

**SCHOOL FACILITIES MAINTENANCE AND STUDENTS' ACADEMIC
ACHIEVEMENT IN GOVERNMENT AIDED SECONDARY SCHOOLS IN HOIMA
DISTRICT,
UGANDA**

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DECLARATION

I, Prossy Naigaga, declare that this Dissertation entitled “**School Facilities Maintenance and Students’ Academic Achievement in Government Aided Secondary Schools in Hoima District, Uganda**” is my original work and has not been submitted for any award in any University or institution of higher learning and that all referenced materials contained therein have been duly acknowledged.

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APPROVAL

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DEDICATION

This dissertation is dedicated to my earnest husband: Mr. Akampurira Moderns, our dear children: Noble, Brave, Prince and my dear parents: Ms. Namaganda Zaituni, Ms. Naigaga Irene and Mr. Kisubi David.

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LIST OF ACRONYMS

BOG	Board of Governors
CAO	Chief Administrative Officers
DEO	District Education Officer
DIS	District Inspector of Schools
MoES	Ministry of Education and Sports
NGP	National Gender Policy
SPSS	Social Packages for Social Scientists
UN	United Nations
UNDP	United Nations Development Program- Uganda

ABSTRACT

The study aimed at establishing the effect of school facilities' maintenance on students' academic achievement in government aided secondary schools in Hoima District. Specifically, the study was pursued to; establish the effect of classrooms Maintenance on students' academic achievement, examine the extent to which laboratory Maintenance affect students' academic achievement and, assess how sanitation Maintenance affect students' academic achievement in government aided secondary schools in Hoima District. A cross-sectional survey design was employed using quantitative, qualitative, and comparative approaches. A sample of 290 respondents comprising of the District Education Officer, 7 Headteachers, 82 teachers' and 200 students from 10 Government aided schools in Hoima District was drawn using cluster, simple random and purposive sampling techniques. Questionnaires were administered to teachers and students while interviews were conducted with the DEO and Headteachers as key informants. The responses from the questionnaires were computer coded and analyzed in 23.0 version 23.0 using descriptive statistics and the results were presented in form of percentages and frequencies in tables. The data obtained from interviews was analyzed using content and discourse analysis. From the analyses, it was established that; absence of proper classrooms Maintenance contributes to the low students' academic achievement in government aided secondary schools; to a greater extent, laboratory Maintenance affects academic achievement of students in government aided secondary schools; Sanitation Maintenance positively affect students' academic achievement in government aided secondary schools in Hoima District. It is recommended that, school stakeholders should put in place Maintenance programs to ensure conducive classroom environment, kempt laboratories and proper sanitation maintenance in schools for children's healthy living and learning. School managers should put in place programs to ensure that laboratories are furnished with required equipment, tools, furniture, lighting and safety guards, and schools' administrators should prioritize sanitation facilities maintenance in budget allocations to ensure good health and hygiene in the school community.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Schools provide a variety of facilities for comfort, recreation, accommodation and access to enable learning. School facilities form an integral part of the educational system which means that the teaching and learning process cannot take place without their availability and maintenance (Farrant, 1991). School facilities consist of not only the physical structures and the variety of building systems, such as mechanical, plumbing, electrical and power, telecommunications, security, and fire suppression systems but also furnishings, materials and supplies, equipment and computers, as well as various aspects of the building grounds, athletics fields, playgrounds, areas for outdoor learning, vehicle access routes and parking (Ajayi, 1990). This study focused on establishing the effect of school facilities maintenance on students' academic achievement in selected government aided secondary schools in Hoima District in Uganda. This chapter presents the background to the study, statement of the problem, purpose of the study, objectives of the study, scope of the study, significance of the study and definition of key terms used in the study.

1.1.1 Historical Perspective

The school facilities maintenance has its origin traced in the waves of the early 1920s. The task of caring for old school buildings, some of which are historically or architecturally significant is substantial and at the same time maintaining finely tuned workings requires technologically advanced facilities, considerable expertise and commitment (Noor, Abdul & Buang, 2014). Dilapidated, obsolete and/or unhealthy facilities posed substantial obstacles to learning and overall wellbeing of their inhabitants but more so the students in African schools (UNESCO, 2012). In many of the African countries, older buildings are more costly to maintain than construction of new ones due to aging infrastructure including outdated systems for electricity, heating, air conditioning, and water, and often suffer because of a lack of parts, limited funding and labor to repair them (Lair, 2003).

The Global Monitoring Report (2015) indicates that the provision of school facilities has improved through donor assistance and cost-sharing policies. However, in some cases the construction and equipping of facilities is the responsibility of parents and communities. Schools that were built for

the old intake are now far too small and the rate of expansion has led to overcrowding in classrooms, especially in the early primary grades (UNESCO, 2015).

In Uganda, by the late 1980s, physical infrastructure generally had deteriorated having passed through a period of nearly twenty years of civil strife (MoES, 2011). A large percentage of the classes met in temporary or dilapidated structures as permanent structures had received little or no maintenance for nearly two decades. Text books and instructional materials were almost nonexistent in most schools, making teaching and learning extremely difficult. Many facilities were damaged by warfare and vandalism. Before 1997, most schools conducted their lessons under trees and makeshift structures (Mathe, Srira, Kibira & Ninan, 2016).

In Uganda, the total number of classrooms in government schools increased by less than half (i.e. from 69,990 in 2002 to 103,186 in 2014) and yet growth rate in enrolment was being maintained at 2.1%, reflecting relatively high pupil classroom-ratio recorded at 70 (which is above required maximum of 54 pupils per classroom) especially after implementing the universal education programs (Huylebroeck and Titeca (2015).

1.1.2 Theoretical Perspective

The study was based on Cash's model. The model envisages that school building conditions affect students' behavior and achievement both directly and indirectly. The model is based upon the paradigm that the condition of the building influences how students learn in a school building. To Cash (1993), school managers are charged with the responsibility of developing a school culture that is geared towards first providing buildings and grounds and secondly maintaining these facilities in a state that promotes students learning. Winston Churchill held that, "we shape our buildings, therefore, our buildings shape us" (Smith, 2008) which points towards the fact that better buildings make their occupants too better off in terms of comfort and thus productivity. Cash's model is applicable to this study since it suggests that school facilities encompass the environment suitable for learning just as important as the choice of the methods and the curriculum teachers' employee to ensure students achieve their academic goals. Creating an effective school entails designing an educational environment. A well-designed building for example supports its user by addressing a broad spectrum of issues that include creating a physically comfortable environment with adequate lighting, temperature and noise control, technology and equipment, and personal user access needs (Ayani, 2007). Cash's theoretical model shows some possible factors that affect the

state of school facilities which in turn affect students' behavior and academic achievement. This therefore suggests that facilities that are in good conditions enable students to learn well and attain good academic grades.

1.1.3 Conceptual Perspective

School facilities are material resources that enhance teaching and learning thereby making the process meaningful and purposeful (Ssonko, 2019). School facilities can be looked at as the entire school plant which school administrators, teachers and students' harness, allocate and utilize for the smooth and efficient maintenance of any educational institution for the main objective of teaching and learning. School facilities serve as pillars and support for effective teaching and learning. School facilities include permanent and semi-permanent structures such as library, sanitary facilities laboratory equipment and classrooms (Owoeye & Yara, 2011).

Nkechi (2016) views school facilities as physical resources that facilitate effective teaching and learning, including classroom blocks, laboratories, workshops, libraries, equipment, consumables, electricity, water, visual and audio-visual aids, tables, desks, chairs, playground, storage space and toilets. School facilities include all types of buildings that are used for both academic and nonacademic purposes which play a pivotal role in the smooth running of teaching and learning process. For the purpose of this study, the concept of school facilities focused on classrooms, laboratory and sanitary facilities in terms of their current state and sufficiency in terms of number of students served. This is because these facilities are vital in facilitating the teaching-learning process and consequently influence on students' academic achievement (Bullock, 2007).

Facility maintenance (FM) is a professional maintenance discipline which puts emphasis on efficient and effective delivery of support services that schools serve (Yara & Otieno, 2010). It serves to ensure the integration of people, systems, place, process, and technology. Some scholars define facility maintenance as "a strategically integrated approach to maintaining, improving and adapting the buildings and supporting services of an organization in order to create an environment that strongly supports the primary objective of that organization" (Wunti et al., 2017). The International Facility Maintenance Association (IFMA) (1980) define facility maintenance as, "the practice or coordinating the physical workplace with the people and work of the organizations" (Wunti, 2014).

Students' Academic achievement is the level of attainment of a learner's educational goals (Basic Education Sector Analysis Report, 2012). Students' academic achievement is referred as the outcome after engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational outcomes, and post-college performance according to Udo (2008). Student academic achievement was measured in terms of outcome that captures the quality of students' academic work that is examinations grades. In the context of this, student academic achievement was considered in terms students' performance in Uganda National Examination Board (UNEB) examinations grades I-III. UNEB is a semi-autonomous body mandated to conduct national assessment of the learning process at primary and posit primary levels in Uganda.

1.1.4 Contextual Perspective

Hoima District is found in Western Uganda with over 34 secondary schools with very old structures built during the early 1960's. Out of the 34 schools, 29 (85.3%) have dilapidated classrooms, laboratories, libraries as well as toilet facilities. As Hoima District's missionary school buildings age, there exists a growing challenge of maintaining school facilities at a level that enables teachers to meet the needs of 21st century learners. The task of caring (cleanliness, orderliness and renovation enhance education). However, facilities Maintenance planning is constrained by real district budgets.

Hoima District has expressed displeasure over the sorry state of the community secondary schools, arguing that the ugly situation is having adverse effect on academic activities. The LCIII chairperson, Buseruka and Kigorobyia sub-counties who described the condition under which the students are learning as 'pathetic', also reported that all the four blocks comprising 14 classrooms were crowded and having leaking roofs. "The students have been subjected to untold hardship after wind blew off the roof of their classrooms two years ago," the school head lamented (researchers pilot study/pre-study results, 2018). He held that the situation has constituted a source of worry to the school facility maintenance, students and the community at large as both the teachers and the students would desert the school premises the moment it starts raining. The school officials have, on two occasions, snapped the picture of the leaking roofs and took it to the district authority with a view to drawing its attention to the sorry state of the school structure (researchers pilot study/pre-study results, 2018).

Despite all the complaints, the headteacher said, nothing has been done about the leaking roofs. One other headteacher at one school said furniture in the classrooms is insufficient. The district inspector of schools said repairing the leaking roofs and providing more furniture for the school would revitalize students' interest and attitude toward education (researchers pilot study/pre-study results, 2018).

On the other hand, many government-aided secondary schools in Hoima District lack Maintenance programs as an organizational activity carried out by the school community in order to prolong the life expectancy of school buildings, its furniture and equipment. Hence it is difficult for School building to meet a minimum standard of condition without continuous maintenance of building, furniture, and equipment to keep them in the best form for normal use. Lack of maintenance budget, renovation plan as well as parent/teacher association not being responsible for: scheduling inspection activities to be carried out by the teams, collecting information, preparing a school building analysis report, and preparing the annual school Maintenance plan, has made it difficult for repairs and renovations. Secondary schools were provided with 600m for facilities/infrastructure development between 2015 and 2019 in projects to build additional classrooms, latrines, build teachers' houses, buy more desk, buy instructional materials and provide facilities connectivity to enhance students' achievement but no progress up-to-date (Hoima District Strategic Plan 2015/16-2019/2020). This has therefore prompted the researcher to conduct a study to investigate the effect of facilities maintenance on students' academic achievement in secondary schools of Hoima District, Uganda

1.2 Statement of the Problem

According to the Ministry of Education and Sports minimum Standards (2013), school facilities enhance effective and efficient teaching and learning process to inspire students' academic achievements in terms of quality of grade scores. Whereas secondary school students can achieve high grades in UNEB exams as a result of regular attendance, studying in spacious and uncongested classrooms which facilitate high completion rate, for the past three years, Hoima government secondary schools' performance had been declining as shown by the Uganda Certificate of Education (UCE) results for 2016, 2017 and 2018 (UNEB). Huylebroeck and Titeca (2015) attribute the low students' achievement in government aided schools in Uganda to poor teaching methods, irregular attendance, absenteeism, and participation in economic activities outside school in search for a living. However, for Hoima District, the Hoima District schools' inspection report (2016)

shows that over 70% of the school facilities are totally in dilapidated conditions, library and laboratory facilities are inadequate and schools lack facility maintenance programs as well as budgets for renovations and repairs. Government has tried to support infrastructural development through USE grants but, the enrollment still supersedes the available facilities by 68% (MoEs abstract, 2016). A few studies conducted so far provide fairly scanty information on the effect of facilities maintenance on students' academic achievement specifically in Hoima District government aided secondary schools. It was unclear as to whether poor state of classrooms, laboratories and latrines contributes to this problem. Further still, uncertainty bloomed as to whether lack of well-maintained school facilities contributed to low students' performance, hence this prompted the researcher to conduct an investigation into the effect of school facilities maintenance on students' academic achievement in Hoima District government aided secondary schools.

1.3 Objectives and Research questions

1.3.1 General Objective

The general objective of this study was to establish the effect of school facilities maintenance on students' academic achievement in government aided secondary schools in Hoima District.

1.3.2 Specific Objectives

The study was guided by the following specific objectives;

- i) To establish the effect of classrooms maintenance on students' academic achievement in government aided secondary schools in Hoima District.
- ii) To examine the extent to which laboratory maintenance affects students' academic achievement in government aided secondary schools of Hoima District.
- iii) To assess how sanitation maintenance affect students' academic achievement in government aided secondary schools in Hoima District.

1.3.3 Research Questions

The study sought answers to the following research questions.

- i) What is the effect of classrooms maintenance on students' academic achievement in government aided secondary schools in Hoima District?
- ii) To what extent does laboratory maintenance affects students' academic achievement in government aided secondary schools in Hoima District?
- iii) How does sanitation maintenance affect students' academic achievement in government aided secondary schools in Hoima District?

1.4 Scope of the Study

1.4.1 Geographical Scope

This study was carried out in government aided secondary schools in Hoima district. Hoima district headquarters is located approximately 230 kilometers by road, northwest of the capital- Kampala. The selected schools are located in four sub-counties including, Buseruka, Kigoroby, Buhimba and Kitoba. 10 schools out of 39 schools (taking 5 from the urban and 5 from the rural setting) with the poor students' academic performance in UNEB for the past 3 years (2016-2018) were selected in a bid to relate their facilities maintenance to the performance in UCE. One school was chosen with the best performance in UCE in Hoima for the same period. The district was selected on grounds that it is one of those in the country that experience poor academic performance especially at secondary school level.

1.4.2 Content Scope

The study was limited to the assessment of the effect of school physical facilities Maintenance including classrooms, science laboratories and sanitary facilities on students' academic achievement. The influence of these structures was measured in terms of current state (renovated, orderliness and cleanliness, sufficiency in terms of numbers) and feasibility of physical Maintenance plans. On the other hand, academic achievement of students was measured by scores obtained by students of the respective schools at Uganda Certificate of Education (in terms grade one, two, three, four, seven, x and nine for the period of three (3) years (2016-2018). These results were then compared between one high performing school and nine low performing schools. These were believed sufficient to give a picture of on the status of school facilities Maintenance and how they related to students' academic performance in Hoima District.

1.4.3 Time Scope

The documentary review data for students' academic achievement covered a period of 3 years (2016-2018) for this is the period when Hoima District registered highest levels of low students' performance especially among government aided secondary schools. Primary data from the field was collected between March and April 2019. All research activities up to report writing took approximately six months.

1.5 Significance of the Study

It is hoped that the results will be helpful in providing a guide for improving school facilities in government aided secondary schools in Uganda for the improvement in the quality of education in the future.

The study findings will provide information to parents, educators and school administrators to reflect upon various factors that help students in achieving desired academic goals. In so doing, they can investigate the possibility of introducing those factors to their schools, which may consequently lead to enhancement students' educational achievement.

This study the findings will likely stimulate parents, school managers, teachers, students and the society's awareness on the importance of providing conducive learning facilities.

The findings of the study will also assist school administrators and curriculum planners to develop strategies that would reduce negative effects of poor school facilities on academic achievement of students in Hoima secondary schools.

The findings of this study ought to be beneficial to students themselves as it will be made known to them, the effects of school facilities on their academic achievement.

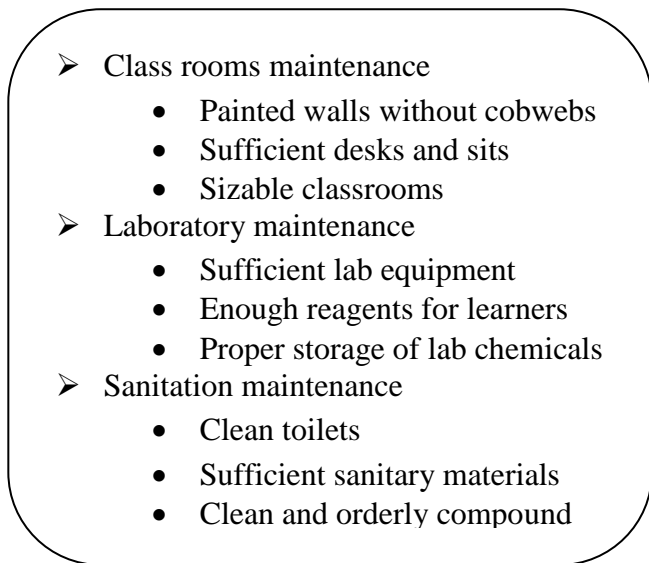
Headteacher are implementers of the broad aims of education broken down into specific, short-term goals and objectives. In view of this, it is hoped that this study may provide information that may be useful for the ministry of education and sports for formulation of policies, budgeting, planning and decision making that may facilitate training and in-service training of education managers and equip them with managerial skills for school facility maintenance and bring about achievement of students.

Finally, the findings of the study will act as a reference to other scholars with research interest in areas of educational institutions’ resources’ maintenance.

1.6 Conceptual Framework

The conceptual framework in this study demonstrates the links between school facilities maintenance and students’ academic achievement. School facilities maintenance is theorized as the independent variable and students’ academic achievement as the dependent variable (Figure 1.1).

INDEPENDENT VARIABLE School Facilities Maintenance



DEPENDENT VARIABLE Academic Achievement

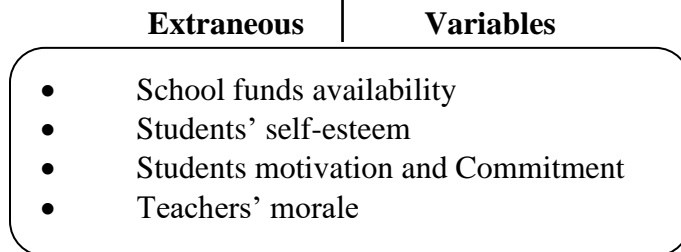
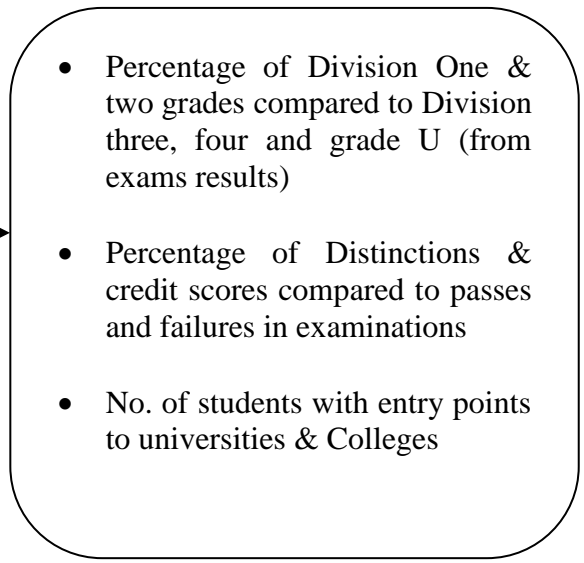


Figure 1.1: Conceptual framework

Source: Adapted from Onodiong (2016)

Figure 1.1 the measures of school facilities’ maintenance are; cleanliness and orderliness of class rooms, laboratories maintenance as well as maintained sanitation whilst the measures of academic achievement are student’s performance in National Examinations. School facilities maintenance entails having renovation budgets, scheduling facility inspection and Maintenance activities and

caring for school sanitation /environment. Academic achievement is measured in terms of percentages of students passing in divisions one & two as compared to those in divisions three and above at National UCE. UCE level is important in Uganda's education system in that it determines a learner life long career path. It can either enable students to proceed to advance level or join tertiary institutions. UNEB results were used as a measure of academic achievement because they are nationally accepted as more reliable way of evaluating the level of attainment at the climax of a given learning cycle. The effect of school facilities maintenance on students' achievement is however interfered with by extraneous variables such as school funds availability, students' self-esteem, motivation, commitment and self-discipline. The effect of these extraneous variables on academic achievement can either be positive or negative and thus moderating the effect of school facilities maintenance on the dependent variable.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of existing related literature on school facilities maintenance and students' academic achievement. The review comprises literature from textbooks, pamphlets, journals, magazines, websites, publications and other official reports related to the topic under study. It includes literature on classroom facilities and students' academic achievement, laboratory maintenance and students' academic achievement as well as sanitation facilities maintenance and students' academic achievement.

2.1 Theoretical Review

The study was based on Cash's (1993) theory. The theory stresses the relationship between school facilities and students' academic achievement (Bailey, 2009). According to O'Neil (2014), poor building conditions affect students' performance. The main assumption of this theory is that, school facilities that are in good conditions play a vital role in the teaching and learning process and are therefore capable of enhancing learners' final academic achievement (O'Neil, 2014). It is envisaged that students who study in low standard school facilities characterized by dilapidated and unrenovated classrooms with poor sitting facilities along with unbecoming sanitation perform poorly leading to low academic achievement as compared to those that study under well maintained facilities. Consequently, this study was undertaken in Hoima District secondary schools to determine whether school facilities maintenance is associated with the students' academic achievement owing to the fact that fairly scanty information exists in the literature about the current state of school facilities' maintenance and the extent to which they influence students' academic performance in government aided secondary schools in Hoima District.

2.2 Review of Related Literature

2.2.1 Classrooms Facilities Maintenance and Students' Academic Achievement

Researchers have tried to establish links between classroom facilities and students' academic achievement in different parts of the world under different education systems and levels but not in the current study area. It was therefore of paramount importance to look at some of the outstanding studies and their respective findings and gauge how the current study would blend in.

Sanoff (2001) in his research on school building assessment methods, notes that school buildings have an impact on the mental development of a student. He further argues that, if schools are properly built and attractive, they motivate the students to stay in school and learn well. However, it was not clear as to whether secondary schools in Hoima District had well-built buildings and infrastructures and how these motivate students to excel academically. The conditions necessary to address when considering a building adequate or inadequate are health and safety, age of the building, human comfort, indoor air quality, lighting, acoustical control, and secondary science laboratories.

Ugiomoh, Ememe and Obike (2013) state that secondary school facilities encompass the physical infrastructures in the classroom block; such as furniture/desks, neatness of the floor area and blackboard, appearance of the walls, roofing or with sealing to reduce heat or not affect students learning. Hence this study sought to ascertain the degree of sufficiency of the different school physical infrastructures desired for proper operationalization of government aided secondary schools in Hoima District.

According to O'Neill (2014), the recent competition for smaller classrooms with insufficient seats within the school buildings makes such environment un conducive for learning. This makes students congested in a heated room and subsequently become violent, rendering such buildings unsafe. It is critical to address facility designs in relation to student health and safety first. It was not certain as to whether secondary schools in Hoima District had modern building with sizeable classrooms to suit students' populations, overcome classroom congestion to enable them learn freely and to score significantly higher grades in reading, listening, language, and arithmetic than those in the older missionary buildings.

Earthman (2017) found out that specific physical features such as space, equipment, Maintenance, appearance, comfort and general physical arrangement positively or negatively affected the school learning environments. School facilities problems however worsen as school facilities age to over forty years which is the time when rapid deterioration in the physical conditions typically begins thus becoming un conducive for inhabitation during lessons. To Hui & Cheng (2008), for learning to effectively take place, buildings must be of good standard and supportive for both the learners and teachers. They further argue that the physical environment plays a significant role in effective teaching. This means that teachers, as drivers in the teaching and learning environment need to conduct their business in a conducive environment as the facilities in which they teach can deter or

enhance the quality of their teaching. Thus, substandard facilities can have far reaching consequences on the teaching process and the consequent result is low student academic achievement. For this reason, the current study sought the opinions of the teachers and students on whether their schools' heads conduct school facilities' Maintenance to promote students' academic performance.

According to Earthman (2017) the Maintenance of ageing stock, vandalism, reuse and adaptation of old buildings, out dated furniture and equipment, use of premises for more than one purpose as well as related expenditure are key issues of concern in every education institution. There was therefore need to conduct a study among government aided secondary schools in Hoima District to ascertain whether basic measures and efforts necessary to maintain school facilities to promote learning and students' academic performance.

2.2.2 Laboratory Maintenance and Students' Academic Achievement

Laboratories and technical workshops for sciences and technical drawing are essential in teaching and learning process of related disciplines. The extent to which these infrastructures can enhance the quality of the teaching and learning depends on their location, structural design and facilities available in them. It is not unlikely that well planned learning infrastructures in terms of location, structures and facilities will positively affect the teaching and learning process and as well as enhance academic performance of the students (Danjuma & Adeleye, 2015).

Olufunke and Olubunmi (2016) revealed that adequate provision and Maintenance of lab equipment is a remedy (solution) for any academic encumbrance. This means that running the school laboratory without adequate provision and maintenance of lab chemicals and reagents can be very cumbersome (O'Neill & Oates, 2000). There was need to find out whether Secondary schools in Hoima District maintain laboratory facilities, chemicals and reagents to promote high academic performance.

According to Ifeanyi, Mba & Uba (2019), secondary schools face problems of obsolete laboratory apparatus. Reagents deficiencies impair the quality of teaching and learning and expired lab chemicals contribute to health and safety problems of staff and students. Hence there was need to investigate the effect of using old lab equipment, outdated and insufficient apparatus on the students' academic achievement in Hoima secondary schools.

Adeyemi (2008) argues that although laboratory equipment and chemicals were adequately provided in some schools, they were not effectively utilized. He further emphasized on the need to ensure effective and efficient realization of the goals and objectives of the educational system. This implies that the availability of physical facilities alone does not enhance learning; rather it is the effective utilization of these facilities that can only motivate students to learn and enhance their academic performance. In the current study, attempts were made to establish the effectiveness of utilization of available laboratory apparatus and reagents in the government aided secondary schools in Hoima District.

2.2.3 Sanitation Maintenance and Students' Academic Achievement

UNICEF (2015) report shows that Government aided schools in Uganda and across many African countries, experience a number of sanitation challenges, one of which is poor/inadequate toilet facilities. Availability of toilet facilities is considered a basic requirement in every school to cater for both emotional and physical needs of the students. To determine the student toilet-ratio, the total number of students in each school has to be divided by the corresponding total number of toilet facilities available (Birdthistle, Dickson, Freeman & Javidi, 2011). Birdthistle, Dickson, Freeman & Javidi (2011) stated that some schools are having a toilet ratio a little above the ratio of 1:30 which is far below the set standard by the Ministry of Education and sports (World Bank, 2015). Hence this study sought to establish the extent to which the available toilet facilities in Hoima District government aided schools promote hygiene to influence students' academic achievement.

Amanchukwu (2010) noted a number of factors contributing to the sanitation "Maintenance gap" including; insufficient funds, poor maintenance of funds, and estate maintenance and provisions that do not match educational needs. There was need to investigate other consequences of poor Maintenance affecting both facilities maintenance and students' academic achievement in Hoima District, whether they encompass deterioration of parts of the building, an unsafe and unhealthy environment, lower quality of teaching and learning, and lower quality of living and vandalism.

Amanchukwu & Obijuru (2013) argue that the environment in which we live should be cared for; and environmentally good Maintenance promotes the aims of education. They looked at a number of aspects of Maintenance, the responsible part, and the budget allocations requirements as shown in Table 2.1.

Table 2.1: Aspects of sanitation facilities Maintenance according to Amanchukwu & Obijuru (2013)

Aspect of maintenance	Responsibility	Budgeting
- Day-to day-maintenance	School	1.5–2% of replacement value, block/lump (appr. 25-30% of total sum)
- Programmed maintenance of elements according to their different servicing and life cycles and environmental standards	School/authority (service packages for schools?)	School: block/lump sum (appr. 25-35% of total sum)
- Periodic improvements to the building fabric to meet new health and safety requirements, improve energy efficiency, reduce fire risks, develop the environmental quality, etc.	Authority	According to a 3-5year investment programme
- Emergency and unforeseen actions to repair damage (storm, flood, theft, arson, outside vandalism, etc.)	Authority	
- Improvements to meet changing educational and social needs (e.g. in regard to technological developments)	School/authority	School: block sum for local improvements; authority: projects

Source: Asiabaka (2008)

According to a study by Lawanson and Gede (2011), to assess the school needs and priorities, the questions raised on this issue were; how such information should be gathered, at what frequency and by whom; to what extent information technology can provide a ready form of accessible storage; how to strike the right balance between planned and day-to-day Maintenance; how best to mobilize manpower and materials; how to balance centralized control and autonomy. This prompted this study to be conducted to assess the basis upon which Hoima District government

aided secondary schools design their school facilities Maintenance plans and evidence of such planning.

Ololube (2013) noted that the steps towards keeping schools in good and up-to-date condition include; having accurate information about the condition of the facilities and the scale of funds needed, keeping the condition of the buildings, stock and resources, under regular review, defining priorities for expenditure (funding), ensuring facility Maintenance financing, establishing resource and funding allocation mechanism, sticking to planned Maintenance schedules, acting promptly to repair damages, and giving responsibility for the condition of the facilities to people who are close to the facilities concerned and involve the users in the maintenance . The key question to this study was what steps do Hoima District secondary schools provide towards keeping schools sanitary facilities in fitting and usable conditions?

Ajayi (2007) revealed that Maintenance plans require budgeting and funding. Quiet often final budgets are determined either by reference to the resources available or, more often, by updating the previous year's budget with some allowance for inflation and changes in the budgeting stock. Attempts have been made to devise benchmarks, or norms, standards and guidelines. The view of most authorities is that a valid method for establishing an appropriate level of expenditure is through a systematic and realistic assessment of conditions, needs and priorities leading to a long-term program and an expenditure plan for school facilities. The current study involved investigation of financial provisions to cater for sanitation facilities' maintenance in Hoima District government aided secondary schools.

2.2.4 Summary of the Reviewed Literature

Based on the review of related literature as seen in the above, it is inferred that, apart from school facilities being insufficient in most learning institutions across the globe, little attention is given towards maintaining the existing facilities in good conditions to enhance learners' performance. Schools continue to use old buildings and the new ones are poorly designed, and laboratory materials are inadequate to promote better students' academic achievement. The literature further suggests that these facilities make students develop either a negative or positive attitude towards learning. The findings however were for studies conducted in different parts of the world with different education systems and at different education levels rather than what the current study targeted. Moreover, no such studies so far have been conducted in Hoima District to provide vivid

evidence to link students' academic performance with school facilities maintenance. To address these gaps, this study was undertaken to gather evidence on the status of school facilities maintenance among nine poorly performing government aided secondary schools and compared the results with those from the only high performing school in Hoima District.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methods that were used to conduct the study about “School Facilities maintenance and Students’ Academic Achievement in Government aided Secondary Schools: A Case Study of Hoima District, Uganda”. It covers a description of the research design, study population and sampling techniques, data collection, quality control, data collection analysis, study limitations and delimitation.

3.1 Research Design

The study adopted a cross-sectional study design involving selection of government aided secondary schools and collection of both quantitative and qualitative data at a single moment in time. The study involved asking respondents about their perception, attitudes and behaviors that best describe their schools’ facilities maintenance in relation to students’ academic achievement. The study design was preferred because of its ability to facilitate rapid data collection from the target population. The design enabled comparison of the responses from two categories of schools in terms of their academic performance at UCE. Use of both qualitative and quantitative techniques facilitated enabled triangulation of the study findings for the production of more coherent and complete picture about school facilities maintenance and student’s achievement (Nsa, Offiong, Udo, & Ikot, 2014). Using a combination of qualitative and quantitative data helped to improve on evaluation by ensuring that the limitations of one type of data were counteracted by the strengths of the other.

3.2 Population and Sampling Techniques

3.2.1 Population

The population in this study comprised of respondents consisting of Headteachers, teachers, and the Divisional Education Officer (DEO) and students in Hoima District. The teachers that were considered are graduates and holders of diplomas since these are certified to handle secondary school teaching and learning processes. The aforementioned categories of participants were considered for this study because they have first-hand opinions regarding school facilities

maintenance and students' academic achievement which is based on the fact that they are key actors in the instructional process in secondary schools in Hoima District.

3.2.2 Sample

A sample is a part of the targeted population that is carefully selected in such a way that the whole population is represented (Magenda & Magenda, 2003). The targeted sample size in this study consisted of 311 respondents, including, 10 Headteachers, 120 teachers, 01 Divisional Education Officer (DEO) and 200 students (Table 2.2). The sample size was arrived at using Krejcie & Morgan (1970) table of sample determination. This approach to sample size determination was deemed ideal in this study because it ensured that the sample selected was representative of the study population to give valid and reliable results. Krejcie & Morgan (1970) Sample determination table stipulates the sample sizes from a given population size that is representative enough to allow for reliable reporting of the findings. The sample size is determined as a proportion of the population size and given in the table as a relationship between these two elements.

Table 2.2: Sample size description

Category of Respondents	Population in 10 schools	Sample in each school										Sample size	Sampling Technique			
		A	B	C	D	E	F	G	H	I	J					
Teachers	300	12	12	12	12	12	12	12	12	1	1	2	2	12	120	Simple Random sampling
Students	400	20	20	20	20	20	20	20	20	2	2	0	0	20	200	Simple Random sampling
Headteacher	10	1	1	1	1	1	1	1	1	1	1	1	1	1	10	Purposive sampling
District Education Officer	1											1	Purposive sampling			
Total	711											311				

3.2.3 Sampling Techniques

Simple random sampling was used to select teachers so that each teacher selected was given an equal chance of participation in the study. This sampling technique helped to avoid biasness and providing relevant, accurate and adequate data for the study. Besides its ease of use and accurate representation of a larger population made it a perfect choice. This sampling technique was facilitated with the help of Krejcie and Morgan (1970)'s table of sample determination.

Purposive sampling was used to select one high performing school (among the 10 against which comparisons were made), the Headteachers and District Educational officer on the basis of knowledge ability and exposure on the study variables as well as experience about the relationships between school facilities maintenance and students' academic achievement in government aided Secondary Schools in Hoima District.

3.3 Data Collection

A number of tools was used for data collection during the study. Because both primary and secondary data were collected, more than one method/tool were necessary for the success of the process. The major tools used include questionnaire, interview guide, observation checklist and documentary review as explained below.

3.3.1 Self-administered questionnaire

A self-administered questionnaire was the major instrument that was used in data collection. Questionnaires were administered to 112 school teachers and 200 students in government aided secondary schools in Hoima District. Mugenda & Mugenda (2003) state that questionnaires are efficient data collection mechanisms where the researcher knows exactly what is required and how to measure the variables of interest besides being less expensive and time saving as they do not need much skills to administer. These tools helped to gather data that was coded and transformed to derive quantitative information regarding school facilities maintenance and students' academic achievement in government aided secondary schools in secondary schools in Hoima District. The questionnaires comprised of mainly closed-ended questions which were formulated in line with the research objectives. The questions were in form Rensis Likert's scale statements having four category responses(4-1), that is , strongly agree (4), agree (3),disagree (2), strongly disagree (1) (Appendix I).

3.3.2 Interview Guides

Interview guides were used to collect qualitative data from key informants including Headteachers of the schools selected for the study and the information obtained was used to supplement on that obtained by way of questionnaires. This was purposely intended to get in depth information about the facility maintenance and students' academic achievement in selected Government aided secondary schools in Hoima District. The interviews involved face-to-face encounter with the targeted respondents. The researcher traveled to the schools under study to meet the respective Headteachers to make arrangements prior to the interview. Before an interview took place, respondents were informed about the intentions of the study and given assurance about ethical principles, such as anonymity and confidentiality. This gave respondents some idea of what to expect from the main interview, increased the likelihood of honesty on top giving informal consent which is fundamental in studies of this project nature. The researcher endeavored to establish rapport with Headteachers before the interview scheduled dates which began with periodic calls and visits to the respondents in an attempt to initiate and complete an interview. Other times, the interviewer would call the respondent in order to seek for an appointment. Some Headteachers who requested to view the interview questions in advance were given the opportunity while others who do not mind, allowed the researcher to read the questions for them systematically during the course of the interview.

Interview responses were jotted down in a note book and also recorded using a smart phone and later on transcribed for final analysis. The recordings were played back again and retrieved later for review. Headteachers' names were not mentioned anywhere in the report but they were rather referred to as, "Headteacher of school "A", "B", "C", "D" and the like". The format of the interview guide used in this study is shown in Appendix II.

3.3.3 Observations checklist

This involved non-participant observation of the status and conditions of school facilities (Appendix III) which included observation of the following:

- Classrooms in terms of their cleanliness, order of arrangement of the seats in class, sufficiency of seats in class, physical appearance of class room (roof, renovated or not), light in class and ventilation.

- Library in terms of arrangement of books in shelves, cleanliness, arrangement of seats, ventilation and light.
- Laboratory in terms of sufficiency of tables and chairs, light, ventilation and apparatus.
- Toilets in terms of distance from class rooms, cleanliness and the sufficiency in ratio to students

3.3.4 Documentary Review Data

The main sources of secondary data obtained from the field included targeted schools' UCE results from UNEB, while on the other hand secondary data for literature review was obtained from online journal repositories, hardcopy magazines, newspapers, reports and government publications, census report, statistical abstracts and textbooks. Both qualitative and quantitative data was obtained. The schools UCE results for the period 2016-2018 (Appendix IV) were meant to be used for stratification of the schools under the study into High performing (h) and Low performing schools (l). The UNEB results are a national standard measure of students' achievement in Uganda thus their use in this study is in conformity with recommended forms of students' achievement.

3.3.2 Research Procedure

The researcher obtained an introductory letter from the Head of Department, Education Planning and maintenance, Kyambogo University seeking permission to carry out the study in the respective schools in Hoima District. First, the District Education office was reached at office and using the introductory letter, the intentions of the study were made known and official consent was sought to conduct the study in the schools under his jurisdiction. Contact was then made with the heads of the schools selected. The schools were visited and arrangements were made with the school heads and teachers to have the questionnaires filled and interviews conducted after. The researcher personally administered the questionnaires in the selected secondary schools with the help of two research assistants. During school visits to collect data, the researcher also made observations of the visible elements/indicators of school facilities Maintenance during which evaluation was undertaken in terms of presence or no existence of critical school facilities and documents. The information was recorded on the observation checklist.

3.4 Quality Control

Validity and reliability of the research instrument were measured as seen under the following sub sections.

3.4.1 Validity of Instruments

Validity refers to the degree to which results obtained from analysis of the data actually represent the phenomenon being studied. The researcher first determined the ability of questionnaires and interview guides to collect accurate data that represents the phenomena under study. Instruments validity test was conducted by presenting the questionnaire drafts to two experts (one being a research supervisor and the other, a lecturer for Research Methods at Kyambogo University) as inter-judges and using their comments, Content Validity Index (CVI) was determined. The formula used according to Amin (2005) and Cresswell (2009) is as shown below.

The researcher used the formula below to establish validity of the research tool;

$$\begin{aligned}\text{Content validity index (CVI)} &= \frac{\text{Agreed items by all judges as suitable}}{\text{Total number of the items judged}} \\ &= \frac{30}{37} \\ &= 0.81\end{aligned}$$

Therefore, the overall content validity Index of the instrument was equal to 0.81 which is well above the average acceptable index of 0.5 for the instrument to be accepted as valid (Amin, 2005).

3.4.2 Reliability

Reliability is the measure of the degree to which a research instrument yields consistent results. Cronbach's Alpha coefficient was used to measure reliability of the instrument. A reliable research instrument should yield consistent results when repeated in similar conditions and is usually expressed as a correlation coefficient (Mugenda & Mugenda, 2003). The process in this study involved test-retest method by way of pilot study from a similar population in Buseruka Secondary School in Hoima District. Questionnaires were presented to 10 teachers and 20 students and the responses were subjected to a reliability test. Using Cronbach alpha in SPSS, a reliability coefficient of 0.72 was obtained, which was well above 0.5, an average coefficient to give reliable

results according to Amin (2005). After the reliability test, the instrument was discussed with the supervisors and items that were found to be vague were modified.

3.5 Data Analysis

3.5.1 Quantitative Data Analysis

Data obtained from the field using questionnaires and observation were computer coded and transformed into quantitative statistical data in Statistical Packages for Social Scientists (SPSS) version 23.0. This enabled statistical computation and analysis of the data whose results were presented in form of frequencies and percentages in tables. This enabled easy comparison of findings on school facilities maintenance and students' performance in government aided secondary schools in Hoima District. The study findings presented in tables were then discussed together with results obtained using other tools in relation to existing literature; on the basis of which conclusions and recommendations were drawn with reference to the study objectives.

3.5.2 Qualitative Data Analysis

Data obtained using interview guides during face-to-face interaction with school heads and the DEO were largely qualitative in nature and thus was analyzed qualitatively using discourse and content analysis as according to (Haggarty, 1996). In addition, data collected from documentary review was also analyzed qualitatively. Content analysis enabled the researcher to categorize verbally collected data into meaningful themes corresponding to study objectives, while discourse analysis enabled the researcher to capture the "voices" of respondents that were very relevant to the study (Haggarty, 1996; & Wallace, 2017). These were used to backup and clarify responses obtained from questionnaires.

3.6 Ethical Considerations

During the study, the researcher endeavored to be as objective as possible putting into consideration of key ethical issue concerning the study. With the help of an introductory letter given by the university, the researcher orally sought informed consent from the participants prior to interaction and acquisition of data and ensured confidentiality of all the information provided.

3.7 Study Limitations

This study has a number of limitations just like many other studies. To begin with, the study was a purely social research in nature involving collecting people's opinions, perceptions and attitudes that change from time to time, thus, the results may not be treated as being ultimate.

Secondary, the current study was restricted to government aided schools in Hoima District and in these, 90% of them were under poorly performing schools' category according to their performance at UCE and only one school under high performing schools' category. For conclusive investigations, this study needed to have compared an equal number of schools under each category. This was limited by the fact that there were few high performing schools in the area of study and thus incorporating schools from elsewhere would broaden the study scope beyond that which is feasible and manageable given the short study time.

Thirdly this study involved collection of qualitative data that was transformed into quantitative data and thus could not meet the requirements for performing advanced statistical analyses like multinomial regression (based on school categories) analysis to determine the statistical effect of school facilities maintenance and students' performance. Besides student's attainment was measured by only one construct, that is UCE grades.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter entails data presentation, analysis, and interpretation. The purpose of the study was to examine the effect of school facilities' maintenance on students' academic achievement in selected government aided secondary schools in Hoima District. Specifically, the study sought to; establish the effect of classrooms' Maintenance on students' academic achievement, examine the extent to which laboratory Maintenance affects students' academic achievement and assess how sanitation maintenance affects students' academic achievement in government aided secondary schools in Hoima District.

To achieve the above objectives and answer corresponding research questions, questionnaires were administered to secondary school teachers and students whilst interviews were conducted with school Headteachers and the DEO. In addition, an observation checklist was used to collect data on observable aspects of school facilities maintenance. The questionnaires formed the main data collection tools whereas data from key informant interviews were used for triangulation and reinforcement of the responses gathered using questionnaires. The questionnaires presented to two categories of respondents (teachers and Student leaders) were of a similar design (having similar questions). In addition to the questionnaires, an observation checklist was used to collect data on observed aspects of school facilities' maintenance.

The questionnaires comprised of four sections. The first three sections followed the study objectives whereas the fourth section gathered data on the schools' academic achievement. On each of the study objectives, statements indicative of classrooms Maintenance, laboratory Maintenance, and sanitation Maintenance respectively were presented in form of questions to the respondents. The respondents were required to indicate the extent to which they agreed or disagreed with each of the statements and their responses were measured on a 4-level Linkert scale that is; Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree. For purposes of analysis and interpretation of data, the responses; "Strongly Agree" and "Agree" were combined and referred to as "Agree"; while "Strongly Disagree" and "Disagree" were combined and referred to as "Disagree". Hence, the percentages and frequencies of the responses on questionnaire items were analyzed in terms of "Agree", and "Disagree".

The data obtained through interviews were qualitatively analyzed using content analysis and used to re-enforce the findings from the main research tool (questionnaires) under the corresponding study findings' themes.

4.1 Research Instruments' Return Rate

Questionnaires were administered to a total of 120 teachers in 10 schools selected under the study (taking 12 per school). In addition, questionnaires were also administered to 200 students (taking 20 from each of the selected schools). Of the questionnaires administered to the teachers, only 82 were dully filled and returned representing a 68.3% return rate. Whereas all the sampled 200 students responded giving a response rate of 100%. Interviews were also conducted with 7 Headteachers of the schools under study and the DEO, giving response rates; 70% and 100% respectively. The overall return rate was 84.6% which is above the minimum recommended for research results analysis and reporting according to Magenda & Magenda (2003).

Table 4.1: Summary of Instruments Return Rate

Category of respondents	Administered instruments	Returned instruments	Percentage return
Students	200	200	100
Teachers	120	82	68.3
Headteachers	10	7	70
DEO	01	01	100
Total	331	290	84.6

Source: Primary Data (2019)

4.2 Effect of Classrooms' Maintenance on Students' Academic Achievement in Government Aided Secondary Schools in Hoima District

To achieve the first objective and answer corresponding research question in this study, a set of nine questions related to classrooms' Maintenance and its inferred effect on students' academic achievement in government aided secondary schools in Hoima District were presented to the respondents and their return responses measured on a 4-level-Linkert scale. The results obtained thereof are summarized in the Table 4.2 in form of frequencies (%) and percentages (F).

Table 3.2: Responses on Effect of Classrooms Maintenance on Students’ Academic Achievement in Government Aided Secondary Schools in Hoima District (N=282)

Classrooms Maintenance and students’ academic Achievement	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
To what extent do you agree that;								
My secondary school has well-constructed classrooms which enables better students’ performance	108	38.3	92	32.6	38	13.5	44	15.6
My school has well ventilated classrooms that enable understanding of content during lessons.	38	13.5	56	19.9	98	34.8	90	31.9
My school has renovated classrooms that facilitate conducive learning.	37	13.1	74	26.2	99	35.1	72	25.5
My school has enough lighting in the classrooms that enables visibility of writings.	47	16.7	70	24.8	94	33.3	71	25.2
My school has sufficient seats/desks in the class rooms for every learner for comfortability.	40	14.2	84	29.8	103	36.5	55	19.5
My classrooms are in good conditions which gives a good learning environment and good performance	43	15.2	85	30.1	92	32.6	62	22
My classrooms are well ventilated which reduces risks of health problems during class time therefore encourages proper learning.	37	13.1	72	25.5	95	33.7	78	27.7
My classrooms have been renovated which gives a conducive learning environment	42	14.9	63	22.3	94	33.3	83	29.4
My classrooms are big enough which reduces overcrowding improving classroom performance	41	14.5	60	21.3	101	35.8	80	28.4

Source: Primary Data (2019)

The first aspect of class rooms’ maintenance that the respondents were probed about was the structural design of the classrooms. The respondents were asked to indicate that extent to which they agreed or disagreed with the view that their schools had well-constructed classrooms which enables better students’ performance. In general, Table 4.2 indicates that 200 (70.9%) of the respondents agreed while 44 (29.1%) disagreed. When the responses were compared among the two school categories in terms of academic performance, all the 32 (100%) respondents from the one high performing school (schools J) agreed whereas 168 (67.2%) of the respondents from the nine (9) low performing schools agreed and 82 (32.8%) disagreed. Whereas there were differences in responses between the high performing school and low performing schools, the general results

indicate that the classrooms in the schools under study had been well constructed to enable high student's academic performance as indicated by the 70.9% of the respondents who agreed with the statement. These results can be explained by the fact that all the schools under study are government aided and therefore follow a common structural design of classrooms which is thought to enable learning and teaching to enhance performance. The differences between the two school categories could be accounted for by the difference in enrolment and possibly Maintenance levels. Although the majority of the respondents agreed that their schools had well-constructed classrooms, some schools under this study had either poorly or no constructed classroom structures as was revealed by the Headteacher of school-A while stating that, "class rooms are okay however to some extent during the rainy season students are affected because the blocks are not yet well constructed". This means leaning in these schools is hampered by many factors related to classroom environment.

On the view that "my school has well ventilated classrooms that enable understanding of content during lessons", Table 4.2 reveals that 94 (33.3%) of the respondents agreed while 188 (66.7%) who were also the majority disagreed with the statement. When responses were compared between the two school categories, all the 32 respondents (representing 100%) from the high performing school agreed whereas 62 (24.8%) of the respondents from the nine low performing schools agreed and 188 (75.2%) who were the majority disregarded the statement. The implication of these results is that, whereas respondents from the high performing school perceive that the classrooms in their school are well ventilated, making them conducive for the teaching and learning thus high performance as reflected in their students' scores in National examinations (UNEB), the situation is quite different in the rest of the nine low performing schools under this study. The few respondents agreeing with the assertion from the low performing schools' category represent the variations in classrooms ventilation within this same category.

With regard to the statement that "my school has renovated classrooms that facilitate conducive learning", 111 (39.3%) of the respondents agreed, while 171 (60.7%) disagreed as shown in table 4.2. In the high performing school, all the 32 respondents giving 100% agreed with the assertion compared to 79 (31.6%) who agreed and 169 (68.4%) who disagreed from the low performing schools' category. The fact that the majority of the respondents from the low performing schools disagreed that their classrooms were renovated compared to respondents from the high performing school, give some evidence to show that lack of classrooms Maintenance through renovations in low performing schools could account for the poor performance in these schools.

The results obtained from key informant interviews were also in agreement with the above findings. During an interview session in school-I, the Headteacher lamented that,

classes are not renovated and some have broken windows but we are hopeful that in the next financial year the district will come in to help with the renovation plus another NGO working within the community. (24th /04/2019)

This indicates that implementing renovation programs are beyond reach for most schools under this study.

Similarly, when the respondents were asked to indicate whether there is enough lighting in their schools' classrooms, 117 (41.5%) of the respondents agreed and 165 (58.5) who were also the majority disagreed (Table 4.2). Of the respondents who agreed, 27.4% were from as single high performing school whilst the remaining 72.6% were from the nine low performing schools. The results point towards variations in provision for sufficient lighting between the high performing school and the low performing schools in Hoima District which could also account for the variations in students' academic performance too. However, there are some respondents from the poorly performing schools who indicated that their classrooms have enough lighting to facilitate conducting learning which also shows that even if they have been classified under low performing schools, these could be registering slightly better results as compared to others for example school H (see Appendix IV).

When the respondents were asked whether the seats and desks in their schools' classrooms were sufficient for all the learners, 124 (45%) of the respondents agreed while 158 (55 %) of them disagreed with the statement. When the responses were compared between the two categories of schools, 20 (62%) of the respondents from school J (high performing school) indicated that they agreed and 12 (37.5%) disagreed while 103 (41.6%) agreed and 146 (58.4%) disagreed from the low performing schools' category. These results imply whereas that majority of the schools under study who consented to the fact that their schools' classrooms had insufficient sitting facilities, the same problem is also faced in the high performing school as indicated by the 37.5% of the respondents who disagreed with the main assertion. This could also imply that, as a result of better students' performance, the high performing school is overwhelmed by students' numbers to an extent that the sitting facilities may not be sufficient for all learners. However, the fact that the majority of the respondents from the high performing school agreeing that seating facilities in their

classrooms implies that they are better positioned to facilitate smooth learning and thus high performance as compared to the low performing schools.

The respondents were also probed on the statement that classrooms in their schools are in good conditions which gives a good learning environment and enhance students' performance. Table 4.2, indicated that 128 (45.3%) of the respondents agreed while 154 (54.7%) disagreed with the statement. In the high performing school, 32 (100%) of the respondents agreed the classrooms at the school were in condition meaning that they have been well maintained as compared to 96 (38.4%) who agreed and 154 (61.6%) who disregarded the assertion from the low performing schools.

On the assertion that "my classrooms are well ventilated which reduces risks of health problems during class time therefore encourages proper learning", Table 4.2 indicates that 109 (38.6%) of the respondents agreed whereas 173 (61.4%) and the majority disagreed with the statement. In relation to school academic performance category, all the 32 respondents (representing 100%) from the high performing school agreed whereas 77 (30.8%) of the respondents from the low performing schools agreed and 173 (69.2%) who were the majority disregarded the statement. The implication of these results is that, the high performing school has kept the ventilation of the its classrooms in a state that facilitates healthy living and learning thus high student academic performance which is not the case with the low performing schools under this study in Hoima District.

The respondents were also probed over whether classrooms in their schools have been renovated in the recent past to provide a conducive learning environment or not. In response, 105 (37.2%) of the respondents agreed while 177 (62.8%) disagreed as shown in table 4.2. from the high performing school, all the 32 respondents representing 100% agreed with the statement while 73 (29.2%) agreed and 177 (70.8%) and the majority from the low performing schools disagreed. The fact that the majority of the respondents from the low performing schools disagreed that their classrooms had been renovated compared to respondents from the high performing school suggests that high performing school plans and implements classrooms' Maintenance scheme that consequently contributes to the students' academic performance.

In terms of class room size, 101 (35 %) of the respondents agreed whilst 181 (63.2%) who were also the majority disagreed that their schools have classrooms that are big enough to reduce overcrowding and thus improve students' performance. Amongst school categories, 29 (91%) of the respondents from the high performing school agreed and only 3 (9%) disagreed whereas 73 (28.8%)

agreed and 178 (71.2%) disagreed from the low performing schools. The implication of these results is that both high and low performing schools in Hoima District are faced with the challenge of large students' numbers as compared to classrooms sizes and number. However, the challenge seems more pronounced in the low performing schools as shown by the overwhelming number of respondents who disagreed with the statement that their classrooms are big enough to avoid overcrowding and improve students' performance. The results further imply that most schools in Hoima do not adjust to increasing students' numbers by either streaming or erecting corresponding large sized classroom structures.

Contrary to the situation in low performing schools, a Headteacher in the high performing school-J while describing the situation about classrooms and school facilities Maintenance in their school stated that,

there has been restocking of the labs, damaged equipment is replaced and what is used up is put back, more classes are being constructed, class desks repaired and or replaced pitch is being developed, facility maintenance plans are present and approved by the BOG. (17th/04/2019)

This means that the better performance registered in the high performing school is as a result of proper class room and other school facilities maintenance.

From the study findings on classrooms maintenance presented in the above, the first research question can be tentatively answered by stating that poor classrooms' maintenance in Hoima district negatively affects students' academic performance. The schools in Hoima perform poorly because students' study in classrooms characterised by insufficient space, poor ventilation, inadequate lighting, limited number of seats and desks, lack of renovation thus presenting unbecoming conditions that deter learning.

4.3 The Extent to Which Laboratory maintenance Affect Students' Academic Achievement in Government Aided Secondary Schools in Hoima District

To examine the extent to which laboratory maintenance plans affect students' academic achievement in government aided secondary schools in Hoima District, the researcher employed research tools with questions that required responses from the teachers and students, measured on 4-level Linkert scale. A summary of the results in line with laboratory maintenance plans are presented in Table 4.3.

Table 4.3: Responses on the Extent to which Laboratory Maintenance Affect Students' Academic Achievement in Government Aided Secondary Schools in Hoima District (N=282)

Laboratory Maintenance and Students' academic Achievement	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
To what extent do you agree or disagree that;								
My school has sufficient equipment in the laboratory for proper learning of science subjects	46	16.3	61	21.6	96	34	79	28
My school has well organized seats in the laboratory for improved learning	46	16.3	48	17	97	34.4	91	32.3
My school has enough light in the laboratory for proper color identification during experiments	43	15.2	53	18.8	96	34	90	31.9
My school has proper ventilation in the laboratory for better breathing and improved performance	43	15.2	36	12.8	116	41.1	87	30.9
My school stores laboratory reagents to avoid contamination and failure.	87	30.9	81	28.7	68	24.1	46	16.3
My school has proper ventilation in the lab which reduces air congestion for conducive learning environment.	47	16.7	68	24.1	89	31.6	78	27.7
The laboratory is well organized and neat for enhanced learning	46	16.3	37	13.1	103	36.5	96	34
Laboratories possess fire extinguishers and first aid tool boxes to enhance proper learning	33	11.7	47	16.7	92	32.6	110	39

Source: Primary Data (2019)

On the view that my school has sufficient equipment in the laboratory for proper learning of science subjects, Table 4.3, reveals that, 107 (38%) of the respondents agreed while 175 (62%) disagreed. In terms of school category, all the 32 (100%) respondents from the high performing school agreed whereas 75 (30 %) of the respondents from the low performing schools agreed and 175 (70%) disagreed with the assertion. It can be noted from these results that in the high performing school, much attention is given to equipping the laboratory with the necessary equipment to facilitate practical and science teaching and learning which is somewhat consistent with the schools' performance. Conversely, low performing schools seem to only use what is provided by government as indicated by the 30% that agreed that the lab equipment are sufficient. These could also be representing government aided schools whose students' numbers are low that the existing

equipment is sufficient for them. The results from interviews also point towards the same direction as what is shown here. One Headteacher in School-I had this to say about laboratories in their school,

at times our teachers especially science teachers don't give enough time to the students even when the equipment in the lab are present. At the moment senior four students, had not had enough practical due to the fact that the school had not had enough resources.(24th /04/2019)

This implies that, when the students fail to have frequent practical studies towards the end of the term or to UNEB they usually panic which makes them fail thus registering poor performance.

In response to the statement that, "my school has well organized seats in the laboratory for improved learning", 94 (33.3%) of the respondents agreed while 188 (66.7%) who were also the majority disagreed with the statement. In the high performing school, all the 32 (100%) respondents agreed while 62 (24.8%) of the respondents from the low performing schools agreed and 188 (75.2%) who were also the majority disagreed that their school had organised lab seats. These results point to the fact that whereas seating facilities in sufficient numbers can provide a conducive learning environment for the learners to enhance their performance, low performing schools under this study were not maintaining them as a major requirement. On the contrary, all the respondents from the high performing school category consented that their laboratories are furnished with sufficient seats that enables the students to learn and perform even better.

Similarly, when the respondents were asked to indicate whether there is enough lighting in their schools' laboratory, 96 (34%) of the respondents agreed while 186 (66%) who were also the majority disagreed. From the high performing school, all the 32 respondents agreed with the assertion while 64 (25.6%) agreed and 186 (74.4) disagreed from the low performing schools. The results point towards variations in provision for sufficient lab lighting between the high performing school and the low performing schools in Hoima District which could also account for the variations in students' academic performance too. The results also imply that most of the low performing schools depend on natural sources with associated shortcomings in enclosed laboratory learning, owing to the fact that such sources need to be supplemented with artificial lighting.

On the view that "my school has proper ventilation in the laboratory for better breathing and improved performance", 79 (28%) of the respondents agreed whereas 203 (72%) and the majority disagreed with the statement. In relation to school academic performance category, all the 32

respondents (representing 100%) from the high performing school agreed whereas 47 (18.8%) of the respondents from the low performing schools agreed and 203 (81.2%), who were the majority disagreed with the statement. The implication of these results is that, the high performing school has kept the ventilation of their laboratories in a state that facilitates healthy living and science practical learning hence high student academic performance as compared to the low performing schools under this study in Hoima District.

Table 4.3 further reveals that 168 (59.6%) who were also the majority agreed while 104 (41.4%) of the respondents disagreed with the statement that their schools ensure proper storage of laboratory reagents to avoid contamination and failure. In the high performing school, all the 32 respondents giving 100% agreed with the assertion compared to 137 (54.8%) who agreed and 113 (45.2%) who disagreed, from the low performing schools' category. These results reveal that majority of the school ensure proper storage of laboratory reagents for use in practical teaching and learning. It would therefore be expected that all the schools perform highly, however, the fact that most of the schools perform poorly could be explained by the fact that some government aided schools might be just keeping the laboratory reagents and not using them at all to enhance performance thus poorly managing the laboratory leading to poor performance in the respective schools. In school D (one of the poorly performing schools), the Headteacher stated that,

Government sent some reagents and chemicals for chemistry and biology but due to poor storage, some got spoiled while others, their containers were broken by students. (25th/04/2019).

This is not different from what the Headteacher in another a low performing school (H) stated when he said that,

laboratories are in place and equipped with the necessary equipment but the facilities are underutilized by “flying teachers” who don't stay in one place. Teachers are not always at the station. facilities are present but also teachers are not utilizing them so well. (22nd/04/2019)

Similarly, the respondents were required to indicate the extent to which they agreed or disagreed with the statement that laboratories in their respective schools have proper air conditioning through ventilation to reduce on air congestion and ensure a conducive learning environment. In response, 115 (40.8%) of the respondents agreed whereas 167 (59.3%) and the majority disagreed with the statement. In relation to school academic performance category, all the 32 respondents (representing 100%) from the high performing school agreed whereas 83 (23.2%) of the respondents from the low performing schools agreed and 167 (66.8%), who were the majority disagreed with the statement.

These results imply that there exists variation in laboratory structural arrangements in relation to natural air conditioning which when also explains variations in students' academic performance especially in science subject areas.

With regard to the question whether the respondent's school laboratories are well organized and neat to enhance students learning, 83 (29.4%) of the respondents agreed while 199 (70.5 %) disagreed with the statement. When the responses were compared between the two categories of schools, all the respondents from the high performing school indicated that they agreed whilst 51 (20.4%) agreed and 199 (79.6%) disagreed from the low performing schools' category. The results here signify that there is absence of neat and organized laboratory conditions in low performing schools that affects their students' performance especially in practical/ science subjects.

The last element of laboratory facilities maintenance to which responses were sought in the study is possession and existence of fire extinguishers and first aid tool kits in the school laboratories. Table 4.3 indicates that 80 (28.4%) of the respondents agreed while 202 (71.6%) disagreed as shown in table 4.3. From the high performing school, all the 32 respondents representing 100% agreed with the statement while 48 (19.2%) agreed and 202 (80.8%) and the majority from the low performing schools disagreed. These results signify that whereas the high performing school has a provision for a fire extinguisher and first aid tool kit in the laboratory reflecting laboratory facility Maintenance and thus promoting learning and performance, the low performing schools seem not to have equipped their science laboratories enough to ensure a feeling of safety of both the learners and teachers to enhance the learning process.

From the above findings, the second research question can be answered by stating that, to a greater extent, laboratory Maintenance affects the academic achievement of students in government aided secondary schools in Hoima District. The schools were discovered to have inadequately equipped science laboratories, inadequately utilizing laboratory reagents, poor lighting and ventilation in laboratories, inadequate provision of sitting facilities, and absence of safety equipment such as fire extinguishers as well as first aid tool kits in the laboratories.

4.4 The Effect of Sanitation Maintenance on Students' Academic Achievement in Government Aided Secondary Schools in Hoima District

The third objective of the study was to assess the effect of sanitation Maintenance on students' academic achievement in government aided secondary schools in Hoima District, the researcher presented research tools with questions that required responses measured on 4-level Linkert scale. The findings in that line are presented in table 4.4 below.

Table 4.4: Responses on how Sanitation Maintenance Affect Students' Academic Achievement in Government Aided Secondary Schools in Hoima District (N=282)

Sanitation Maintenance and students' academic achievement	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
To what extent do you agree or disagree that;								
My school provides sanitary materials for both the male and female students which promotes good hygiene for learning environment	54	19.1	69	24.5	59	20.9	100	35.5
My school maintains regular cleanliness in the toilets	50	17.7	57	20.2	106	37.6	69	24.5
My school has well distributed toilets for girls, boys and teachers	30	10.6	62	22	97	34.4	93	33
School toilets have hand wash utensils used after visiting them	37	13.1	51	18.1	72	25.5	122	43.3
There is a reasonable distance from the classrooms to the toilets	27	9.6	39	13.8	120	42.6	96	34
My school Headteacher has purchased tools for facility Maintenance	82	29.1	112	39.7	60	21.3	28	9.9
My school has non-teaching staff specifically for facility Maintenance	49	17.4	68	24.1	90	31.9	75	26.6
My school has day-to-day Maintenance of school facilities	51	18.1	77	27.3	92	32.6	62	22
My school has prograded Maintenance of school facilities	42	14.9	94	33.3	92	32.6	54	19.1
My school maintains clean and orderly compound for better learning	22	7.8	74	26.2	116	41.1	70	24.8

Source: Primary Data (2019)

In relation to sanitation facilities maintenance and students' academic achievement, the respondents were probed to indicate that extent to which they agreed or disagreed with the view that their schools provide sanitary materials for both the male and female students which promotes good hygiene for learning environment. In response, Table 4.4 indicates that 123 (43.6%) of the

respondents agreed while 159 (56.4%) who were also the majority disagreed. When the responses were compared between the two school categories in terms of academic performance, all the 32 (representing 100%) respondents from the high performing school agreed, whereas 91 (36.4%) of the respondents from the low performing schools agreed and 159 (63.6%) disagreed. The results indicate that the schools under study try to provide sanitary materials for both boys and girls in a bid to promote good hygiene in their schools to enable all students learn in a conducive environment. However, the results also show that more the high performing school caters for sanitary materials for both boys and girls more than the low performing schools do. This could be due to the fact that high performing schools have relatively sufficient funds in addition to what government provides to cover up some of the expenses among which is provision of sanitary materials.

Table 4.4 also shows that 107 (37.9%) of the respondents agreed while 175 (61.9%), and the majority disagreed with the statement that their schools maintain regular toilet cleanliness. When responses were compared between the two school categories, all the 32 (100%) respondents from the high performing school agreed whereas 75 (30%) of the respondents from the low performing schools agreed and 175 (70%) disregarded the statement. This means the majority of the schools in the low performing category do not ensure regular toilet cleaning whereas regular toilet cleaning is ensured in the high performing school which could have a bearing on the good grades achieved by the students. The Headteacher in school-I noted that,

Toilets that are kept in good condition give students comfort to use them. To girls especially when the toilets are not clean, they usually get STIs which affect their concentration and performance in class. (24th/04/2019)

On the view that, “my school has well distributed toilets for girls, boys and teachers,” 92 (32.6%) of the respondents agreed while 190 (67.4%) disregarded the statement. In relation to the two school categories, the high performing school had all its respondents (100%) agreeing with the assertion whilst 60 (24%) agreed and 190 (76%) disagreed from the low performing schools’ category. The results here point to the fact that the low performing schools have an imbalance in the distribution of toilets among different strata, although the 24% of the respondents who consented to the statement represent schools which try to provide toilet facilities to the different groups of individuals at their schools compared to others, but within the same academic performing category. On the contrary, in the high performing school, girls, boys and teachers use different toilet facilities which provide a learning enabling environment and thus enhancing performance of the learners. This was not different from what the Headteacher in school H reported when he stated that,

the ratio of toilets between girls and boys is not equal in our school. When children lack privacy and easy access especially girls in their menstrual periods, they are inconvenienced. The child may be forced to stay at home thereby miss lessons. (22nd/04/2019).

Similarly, in another low performing school-F, the Headteacher mentioned that, “toilet facilities are not to the proportionate ratio of children or students to toilets”. In another school-I, the Headteacher reported that,

Another problem we have is that girls and boys meet in shared toilets for sexual relationships. This affects their academic performance. We had an incident of a pregnancy but after critically looking at it, it was discovered that actually the girl had been impregnated by a fellow student in the toilets. (24th /04/2019).

Poorly distributed toilet facilities between boys and girls therefore contributes towards poor performance.

Similarly, when the respondents were asked to indicate whether their schools have hand-washing utensils used after visiting the toilet or not, 88 (31.2%) of the respondents agreed while 192 (68.8%) disagreed. In the high performing school, 100% of the respondents who agreed whilst 56 (22.4%) agreed and 194 (77.6%) disagreed from the low performing schools. The implication of these results is that at minimum, some low performing schools don't own hand washing utensils for use by students after visiting the toilets whereas in the high performing school, the administration has ensured provision of hand washing utensils for proper hygiene and sanitation in the school to keep the school community free from hygiene and sanitation related illnesses like stomach problems that destruct learners form concentrating in school to perform better academically. The results could serve to explain the differences in student's performance between the two school categories being compared here. During an interview session in school-H, the Headteacher said, “there is no water source but the school is planning to construct another water tank”.

Another Headteacher in school-A said, “lack of water near toilet facilities increase incidences of hygiene related illnesses which hamper children's studies and academic achievement. (9th 04/2019).

This means that even if hand washing utensils were provided, they would be of no use.

Table 4.4 further reveals that 216 (76.6%) of the respondents agreed while 66 (23.4%) of them disagreed with the statement that there is a reasonable distanced from the classrooms to the toilets in their schools. In terms of school category, 100% of the respondents from the high performing schools indicated that there was reasonable distance between classrooms and toilets while in the low

performing schools, only 34 (13.6%) agreed and 216 (86.4%) disagreed. The results here signify that managers of the high performing school have tried so much to ensure optimum toilet to classrooms distance to ensure minimum time wastage by students especially during lesson time which enables the students to perform better which seems not to be the case with the situation in low performing schools. These results also indicate that the high performing school could be providing flush toilets facilities which can be situated within proximity to classrooms compared to ordinary pit latrines provided in low performing schools which have to be situated at considerable long distance from classroom and dormitory areas for sanitation and hygiene reasons.

While conducting an interview with the Headteacher in school-I, the Headteacher had this to say;

Toilets being in close proximity enable students to save time in moving especially when a lesson is going on in class. However, in our school, we have a problem of shortage of toilets. Toilets are a bit far from classes. Within the school compound, there are no toilets. They are located on the dormitory side which is a bit far from classrooms. Students waste a lot of time and if they go in groups that means discussions and talking. By the time they get back, time is already spent and at times the lesson over. (24th /04/2019).

The respondents were also probed on the Headteachers of their schools had purchased tools for facility Maintenance to which 194 (78.8%) of the respondents overwhelmingly agreed while only 88 (21.2%) disagreed with. Whereas in the high performing school all the respondents agreed that the Headteacher had bought tools required for facility maintenance, the majority of the respondents agreeing with the state assertion imply that on average all school heads provided for tools for school facilities maintenance. The emerging difference between the two school categories can be accounted for by the fact that there could be differences in making the tools available and actual usage to maintain facilities to which the high performing school seem better at, compared to the low performing schools in Hoima District.

Regarding the view that the respondents' schools have non-teaching staff specifically allotted to facility maintenance, 117 (41.5%) of the respondents agreed while 165 (58.5%) disagreed. This means that the majority of the respondents in the schools selected for the study consent that their schools hire non-teaching staff to take care of school facilities although the difference between those who agreed and those that disagreed is only 17%. When the responses are compared between the school category, all the respondents in the high performing school agreed while 85 (34%) agreed and 165 (66%) disagreed from the low performing schools. Similarly, while responding to the interview question, "does the school have someone in charge of facility maintenance?" majority

of the Headteachers (schools; A, D, H, & G) agreed that there were non-teaching staff allocated to do the work of facilities Maintenance which contradicts with the findings from the questionnaire.

On the statement that “my school has a day-to-day maintenance of school facilities”, Table 4.4 indicates that 128 (45.4%) of the respondents agreed while 154 (54.6%) disagreed with the statement. In relation to school academic performance category, all the 32 respondents representing 100% from the high performing school agreed whereas 96 (38.4%) of the respondents from the low performing schools agreed and 154 (61.6%) who were also the majority disregarded the statement. The majority of the respondents from the low performing schools’ category disagreeing that they do not have day-to-day Maintenance of school facilities implies that their facilities are kept in an appalling state as compared to their high performing school counterpart. However, there was slight margin between respondents who agreed and those who disagreed with the assertion which mean that although these schools do not regularly offer facilities maintenance, they do it less often as indicated by the 45% of the respondents who agreed. A Headteacher in school-I noted during an interview that,

facility maintenance activities are carried out twice in the term at the beginning and mid-term. However, nothing had been done by now (time of the interview) because the school resources were not enough.

Another aspect of school facilities maintenance that the respondents responded to was whether their schools have programmed maintenance of school facilities. In response and just like the other aspects already looked at in this section, the majority of the respondents (146 representing 51.8%) disagreed whilst 134 representing 48.2% agreed. However, there was a very small margin (2.6%) between the respondents who agreed and those that disagreed. In the high performing school, all the respondents agreed that their school has programmed Maintenance of school facilities whereas 104 (41.6%) of the respondents from the low performing schools agreed and 146 (58.4%) disagreed. The results presented here signify that whereas all the respondents from the high performing school consent that their school has programmed Maintenance of school to enhance learning, the same is lacking among the low performing schools which could be partly failing their learners from excelling academically.

“The school has facility Maintenance plans but they are not effected due to meagre resources”, said one of the Headteachers in School-I (24th /04/2019).

This confirms the results obtained on this matter under questionnaire.

The respondents were also required to indicate whether they agreed or disagreed with the view that their schools maintain clean and orderly compounds that promote learning and better performance. While responding, 96 (44%) of the respondents indicated that they agreed with the statement whereas 165 (58.8%) and the majority disagreed. In the high performing school, all the 32 respondents representing 100% agreed with the statement while 64 (25.6%) agreed and 186 (74.4%) who were the majority from the low performing schools disagreed. This means that the respondents from the low performing schools are discontented with their schools' compounds due to the fact that they are disorderly and untidy compared to the respondents from the high performing school. This can also serve to provide an explanation for the discrepancies in academic performance.

Basing on the study results shown in above, question three in this study can be answered by stating that sanitation facilities maintenance has a positive and direct effect on students' academic performance in government aided secondary schools in Hoima District.

4.5 Students Academic Achievement in Government Aided Secondary Schools in Hoima District

To compare and validate UCE results (Appendix IV) with what the stake holders think of in terms of students' academic achievement in the selected secondary schools in Hoima District, the respondents were asked to indicate the extent to which they agreed or disagreed with five statements presented in part D of the questionnaire. The responses were measured on 4-level Linkert scale and the finding in that line are presented in Table 4.5.

Table 4.5: Responses on Academic Achievement of Students in Selected Government Aided Secondary Schools in Hoima District (N=282)

Students' academic achievement	Strongly Agree		Agree		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%
To what extent do you agree or disagree that;								
My school registers high percentage of division One and two grades in UNEB examinations.	46	16.3	38	13.5	115	40.8	83	29.4
The number of students who passed in division three, four and grade U are lower in final examinations.	39	13.8	56	19.9	111	39.4	76	27
Students in my school score high percentage of distinctions and credit scores in all subjects in UNEB examinations.	41	14.5	57	20.2	110	39	74	26.2
The percentage of our students who score passes and failures in various subjects is negligible.	48	17	54	19.1	110	39	70	24.8
Our schools have high percentage of students with entry points to higher institutions of learning.	34	12.1	48	17	115	40.8	85	30.1

Source: Primary Data (2019)

Table 4.6 indicates that, 84 (29.8%) of the respondents agreed while 198 (70.2%) disagreed with the assertion that their schools register high percentage of students in divisions 1 and 2 in UNEB examinations. Whereas all the respondents from the high performing school agreed that their school registers high percentage of students in divisions one and two, in low performing schools, 52 (20.8%) agreed and the majority (198 representing 79.2%) disagreed with the assertion.

Similarly, 95 (39.4) of the respondents agreed while 187 (66.5%) disagreed with the assertion that the number of students who passed in division three, four and grade U are lower in final examinations. This means that a number of students in the schools under this study register more students in divisions three, four and U which indicate relatively low academic performance. Conversely, all the respondents from the high performing school agreed that their school registers lower numbers of students in divisions three, four and U. However, even among the low performing category there were respondents who agreed with the assertion which also implies that there could be those schools whose students pass in divisions one and two but whose numbers are also smalls.

Besides, the results also imply that some low performing schools could be registering more students in division X, or simply put it that they are not aware of their school's performance because of poor performance.

On the view that students in the respondents' schools score high percentage of distinctions and credit scores in all subjects in UNEB examinations, 98 (34.4%) of the respondents agreed while 149 (65.6%) who were also the majority disagreed. These results imply that most of the schools under this study register few credits and distinctions in UNEB examinations as compared to passes. In the high performing school category, all the respondents indicated that they agreed with the statement which is just consistent with the results obtained from UNEB (Appendix IV).

Further still, Table 4.5 indicates that, 102 (36.1%) of the respondents in the selected schools agree that the percentage of their students who score passes and failures in various subjects at UNEB is negligible whereas the majority (180 representing 63.8%) disagreed. All the respondents from the high performing school agreed while in the low performing school category, the majority of the respondents disagreed that the number of passes and failures scored by their schools were negligible. This implies that passes and failures registered in the low performing schools are a reason to worry.

On the view that "our schools have high percentage of students with entry points to higher institutions of learning", 82 (29.1%) of the respondents indicated that they agreed with the statement whereas 200 (70.9%) disagreed. In the high performing school, all the 32 respondents representing 100% agreed with the statement while 41 (20.4%) agreed and 199 (79.6%) from the low performing schools disagreed. The fact the majority of the respondents in the low performing schools disagreed with the fact that their schools have high numbers of students with entry point to higher institutions implies that students from these schools not only fail to pass exams but also fail to join any formal careers that also makes them to fail in different aspects of life. In the high performing school on the other hand, the students not only have an opportunity to join advanced level but also join tertiary institutions that can immediately shape their careers and easily succeed in life.

The results obtained from the field and those from UNEB all indicate that students' performance in the selected schools is still wanting, and when the performance was compared with the status of schools' facilities, a close relationship was established between the two variables, which implies

that facilities maintenance greatly affects students' academic achievement in Government aided schools in Hoima District.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents discussion and summary the study findings, draws conclusions from the findings and provides recommendations on each of the study objectives in line with school facilities Maintenance and students' performance.

5.1 Discussion

5.1.1 Effect of Classrooms' Maintenance on Students' Academic Achievement

The results shown in Table 4.2 in chapter 4, revealed that low performing schools have poor class rooms' Maintenance as compared to their counterparts in high performing schools in Hoima government aided secondary schools. This was mainly in terms of insufficient siting facilities, congested classrooms, inadequate classrooms' lighting, unrenovated and poorly ventilated classrooms. These results revealed the importance of maintaining a conducive classroom environment in facilitating students learning and consequently academic performance which have already been over emphasized elsewhere in the literature (e.g. Bullock, 2007; Nkechi, 2016).

It was established that schools in Hoima District have well-constructed class rooms as they follow the same structural designs and standards set by the MoES school infrastructure development. This contrasted slightly from the revelation by Sanoff (2001), who while conducting an assessment of building methods noted that school buildings have an impact on the mental development of a student. He further argued that if schools are properly built and made attractive, they motivate the students to stay in school and learn well. However, what affects students' performance in the schools under the current study was related to the internal classroom environment in terms of wall paintings, size verses students' number, seats and desks, ventilation and lighting conditions. The schools under study performed poorly due to poor state of the classroom environment which is not in any way different from what Sanoff (2001) asserts.

The learning environment has been noted to be so instrumental in the process of teaching and learning that any defects in it will have colossal negative impact of children's learning and thus academic performance. A classroom forms the main students' learning environment which must be made as comfortable as possible since learners spend much of their school time in class. Classroom

facilities such as sitting facilities for students were discovered to be having impact on students' performance. Learners prefer to study under adequately sized class rooms with enough lighting, seats, desks and ventilation.

It was established that in most of the schools under the current study have congested classrooms which makes teaching and learning difficult and thus low academic achievement. This revelation is directly related to what Dahar & Faize (2011) observed when they stated that overcrowding in classrooms makes it difficult for students to write and the teacher is also unable to move around the class to assist needy students and this affects the teaching-learning process. Crowded classroom conditions not only make it difficult for learners to concentrate but inevitably limit the amount of time teachers can spend on innovative teaching methods such as cooperative learning and group work (Dahar & Faize, 2011). Thus, congestion within classrooms affects teaching-learning process. This is because the teacher may not be able to move around to give individual attention to all the students in need due to the high number of students in class. Similarly, Earthman (2017) revealed that comfortable classroom temperature and smaller classes in terms of students' numbers enhance teachers' effectiveness and provide opportunities for students to receive more individual attention, ask more questions, participate more fully in discussions, and reduce discipline related issues.

Renovated buildings positively affect health, behavior, engagement, learning, and growth in student's achievement. Rutter, Maugham, Mortimore, and Ouston (1979) revealed that the school environment and decoration of buildings is associated with better outcomes for students. Furthermore, the findings of this study are in line with a more recent finding by Ayeni and Adelabu (2012) that the condition of school's learning environment including infrastructure, has an important impact on the teachers' effectiveness and students' academic performance. Owoeye & Yara (2011) also found out that student achievement was as much as 11 percentile points lower in substandard buildings as compared to above standard buildings.

According to O'Neill (2014), the recent competition for smaller classrooms with insufficient seats within the school buildings makes such environment un conducive for learning. This makes students congested in a heated room and subsequent become violent, making such buildings unsafe. Jago & Tanner (2012) argues that class size is one of the most important infrastructures in the institutional environment because it helps to identify the student's teacher ratio. Teacher-student ratio is a variable that gives an indicator on the average of a class in an institutional setting. All these findings related to those in the current study.

The results obtained in this study conform to what Earthman & Lemasters (2011) found out when they stated physical features such as space, equipment, Maintenance , appearance, comfort and general physical arrangement positively or negatively affected the school learning environment. To Hui & Cheng (2008), for learning to effectively take place, buildings must be of good standard and supportive for both the learners and teachers. They further argued that the physical environment plays a significant role in effective teaching all of which have been proved true with the findings in the current study.

Poor Maintenance and ineffective ventilation systems lead to poor health among students as well as students, which leads to poor performance and higher absentee rates according to Omotere et al. (2016). These factors can adversely affect student behavior and lead to higher levels of frustration among teachers, and poor learning attitude among students, just like the current study findings have shown.

Edogie (2014), reported that safe and orderly classroom environment (aspect of instructional space), University facilities (accessories) were significantly related to students' academic performance in schools. Poor Maintenance and ineffective ventilation systems lead to poor health among students as well as lecturers, which leads to poor performance and higher absentee rates (Omotere, Tope & Adunola, 2016) to which the current study too has indicated.

5.1.2 The extent to which Laboratory Maintenance affect Students' Academic Achievement

It was also established in this study (Table 4.3) that laboratory Maintenance to a greater extent affects students' academic achievement in terms of sufficient lighting, ventilation, orderliness and properly equipping them with necessary equipment, including safety tools like first aid kit and fire extinguishers. Proper laboratory Maintenance promotes practical learning, ensures proper usage and storage of reagents such that they do not get contaminated making them susceptible to giving wrong results. Sufficiently equipping the lab with artificial lighting sources also helps to ensure visibility and smooth operation of practical procedures. According to Yara & Otieno (2010), equipping science laboratories has been proved to improve the teaching and learning process and it is helpful in increasing student intake, delivering timely and accurate learning. So, by having well equipped computer laboratories, it implies that students will have regular access to equipment, which in turn improves their academic performance.

In this study, it was noted that well maintained laboratories; varnished with safety equipment like fire extinguishers and first aid tool kits enable students to learn practical subjects which enhances their performance. Lair (2003) argues that a secure working environment enhances a persons' productivity. Whereas laboratories are viewed as learning centers for students, they also act as work stations for the very students involved in practical studies hence their productivity would also depend of how secure these laboratories are. The current study indicated that laboratories in the selected schools were ill-equipped which explains the poor performance in those schools like the literature has revealed too.

Olufunke and Olubunmi (2016) revealed that adequate provision and Maintenance of lab equipment is a remedy (solution) for any academic encumbrance. This means for schools that still face academic challenges, their laboratories have not been effectively supplied with the necessary equipment besides not maintaining the existing ones. The fact that they have less or completely lack any lab equipment is enough indication that the equipment is mishandled and miss managed. This is what the current study also pointed towards.

It was also shown in this study that schools with equipped laboratories have their students performing better than their counterparts in schools without laboratories or those with ill equipped laboratories. Laboratory work stimulates learners' interests as they are made to personally engage in useful scientific activities and experimentations (Owoeye & Yara, 2011). Qaiser and Ishtiaq (2014) noted that laboratories play a key role in the teaching and learning of science and for the same reason, Fisher (2008) emphasizes the need to have adequate laboratory facilities which should also be kept in good conditions for the schools to function effectively.

Furthermore, it was established in this study that the low performing government aided secondary schools in Hoima District were properly keeping the laboratory reagents which meant that some would get expired in their original packaging as a result of failure to make use of them or expired reagents and chemicals would be used thus, giving wrong results for the teachers and the students. This is directly in line with Adeyemi (2008)'s argument that, although laboratory equipment and chemicals are adequately provided in some schools, they are not effectively utilized. Adeyemi (2008) suggests that schools should put more emphasis on not only providing lab equipment and reagents but also on the effective utilization to realize the goals and objectives of the education system. Keeping chemical and reagents meant for practical learning for long time periods also means that learners do little or no practice at all, for the practical subjects and that means even what

they cover theoretically cannot be concretized. They are simply not exposed to doing practical studies so much so that in some schools, students do science practical for their very first time during final exams with UNEB. Which also implies that they cannot be perfect in things they are doing for the first time. In this study, it was shown that most of the school keep reagents for long time without using and by the time they are used, they are expired and thus giving wrong results. This similar to the revelation by Ifeanyi Mba & Uba (2019) who stated that secondary schools face problems of obsolete laboratory apparatus.

Allen (2015) viewed the availability of adequate number of physical facilities had significant influence on student's academic performance. He further emphasized that adequate number of physical facilities should be provided to schools to guarantee performance. Lawanson & Gede (2011) in their study observed that inadequate provision of laboratory resources has been a major factor of poor student's academic performance. They further noted that without adequate classroom/laboratory equipment, there would be a continuous decline in student's academic performance. This exactly what is being experienced in the government aided schools in Hoima District according to the current study findings.

5.1.3 How Sanitation Maintenance affect Students' Academic Achievement

With reference to Table 4.4, it was established that proper Maintenance of sanitation in the school environment positively contributes towards better students' performance and that poorly performing schools in Hoima District have no properly streamlined sanitation Maintenance measures. Proper Maintenance of sanitation by providing toilet facilities for different students sexes and staff, provision of hand washing utensils, location of sanitary facilities within reach and assigning personnel to conduct regular cleaning and Maintenance of sanitary facilities helps to avoid time wastage, control students' indiscipline, control illnesses related to poor hygiene that destruct learners from the daily school teaching and learning routines hence concentrate and perform better academically. Poor sanitation in a school environment; where so many learners congest can be associated with severe health impacts all with potential to deter learners from excelling in their studies. William (2013) for example reports that continuous child sickness limits their possibility of excelling academically and some are discouraged and end up dropping out of school due to irregular school attendance.

The respondents in this study mainly from the poorly performing schools revealed that their schools had not purchased enough sanitation Maintenance equipment. Without the right tools and equipment, sanitation Maintenance by the staff find it difficult to do their job. Yara & Otieno (2010) observed that availability of working tools and resources improves knowledge and skills of any worker and motivates them to even do better but absence of these complicates the working conditions.

It was established in this study that poorly performing school do not employ adequate support staff to carry out sanitation facilities Maintenance . Whereas facilities can be maintained by students themselves, it deprives them of the vital time they would have used to conduct academic activities that enhance their performance. Besides, the learners are ill experienced in facilities Maintenance that they may not do the right job. Furthermore, in some schools, sanitation Maintenance work is given to students as a form of punishment therefore giving it to student's affects them psychologically and thus failing to concentrate in class and the end result is poor performance academically.

It was established that schools in Hoima District perform poorly due to inadequate provision of toilet facilities for girls, boys and staff which negatively affects students' performance. These results confirm what was reported by UNICEF (2015) that government aided schools in Uganda and across many African countries experience a number of sanitation challenges including poor and/ or inadequate toilet facilities which physically and emotionally affect the students thus hampering their moral for leaning.

It was determined that majority of poorly performing schools in Hoima District under the study do not have non-teaching staff dedicated to maintaining sanitation facilities. Besides, there were no designed plans for regular Maintenance of sanitary facilities. Rather, the facilities are maintained less often. Ololube (2013) asserts that, as part of sanitation and school facilities Maintenance to keep schools in good and up to date condition, there is need to have accurate information about the condition of the facilities and the scale of funds needed, keep the condition of the buildings, stock and resources under regular review, define priorities for funding, ensure facility Maintenance financing, establish resource and funding allocation mechanism, stick to planned Maintenance schedules, act promptly to repair damages, and give responsibility for the condition of the facilities to people who are close to the facilities concerned and involve the users in the maintenance . The fact that less attention is paid to such aspects in most of the schools studied in the current study

implies that students' academic performance cannot be enhanced in these institutions. Such conditions also reveal that these schools have much more maintenance challenges that directly or indirectly affect students' performance negatively.

5.2 Conclusions

Basing on the evidence obtained from the study findings presented and discussed in chapter 4 and 5, a number of conclusions are arrived at in line with the objectives of the study as seen in the following;

Absence of proper classrooms Maintenance contributes to the low students' academic achievement in government aided secondary schools. The low performing schools were shown in this study to be facing challenges with their schools' classrooms environment in terms of congestion, limited sitting facilities, poor air conditioning and inadequate lighting among other which was not the case with the high performing school they were compared with.

On the second objective, the study provided sufficient evidence to suggest that, to a greater extent laboratory maintenance positively affects academic achievement of students in government aided secondary schools in Hoima District. It was established that the poorly performing schools have laboratories characterized by insufficient seats, inadequate equipment, absence of safety mechanisms, properly stored but not effectively used chemicals and reagents.

Sanitation Maintenance positively affects students' academic achievement in government aided secondary schools in Hoima District. In the high performing school, it was established that there is a programmed Maintenance of sanitary facilities, high student-toilet ratio, optimal classroom to toilet distance, allocated sanitary facility maintenance staff, and sufficient provision of tools, equipment and materials for sanitary maintenance. The reverse is the case with poorly performing schools which implies that sanitation maintenance has a hand in how the students perform in these schools under the current study.

5.3 Recommendations

In line with the study findings and conclusions, the researcher made the following recommendation.

Stakeholders of government aided schools should look beyond constructing classrooms that conform to set structural designs to ensuring that size of the classes are big enough or provide more

classrooms for streaming purposes under circumstances that students numbers swell; provide adequate sitting facilities, provide artificial lighting to supplement on the natural sources, ensure classroom walls, ceilings and floors are kept in pleasant conditions to provide comfort to the learners and teachers.

School managers should put in place programs to ensure that laboratories are furnished with required equipment, tools, furniture, lighting and safety guards. School heads should ensure that chemicals and reagents are not stored for long in the laboratory but rather are effectively used to enhance students practical learning. These can be affected through conducting regular inspections of laboratories to ensure they are used as planned.

School administration should prioritize sanitation facilities maintenance in budget allocations to ensure good health and hygiene of the school community and thus minimize communicable diseases caused by poor hygiene and that prevent students from regularly participating in academic activities. Toilet facilities should be located within students reach and if the schools can afford, they could provide water borne toilets that can be situated on classroom blocks. Schools should ensure that girls and boys toilets are separated to ensure privacy and avoided indiscipline related problems that may affect students' academic performance.

5.4 Areas of Further Research

This research study was conducted in schools selected to represent in only government aided schools. Therefore, there is need to replicate this study in privately operated secondary schools or both so as to establish the differences and similarities emergent thereof.

The study involved investigating the effect of school facilities maintenance in nine poorly performing schools and only one best performing school in Hoima District. The results obtained herein therefore cannot be generalized across all school categories. There is need to have study with a balanced sample of high performing schools and low performing schools

This study involved collection of semi qualitative data and as such, it could not allow for robust statistical analyses such as multinomial regression analysis to statistically determine the effect of school facilities maintenance on student's performance. A study to address this issue would enrich the findings in the present study and benefit academia.

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APPENDICES

Appendix I: Questionnaire for Teachers and Students

I am Prossy Naigaga, a student from Kyambogo University pursuing a Master Degree in Education Policy, Planning and Maintenance . I am carrying out a study on: “*School Facilities Maintenance and Students’ Academic Achievement in Government aided Secondary Schools: A Case Study of Hoima District, Uganda*”. I kindly request you to participate in the study by filling in this questionnaire. The questionnaire is meant to help in fulfilling the research objectives. The researcher will ensure that any information provided is only used for academic purposes and will also be kept with utmost confidentiality. Thanks in advance.

Section A: The effect of Classrooms Maintenance on Students’ Academic Achievement in Government Aided Secondary Schools of Hoima District

For each of the following statements about the effect of Classrooms Maintenance on Students’ Academic Achievement in Government Aided Secondary Schools of Hoima. Please indicate (by ticking) the extent to which you agree them, using the following scale: *Strongly Agree (SA)*, *Agree (A)*, *Disagree (D)* and *Strongly disagree (SD)*.

No.	Classrooms Maintenance and Students’ Academic Achievement	Responses			
		SD	D	A	SA
1	My secondary school has well-constructed classrooms which enables better students’ performance.				
2	My school has well ventilated classrooms that enable understanding of content during lessons.				
3	My school has renovated classrooms that facilitate conducive learning.				
4	My school has enough lighting in the classrooms that enables visibility of writings.				
5	My school has sufficient seats/desks in the class rooms for every learner for comfortability.				
6	My classrooms are in good conditions which gives a good learning environment and good performance				
7	My classrooms are well ventilated which reduces risks of health problems during class time therefore encourages proper learning.				
8	My classrooms have been renovated which gives a conducive learning environment				
9	My classrooms are big enough which reduces overcrowding improving classroom performance				

Section B: Extent to which laboratory Maintenance plans affect students' academic achievement in in government aided secondary schools of Hoima District.

For each of the following statements about the extent to which laboratory Maintenance plans affect students' academic achievement in in government aided secondary schools of Hoima District, please indicate (by ticking) the extent to which you agree them, using the following scale: *Strongly Agree (SA)*, *Agree (A)*, *Disagree(D)* and *Strongly Disagree(SD)*.

NO.	<u>Laboratory Maintenance plans and students' academic achievement</u>	Responses			
		SD	D	A	SA
1	My school has sufficient equipment in the laboratory for proper learning of science subjects				
2	My school has well organized seats in the laboratory improved learning				
3	My school has enough light in the laboratory for proper color identification during experiments				
4	My school has proper ventilation in the laboratory for better breathing and improved performance				
5	My school stores laboratory reagents to avoid contamination and failure				
6	My school has proper ventilation in the lab will reduces air congestion for conducive learning environment.				
7	The laboratory is well organized and neat for enhanced learning				
8	Laboratories possess fire extinguishers and first aid tool boxes to enhance proper learning				

Section C: How sanitation Maintenance affect students' academic achievement in government aided secondary schools of Hoima district

For each of the following statements on How sanitation Maintenance affect students' academic achievement in government aided secondary schools of Hoima District, please indicate (by ticking) the extent to which you agree them, using the following scale: *Strongly Agree (SA)(5)*, *Agree(A)(4)*, *Disagree (D)(2)* and *Strongly disagree (SD)(1)*.

No	<u>Sanitation Maintenance and Students' academic achievement</u>	Responses			
		SD	D	A	SA
1	My school provides sanitary materials for both the male and female students which promotes good hygiene for learning environment				
2	My school maintains regular cleanliness in the toilets				
3	My school has well distributed toilets for girls, boys and teachers				
4	School toilets have hand wash utensils used after visiting them				
5	There is a reasonable distanced from the classrooms to the toilets				
6	My school Headteacher has purchased tools for facility Maintenance .				

7	My school has non-teaching staff specifically for facility Maintenance				
8	My school has day-to-day Maintenance of school facilities				
9	My school has programed Maintenance of school facilities				
10	My school maintains clean and orderly compound for better learning				

Section D: Students' Academic Achievement

No	Students' Academic Achievement	Responses			
		SD	D	A	SA
1	My school registers high percentage of division One and two grades in UNEB examinations				
2	The number of students who passed in division three, four and grade U are lower in final examinations				
3	Students in my school score high percentage of distinctions and credit scores in all subjects in UNEB examinations				
4	The percentage of our students who score passes and failures in various subjects is negligible.				
5	Our schools have high percentage of students with entry points to higher institutions of learning				

“Thank You for Your Participation”

Appendix II: Interview Guide for the Headteachers and DEO

Dear Respondent,

I am Prossy Naigaga a student of Kyambogo University pursuing a study on; “*School Facilities Maintenance and Students’ Academic Achievement in Government aided Secondary Schools: A Case Study of Hoima District, Uganda*”. You are among the selected participants in this study by providing information. This study is a requirement for partial fulfilment for the award of the degree of Masters of Education in Policy, Planning and Maintenance of Kyambogo University and is purely for academic purposes. Therefore, the information given was treated with utmost confidentiality. I therefore request you to spare some time and help provide information. Your response is highly appreciated.

Thank you for your cooperation.

Yours faithfully,

- 1) What shows your school has facility Maintenance plans?
- 2) How often does your Headteacher mention facility Maintenance plans on assembles and meeting?
- 3) How often does your school carry out facility maintenance (renovation, repair)?
- 4) Does the school have someone in charge of facility maintenance?
- 5) To what extent does the state of classroom facilities influence students’ academic achievement in Hoima District secondary schools?
- 6) To what extent does the state of laboratory facilities influence students’ academic achievement in Hoima District secondary schools?
- 7) To what extent does the state of toilets facilities influence students’ academic achievement in Hoima District secondary schools?

“Thanks for your cooperation”

Appendix III: Observation Checklist

Item	What to check for	N.A	S	N.S
Classrooms	Cleanliness			
	Renovation			
	Ventilation			
	Light			
	Size			
	Sufficiency of classrooms			
Laboratory	Equipment			
	Chemicals and reagents			
	Science charts and models			
	Neat			
	Well-arranged tables			
	Well ventilated			
	Light			
	Proper arrangement of books			
	Order of seats			
	Reading material			
	Internet			
	Light			
	Ventilation			
Sanitation	Sufficient toilets			
	Hand wash utensils after visiting toilet			
	Availability of sanitary pads			

Appendix IV: Selected Hoima Schools' UCE UNEB Results for 2016-2018

School Catego	Year	Div 1	Div 2	Div 3	Div 4	Div 7	Div 9	Div x
A (I)	2016	0	4	17	55	0	16	4
	2017	0	1	11	46	0	22	1
	2018	0	3	6	26	0	21	3
B (I)	2016	1	1	10	24	0	3	1
	2017	1	7	9	23	0	0	0
	2018	1	3	9	23	0	6	1
C (I)	2016	0	1	0	18	0	3	1
	2017	0	0	2	24	0	12	0
	2018	0	0	0	14	0	12	2
D (I)	2016	6	30	53	118	0	74	2
	2017	1	28	46	95	0	35	3
	2018	4	13	36	125	0	71	5
E (I)	2016	3	27	53	147	3	66	19
	2017	2	18	35	157	2	79	5
	2018	5	14	29	94	1	76	4
F (I)	2016	0	3	14	96	0	38	3
	2017	1	16	26	75	1	20	6
	2018	2	5	22	65	1	43	2
G (I)	2016	0	1	3	16	2	10	2
	2017	1	1	6	13	7	10	0
	2018	0	1	4	12	0	8	0
H (I)	2016	1	19	35	42	0	3	0
	2017	1	14	24	34	0	3	2
	2018	11	12	17	14	0	0	0
I (I)	2016	2	6	7	26	1	5	0
	2017	2	3	17	20	2	2	0
	2018	1	3	14	19	6	1	0
J (h)	2016	164	47	2	0	0	0	0
	2017	181	22	1	0	0	0	0
	2018	164	37	2	0	0	0	0