

**Influence of Teachers and School Environment on Students' Academic
Motivation and Performance in Chemistry in Kabarole District**

Macarius Kabyogamu

2006/HD04/ 5288U

**A Dissertation Submitted to the School of Education in Partial Fulfillment of
the Requirements for the Award of a Degree of Master of Education in
Educational Psychology of Makerere University.**

May 2012

Declaration

I declare that this dissertation has been developed and written by me. No part of this work has been produced before for any award in Makerere University or any other institution of higher learning. In instances where I have used other people's materials I have duly acknowledged.

SIGNED

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Marcarius Kabyogamu

2006/HD04/ 5288U

Approval

This dissertation has been developed and submitted to Makerere University School of Education, department of Educational Psychology with my approval as the university supervisor.

Signature..... Date.....

Dr. Grace Kibanja

Supervisor

Makerere University

Dedication

I dedicate this work to my mother Serina Bamugeya and my father Francis Xavier Nyambogo Bamugeya.

Acknowledgements

I wish to thank the Bishop of Fort-Portal Diocese, the Rt. Rev. Robert Muhirwa for supporting me in my studies. I extend a vote of thanks to my supervisor, Dr. Grace Kibanja for the guidance and patience that has seen this work to this development. I am equally indebted to all my lecturers for the good work done.

I acknowledge the support of friends like Martin Watsisi, Fr. Sebastian Twinimugabi, Fr. Benedict Kakwezi, Hon. Sheila Kawamara Mishambi, Ms Jolly Uzamukunda, Ms Mildred Abwooli, Ms Regina Tumuhairwe and Ms Nantongo Maureen for the support in my studies. May God bless them abundantly.

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Abstract

The study aimed at examining the relationship between teachers' influence, and school environment, on the academic motivation and performance in Chemistry among secondary school students in Kabarole district. It adopted a Correlation survey design. A structured questionnaire was administered to a sample of 328 senior four students assessing the impact of teachers influence, school environment and motivation on performance in Chemistry.

Pearson product moment correlation was used to test the relationship between the study variables. The results revealed that teachers' influence and school environment have a significant positive relationship. Also there was a significant positive relationship between teachers' influence and student's academic motivation. The study further revealed that the school environment has a significant impact on students' academic motivation for chemistry. However, there was no relationship between teachers' influence, and performance in chemistry. There was no relationship between the school environment and performance in chemistry. The results further revealed that there is no relationship between students' motivation and performance in chemistry. It was thus concluded that teacher's influence and school environment affect students' motivation for chemistry. However, high level of students' motivation for chemistry does not guarantee good performance in the subject in Kabarole District.

It is important to note that the study had limitations that are a cause of no significant relationship between the variables and performance. It could be due to lack of competence of teachers of Chemistry, wrong expectations of students about their ability and wrong understanding of the questions in the questionnaire.

To improve on students' performance in Kabarole District it was recommended that other factors rather than teachers influence, school environment, and academic motivation be investigated.

Chapter One

Introduction

Background

In 2002, the government of Uganda through the Ministry of Education and Sports passed a policy compelling all Secondary schools to make science subjects compulsory at ordinary level. This was in view of helping Uganda's future date to compete favorably with the rest of the world in the field of industrialization and scientific development. In spite of the policy, science subjects which include physics, chemistry, biology and mathematics, have been poorly done. Sserwaniko, Nalubowa and Muwonge (2008), reported that the failure rate in Chemistry was at 66.8% in the O-level national examinations sat in 2007. Evidence from previous examinations indicates that the situation was no better in all science subjects but more especially in Chemistry (Bukonya, 2007).

This high failure rate in the chemistry subject has raised many questions in the minds of students, parents, teachers and the nation at large. The basic questions posed have been; Is the students' high failure rate due to teachers' negative influence on the students (teachers capacity to motivate students towards learning chemistry, teachers negative attitudes towards learners, and teachers methods of teaching)? Could it be due to poor students' personal motivation/low intrinsic motivation towards study and academic achievement in chemistry subject? Or is it due to unfavorable learning environmental factors in schools, like the lack of laboratories, text books, and science teachers and a discouraging record of failing in chemistry subject (Nyanzi, Kasyate & Wosijja, 2006; Sserwaniko, et al, 2008).

According to reactions of students' after release of national results of secondary school examinations, they indicate that teachers have an influence on their performance (Atuhaire & Kulubya, 2004). Arthur Netua for example one of the Mbale district best performers in the O-Level exams sat in 2006 attributed his success not only to his parents but largely to his teachers,

just as Sareh Nyende one of the Kampala best performers who acknowledged the role of Allah and his teachers in his wonderful performance in the national exams (Kakaire & Mafabi, 2004).

Not only students but also Head teachers acknowledge the influence of teachers on the academic performance of the schools. The head teacher of Buddo S.S. Mr. Lawrence Muwonge reacting to the National examination results released on March 2007 said that “We have made it again (High performance in exams) because our teachers were hard working. We did a lot of tests and exercises and of course we have hard working teachers who also offered guidance to our students and enabled us to succeed (Nalugo, 2007).

Given the reaction of different stakeholders, after the release of National examination results, it is important to acknowledge that school environmental factors that directly relate to learning also contribute to the high failure rate in Chemistry and other subjects. For instance, commenting on the O’ level results released 25th January 2006; the secretary for UNEB Mr. Mathew Bukenya said that “science subjects have been poorly done than arts subjects. The situation is worryingStudents lack practical experiences due to lack of functional laboratories and basic equipments in schools. Many handle certain pieces of the apparatus for the first time in the examinations which they find quite bewildering” (Sserwaniko, et al, 2008).

The secretary for UNEB further reported that 31.5% of the examination centres lacked functional laboratories while others lacked chemicals and this was reaffirmed by the UNEB scouts (special invigilators) putting the figure to 33.6% (Nyanzi, et al, 2006). Kundu C.L. and Tutoo D.A. (2005) confirm that school environment has direct social and psychological impact on the learner. It affects students’ motivation and academic performance in very dynamic means. As such a bad school environment of viscous lack of motivating factors, leads to persistently poor performance in chemistry. While teachers and the school environment have an effect on students’ performance, the learners’ motivation is equally significant. Self determination and

students goals motivate the learner to have interest in chemistry subject and consequently do better at the end of the course.

Intrinsic motivation emerges from the learners' own needs and desires rather than from outside pressures. This is the tendency to engage tasks because one finds them interesting, challenging, involving and satisfying. Deci and Ryan (1987) add that intrinsic motivation that most powerfully includes self determination often predicts positive performance engagements and success. Hadre and Reeve (2003) mention that a student's perceived ability in a subject motivates her/him to do better. Perceived ability refers to the student's self evaluation of the capacity to learn and do well in educational endeavors and this can influence both motivational and achievement outcomes (Green J., Martin J.A. & Marsh H.W. 2004). It is important to identify the relative degrees of influence that these factors have on the student's performance especially in chemistry subject.

Problem

There is a high failure rate in chemistry subject in secondary schools that was reported at 66.8% in the National O-Level exams sat in 2007 (Sserwaniko et al, 2008). This high failure rate can be attributed to the negative influence of the teachers, unfavorable learning school environments and low students' academic motivation towards performance in chemistry. The continued failure of chemistry which is an essential subject in science related professions like medicine, food science, animal and crop science, technology, geology and engineering frustrates scientific endeavors of the country and perpetuate dependence on expatriate manpower.

Purpose

The purpose of this study was to examine the relationship between influence of teachers, school environment, students' academic motivation and performance in chemistry subject among Secondary school students of Kabarole District. It was intended to see which factors have a big impact on each other and how they affect student's performance.

Objectives

This study aimed at analyzing the following objectives;

1. To establish the relationship between teachers' characteristics and students' academic motivation for chemistry.
2. To establish the relationship between the influence of teachers and students' performance in chemistry.
3. To establish the relationship between school environmental factors and students motivation in Chemistry.
4. To establish the relationship between school environment and performance in chemistry.
5. To establish the relationship between students motivation and performance in Chemistry.

Scope

The study was carried out in Kabarole District. As a place that lies over 300Km (Western Uganda) from the capital city- Kampala, Kabarole district secondary schools are rural and were seen as those that lack basic science supplies and faced persistently low academic performance in science subjects and chemistry in particular. The study covered 20 secondary schools that had students from senior one to senior four. Those included, single sex, mixed boys and girls schools, those that operated as day or boarding only and day/boarding schools. The study covered both privately owned and government aided schools.

The study focused on the motivation that students attain from teachers' characteristics, attitudes and methods, the impact of the school environmental factors like availability of teachers, science textbooks, laboratory supplies among others towards learning and performance in Chemistry subject. Performance was determined from the national standardized O-Level system used by Uganda National Examinations Board (UNEB).

The teachers influence focused on teacher characteristics, attitudes, and teaching style and its relationship towards motivation of students in the study and academic achievement in chemistry subject. School environmental factors focused on the structural components and human resource elements that directly related to study of chemistry and its relationship to students' motivation and academic performance. Students' motivation focused on factors such as self perception, self determination, future goals, and attitude towards chemistry subject.

Significance

The results of the study may enlighten teachers on the impact of their attitudes, methods and characteristics on the motivation of students towards the study and academic achievement in chemistry. The results of this study may also guide school administrators on establishment of science stimulating environment in schools that motivates students to study and academically achieve in chemistry and other science subjects. The study results could assist education policy makers on establishment of policies and minimum standards that ensure students' high motivation and academic achievement in chemistry subject at secondary school level.

Further more, the results of the study may provide ground for further research on the factors that affect students' performance in national examinations and thus contribute to a body of knowledge that give insights in the academic achievement of the students.

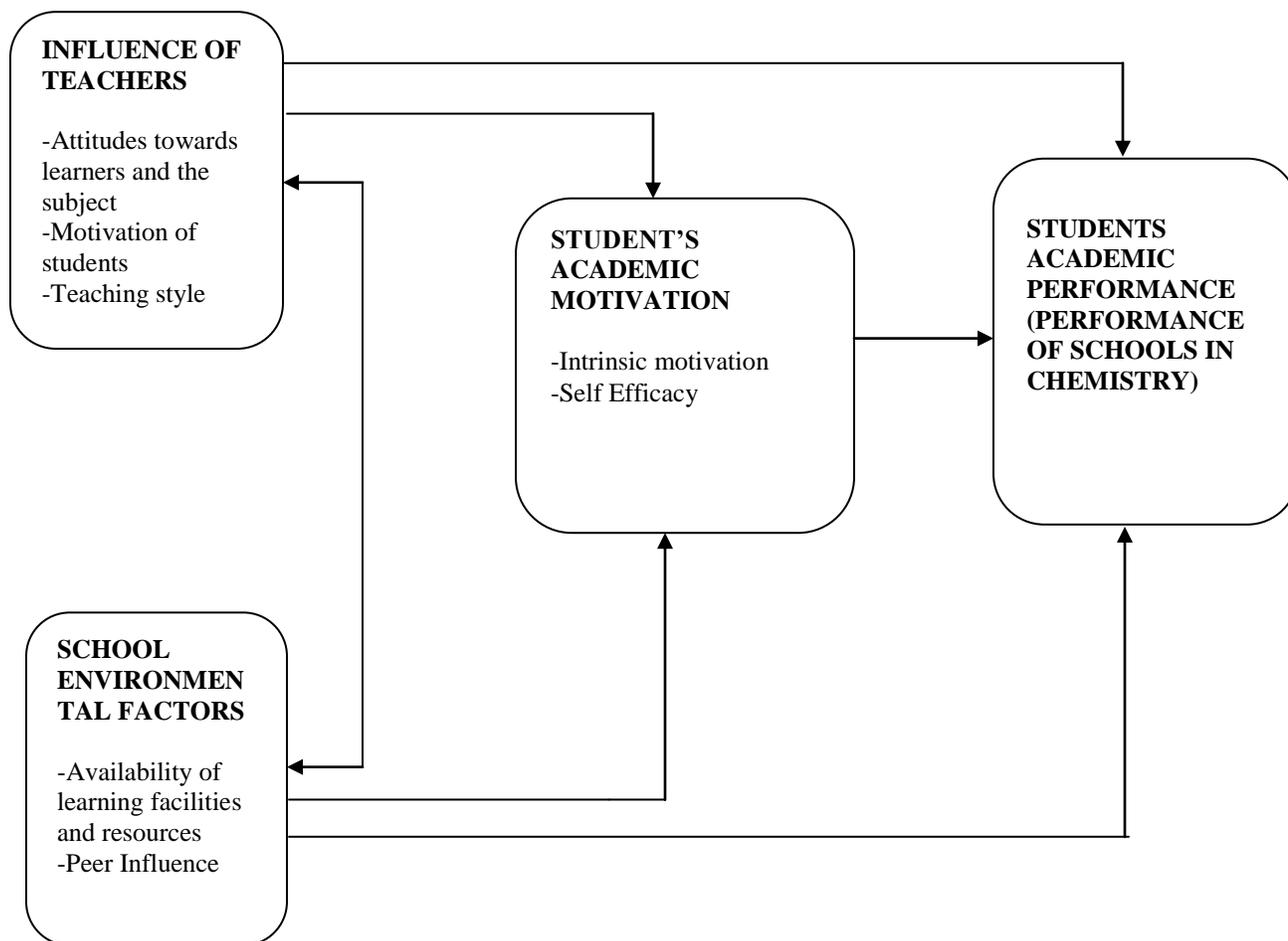


Figure 1: Conceptual Framework: Self Constructed

From the above diagrammatic representation, teacher's attitudes towards learners and the subject they teach, their personal motivation and teaching style can be collectively referred to as the influence of teachers. These teacher characteristics affect students' motivation in learning and performing well in the related subject.

School environmental characteristics also affect student's motivation in learning a given subject. These environmental factors such as staffing, location, nature of students, previous performance and infrastructure among others can facilitate or constrain learning and thus affect students' motivation and performance of schools in national examinations.

Central in this conceptual framework is the factor of student's motivation towards chemistry subject. Their intrinsic motivation though impacted on by the school environmental factors and the teachers characteristics; it directly influences students' academic performance in chemistry. There are three fundamental factors whose relationships were investigated in this study so as to establish their impact on the students' academic performance in chemistry. Performance in Chemistry was seen from the students' scores/grades in the national examinations of 2008.

Operational Definitions

1. **Motivation:** It refers to the internal processes that serve to activate, guide and maintain our behavior or processes involved in directing and maintaining physical and psychological activities.
2. **Intrinsic Motivation:** It refers to the real nature of a person not dependent on external circumstances or influence.
3. **Self-efficacy:** The power to produce the intended results or effectiveness.
4. **School Environment:** It refers conditions and circumstances that affect a teaching and learning process (The effects can be negative or positive).
5. **Influence of teachers** it refers to the power of the teacher to affect learners actions, character or beliefs through example.
6. **Performance:** The act of accomplishment and fulfillment in an activity.

Chapter Two

Literature Review

Introduction

The literature that relates to teachers' influence on students motivation, environmental factors in school and their impact on students motivation as well as the influence of students motivation on academic performance was reviewed.

Influence of Teachers and Students' Motivation

In the effort to improve students cognition and affective outcomes in science subjects like chemistry and/or school learning, educational psychologists and science educators, have continued to search for variables (personal and environmental) that could be manipulated in favor of academic gains. Of all the personal and psychological variables that have attracted researchers in this area of educational achievement, motivation seems to be gaining more popularity and leading other variables (Tella, 2007).

Educational psychologists agree that motivation is the very heart of the learning process. It arouses interest and interest is the mother of attention; attention being the mother of learning and learning being the mother of performance. "Therefore to secure learning, it demands one to catch the mother, the grandmother and the great grandmother" (Aggarwal, 1998). Motivation energizes and accelerates the behaviours of the learners and thus his or her performance.

According to Aggarwal (1998) and Tiberius, (1990), teachers need to motivate the students by telling them what to do to succeed in their study;

"Let your students not struggle to figure out what is expected of them. Reassure students they can do well in your course/subject and tell them exactly what they must do to succeed. Say something to the effect that if you can handle the examples on these

problem sheets, you can pass the exam. People who have trouble with those examples can ask me for extra help... ” (Aggarwal, 1998: 231).

Students do better on tasks that they find challenging but not discouragingly difficult (Mangal, 1995). Thus this important aspect in the students’ learning and academic achievement should be consciously focused on by the teacher. According to Lucas (1990) a teacher motivates students by working with their strength and interests; the reason why they enrolled in the subject, how they feel about it and what expectation they hold.

It is from this background that examples and assignments that relate to students’ experiences should be coined by a teacher to enhance motivation. For instance, a chemistry teacher might devote some time to examining the contribution of chemistry to solving environmental problems such that the students can relate the content of the subject to their educational and personal goals.

Jurišević, Vogrinc, Gla_Ar, and Devetak (2005) urge that secondary school students show the low intrinsic motivation for learning of abstract and difficult subjects like chemistry compared to highly interesting subjects like foreign languages, which is probably the result of the developmental changes in adolescent's years. To stimulate this intrinsic motivation externally rewarding processes have to be undertaken by teachers for example that giving students feedback in form of returning their test or exam papers gives them an indication of where they have done well and this motivates them to improve. Further, positive rewards as a teachers attribute motivates learners, builds self confidence to meet even difficult tasks hence a better performance (Cashin, 1979; Lucas, 1990).

Studies by Mess and Emes (1990); Mc McMillan and Forsyth (1991); Metheny J., Mc Whirter & O’Neil (2008) have indicated that a teachers’ method of teaching has direct bearing on the interest the student will have in the subject and also the ability of the student to perform well. For example a teacher is able to establish a learning environment that is

cooperative and non competitive that encourages students to display more attentive, comprehensive and thus perform well in the subject. In a similar study by Kloosterman (1997) on students' motivation in mathematics using interview methods, teacher's style of teaching was found to be highly rated by students as part of the motivation factors.

Lukas (1990) stressed giving priority to work from student strengths and interests. It is important, he stresses that the teachers finds out why students are enrolled for the course (subject), how they feel about the subject matter, and what their expectations are. These can be augmented by examples, assignments and case studies that are related to the subject. Lukas (1990) offers a good example of where a chemistry teacher can devote some time to examining the contribution of Chemistry to solving environmental problems such that learners can identify with the professional, educational and personal goals of the subject.

Cashin (1979) emphasize the importance of teachers feedback on the students' motivation to learn and performance. Quick feedback in form of timely returned test and exam papers and rewarding success with immediacy and publicly are strong motivators for better performance of the learners. "Rewards can be as simple as saying a student's response was good and why it was good (Cashin, 1979).

Influence of Teacher on Performance in Chemistry

Studies that estimate the relation between students' achievement in a given subject and teachers' characteristics, including their credentials, have produced little consistent evidence that students perform better when their teachers have more 'desirable' characteristics. This is all the more puzzling because of the potential upward bias in such estimates—teachers with better credentials may be more likely to teach in affluent schools with high performing students. This has led many observers to conclude that, while teacher quality may be important influence on students' performance, variation in teacher quality is driven by characteristics that are difficult or

impossible to measure. Therefore, researchers have come to focus on using matched student-teacher data to separate student achievement into a series of “fixed effects,” and assigning importance to individuals, teachers, schools, and so on (Rockoff, 2003). Teachers themselves have often rejected the use of students’ performance to evaluate their quality and performance (Joshua, Joshua & Kristsonis, (2006). In their study on Nigerian secondary school teachers indicated that the attitude of secondary school teachers to the use of student achievement scores as a basis for assessment of teachers is not significantly positive.

According to Rockoff (2003) raising teacher quality is important way to improve achievement, but suggest that policies may benefit from shifting focus from rewarding credentials to performance-based indicators of teacher quality. In Uganda the Policymakers both at school and national level have demonstrated their faith in the importance of teachers by greatly increasing funding for programs that aim to improve teacher quality in low performing schools. However, the vast majority of these initiatives focus on rewarding teachers who possess credentials that have not been concretely linked to student performance.

Metheny, McWhirter, and O’Neil (2008) investigating the utility of the teacher support scale (TSS) noted that t teachers have high expectations of the student and want to help the student do well academically. Previous research has examined the influence of teacher expectations on student performance, finding a small effect on academic outcomes for most students and the potential for a strong effect on students who are members of marginalized groups e.g., lower socioeconomic status.

Measuring academic performance can occur at multiple levels and serves multiple purposes. For example, classroom teachers often conduct formative and summative tests to evaluate student mastery of course content and provide grades for students and parents. State tests are designed primarily to measure progress at the school or school district level.

In particular, graduation tests are used to determine whether a student has mastered the minimum content and competencies required to receive a promotion to the next academic level (Blackorby, Chorost, Garza, & Guzman, 2004).

According to Hazeltine (2006) new ideas need to be connected to what has come before but, more importantly, to the “real world”, to the student’s experience. Teachers, who will influence academic outcomes of students, endeavor to show how an idea plays out in practice or how the subject has relevance of the knowledge to their lives. He argues that teachers who treat students as partners in learning increase their motivation and induce high performance even in seemingly hard subjects.

Teachers influence on student results from a number of other teacher characteristics that directly or indirectly affects learning and motivation. For example the teaching style of a teacher, the emphasis and strategies employed by the teacher among others. According to Mahajan and Singh (2005) conducting laboratory sessions/tutorials in Chemistry is important and greatly improves the performance in Chemistry. They further emphasize that laboratory sessions are useful in understanding of the subject. Another element of the school teachers influence taken from the perceptive of style of teaching is demonstrations using models. Demonstration using models improves students’ performance (Mahajan & Singh, 2005; Marshal, 2004). These are helpful for students in visualizing and thus improve their understanding of concepts in the subject. Use of active learning methods like short exercises during lessons promotes critical thinking and provides a method for student discovery and growth. Active learning methods during lessons such as concept tests and problem sheets have been proved to be successful in improving the grades. Use of examples from day to day life during lessons enables students find the subject interesting if examples from day to day life are cited. For example organic compounds found in daily elements such as foodstuffs, (proteins, carbohydrates, vitamins, fats), fuels, fabrics, wood, paper, plastics, soaps, detergents, cosmetics, medicines and explosives.

While the teacher is taken as a wholesome factor, various aspects of the teacher can be examined in relation to influencing a student's level of performance. Berry (2002) adds that teachers may be able to give the opportunity to have hands-on experience in the classroom. Those who allow a high level of teacher -student interaction challenge their students to raise their level of critical thinking and learn that it's okay to question and ask why. Students are empowered to take risks and reach their highest potential. Such additional qualities of teachers are important in influencing motivation and performance of chemistry. Influence of teachers is not only measurable on what the teacher does. Presence or absence of teachers in a school also has a 'teacher- influence on the students' motivation. According to Katorotorwa (2007) some schools in rural district of Uganda do not have qualified teachers and some completely lack the teachers. Adequacy of qualified teachers in a school has not been the focus of many researchers on factors that influence students' motivation and academic performance.

School Environment and Academic Motivation of Students

Mangal (1995) says that the school is a fundamental determinant in the behavior and motives of the students because it is a centre of learning and socialization. The school characteristics particularly the resource factors, directly impact on the easiness of learning and this translates into attitude formation by the students. This does not exactly relate to students forming an attitude towards a subject and eventually affecting the way they perform in that subject. For Chui (2005) students should be able to appreciate that Chemistry is a world filled with interesting phenomenon, appealing experimental activities, and fruitful knowledge for understanding the natural and manufactured worlds. That is it is so complex but not totally complicated. With this appreciation not only do students will be prepared to understand the symbols, terminologies, and theories used in learning chemical concepts, but they also will work towards transforming instructional language or materials that teachers use in the chemistry classroom into meaningful representations.

Chemistry will then be part of their life and this eases learning and performance. To form such a positive attitude towards a subject, school environment is a strong factor.

Okebukola (1986) identified school factors such as the classroom environment, resource availability and the focus of the study of chemistry for example participatory nature of the laboratory work as key in influencing students' motivation towards the subject. He concluded that the participation of the students in practical laboratory lessons may produce more positive attitude towards the study of chemistry and consequently lead to better performance.

Schools with facilitating environment (with available resources, motivating teacher) enable students develop a positive attitude towards a subject in focus unlike those with no laboratories neither chemistry teachers. The situation in most schools especially outlying schools in Uganda is the unfavorable. Most schools in the countryside lack laboratories and attendant science based teachers to handle the science subjects despite government making the study of science compulsory for all schools at O' Level. The secretary for UNEB attributed the high failure rates in sciences to the poor science environment in schools (Nyanzi, et al, *Daily Monitor* January 26th, 2006).

“The lack of functional laboratories greatly affected the conduct of the examinations in the science subjects. There were instances where centres failed to organize for the practical examinations prompting the candidates to be moved to nearby centres; the worst case scenario being in rural areas. Science teachers were found not to know how to use laboratory equipments” (Sserwaniko, Nalubowa & Muwonge February, 2nd 2008, pg 3)

Such unscientific environments that characterize Ugandan schools may be responsible for the low motivation towards the study of chemistry and the resultant low performance in national examinations.

Other such important aspects of the school environment may include a library. In a study that explored connections between the presence of a library at two schools in rural Uganda and certain student academic engagement indicators, such as academic performance, Dent (2006) observed that in addition to providing support for academics, the libraries also help students with personal development. He further identified that several “affective” outcomes, including increased self-confidence, self-sufficiency, an increased sense of responsibility, and a broadened worldview – each associated in some way with the overall positive impact of the library. The author goes on to conclude that the library had some degree of impact on student performance. This conclusion may be immature considering that the study only compared two school and on only one aspect of school environment. However, it contributes on the major debate that aspect of the school environment impact differently on students’ motivation and performance.

In any school setting, significant among the environmental factors is that of the peers. At adolescent age, students’ attitudes, motivation and learning behaviors are greatly influenced by the peers (McNerny et al, 2001). When most of the students have poor attitude towards the subject or the teachers, other jump in and follow their peers. Individual motivation is also affected by the motivation of the peers. Peer traits may be correlated with behavioral changes that influence achievement and may account for group differences in motivation for a given subject as well as academic achievement in that subject. Aaronson, Barrow and Sander (2007) urge that it is difficult to place a causal interpretation on the peer measures but agree to the fact that there is a statistical association between a student’s performance and that of her peers. The debate on peer influence has had negative focus say on negative behavior. It is important that this study focused on the contribution of the peers towards positive aspects of motivation and performance.

Marshal (2004) investigated the relationship between characteristics of schools, such as the physical structure of a school building and the interactions between students and teachers and student performance. He noted that teachers and school characteristics are two diverse factors that both affect and help to define the intricate relationship between the school environment and students performance. School environment has been researched for many years and continues to be examined and redefined as a result of its significant influences on educational outcomes. The elements that comprise a school's environment are extensive and complex number and quality of interactions between adults and students (Kuperminc, Leadbeater & Blatt, 2001). Kuperminic, et al (2001) named students' and teachers' perception of their school environment, or the school's personality, environmental factors (such as the physical buildings and classrooms, and materials used for instruction, academic performance, feelings of safeness and school size as well as feelings of trust and respect for students and teachers as important among others in a long list.

Studies on school environment research support the conclusion that many factors comprise this complex concept. They have linked it to motivation of both learners and teachers (Freiberg, 1998), in providing a healthy and positive school atmosphere. In particular Freiberg (1998) notes that "the interaction of various school and classroom environment factors can create a fabric of support that enables all members of the school community to teach and learn at optimum levels"

It has been found that a positive school environment can yield positive educational and psychological outcomes for students and school personnel; similarly, a negative environment can prevent optimal learning and development (Freiberg, 1998). However such studies have not fully demonstrated how each aspect of school environment influence the various aspects such as motivation that intervene to determine educational outcomes like performance. For instance, school environment in form of positive peer relations can provide an enriching environment, both for personal growth and academic success (Kuperminc, et al, 2001).

What children learn about themselves in school through interactions is equally important as the academic knowledge they receive.

In yet another view, Yucel (2007) looks at group discussion as not a teaching innovation by the teacher but a school environment factor. He urges that one aspect of school environment that helps to improve performance is group discussions. Group discussions are helpful in understanding of the subject and improve the students' performance. Although in chemistry classrooms, the lecture is the dominant teaching mode but multiple teaching methods are being used of which group discussions, cooperative learning methods are becoming popular as active involvement of students improves their understanding. Such factor may largely depend on the peer relations and school student characteristics that can motivate the learners or make teaching effective. Yucel (2007) however, does not take peers as a key school environment factor that may influence existence or quality of group discussion. In this study peers are considered an important school environment factor that determine not only such learning mechanism like group discussion, but also factor that directly affect motivation and performance.

In Uganda today an important aspect of the school environment on which students' motivation and performance are measured is ICT levels. According to Ndidde, Lubega, Babikwa and Baguma (2009), schools that have ICT create a favourable teaching and learning environment for teachers and students. Teachers augment their materials with using ICT resources and also further interest students to study science subjects like mathematics and chemistry. This places the rural schools in a disadvantaged position.

It is difficult to exhaust the various aspects of school environment. Every scholar seems to pay attention to a measurable aspect of the school environment. In the School climate and Learning (2004), school culture and school climate are considered two factors that make up school's environment. It is further urged that school's environment can either impede or support learning—and focuses primarily on school climate and its relationship to learning.

Four aspects are distinguishable namely; a physical environment that is welcoming and conducive to learning; a social environment that promotes communication and interaction; an affective environment that promotes a sense of belonging and self-esteem and an academic environment that promotes learning and self-fulfillment.

These various aspects of school climate do not operate independently of one another. For example, the physical environment can encourage or discourage social interaction. Similarly, social interaction facilitates a warm, affective environment. Collectively, the physical, social and affective environments contribute to, and are impacted by, the academic environment. Numerous studies document that students in schools with a better school climate have higher achievement and better socio-emotional health. This fall short in indicating how these various aspects of the school environment interact to create a facilitating or impeding situation to students motivation and performance.

Students Motivation and Performance in School

According to Renchler (2002), an atmosphere or environment that nurtures the motivation to learn can be cultivated throughout an entire school. Much of the recent research on educational motivation has rightly centered on the classroom, where the majority of learning takes place and where students are most likely to acquire a strong motivation to gain new knowledge (Renchler, 2002; Wlodkowski & Jaynes 1990). But achieving the goal of making the individual classroom a place that naturally motivates students to learn is much easier to attain since only two important elements are involved; if students and teachers do what is expected, are respected, and rewarded. According to Renchler (2002) an atmosphere where students learn to love learning for learning's sake, especially insofar as it evolves into academic achievement, is a chief characteristic of an effective school.

A strong case for strengthening the degree of intrinsic motivation students feel for learning chemistry is made here.

While the argument is not for the complete elimination of extrinsic reward systems, there are many benefits to maximizing intrinsic motivation and many ways to foster it. Renchler (1992) identifies four perspectives from which intrinsic motivation can be viewed: competency motivation, curiosity, autonomy, and internalized motivation.

Competency motivation assumes “that individuals engage in tasks, in part, for the purpose of developing competence and experiencing the positive feeling of efficacy associated with successful mastery attempts. The second perspective, curiosity, assumes that individuals are innately curious about new events and activities that are somewhat discrepant with their expectations. Considering secondary school adolescents, their curiosity would be stronger. Autonomy involves the idea that humans have a natural need to feel self-determining. They want to believe that they are engaging in activities by their own preference—because they want to—rather than to achieve some external reward or to avoid punishment. Internalized motivation assumes that some students engage in tasks in the absence of external reinforcement because they learn to value academic work. Stipek (1998) describes some techniques that promote intrinsic motivation but suggests that they are rarely found in today’s schools (Renchler, 1992). In Uganda the case for rural schools is worse.

Students are intrinsically motivated to work when the threat of negative external evaluation is not salient and when their attention is not focused on extrinsic reasons for completing tasks. They will also feel more competent and proud, and thus more intrinsically interested in tasks, when they can take responsibility for their success. Allowing some student choice enhances intrinsic interest in school tasks, and it teaches self management skills that are essential for success in higher grades and the workplace. It is impossible for children to develop autonomy and a sense of responsibility if they are always told what to do, and how, and when to do it. Unfortunately this is the mode of most rural secondary schools in Uganda, where the focus is to have students pass their exams. She recommends challenging but fair task assignments, the

use of positive classroom language, mastery-based evaluation systems, and cooperative learning structures to foster intrinsic motivation toward academic learning.

Another voice in matters related to student motivation belongs to Glasser (1990), who theorizes that all motivation springs from an individual's desire to fulfill one of five basic needs: survival, love, power, fun, and freedom. Glasser (1990) condemns what he calls "boss management" in educational systems, which are behaviors that assume that students can be coerced into becoming motivated: Boss-managers firmly believe that people can be motivated from the outside: They fail to understand that all of our motivation comes from within ourselves.

Other two important theories of motivation are considered important for this study. The first is Maslow's hierarchy of needs theory and then Gagne's paradigm of learning hierarchies. According to Maslow's motivational theory there are two expressed groups of needs, these are deficiency needs and growth needs. When the deficiency needs are met, pupils are likely to function at the higher levels (that is growth needs level). This means that when the deficiency needs are met, self directed learning or the desire to know and understand would be engaged in more easily (Eklof, 2006). The implication of this is that teachers can encourage pupils to meet their growth needs by enhancing the attractiveness of learning situation. In the light of these, when the environment where the child is learning (in this study, class, laboratory, and location of school) is made attractive, effective learning and better performance is likely to take place (Adesoji & Olatunbosun, 2008).

Gagne's theoretical formulations are attempts to identify aspects of learning and to match these with the intellectual demands of the individual. While development is subordinated to learning, Gagne's paradigm insists on identifying valid ordered sequences of instruction (pre-requisites) that can facilitate the learning of intellectual skills. Gagne's theory offers an opportunity for the chemistry teacher to diagnose students' limitations and strengths more effectively, thus permitting more adequate individualization and personalization of chemistry instruction.

Gagne's learning hierarchy also offers chemistry teachers the opportunities of developing and conceptualizing agreed-upon chemistry goals and objectives in reality-oriented and learner-centred way. It is on this premise that Gagne anchors his belief that children learn ordered additive capabilities. That is, the simpler and more specific capabilities is learned before the next more complex and general capability. Gagne therefore considered previous experience to have a major role in determining an individual's performance. It is within this framework that the present study looked into the student's background knowledge in Integrated Science vis-a-vis their performance in chemistry in the senior secondary school (Adesoji & Olatunbosun, 2008).

According to self motivation theory, students' motivation for academic performance varies in both strength and quality. Both variations predict learning achievement (Deci & Ryan, 2002). Intrinsic motivation emerges from learners own needs and desires rather than outside pressures or influences of rewards or punishments. It is this high self determined motivation that most powerfully predicts positively related engagements and success (Hadre & Reeves, 2003).

Achievement goal theory asserts that much as self determination is important to students' motivation, so are the students' goals. Both sets of characteristics help to explain the reasons why students engage or fail to engage in school related tasks. Mess R. and Ames (1992) asserts that it is not the strength but the nature of the students' academic goals that influence their approaches to learning and their consequent academic performance.

Evidence from a number of students upon their success in Uganda National Examinations (Kakaire & Mafabi, 2004; Nyanzi, et al, 2006) indicates students who were proud of their efforts had performed well in seemingly hard subjects. Those who had set goals of being doctors, engineers passed well subjects that are essential for these professions, further affirming the relevance of the goal motivation theory in explaining academic achievement.

According to Tella (2007), students' motivation and teacher's performance have a complex relationship.

Good attitude and better interest learners display particularly in Chemistry serve as an encouragement even to the teacher. And this can help the teacher a lot to disseminate his teaching to the best of his ability and knowledge making use of all available resources rather than resorting to the use of chalk and talk when learners show no interest or negative attitude. Moreover, when the students display good attitude and better interest in Chemistry, the teacher is motivated and this may cause him to forget whatever hindrances to the teaching of the subject from his own part. Good impartation of Chemistry knowledge on the part of the teacher; couple with student's interest in the subject and the display of positive attitude as earlier pointed out, are good motivating factors which when combine together is assumed will result to better achievement in Chemistry.

A significant connection between student's academic achievement and attitude towards chemistry was found in the study done by Yucel (2007). It was discussed further that a positive attitude towards chemistry proportionally increases students' achievement in the subject. This study however does not link factors that affect positive attitude towards chemistry to achievement in the subject. The question that still remains is what influences students' attitude towards chemistry; teachers; school environment; both or other factors.

Adesoji and Olatunbosun (2008) reported that those who have positive attitude toward science tend to perform either in the subject. The affective behaviors on the classroom and strongly related to achievement, and science attitudes are learned where the teachers play a significant role during the learning process and they can directly or indirectly influence the student's attitudes toward science which in consequence can influence students' achievement. Teachers are, invariably, role models whose behaviors are easily mimicked by students (Marshall, 2004). What teachers like or dislike, appreciate and how they feel about their learning

or studies could have a significant effect on their students. By extension, how teachers teach, how they behave and how they interact with students can be more paramount than what they teach. Student's attitude toward the learning of chemistry is very often negative and Adesoji and Olatunbosun (2008) see this as part of large problem that leads to failure in chemistry test and exams.

It is evident that many studies focus on motivation as having a direct relationship to performance (Adesoji & Olatunbosun, 2008; Marshal, 2004). However, little is said on non school factors that may motivate the students towards studying a given subject. For example job prospects, family influence and prominent models in society. These non school factors are not investigated in this study but it should be acknowledged that motivation of students in a given subject is a complex matter that calls for broader perspectives.

From the above literature, it is evident that a number of studies have been conducted on most of the important aspects of the variables in this study namely; influence of teachers, school environment, students' motivation and performance. Apart from the linkage to performance, most of the studies have not connected the variables mentioned above nor examined the various aspects that form one variable. The value of this research is to establish this linkage and fully examine the various aspects of each factor.

Hypotheses

This study was guided by the following hypotheses:

1. Influence of teachers is significantly related to students' academic motivation in chemistry subject.
2. Influence of teachers is significantly related to academic performance in chemistry.
3. School environmental factors significantly relate to students' academic motivation for chemistry.

4. There is a significant relationship between School environmental factors and performance in chemistry.
5. There is a positive significant relationship between students' academic motivation and performance in chemistry.

Chapter Three

Methodology

Introduction

This chapter presents the methodology to be used in the study. It includes the research design, population, sampling strategy, instruments, procedure, data management and data analysis.

Study Design

The study adopted a correlation survey design, using a quantitative approach. It is correlation because this design is appropriate in determining relationships. This design assists to know the relationship between events their strength and direction. Thus far the design helped to determine the relationship between the study variables.

Population

The population included the 1,500 senior four secondary students in Kabarole district. It is believed that Kabarole district secondary schools present a rural situation where constraints to learning and performing well in science subject are particularly many. Given this population a sample out would assist to find which constraints impact most on students' motivation and performance.

Sample

Given the population of 1,500 senior four students, using a sampling error of ± 5 percent in Morgans Sample size table (Bartlett, Kotrilik & Higgins, 2001) the selected sample was 400 senior four students from 20 secondary schools. However due to number response only 328 were used which number is within the minimum number of respondents required for a population of 1500.

Sampling Strategy

A lottery method (two-tie approach) was used where respondents were selected from 20 senior secondary schools. The first tie involved using simple random sampling to select the school whereby all the 28 senior secondary schools in the district were written on separate pieces of paper and placed in a container. Then one by one, 20 pieces of paper were selected. The schools written on the selected pieces of paper were included in the sample. This technique was chosen because it saves time selecting the schools and yet it provides each school an equal opportunity to participate. The second tie involved using simple random sampling to select the senior four students. Here a list of the senior four students in each school was obtained from school administration offices. Then a random number table was used to select numbers and the school on the lists with the corresponding number was selected. This technique has been chosen because it saves time when selecting a sample from a large population and yet it provides the schools in the population an equal opportunity to participate. From the school selected, 20 students from each were included in the sample.

Instruments

Data was collected from students using a structured questionnaire. This research instrument composed of four parts (A-D). Part A was to collect background information of the respondent that was to help identify and categorize them. Part B examined the influence of teachers on students' motivation. With the help of literature reviewed, 17 items of likert type ranging from 1 (strongly disagree) to 5 (strongly agree) were developed. The possible scores range between 17 and 85 where the high score of 85 means the student experiences high teachers' influence and less of it when the score is low. Part C examined the school environmental factors that relate to students' motivation to performance in chemistry. With the help of literature reviewed, 15 likert type items anchored on a 5-point scale were developed.

The possible scores range between 15 and 75 where by the high scores indicate high level of school environment on the students level of motivation and performance in chemistry and the reverse is true.

Part D examined the level of student's motivation in the learning and performance of Chemistry. Two subscales (the Self-efficacy and Intrinsic Value) of the Motivational Beliefs Questionnaire were adapted from the Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich and De'Groot (1991). There were 18 questions with a possible total score of 18-90 measured on a five point likert-type with values ranging from 1(Strongly disagree) to 5 (Strongly agree). A score of 5 means high motivational level and the reverse is true for the score of 1. The instrument was pilot tested to find out the reliability in the Ugandan context.

Pilot Study

A pilot test was carried out to find out the reliability of all three instruments. Thirty (30) senior four students from Kyenjojo district neighboring Kabarole District were randomly selected. The thirty students were selected from two schools. Selected students filled the questionnaire and the data from the questionnaire was used to calculate Cronbach's reliability coefficient. Using Cronbach's reliability analysis the pilot study indicated that the alpha for questionnaire B which tested teachers influence was 0.83 while that of questionnaire C that tested school environment was 0.68 and questionnaire D which tested student's academic motivation was 0.91. On average after getting reliability above 0.7 the instrument was considered suitable for the study.

Procedure

After ascertaining the suitability of the instruments, permission to conduct research was obtained from the Makerere University School of Education and an introductory letter was presented to the authorities of the selected schools. The authorities in the selected schools were asked for an appointment to do the exercise, and an explanation was given to the students to

know the importance of such an exercise. With the permission from the school authorities the questionnaires were then administered to the respondents in a classroom setting. Instructions were read for the respondents and care was taken to ensure that they are clearly understood. Respondents were free to ask questions to clarify anything that was not clear. Questionnaires were checked before they are received to ensure that they are fully filled in. Confidentiality was ensured to the respondents in order to freely express their views; that is, respondents were not required to indicate their names on the questionnaires. Data on performance in chemistry was collected from the 2008 Uganda National Examinations' Board (UNEB) results of the schools in the study.

Data Management

The information gathered using the instrument was coded as follows: The Teachers influence section was coded: 1 = strongly disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree and 5 = Strongly Agree. The negative items, that is, 3, 10 and 12, were reverse coded. The highest possible score was 85, while the lowest possible score was 17. High scores implied that there is more teachers influence on such a student.

School environment factors was rated on a five-point Likert response scale where respondents was required to tick the appropriate answer on the following scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree and 5 = Strongly Agree. The negative items on this scale that is 2, 4, 7, 8, 10 and 14 was reverse coded. The highest possible score was 75, while the lowest possible score was 15. High scores signified high levels of school environmental influence on the student's level of motivation and performance.

Motivation for chemistry was rated on a five-point Likert-type response scale. The student was indicate the extent of motivation by circling the appropriate answer on the scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree and 5 = Strongly Agree. The highest possible score was 90, while the lowest possible score was 18.

The motivation scores was therefore potentially range between 15 and 75. High scores on motivation implied that student is more motivated to study and perform well in chemistry.

Data Analysis

The data was analyzed with the help of Statistical Package for Social Scientists 16.0 (SPSS). Pearson product moment correlation co-efficient was used to test hypotheses one, two, three, four and five. This is because the study is co relational in nature and all the research instruments were to produce ordinal data, which is best analyzed using Pearson Product moment co relation test. In order to investigate the combined effect of two independent variables (teachers influence and school environment) on the dependent variables (motivation and performance), a Pearson Product moment co relation test was used to test hypothesis 4 and 5.

Chapter four

Results

Introduction

In this chapter, results of the study are presented. These include summary of frequencies and percentages on the background information of the respondents. This chapter also includes results on the relationship between the major study variables namely: Influence of teachers and students' academic motivation; Influence of teachers and academic performance of schools in chemistry; School environmental factors and students' academic motivation for chemistry; School environmental factors and schools' performance in chemistry and finally Students' academic motivation and academic performance.

Background Information of the Respondents

Frequencies and percentages were used to summarize the background information of the respondents. These include gender of the respondents as well as the demographic characteristics of the schools.

Table 1

Gender of Respondents

Gender	Frequency	Percent
Girls	136	41.3%
Boys	192	58.7%
Total	328	100

Source: Primary data

Results in table 1 indicate that majority of the respondents were boys (58.7%) compared to girls (41.3%). This implies that there is a high enrollment of boys in the senior four classes than girls.

Characteristics of Schools

The characteristics of the schools attended by the respondents include differences in gender composition and operational nature of the school.

Table 2

Characteristics of Schools attended by Respondents

Variable		Frequency	Percent
Gender composition	Boys only	26	8%
	Girls only	20	6%
	Mixed	282	86%
	Total	328	100
Operational nature of schools	Boarding only	72	22%
	Day only	225	69%
	Day and Boarding	31	9%
	Total	328	100

Source: Primary data

Results in table 2 above indicate that majority of the respondents were from mixed gender schools (86%). The least were from schools for girls only (6%) while respondents from schools for boys only were 8%. Results reflect the school population situation in the district. There are only two schools for ‘girls only’ and two school that take ‘only boys’. Majority of the schools are mixed.

There are different categories of schools in terms of operation; some keep students for only the day time (day only), other offer day and night facilities to all students (Boarding only) and those who operate in both modes (day and boarding schools). Results in Table 2 indicate that most of the respondents were from ‘day only’ schools (69%). Those from ‘boarding only’

schools were 22% while the least were from schools that operated both day and boarding section (9%).

Item Analysis of the key study Variables

This analysis was used to show respondents weights on given items of the scales used to measure the various study variables namely teacher's influence, school environment and students' motivation.

Table 3:

Items measuring Teacher's Influence on Students

S N	Variable	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1.	I trust the way my chemistry teacher sets the tests and exams we do.	117 (33.7)	156 (45.0)	43 (12.4)	24 (6.9)	7 (2.0)
2.	Our Chemistry teacher is very knowledgeable in the subject.	156 (45.1)	121 (35.0)	46 (13.3)	14 (4.0)	9 (2.6)
3.	I can pass well or even better in chemistry without my chemistry teachers' efforts.	23 (6.7)	39 (11.4)	73 (21.4)	88 (25.8)	118 (34.6)
4.	My teachers' style of teaching chemistry encourages me to like and also perform better in the subject.	125 (36.0)	138 (39.8)	34 (9.8)	40 (11.5)	10 (2.9)
5.	The chemistry teacher often praises my efforts in the subject.	46 (13.6)	117 (34.5)	77 (22.7)	73 (21.5)	26 (7.7)
6.	My chemistry teacher comes up with examples that help me to relate chemistry subject to my daily life.	117 (34.7)	134 (39.8)	38 (11.3)	33 (9.8)	15 (4.5)
7.	Our chemistry teacher encourages us to participate in the practical lessons.	177 (51.0)	99 (28.5)	18 (5.2)	28 (8.1)	25 (7.2)
8.	I have learnt of the benefits of chemistry as a subject from what my teacher says about it.	125 (36.4)	154 (44.9)	25 (7.3)	26 (7.6)	13 (3.8)
9.	Because of my chemistry teacher, I plan to go ahead and study professions where chemistry is an essential subject.	123 (35.5)	94 (27.2)	73 (21.1)	32 (9.2)	24 (6.9)
10.	Often times I wish I had a different teacher; I would perform better in chemistry than I do now.	71 (20.6)	60 (17.4)	77 (22.3)	65 (18.8)	72 (20.9)
11.	I am often happy in the chemistry lesson because our teacher inspires me.	83 (24.1)	126 (36.5)	49 (14.2)	61 (17.7)	26 (7.5)
12.	Our school's performance in chemistry is because of the nature of the chemistry teachers that we have.	102 (29.5)	122 (35.3)	48 (13.9)	47 (13.6)	27 (7.8)
13.	Basing on what I have been taught by my chemistry teacher, I hope to pass well the subject come the UNEB exams.	89 (25.7)	119 (34.4)	97 (28.0)	28 (8.1)	13 (3.8)
14.	I find it easy to approach my chemistry teachers and ask for additional information in the subject.	123 (35.9)	118 (34.4)	40 (11.7)	45 (13.1)	17 (5.0)
15.	The exams given to us by the teachers are a good sign that we may perform well in UNEB exam.	99 (28.5)	142 (40.9)	67 (19.3)	33 (9.5)	6 (1.7)
16.	I trust the way our chemistry teacher has been awarding marks in the exams	73 (21.0)	111 (31.9)	70 (20.9)	62 (17.8)	32 (9.2)
17.	My teachers' method of teaching Chemistry encourages me to like the subject	127 (36.6)	119 (34.3)	25 (7.2)	50 (14.4)	26 (7.5)

Source: Primary data. NB figures in the brackets indicate percentages

Results in Table 3 show that most respondents agreed with items that measured teachers' style of teaching; for example, items 1, 4, 8, 12 and 17. For method of teaching (item 17) 70.9% of the respondents agreed and 21.9% disagreed that the method of teaching encourages them to like chemistry. Most students agree that their teachers have the ability to deliver chemistry lessons well and also that their teachers use appropriate style of teaching. Results further indicate that Teachers influence on students' motivation for chemistry is mainly through good teaching style, appropriate subject content and having a positive attitude towards their students. Teachers pass on encouraging messages to their students. For example 48.1% agreed that teachers always praise their efforts in the subject and only 30.2% disagreed

Table 4:

Items Measuring Influence of School Environment on Students

S N	Variable	Strongly Agree	Agree	No Sure	Disagree	Strongly Disagree
1.	My school has adequate learning materials to enable me perform well in chemistry.	89 (25.7)	90 (26.0)	32 (9.2)	69 (19.9)	66 (19.1)
2.	In this school we never have permanent teachers for chemistry	73 (21.2)	69 (20.1)	27 (7.8)	85 (24.7)	90 (26.2)
3.	My peers are a source of encouragement for my performance in chemistry.	74 (21.4)	141 (40.8)	46 (13.3)	50 (14.5)	35 (10.1)
4.	When we perform poorly in chemistry, it is because of the poor school facilities.	58 (17.0)	65 (19.1)	48 (14.1)	72 (21.1)	98 (28.7)
5.	We have a fairly good chemistry laboratory.	65 (19.2)	121 (35.7)	22 (6.5)	63 (18.6)	68 (20.1)
6.	I can easily get assistance for a hard chemistry problem in my school	79 (23.5)	116 (34.5)	69 (20.5)	45 (13.4)	27 (8.0)
7.	To perform well in chemistry, I need to get into a school better than this.	126 (36.1)	87 (24.9)	42 (12.0)	58 (16.6)	36 (10.3)
8.	Students in this school never do well in chemistry.	50 (14.6)	90 (26.2)	79 (23.0)	76 (22.2)	48 (14.0)
9.	Being in this school assures me of passing well chemistry.	47 (14.2)	102 (30.7)	103 (31.0)	51 (15.4)	29 (8.7)
10.	We do not get enough practical lessons for chemistry.	60 (17.9)	82 (24.4)	30 (8.9)	83 (24.7)	81 (24.1)
11.	In our school we can easily access current information on chemistry	37 (11.0)	93 (27.8)	75 (22.4)	85 (25.4)	45 (13.4)
12.	We have discussion groups that help me to better understand chemistry.	80 (23.1)	124 (35.7)	33 (9.5)	79 (22.8)	31 (8.9)
13.	I can describe my school as a good environment for learning and performing well in chemistry.	78 (22.7)	116 (33.7)	52 (15.1)	54 (15.7)	44 (12.8)
14.	Because our school is in the rural area far from the capital city, we cannot perform well in a subject like chemistry	23 (6.6)	33 (9.5)	49 (14.1)	109 (31.3)	134 (38.5)
15.	Our school is located in an environment that stimulates learning chemistry	55 (15.8)	123 (35.3)	68 (19.5)	63 (18.1)	39 (11.2)

Source: Primary data. N.B statistics in brackets are expressed in percentages

Results from table 4 indicate that respondents agreed with items that indicated that location as an aspect of school environment would hinder their performance in chemistry (items 13, 14 and 15). For example in item 15 which depicts that the school is located in an environment that stimulates learning chemistry, 51.1% said they agree and 29.3% disagreed. The rest were not sure. Many respondents also agreed that peers in their school inspire them (item 3); for example 62.2% agree that “my peers are a source of encouragement for my performance in chemistry” while only 24.6% disagree.

In regard to school facilities as an aspect of the school environment slightly higher number said their schools had adequate resources like laboratory. For example item 5 where 54.9% agree that their school have fairly good laboratories and only 38.7% disagree. In relation to school facilities, majority (49.8%) disagree that their poor performance in chemistry is due to poor school facilities while only 36.1% agree to this. Student agree that they have adequate practical lessons (48.8%) and 42.3% disagree.

These results indicate that students have a feeling that their schools have an average environment that can facilitate their learning and performance in chemistry. However, majority of the respondents (61.0%) agree that to perform well in chemistry, they needed to shift to a school better than their current school.

Table 5:

Items Measuring Students' Motivation in Chemistry

S N	Variable	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
1.	I prefer chemistry lesson that is challenging so I can learn new things.	103 (29.7)	166 (47.8)	35 (10.1)	28 (8.1)	15 (4.3)
2.	Compared with other students in this class I expect to do well in chemistry	70 (20.1)	132 (37.8)	110 (31.5)	33 (9.5)	4 (1.1)
3.	It is important for me to learn what is being taught in chemistry.	166 (48.3)	160 (46.5)	13 (3.8)	4(1.2)	1 (.3)
4.	I like what I am learning about chemistry in this class.	142 (41.5)	157 (45.9)	22 (6.4)	17(5.0)	4 (1.2)
5.	I'm certain I can understand the ideas taught in chemistry lessons	57 (17.2)	158 (47.7)	69 (20.8)	38 (11.5)	9 (2.7)
6.	I think I will be able to use what I learn in chemistry in other spheres of life	119 (34.7)	141 (41.1)	57 (16.6)	16 (4.7)	10 (2.9)
7.	I expect to do very well in this in the upcoming chemistry exam.	69 (20.2)	140 (40.9)	107 (31.3)	18 (5.3)	8 (2.3)
8.	Compared with others in this class, I think I'm a good chemistry student	62 (18.1)	106 (30.9)	125 (36.4)	41 (12.0)	9 (2.6)
9.	I often choose chemistry topics I will learn something from even when they appear a little difficult.	60 (17.2)	167 (48.0)	81 (23.3)	28 (8.0)	12 (3.4)
10	I am sure I can do my best on the chemistry assignments given to us	73 (21.1)	181 (52.3)	60 (17.3)	28 (8.1)	4 (1.2)
11	I think I will get a good grade in chemistry.	91 (26.5)	109 (31.7)	120 (34.9)	18 (5.2)	6(1.7)
12	Even when I do poorly in a chemistry test/exam I try to learn from my mistakes.	132 (38.3)	180 (52.2)	1 (4.9)	8(2.3)	8(2.3)
13	I think that what I learn in chemistry is useful for me to know.	156 (45.5)	146 (42.6)	25 (7.3)	12 (3.5)	4(1.2)
14	My study skills in chemistry are excellent compared to other students in this my class.	52 (15.2)	99 (28.9)	141 (41.1)	42 (12.2)	9 (2.6)
15	I think what we have been learning in Chemistry has been interesting.	102 (29.4)	170 (49.0)	43 (12.4)	21 (6.1)	11 (3.2)
16	Compared to other students in my class I think I know a lot in chemistry.	44 (12.6)	109 (31.3)	124 (35.6)	58 (16.7)	13 (3.7)
17	I know I will be able to learn more in chemistry in future.	110 (31.5)	133 (38.1)	78 (22.3)	17 (4.9)	11 (3.2)
18	Understanding chemistry is important to me.	201 (57.9)	122 (35.2)	7(2.0)	10 (2.9)	7 (2.0)

Source: Primary data. N.B. Figures in brackets are expressed as percentages

Results in table 5 above indicate that overall, secondary students are motivated to take chemistry as a subject. Items 1, 3, 4, 6, 9, 12, 13, 15, and 18 measure intrinsic value of students' motivation for chemistry. Majority of the respondents agree with all the items for intrinsic motivation. For example for item 1 (I prefer chemistry lesson that is challenging so I can learn new things), 77.4% agree that they prefer challenging chemistry lessons while only 12.4% disagree. In item 18 demonstrating how respondents valued chemistry as a subject, 91.3% agreed that understanding chemistry is important to them and only 4.9% disagreed.

Self efficacy of students' motivation was measured by items 2, 5, 7, 10, 11, 14, 16 and 17. The respondents mostly agree to these items indicating they have a high sense of self efficacy in relation to study and performance in chemistry. For example item 2, 57.9% of the respondents agreed that they were expected to perform well compared to their counterparts in that class. Also 61.1% agreed that they were expecting to perform well in the upcoming exams while only 7.6% disagreed.

However, results also indicate that there is a high level of self doubt on whether they will perform well in the exams. For example in item 11, 34.9% of the respondents were not sure of getting a good grade in chemistry. Similarly, 41.1% of the students doubted their study skills in chemistry were excellent compared to other students in their class. Also 35.6% were again not sure if they knew a lot in chemistry compared to other students in their class.

Performance in Chemistry

Performance in chemistry focused on the overall performance of schools in UCE national examinations for 2008. These were categorized as follows:

- Excellent pass (Obtained Distinction 1-2)
- Very good pass (Obtained Credit 3-4)
- Good pass (Obtained credit 5-6)
- Fair pass (Obtained pass 7-8)

- Fail (Obtained Failure 9)

Table 6:

Summary of grades indicating Students' Performance in Chemistry

Grades	Frequency	Valid Percent	Cumulative Percent
Distinction (1-2)	6	1.8	1.8
Credits3-6)	65	19.8	21.6
Pass (7-8)	93	28.4	50.0
Failure (9)	164	50.0	100.0
Total	328	100.0	

Source: Primary data

Results in table 6 show that only 1.8% of the students in the 20 schools sampled passed with distinctions in chemistry, 19.8% obtained credits 3-6 and 28.4% obtained passes (7-8). Results further indicate that 50% of the students completely failed chemistry in the national examinations.

Correlations Indicating the Relationship between the Study Variables

Pearson Product moment correlation was used to establish the relationships between the study variables and test the study hypotheses. These included, teachers influence and school environment, teacher's influence and students motivation, teacher's influence and performance in chemistry, school environment and students motivation and lastly school environment and performance in chemistry subject.

Table 7
Pearson correlations among the study variables

Correlations							
		(TI)	(SE)	(MOT)	(IVM)	(SEM)	(P)
Teachers' Influence (TI)	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	262					
School Environment (SE)	Pearson Correlation	.34**	1				
	Sig. (2-tailed)	.01					
	N	212	250				
Intrinsic Value of Motivation (IVM)	Pearson Correlation	.62**	.35**	.93**	1		
	Sig. (2-tailed)	.01	.01	.01			
	N	243	239	273	302		
Self Efficacy of Motivation (SEM)	Pearson Correlation	.68**	.34**	.91**	.70**	1	
	Sig. (2-tailed)	.01	.01	.01	.01		
	N	245	232	273	276	294	
Performance (P) UNEB RESULTS 2008	Pearson Correlation	-.02	-.05	.11	-.10	.12	1
	Sig. (2-tailed)	.80	.45	.061	.10	.03	
	N	262	250	273	302	294	328
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Teachers' Influence and School Environment

Results in table 7 indicate that teachers influence and school environment have a positive significant relationship ($r = .34^{**}$; $p = .01$). This implies that a good school environment contributes to a positive teacher influence. Thus the stated hypothesis is accepted and it can be concluded that “Teachers influence is significantly related to school environment”.

Teachers' Influence and Students' Motivation

Results in this study also indicate that there is significant positive relationship between teachers influence and students' motivation. Students' motivation was divided into intrinsic value and self efficacy. The study results show that teachers' influence and intrinsic value of student's motivation have a positive significant relationship ($r = .62^{**}$; $p = .01$). This means that the positive influence of the teachers creates a high sense of internal desire for learning chemistry. Also results indicated that there is a significant positive relationship between teachers' influence and self efficacy aspect of students' motivation for chemistry ($r = .68^{**}$; $p = .01$). It implies that the positive influence of teachers enables students to develop more self confidence in learning chemistry. In regard to overall motivation, results further show that there is a significant positive relationship between teachers' influence and students motivation ($r = .73^{**}$, $p = .01$). This demonstrates that the positive influence of teachers' translates into high motivation of students'. This confirms the hypothesis that stated "Teacher's influence and student's motivation for chemistry are significantly related".

Teacher' Influence Vs Performance in Chemistry

Results in table 7 indicate that there was no significant relationship between teacher's influence and performance in chemistry. This implies that while teachers have a high influence on the students, this may not necessarily lead to good performance in chemistry. Therefore the hypothesis there is a relationship between teacher's influence and performance in chemistry is rejected

School Environment Vs Motivation for Chemistry

Results in table 7 further indicate that there is a positive significant relationship between school environment and students' motivation for chemistry. Results indicate that school environment and students intrinsic value of motivation have a positive significant relationship

($r = .35^{**}$; $p = .01$). Also there is positive significant relationship between school environment and student's self efficacy aspect of motivation ($r = .34^{**}$; $p = .01$). Results further indicate that there is a positive significant relationship between school environment and total motivation ($r = .93^{**}$, $p = .01$). It is probable that the nature of school environment has a significant relationship with both aspects of student's motivation for chemistry. Hypothesis 3 is thus accepted and it can be concluded that "School environmental factors significantly relate to students' academic motivation for chemistry". Good school environment means high motivation of students for chemistry.

School Environment and Performance in Chemistry

Results in this study indicated that there is no significant relationship between school environment and performance in chemistry ($r = -.05$; $p = .45$). The nature of the school environment may not influence student's performance in chemistry. Thus, hypothesis four that stated that "there is a significant relationship between school environment and performance in chemistry" is rejected. It can be concluded that school environment and students' performance in chemistry are not significantly related.

Motivation Vs Performance in Chemistry

Results in this study show that there is no significant relationship between intrinsic value of motivation and performance in chemistry ($r = -.10$; $p = .10$). The internal urge that students have for chemistry does not translate into actual performance or scores in the subject. Similarly there is no significant relationship between self-efficacy aspect of motivation and performance ($r = .12$, $p = .08$).

Students are high on self-efficacy and low in performance. In regard to total motivation, results in this study revealed that there is no significant relationship between students motivation

for chemistry and their performance in the subject ($r = .11$, $p = .61$). Thus hypothesis 5 which stated that “there is a significant positive relationship between students’ motivation and performance in chemistry” is rejected. It can be concluded that students’ motivation and performance in chemistry in Kabarole District are not significantly related.

Chapter Five

Discussion, Conclusion and Recommendations

Introduction

This chapter discusses the findings of the study presented in line with the hypotheses that were tested and the literature that was reviewed. It is divided into three sections. Section one involves a discussion of the findings on the relationship between the study variables namely; teachers influence, school environment, students' academic motivation, performance in chemistry. Section two presents' conclusions and recommendations made on the basis of the study findings. Section three presents suggestions for further study.

Discussion

Teachers' Influence and Students' Motivation for Chemistry

Results in this study indicated that there is a significant positive relationship between teachers' influence and students' academic motivation. There was a significant positive correlation between teachers' influence and the two facets of motivation namely; intrinsic motivation and extrinsic motivation. This implies that positive teacher attributes like style of teaching, teacher's confidence in the subject among others have a direct positive bearing on the student's attitude towards chemistry as a subject.

Results in this study concur with findings of Jurišević, et al (2005) that teachers significantly contribute to the motivation of secondary school students towards learning abstract and difficult subjects like chemistry. Jurisevic et al (2005) however concluded that on the whole secondary school students compared to students in higher levels of education were not motivated to study chemistry. This study indicates that secondary students are relatively motivated towards learning chemistry even if there was no effort made in to compare the motivation of secondary students with students in other levels of education like university. In comparison to motivation towards learning other subjects, Jurisveic, et al (2005) suggests that secondary school students

have lower intrinsic motivation for learning chemistry than subjects like foreign languages. This study measured level of motivation rather than how the subject compared with others. Similarly, the study by Kloosterman (1997) though on students' motivation in mathematics, found that teachers who explained clearly the subject concepts to students were rated as highly motivating. Admittedly, what is clear to one student may not be so to another but the comments indicated that teachers can have a substantial impact on whether students see their efforts as productive or not (Kloosterman, 1997).

Teacher's Influence and Performance in Chemistry

Results in this study indicated that there is no significant relationship between these two variables. This means that teachers influence does not relate to the way students perform in chemistry. The findings in this study contradict studies by Metheny, McWhirter, and O'Neil, (2008) assessment of teachers influence on the performance of students using the Teachers social support scale (TSS) that assert that teachers significantly influence the performance of students. While this considered overall students' performance, the study demonstrated that teachers style of teaching, subject confidence, ways of motivating the learners have a significant influence on the students' academic achievement. These are the same facets of teachers influence measured in this study yet they indicate no significant influence of teachers on students' performance.

It can be noted that social and cultural factors may have dynamic influence on the way students evaluate their teachers. Thus students in Uganda may positively evaluate their teachers indicating a high level of teacher's influence even when it does not lead them perform well in the subject. In conclusion the hypothesis stated is rejected since it is not supported by the results of the study and the null hypothesis is true that "teachers influence does not affect students' performance in chemistry.'

School Environment and Student's Academic Motivation for Chemistry

The results in the study indicated that school environment is significantly related to motivation of students for learning chemistry. It means that a good school environment builds a positive attitude among the learner's towards study and achievement in chemistry subject. This study concurs with earlier research by Okebukola (1986) and then MaC Nearly (2001) which revealed that school and classroom environmental factors that include level of availability of resources and role of peers significantly influence the level of student's motivation.

In this study specific motivation for chemistry as a subject was investigated. It was revealed that majority of the students were motivated to take chemistry and achieve good result in the subject. The environment in the schools predicted this motivation. It can thus be concluded that the study affirms the hypothesis that school environmental factors significantly relate to the students' motivation for chemistry.

School Environmental Factors and Performance in Chemistry

Hypothesis IV stated that "There is a significant relationship between School environmental factors and performance in chemistry". However, results in this study revealed that there is no significant relationship between school environment and performance in chemistry. Whether the school had good climate, located in a conducive area, with good human and material facilitation, such factors did not directly translate into students performing well in chemistry. However studies by Wai-Ming (1995), who evaluated some component variables of school environment, showed that they contribute significantly to the performance of students. These factors included caring and support factor in the school, the formalization factor, and the pupil control factor. He noted that they significantly related to the academic performance of the students. Wai-Ming (1995), measured performance as a general academic achievement rather than achievement in particular subjects like chemistry. Also Yucel (2007) examined the school

environmental factor that affect performance and concluded that such factors can facilitate or constrain performance in chemistry and overall academic achievement because school environment and performance are significantly related.

In contradiction, this study measured the relationship between school environment and performance in chemistry as a subject and results were not significant. Social cultural factors and lack of exposure to other better school environments that offer the investigated factors above by Wai-Ming could have made it difficult for the respondents in this study to adequately evaluate the role and nature of the school environment. The stated hypothesis thus is rejected and it can be concluded that school environment and performance in chemistry are not related.

Student's Academic Motivation and Performance in Chemistry

Hypothesis V stated that there is a significant positive relationship between Students' academic motivation and performance in chemistry. Results in this study indicate that there is no significant relationship between the two study variable. This means that having positive or high levels of motivation for chemistry did not necessarily mean that a student performs well in the subject. Such a revelation contradicts earlier studies done by Hadre and Reeves, (2003) that noted that self determined form of motivation significantly affects academic performance. Others like Tella, (2005); Adesoji and Olatunbosun (2008) had further revealed that positive attitude or high level of motivation among students positively related to their performance. The contradiction in this study could have come as a result of poor socialization of students that chemistry as a science subject is hard to pass. What is indicated from this study means there are many factors that stand between motivation and performance. Motivation alone especially self efficacy cannot predict performance.

Conclusion

Arising from the above discussion the following conclusions can be made;

It can be concluded that teachers greatly contribute to the school learning environment and that can motivate or demotivate through their style of teaching the subject and reinforcement given to students. Further more the school environment greatly affect the levels of motivation of students it can either be positive or negative. However, the positive influence of teachers and the nature of school environment on motivation of students does not translate into good performance in chemistry. Thus far motivation as the single factor does not determine the level of students performance in chemistry. Therefore, other than motivation, teacher influence and school environment many other factors determine student's ability to perform well in chemistry. These factors can be considered as limitations of the study and they include social cultural values, teachers competencies, and unrealistic expectations of learners and teachers.

Recommendations

Basing on the findings of this study, the following are recommended:

According to the results, secondary school teachers should concentrate on enhancing their teaching in a way that students would preserve initial intrinsic motivation after the entrance in secondary school but at the same time they must be aware of the power of the extrinsic factors regarding school learning. Teachers and school environment are strong extrinsic factors that affect students' motivation but not performance. Therefore teachers should find other reasons other than school environment and motivation which can help students perform better in chemistry. These reasons may be social-cultural because of peer and social influence that chemistry is hard as a science subject.

Further more administrators should realize that teachers and other school environmental factors are inter-related thus they need to be used in unison to enhance good performance thus

this requires sensitization of students to know and make use of their potential for learning and passing in chemistry.

To the policy makers there is need to remunerate teachers of science better as the means of encouraging students to take chemistry and other science subjects important as a means to earn a living in future.

Teachers' influence on student's motivation in chemistry should be administered to a large sample with diverse backgrounds to enable more generalizations.

Since this study did not find significant relationship between teachers' influence and student's performance there should be further investigation in social-cultural and psychological factors to see if they are responsible for poor performance in chemistry in spite of high motivation levels.

Areas for Further Research

Motivation is a significant issue in the learning of chemistry. The results of this study help to connect science/chemistry education researchers, who have interests in motivating students into the subject, with educational psychologists who have worked extensively in motivation but rarely in the context of secondary school chemistry. Most importantly, the study is an example of how general psychological theories of influence from significant others like teachers, environmental factors like nature of the school and motivation should be applied to study of chemistry where the content, pedagogy, and attitudes toward the subject are significantly different from most other disciplines. Additional research is needed on motivation for chemistry such that researchers continue to gain in understanding how motivation for chemistry differs from motivation in other content areas and from academic motivation in general.

According to the research findings teachers' influence, school environmental factors and motivation in Kabarole District do not translate into good performance in chemistry. According

to me there is need to investigate other factors which are social cultural and see the impact they have on performance in chemistry in particular. These factors in particular are: The common attitude society has towards Chemistry as a subject and other science subjects, peer influence, teachers competencies and unrealistic student/teacher expectations.

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Appendix 1: Students' Questionnaire

Influence of teachers and School Environmental factors on Student's academic Motivation and performance of schools in Chemistry

Background: Teachers and school environment are significant in determining student's academic motivation. In turn academic motivation influences academic performance in chemistry subject,

This questionnaire is to investigate the relationship between these aspects and the results will contribute to the academic thesis for the award of Master of Education in Educational Psychology of Makerere University.

General Instructions:

1. There is no true or wrong answer to this questionnaire, but just your opinion to the questions.
2. Please be honest and diligently answer the questionnaire as instructed
3. Please answer all the questions

SECTION A: Respondents background information.

1. Gender? (*Circle* appropriately)
 - (a) Female
 - (b). Male
2. Name of your School:
3. The nature of my school is:
 - a. Day only
 - b. Boarding only
 - c. Day and Boarding
4. The gender composition of the school is:
 - a. Girls only
 - b. Boys only
 - c. Mixed with boys and girls.
5. Your current class of study (For example; senior four).
6. How long have you been a student in this school? (*Tick appropriately*)
 - a. One year
 - b. Two years
 - c. three years
 - d. four year
 - e. more than four years
7. If chemistry was not a compulsory subject, would you have taken it?
 - (a) Yes
 - (b) No
 - (c) Not Sure

SECTION B. Influence of teachers

Please indicate the extent to which you agree with these statements using the scale below

	1-Strongly Agree	2-Agree	3 Not Sure	4-DisAgree	5-Strongly Disagree				
1	I trust the way my chemistry teacher sets the tests and exams we do.				1	2	3	4	5
2	Our Chemistry teacher is very knowledgeable in the subject.				1	2	3	4	5
3	I can pass well or even better in chemistry without my chemistry teachers' efforts.				1	2	3	4	5
4	My teachers' style of teaching chemistry encourages me to like and also perform better in the subject.				1	2	3	4	5
5	The chemistry teacher often praises my efforts in the subject.				1	2	3	4	5
6	My chemistry teacher comes up with examples that help me to relate chemistry subject to my daily life.				1	2	3	4	5
7	Our chemistry teacher encourages us to participate in the practical lessons.				1	2	3	4	5
8	I have learnt of the benefits of chemistry as a subject from what my teacher says about it.				1	2	3	4	5
9	Because of my chemistry teacher, I plan to go ahead and study professions where chemistry is an essential subject.				1	2	3	4	5
10	Often times I wish I had a different teacher; I would perform better in chemistry than I do now.				1	2	3	4	5
11	I am often happy in the chemistry lesson because our teacher inspires me.				1	2	3	4	5
12	Our school's performance in chemistry is because of the nature of the chemistry teachers that we have.				1	2	3	4	5
13	Basing on what I have been taught by my chemistry teacher, I hope to pass well the subject come the UNEB exams.				1	2	3	4	5
14	I find it easy to approach my chemistry teachers and ask for additional information in the subject.				1	2	3	4	5
15	The exams given to us by the teachers are a good sign that we may perform well in UNEB exam.				1	2	3	4	5
16	I trust the way our chemistry teacher has been awarding marks in the exams.				1	2	3	4	5
17	My teachers' method of teaching Chemistry encourages me to like the subject				1	2	3	4	5

SECTION C: School environment factors;

Please indicate the level at which you agree with the following statements below. Use your first impression, the answer that first comes to your mind. Use the scale below

1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

1	My school has adequate learning materials to enable me perform well in chemistry.	1	2	3	4	5
2	In this school we never have permanent teachers for chemistry	1	2	3	4	5
3	My peers are a source of encouragement for my performance in chemistry.	1	2	3	4	5
4	When we perform poorly in chemistry, it is because of the poor school facilities.	1	2	3	4	5
5	We have a fairly good chemistry laboratory.	1	2	3	4	5
6	I can easily get assistance for a hard chemistry problem in my school	1	2	3	4	5
7	To perform well in chemistry, I need to get into a school better than this.	1	2	3	4	5
8	Students in this school never do well in chemistry.	1	2	3	4	5
9	Being in this school assures me of passing well chemistry.	1	2	3	4	5
10	We do not get enough practical lessons for chemistry.	1	2	3	4	5
11	In our school we can easily access current information on chemistry	1	2	3	4	5
12	We have discussion groups that help me to better understand chemistry.	1	2	3	4	5
13	I can describe my school as a good environment for learning and performing well in chemistry.	1	2	3	4	5
14	Because our school is in the rural area far from the capital city, we can not perform well in a subject like chemistry	1	2	3	4	5
15	Our school is located in an environmental that stimulates learning chemistry	1	2	3	4	5

SECTION D; Students Academic Motivation in chemistry subject

Please rate yourself, the extent to which the following statements are true with you. Be honest as there is no gain for untrue answers. Use the scale in table below

1-Strongly Agree	2-Agree	3 Not Sure	4-Disagree	5-Strongly Disagree
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1.	I prefer chemistry lesson that is challenging so I can learn new things.	1	2	3	4	5
2.	Compared with other students in this class I expect to do well in chemistry	1	2	3	4	5
3.	It is important for me to learn what is being taught in chemistry.	1	2	3	4	5
4.	I like what I am learning about chemistry in this class.	1	2	3	4	5
5.	I'm certain I can understand the ideas taught in chemistry lessons	1	2	3	4	5
6.	I think I will be able to use what I learn in chemistry in other spheres of life	1	2	3	4	5
7.	I expect to do very well in this in the upcoming chemistry exam.	1	2	3	4	5
8.	Compared with others in this class, I think I'm a good chemistry student	1	2	3	4	5
9.	I often choose chemistry topics I will learn something from even when they appear a little difficult.	1	2	3	4	5
10.	I am sure I can do my best on the chemistry assignments given to us	1	2	3	4	5
11.	I think I will get a good grade in chemistry.	1	2	3	4	5
12.	Even when I do poorly in a chemistry test/exam I try to learn from my mistakes.	1	2	3	4	5
13.	I think that what I learn in chemistry is useful for me to know.	1	2	3	4	5
14.	My study skills in chemistry are excellent compared to other students in this my class.	1	2	3	4	5
15.	I think what we have been learning in Chemistry has been interesting.	1	2	3	4	5
16.	Compared to other students in my class I think I know a lot in chemistry.	1	2	3	4	5
17.	I know I will be able to learn more in chemistry in future.	1	2	3	4	5
18.	Understanding chemistry is important to me.	1	2	3	4	5

Thank you for your cooperation

CODE: