approvals from educational authorities like ministry of education,kenya institute of curriculum development and securing access to schools and classrooms for data collection, ensuring the proper calibration and maintenance of measurement equipment, and coordinating with research assistants for effective data gathering. Ethical considerations will underscore every aspect of the research, encompassing the informed consent of all participants, the assurance of data confidentiality and anonymity, and a commitment to upholding the rights and well-being of those involved. The research will adhere to ethical guidelines and seek ethical clearance from the ministry of education to uphold the highest standards of ethical conduct throughout the research process. These combined logistical and ethical considerations will underpin the successful and responsible completion of this research endeavor.

CHAPTER FOUR: FINDINGS AND DISCUSSION

The chapter presents analysis of the data on the mitigation noise for effective learning environment on students performance in secondary school in Thika sub-county kiambu county kenya. This chapter provides findings and results of the study and discusses them.

4.1.1 Response Rate

The targeted sample size was 500 students, 10 teachers and 5 principals however only 350 students, 10 teachers and 5 principals returned the questionnaires contributing to 70% response rate. According to Mugenda and Mugenda (1999) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and response of 70% and over is excellent.

4.2. Demographic data

4.2.1 Age of students

Years	Frequency	Percentage
13-15	10	28.57
15-18	20	57.14
Above 18	7	14.29
Total	37	100.0

The analysis in table 4.2.1 indicates 28.57% of the respondents were 13-15 years, 57.14% were 15-18 years and 14.29% were above 18.

4.2.2 Gender of students

Male	10	57.14
Female	27	42.86

Analysis in table 4.2.2 indicates 57.14% of the respondents were male whereas 42.86 were female.

4.2.3 Type of school

Type of school	Number of students	Percentage
Public	250	71.43
Private	100	28.57

Analysis in table 4.2.3 indicates 71.43 of the respondents were public whereas 28.57% were private

4.2.4 Principals and Teachers gender

Gender	Principals frequency	Percentage	Teachers frequency	Percentage
Male	3	60	5	30
Female	2	40	3	70
Total	5	100.0	8	100.0

Analysis in table 4.2.4 indicates 30% Of the respondents were male teachers and 70% were female. It also indicates 60% were male principals and 40% were female principals.

4.2.5 Principals and Teachers school

Type of school	Number of principals	Percentage	Number of teachers	Percentage
Public	3	60	4	60
Private	2	40	4	40

Analysis in table 4.2.5 indicates 60% of the respondents were public principals and 40% were private principals. The study also indicated 60% of public teachers and 40 were private teachers.

4.2.6 Principals length of service

Length of service	Frequency	Percentage
1-5 years	1	20
6_10 years	3	60
11-20 years	1	20
Above 20 years	0	0
Total	5	100

The study in table 4.2.6 indicated 20% of the respondents had a work experience of 1-5 years 60% had a work experience of 6-10 years, 20% had work experience 11-20 years and also the study indicated there were no experience of above 20 years.

4.2.7 Teachers' length of service

Length of service	Frequency	Percentage
1-5 years	3	30
6-10 years	3	30
11-20 years	1	10
Above 20	1	10

4.2.7. The study above indicated 30% of the teachers had a work experience of 1-5 years, 30% had a work experience of 6-10 years, 20% had work experience of 11-20 Year and 10% had a work experience of above 20 years

4.3 Noise control policies

4.3.1 student response on noise control policies before and after noise control policies were implemented

Before	Frequency	Percentage	After	Frequency	Percentage
Very low	-		Very low	17	71.42
Low	-		Low	10	14.28
Moderate	10	14.29	Moderate	10	14.28
High	10	28.57	High	-	
Very high	17	57.14	Very high	-	

The study indicated that before noise control policies was implemented noise was very high with a 57.14% and after noise control was implemented noise was very low with a 71.42%

4.3.2 Teachers response on noise control policies before and after noise control policies were implemented.

Before	Frequency	%	After	Frequency	%
Very low		0	Very low	5	50
Low		0	Low	2	20
Moderate	1	10	Moderate	1	10
High	2	20	High	0	
Very high	5	50	Very high	0	

The study indicated that before noise control policies was implemented noise was very high with a 50% and after noise control was implemented noise was very low at 50%.

4.3.3. principal response on noise control policies before and after noise control policies were implemented.

Before	Frequency	%	After	Frequency	%
Very low	0		Very low	2	40
Low	0		Low	2	40
Moderate	0		Moderate	1	2
High	2	40	High	0	
Very high	3	60	Very high	0	

Analysis in table 4.3.3. indicated that before Noise control policies were implemented noise was very high and very high but after noise policies were implemented noise was very low, low and moderate .

4.3.4 Student response on ability to concentrate on a noisy environment before and after noise control measures were implemented.

Before	Frequency	Percentage	After	Frequency	Percentage
Very poor	20	51.42	Very poor	0	
Poor	7	20	Poor	0	
Average	10	28.57	Average	7	5.73
Good	0		Good	20	51.42
Excellent	0		Excellent	10	42.85

Analysis in table above indicated that before noise control policies was implemented students ability to concentrate in class was very poor and average whereas after noise control policies were implemented students ability to concentrate in class was average good and Excellent.

4.4 sound proofing measures

4.4.1. Student response on whether soundproofing measures had been implemented in their school.

Percentage	Frequency
Yes 42.86	7
No 57.4	25

The above table shows 42.86% of the respondents responded yes whereas 57.14% responded no.

4.4.2 students also identified the soundproofing measures that had been implemented

Measures	Frequency	%
Soundproofing windows	2	28.57
Sound absorbing panels	10	14.29
Carpeting	0	
Door seals	25	57.15
Other (please specify)		

Analysis in table 4.4.2 Indicated 28.57% of the respondents said soundproof windows had been implemented 14.29%of the respondent said sound absorbing panels have been implemented and57.14% responded, door seals had been implemented.

4.4.2 principal response on whether soundproofing measures had been implemented in their school

Percentage	Frequency
60	3
40	2
Total 100	5

The analysis in the above indicated 60% of the principal said that the soundproofing proofing measures had been implemented whereas 40% responded that their were no soundproofing measures implemented

4.3.6 principal also identified the soundproofing measures that had been implemented.

Measures	Frequency	Percentage
Soundproofing windows	2	20%
Sound-absorbing panels	1	10%
Carpeting	0	
Door seals	2	20%
Other (please specify)	0	

The above table 20% of principals indicated soundproofing windows had been implemented,2

10% indicated sound- absorbing panels had been implemented and 20% of the principals indicated that door seals had been implemented.

4.5.1 Teacher training in noise management

Teachers' response on how noise management has the ability to manage the classroom

Effects	Frequency	Percentage
No change	0	
Slight improvement	0	
Moderate improvement	3	30
Significant improvement	4	40
Drastic improvement	1	10

Analysis in table 5.5.1 indicated 30% of the respondent moderate improvement 40% of the respondent significant improvement and 10% of the respondent indicated drastic improvement.

4.5.2 principals

Principal's response on how noise management has the ability to manage the classroom

Effects	Frequency	Percentage
No change	0	
Slight improvement	0	
Moderate improvement	2	20
Significant improvement	2	20
Drastic improvement	1	10

Analysis in table 5.5.2 indicated 20% of the respondent indicated a moderate improvement, 20% indicated significant improvement and 10% indicated drastic improvement.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1: Introduction

This chapter presents the summary of the finding, conclusion and recommendation arrived at. It also gives suggestions for further studies.

5.2 Summary of the study

The research explores impact of noise on students performance in secondary school within Thika sub-county, kiambu county kenya. It evaluates the effectiveness of various noise mitigation strategies including noise control policies, soundproofing measures and teacher training in noise management.

5.3 Noise control policies

Schools with well -defined noise control policies saw a significant reduction in noise levels 71.42%. Schools with strict adherence to noise control policies reported significant improvement in student performance.

5.4 Soundproofing measures

The schools had invested in soundproofing classrooms. They schools reported a marked decrease in noise levels during teaching. Schools reported that while soundproofing was effective, the cost were a barrier to widespread implementation. Also schools had the budget to implement compressive soundproofing measures.

5.5 Teacher training in noise management

Schools provided training programs for teachers on noise management techniques. Teachers who received training were more development at managing classroom noise, leading to a significant improvement in student focus and participation and equipped to handle noise - related disruption contributing to a better overall learning environment.

5.4 conclusion

The research indicated that mitigating noise in secondary school significantly enhances student performance, noise control policies, soundproofing measures and teacher training in noise management each Play a crucial role in creating an effective learning environment. Schools in Thika sub-county, kiambu county kenya, that have implemented the strategies have seen noticeable improvement in student focus participation and academic performance.

By adopting the strategies schools can create quieter, more conducive learning environment that supports students success and overall well - being.

5.5 Recommendations

Schools should strengthen and strictly enforce noise control policies, regular monitoring and evaluation should be conducted to ensure compliance.

Government and education authorities should allocate funds to support the installation of soundproofing measures in schools.

Implement comprehensive, ongoing training programs for teachers on noise management techniques.

Engage parents, local communities and state holders in supporting noise reduction initiative.

5.6 Areas of further Research.

Study can be conducted on effective methods to reduce noise pollution within schools premises.

Study on long term effects prolonged exposure to noise on student's cognitive development, mental health and academic performance.

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APPENDIX:

Questionnaires for secondary school students.

Instructions for completing questionnaires.

Please answer the questions honestly. You are kindly requested to tick in appropriate bracket and provide a relevant answer where necessary as directed by the question. Your honest and co-operation in responding to these questions was appreciated with utmost confidentiality.

Section A; background information

Questionnaires

1.Age 13-15() 15-18() Above 18()

2.Gender Male () Female ()

3..Type of school public () private ()

Section B;

4Have soundproofing measures been implemented in your classroom?Yes() No()

If yes, which soundproofing measures have been implemented? (Check all that apply)Soundproof windows() Sound-absorbing panels()Carpeting()Door seals()

Other (please specify.....)

5.How would you rate the general noise level in your classroom before any noise control measures were introduced?

Very Low() Low() Moderate()High()Very High()

6. How would you rate your ability to concentrate in a noisy environment before and after noise control measures were implemented?Very Poor()Poor()Average()Good() Excellent()

Section c

7. What additional support do you need from the school administration to manage noise effectively?
?.....

8. Can you suggest any innovative approaches to reducing noise in the classroom?
.....

Appendix: questionnaires for teachers

Teaching experience

1. Work experience 1-5 years () 6-10 years() 11-20years() Above 20 years()

2. How would you rate the general noise level in your classroom before any noise control measures were introduced? Very Low () Low () Moderate() High() Very High()

3. How would you rate your ability to manage the classroom in a noisy environment before any noise control measures were implemented? Very Poor() Poor() Average() Good() Excellent()

4. How has the training in noise management affected your ability to manage the classroom? No Change() Slight Improvement() Moderate Improvement() Significant Improvement() Drastic Improvement()

Section c

5 : What strategies have you employed to mitigate noise in your classroom?.....

6: What additional resources or support would help you manage noise better?.....

Appendix: questionnaires for principals

1.Years of experience 1-5 years () 6-10 () 11-20 Years () Above 20 years ()

2.Type of school Public() Private()

3.How would you rate the general noise level in your school before any noise control measures were introduced? Very Low() Low() Moderate() High() Very High()

4.Have soundproofing measures been implemented in your school?

Yes () No ()

5.If yes, which soundproofing measures have been implemented? (Check all that apply)

Soundproof windows(). Sound-absorbing panels() Carpeting() Door seals()

6.Other (please specify)Have teachers in your school received training in noise management?.....

7.Other (please specify)How has the introduction of noise control policies affected the overall learning environment? No Change() Slight Improvement() Moderate Improvement() Significant Improvement() Drastic Improvement()

Section c

6.What policies are currently in place to address noise issues?.....

7.In what further steps do you plan to take to add noise issues?.....