

**PRINCIPALS PERCEPTION OF FACTORS CONTRIBUTION TO STUDENTS
POOR PERFORMANCE IN CHEMISTRY IN PUBLIC SECONDARY
SCHOOLS IN WAJIR COUNTY, KENYA**

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DECLARATION

I declare that this dissertation is my original work and has not been presented in any other university/institution for consideration of any certification. This research project has been complemented by referenced sources duly acknowledged. Where text, data,(including word spoken graphics, pictures or tables have been borrowed from other sources including internet, these are specifically accredited and references cited in accordance with anti-plagiarism regulation.

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DEDICATION

This work is dedicated to my family, particularly to my wife Hodan Abdi Mohamed and my daughter Zeytun and not forgetting my beloved mother Habiba and my youngest brother Hadi Ahmed for their tireless support they have given me both financial and emotional which has made me to achieve this great work of research. It was only possible through the love, support and sacrifices made by the family.

To God is the glory. Alhamdulillah.

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ABBREVIATIONS AND ACRONYMS

ASAL	-	Arid and Semi-Arid Land
DEO	-	District Education Officer
DQASO	-	District quality assurance and standards officer
GIST	-	Girls in Science and Technology
HOD	-	Head of Department
ICT	-	Information Communication and Technology
KCSE	-	Kenya Certificate of Secondary Education
KNEC	-	Kenya National Examination Council
MOE	-	Ministry of Education
MOEST	-	Ministry of Education Science and Technology
NAEP	-	The 1986 National Assessment of Educational Progress
SEPU	-	School Equipment Production Unit
SMASSE	-	Strengthening Mathematics and Science in Secondary Education
SPSS	-	Statistical Package for Social Sciences
TIMSS	-	Third International Mathematics for Scientific Survey
UNDP	-	United Nation Development Programme
UNESCO	-	United Nations Education Social and Cultural Organization

ABSTRACT

This study sought to assess principals' perception of factors leading to poor performance in chemistry in Wajir County in the Kenya certificate of secondary education (KCSE). Data available indicates that performance of students in chemistry at KCSE has continued to be poor over the years. The poor performance both at the County and national levels in chemistry persists despite of the pre and post interventions measures administered by the Government of Kenya through the Ministry of Education in collaboration with many other education stake holders. Performance of students in Wajir County in Chemistry has always been below the national average. This study was guided by the following objectives: to establish the factors contributing to poor performance in chemistry, to find out students' attitude towards Chemistry and its effect on chemistry performance, establish Chemistry teacher's attitude towards their learners' ability in Chemistry and establish the influence of the principal on resources mobilization for teaching Chemistry on students' achievement in Chemistry. The study employed descriptive survey design. Questionnaires were used as a means of data collection from principals and students while the teachers were provided with interview schedules. Stratified random sampling was used. The sample population consisted of 4 public secondary schools in the Sub County, 4 principals, 16 teachers of Chemistry, and 160 form four students who take Chemistry in those schools.. Data obtained from the study as well as physical observation of the nature of the teaching and learning resources and the conduct of both the practical and theory chemistry lessons was analyzed. Quantitative and descriptive data was analyzed in order to come up with means, modes, and percentages. Various factors contribute to poor performance as perceived by the principals. On attitude of the learners towards the subject, the students have a negative attitude towards Chemistry despite the fact that they are interested in careers that need the knowledge of Chemistry; this has affected the performance in the subject. Secondly, motivation of the teacher did not seem to affect performance in the Sub County. However a small percentage of teachers noted that availability of instructional resources was a motivating factor for them. The instructional resources however were not adequate. The teachers responded that factors that affected the performance of Chemistry in their schools, apart from availability of instructional materials, were learners' academic ability and student attitude towards the subject. On instructional resources, all the schools have a library which is not well equipped, with Chemistry books. The laboratories were underutilized due to the preference of teacher demonstration over practical activities during learning of the subject by Chemistry teachers. Habaswein Sub County, Wajir County can therefore be attributed to, negative attitude of the students towards the subject especially towards the practicals, inadequate resources, and underutilization of resources. The school management should provide more instructional resources in form of a variety of Chemistry textbooks for the students in the library. Teachers of Chemistry should organize motivation talks that would help alleviate the negative attitude towards Chemistry. They should also expose their students to more individualized or group based practicals, adopt a practical approach while teaching and in conjunction with the school management A research should be done to investigate why teachers prefer demonstration over individual practicals in schools with equipped laboratories and also to investigate impact of teachers' intrinsic motivation on performance of Chemistry

CHAPTER ONE

INTRODUCTION AND CONTEXT OF THE STUDY

1.0 Introduction

This chapter contains background to the study, statement of the research problem, purpose of the study, objectives of the study, research questions, and significance of the study, limitations and delimitations of the study, assumptions of the study, theoretical framework, the conceptual framework and operational definitions of terms.

1.1 Background to the Study

According to Majo (2016), the performance of science subjects has been dwindling in the recent times among secondary school students in East Africa and Africa and globally. The poor performance in science subjects has been a major concern to the educationists and the stakeholders in education sector. Kiyagi (2013) maintains that science subjects especially chemistry remain a big burden to the education sector globally and in Africa.

School leadership plays an important role in the school and have an effect on the student the students achievement within their schools. The principals are the managers who are tasked with all the functions of the school; these tasks include directing and supervising the delivery, implementing and assessing the national curriculum within their respective schools (Dhuey & Smith, 2018). Besides the principals supervise teachers, evaluate individual performance, assign them with workload and create timetables, recommend for hiring, transfers and dismissals. The principal interacts with

the students both directly and indirectly. Principals also act as the liaison officers between the school and the outside world.

School principal have been given the powers and are in charge of their schools and ultimately can influence the behavior and performance of the teachers(Eyal, & Roth, 2011). Principals have the powers to initiate policies and reforms based on what they perceive to be good and necessary for the individual school. According to Bayrak, Altinkurt and Yilmaz (2014), the principals have the ability to influence, enhance and improve on the performance of their schools.

The principals are very crucial in providing enabling environments for the students to excel in their studies(Valentine & Proter, 2011). Principals who have good experience and competence is crucial for effective professional development (Fallon & Barnet, 2009). An effective school principal should strive to prioritize academic performance and find ways for students to excel (Clark, Matorell & Rockoff,2009). The principle role of the school principal is to coordinate, assess, monitor and communicate academic performance(Valentine & Proter, 2011). The principal is wholly responsible for academic performance be it failure or success.

The students are responsible for their test scores. However, if by any chance the principal does not give proper guidance and clear direction, the performance of the concerned students may be affected negatively. Effective leadership in the principal can have an impact on the academic performance of the particular school (Ololube,2008) and ultimately on student performance. Inadequate facilities, poorly

trained teachers and poor principal leadership can impact negatively on the school's performance as well as the student performance.

Education serves as the means towards bringing out the desired change in the society and develop a virtuous individuals and thereby contributing positively towards the development of productive individuals. The key role of education is to gain knowledge, inculcate the forms of proper conduct and acquire technical competencies. Education is necessary for the generation of the required technologies, expertise and knowledge that is required for the development of any economy. According to the Ministry of science and technology (2003), education is key to changing the Kenya from a buyer country to a producer country as well as changing from developing to developed.

The 1986 National Assessment of Educational Progress (NAEP) in a report concluded that young men performed better than girls in sciences in the United States of America and the sexual orientation gap was evident as the learners progressed through the academic ranks (Mullis & Jenkins, 1988). An evaluated study conducted later by NAEP in 2007 indicated that boys continued to perform well in grades 4 and 8 respectively with the average scores being higher in 2007 as compared to 2005 (Lee, Grigg & Dion, 2007). George and Kaplan (1998) in their report concluded that there is no critical relationship between the availability and sufficiency of laboratory materials and hardware and the scholastic excellence of learners in science subjects of Physics, Biology and Chemistry in SSCE. Afolabi (2008) asserts that a positive connection between the alignment of materials has a positive and a compelling effect on the performance of secondary school learners in the science subjects of Physics, Biology

and Chemistry and enhance the learners' academic progress. This observation is affirmed by Twoli (2007), who concluded that lack of offices and closed research facilities contributed negatively towards the performance of students in the science subjects of Physics, Biology and Chemistry in the national Examinations.

Chemistry has been identified as a key science subject and its importance in the logical and innovative development of any country has been widely detailed (Ekpete, 2000). It is with this in mind that has been a centre subject among the common sciences and other science related courses in Kenya training framework (GOK, 2005). It is a core and key subject for most the science related programmes in tertiary institutions and therefore there is need to teach and evaluate it adequately and effectively.

Teaching and instructing chemistry should be result based as well as learner based and it is only complete when the learners are ready and the instructors are properly and positively aligned. Towards this end, proper strategies and assets in instructing the learners should be properly aligned (Woolfolf, 2007). By nature learners are eager and curious, and should be effectively engaged in the learning process in which they are preparing, testing theorizing and synthesizing their own conclusions and information. It is just by customizing the learning process that ends up with legitimate, important and helpful process that is helpful to them. In sciences and chemistry in particular, the learner needs to effectively and efficiently build their own mindfulness and significance (Woolfolf, 2007). To substantiate the contention, the cerebrum is certifiably not an aloof customer of data and to learn with comprehension, a student should effectively develop significance of what to be realized.

Despite the prime position chemistry occupies in our educational system and the efforts made by researchers to enhance performance, students' performance in chemistry and sciences in general are still low (KNEC, 2016). Some of the reasons identified for this failure are laboratory inadequacy, teachers' attitude, examination malpractice, time constraint for conduction of practice's, non-coverage of syllabus, class size, non-professionalism and environment (Li, 2011).

Students' performance in chemistry depends on many factors and stands out to show how well a student is doing. Festus (2007), contend that performance appears generally to be the fundamental goal behind every life struggle, but the positive platform has consequential effects of improving the worth of the student and can only be achieved through acquisition of positive learning attitudes. The attitudes of a student trigger his behavior. Attitudes are antecedents which serve as inputs or stimuli that trigger actions.

Festus and Ekpete (2012) have the opinion that acceptable methods of instruction have the potential of changing learners' performance and attitudes towards chemistry. Learners who have more inspirational mentalities have demonstrated positive and enhanced performance in science subjects after being presented with self-learning procedures and self-learning gadgets such as computers (Olatunde, 2009).

According to Khatete (1995), the Kenyan education has a well-focused examination system towards the finish of optional school. The learners who excel in Kenya Certificate of Secondary Education (KCSE) examinations, with a mean grade of C and above are usually selected to join administrative establishments of higher learning institutions and universities and funded by the government (KNEC, 2009). On

completion these learners are better placed to be invested in exceptionally critical national and global occupational engagements. The execution of studies at all levels including at KCSE level is a concern for all including the parents, guardians, students, the legislature and the public in general (UNESCO, 2013).

Result in chemistry from 2011 to 2014 has shown a decline of chemistry performance in the whole county Wajir were its more worse in Habaswein Sub County. Studies have proposed various determinants of performance in sciences in general and Chemistry in particular. Mohamed (2012) ascertained that poor teaching methodologies, poor capital investment in terms of learning resources, lack of teachers motivation to teach, insecurity attributed to this area, poor administration which is facilitated by the Islamic religion where few women head schools, inadequate supervision and inspection of schools due to poor infrastructure and lack of adequate support from parents due to poverty associated to this area are the major causes of poor performance of chemistry in this area. According to Chiriswa (2003) insecure working relationship between the principals and their staff and indiscipline are some of the factors leading to poor performance of schools.

While trying to check poor performance, the Government of Kenya through the Ministry of Education in a joint effort with different partners embraced various intercessions. The measures included educational programs survey and legitimization to diminish the heap both on understudies and educators, at work preparing of science instructors through SMASSE (Strengthening of Mathematics and Science in Secondary

Education) to upgrade subject dominance levels and fortifying of inspectorate office to enhance educational modules performance and supervision (GOK, K, 2005).

Despite the government's interventions, the available statistics regarding the learners' performance in Chemistry in Habaswein Sub County is still poor. Available data from the regional Education offices in 2014, the mean score for science subjects was 1.89 in 2011 and 2.56 in 2014 respectively. This implies that the learners' performance in science subjects is still low and the improvement is slow.

This means that the interventions undertaken so far have not achieved the desired outcome. It is therefore probable that such interventions may not have been based on results of empirical and systematic studies on the determinants of poor performances in Chemistry in Habaswein Sub County (Mohamed, 2013). This study therefore sought to investigate the principals' perception on the factors influencing continued poor performance in Chemistry in Habaswein Sub County with a view of identifying appropriate interventions to improve the performance.

The performance of chemistry nationally has been dismal. Out of 144,744 candidates who sat the Kenya Certificate of Secondary Education examination (KCSE) only a paltry 9% (13,026) candidates scored A⁻ and above in 2016. The mean grade for the year in chemistry was C⁻, a drop from the previous two years. In 2016, only 90% of the candidates scored less than Grade C compared to 70% in 2014. More than 67% of the students scored a D and E while 1% scored more than A⁻.

1.2 Statement of the Problem

Chemistry plays an important role in scientific and technological development of a nation. The fundamental role of chemistry lies in its day to day application in medicine and drug manufacturing industries. Indeed, chemistry is vital as it is training in itself, where development of new techniques and concepts are scientific, economic and sociological in its consequences to the societal development needs. The performance of students in chemistry among secondary schools in Kenya has remained poor for many years with an average score less than 20% (K.N.E.C, 2008). The poor academic performance of chemistry among learners in the North Eastern Province has been a concern for quite some time.

In Wajir county especially Habaswein Sub county the performance of science subject which includes chemistry has continued to be a major concern for the county government and the national government at large (Mohamed, 2012). Being one of the sub counties located far from Nairobi which the national center for education and curriculum development its performance has remained poor due to a number of factors which include poor infrastructure and insecurity. The performance has led to low mean grades for most students and thus jeopardized their chances for upward social mobility. At the national level, the poor performance has led to low uptake of careers in science and technology. In an effort to reverse the trend, the government adopted a number of interventions targeting students, teachers and the overall teaching and learning environment (K.N.E.C, 2014).

Despite these interventions, the performance in Chemistry in Habaswein Sub County continues with lower mean grades than the national averages grades being recorded year after year. The continued declining performance in Chemistry have been attributed to a number of factors including student's attitude towards Chemistry, teacher's attitude towards students' abilities, inadequate teaching and learning resources, and poor teaching methodologies. However, it is not clear which of these factors are responsible for the dismal performance of Chemistry in Habswein Sub County. The study therefore sought to identify the Principals' perception of factors contributing to poor performance of students in Chemistry in Habaswein Sub County.

1.3 Purpose of the Study

The purpose of the study was to determine principals' perception of the factors contributing to poor achievement in Chemistry in Habaswein Sub County and suggest possible interventions for enhancing good performance.

1.4 Objectives of the Study

The following were the objectives of this study:

- i. Establish the factors that the principals perceive to attribute to poor performance in chemistry
- ii. Find out students' attitude towards chemistry and its effect on performance as perceived by the principals
- iii. Establish the principal's influence on the chemistry teacher's and students' expectations as students prepare for examinations

- iv. Establish the influence and role of the principal on chemistry resource mobilization for the school.

1.5 Research Questions

The study aimed to answer the following questions:

- i. What factors do the principal perceive to attribute to poor performance in Chemistry?
- ii. What is the principals' perception of the effect of students' attitude on chemistry performance?
- iii. What is the principal's influence on the Chemistry teacher and students' expectation as they prepare for examinations?
- iv. What is the principal's influence on Chemistry resource mobilization for the school?

1.6 Significance of the Study

The findings of this study are expected to practically contribute towards improvement of teaching and learning strategies of Chemistry not only for secondary schools under study, but for the entire nation. This study is also expected to contribute to the advancement of science knowledge for social and economic development. The findings of this study may also be beneficial to chemistry teacher who will be helped to select good methods that would improve the quality of teaching and learning.

This study may also be of beneficial to the school principals who will benefit from the suggestions on how to ensure an enabling learning environment for students and teachers to enhance performance in Chemistry. Students also will not be left out from

benefiting from this study as they would leap from the suggestions on particular characteristics and study habits that enhance performance in Chemistry.

Finally the findings of this study may benefit the policy makers would gather useful information which would shed light on why the interventions so far implemented have not so far yielded required outcome. This would enable policy implementers adopt only those strategies that promotes good performance in Chemistry.

1.7 Delimitations and Limitations

The study was to conceptualize under the following limitations and delimitations

1.7.1 Delimitations of the Study

Delimitation of the study included the following:

- i. The study was confined to public school only and their results that was derived formed the basis for generalization and recommendation.
- ii. It involved Form four Chemistry students, their Chemistry teachers and principal of the school as the major respondent.
- iii. Only form four students were involved due to the fact that these students have a longer exposure to chemistry.
- iv. Since the study concentrated on only one sub county, it may not be representative and that the study is limited by time and financial resources.
- v. The findings of the study relied heavily on the responses from the respondents and thereby the reliability of the information depended entirely on them.

1.7.2 Limitations of the Study

The study employed descriptive survey research design and the following weaknesses were expected to face this study:

- i. The weakness of self-report and the information given by the respondent can be distorted.
- ii. The respondent can also say what they believe to be true or perhaps what they think the researcher want to hear. To this end the researcher made sure that the research instruments are as objective as possible.
- iii. Lastly the respondents may intentionally misrepresent facts in order to present a favorable impression to the researcher.
- iv. The questionnaire may not capture the opinions and attitudes of the respondent and the respondents can also be biased.
- v. The sample size may not be adequate to generalize to all students of Wajir county and Kenya in general.

To overcome this limitation, the respondents were assured of confidentiality. Time management was catered for since it is also another limiting factor.

1.8 Assumptions of the Study

This study made the assumptions that:

- i. The teachers who were interviewed were teaching Chemistry in the specific schools for a reasonable period of time to be able to be conversant with the dynamics of their learning environments also the principals were more concern with the school performance in chemistry.

- ii. The principals ensured that the syllabus covered and this was uniform for all the schools.
- iii. The students who participated in this study learn under similar conditions as those whose KCSE results was analyzed in the period ranging from 2010 to 2016.
- iv. The respondents were honest in answering all questions.

1.9 Theoretical Framework of the Study

According to Mugenda (2008), the theoretical orientation is a collection of the existing theories from literature that guide the conceptual framework and subsequently informs the problem statement. The information that people have gained in regards to conduct change allows some measure of forecast and control over performance and learning (Di Viesta, 1989). Assumptions of mental state by Locke, (1996) give unmistakable data about the points of confinement of powerful learning process. These assumptions of mental states provide key variables that when well cooperated present meaningfulness to the students learning process. They lay a basis to the understanding to the learning process, instructional assets, students' qualities, showing procedures and the kind of data that a competent teacher needs when faced with a choice about the instructional methodology or methodologies to apply at any given moment in time (Brenner, 2002). Consequently this was connected to the learners in Wajir County, Kenya. The research was guided by transformational leadership theory as championed by Bass (1978)

1.9.1 Transformational Leadership Theory

The theory as championed by Bass (1978) advocates for the leader to work with team members in identifying the needed change, thereby creating a vision to guide the change

through inspiration and executing the required change in momentum with the needs of the committed group members. The theory thus serves to enhance the motivation required, morale and ultimately the requisite performance of the group members. The leader must identify the group members' vision as well as objective so as to guide and direct them toward their destinations.

The leader in this case acts as a role model to the followers in order to raise their interest in whatever they are required to do. The leader is therefore required to motivate the followers in order to take responsibilities and ownership in all their endeavors. The leader is required to understand the strengths as well as weaknesses of each of the followers. The leader is required to align the followers with the tasks that befits each one of them and the one that enhances their performance.

According to Bass and Riggio(2006), transformational leadership ties the leader to the group member and thus has a potential of affecting positively the students' achievement. The school's principal has a considerable influence on the development of the learners. Even though the principal's leadership style may not have an impact on the students' outcome, it is important to note that the school's resources are vested directed and indirectly on the principal's authority and responsibilities. Studies have shown that transformational leadership has a positive impact on students' achievements and attainment of their objectives (Allen, Grisgby & Peters, 2005).

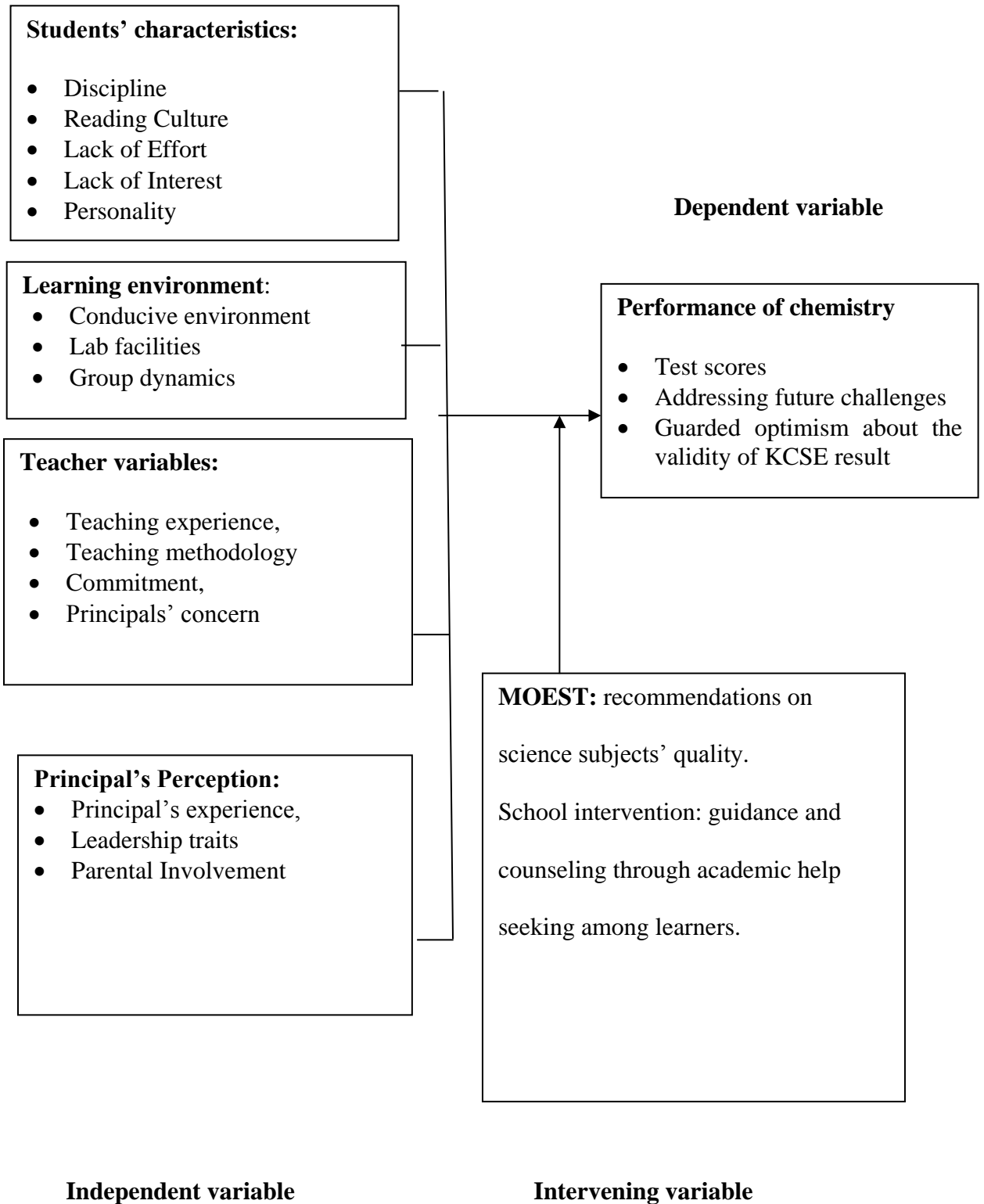
1.10 Conceptual Framework of the Study

The conceptual framework defines the relationship between the dependent variable and the independent variable/s graphically or diagrammatically. According to Mugenda and Mugenda (2008), the conceptual frame guides the researchers to visualize easily and

quickly the relationship between the dependent and independent variable/s. In this study the researcher intended to establish the relationship between the poor performance in chemistry among students and the principals' perception of the factors that contribute towards poor performance or achievement in chemistry. The conceptual framework is shown in figure 1.1

Students characteristics consists of the student discipline, student reading culture, lack of student's effort, lack of interest in the subject, and general student's personality. The learning environment consists of Conducive environment Laboratory facilities and equipment and Group dynamics. The teachers characteristics or variables comprises of Teaching experience, Teaching methodology, Commitment and Principals' concern. The principal perception may be understood from Principal's experience, Leadership traits and Parental Involvement by the principal

Figure 2-1 Conceptual Framework



1.11 Operational Definition of Terms

Achievement:	this is performance of a student measured by the school through test and national examinations.
Assessment:	the process of determining students' achievement through tests, projects and examinations.
Chemistry	Is a branch of science that deals with study of nature and properties of all forms of matter and the various changes that these substances undergo in different conditions.
Chemistry achievement:	the competency level attained in chemistry including mastery of basic skills (observation, recording, reporting), knowledge and measured in terms of grades a student scores at KCSE level.
Learning environment:	all the surroundings and conditions under which students study. Poor achievement: a score of below 40% obtained in Chemistry by a student at KCSE level.
Performance	Refers to student's achievement in Chemistry as indicated by their scores in an important school or national examination.
Principal	Refers to the administrator of a school appointed by the Teachers Service Commission in accordance with Education Act Cap 211.

School Facilities	School facilities means school plant facilities, school plant projects, school buildings and the grounds
Science:	Is a vast body of connected knowledge of theories and facts developed by scientists through scientific methods.
Students' attitudes	Refer to students' predisposition or a tendency to respond Positively or negatively towards education.
Arid and Semi-Arid Land	This consist of those areas in Kenya where the weather is dry and arid and the government of Kenya classifies 29 counties these are Mandera, Marsabit, Tana River, Turkana, Wajir, Samburu, Isiolo, Baringo, Garissa, Narok, Kajiado, Makueni, Kitui, Tharaka – Nithi, Embu, West Pokot, Laikipia, Nyeri, Kwale, Kilifi, Lamu, Taita Taveta, Meru, Migori, Machakos, Elgeyo Marakwet, Homabay, Nakuru, Kiambu (GOK, 2016)
Marginalized Communities	The counties listed as marginalized are Turkana, Mandera, Wajir, Marsabit, Samburu, West Pokot, Tana River, Narok, Kwale, Garissa, Kilifi, Taita Taveta, Isiolo and Lamu (GOK, 2016)

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter outlines the primary research which provided a background on poor performance of chemistry and all science oriented subject at large. It is arranged from attitude which includes students and teachers, teachers' characters and recourse available for teaching chemistry.

2.2 Principal's Influence on School Climate

Research studies so far indicate that the school principal can greatly influence the school's academic achievement by what kind of environment that he or she creates. According to DeAngelis & Presley(2011), principals have the greatest influence on school achievement through their creation of the school climate and support. The climate of the school can influence the out of the school and students. According to Kane, Taylor, Tyler, & Wooten (2010), the principal can create a safe, orderly and strong environment on which the academic endeavors are carried out, which influences the outcome of the student.

DeAngelis & Presley(2011) further asserts that bright student taught by well qualified and experienced teachers but in an disorderly environment are unlikely to make it through. The principal has an influence in regard to providing infrastructure which are crucial for quality instructional practices. The facilities developed go a long way in motivating teachers positively which in effect enhance students' success. This

conducive environment is directly impacted on the leadership which include the principal and the board of governors (Marzano, Waters, & McNulty, 2005).

The climate within the school is highly dynamic and thus requires the principal to monitor and nature to the extent of adjusting the processes to accommodate new changes where necessary (Kelley, Thornton, & Daugherty, 2005). The principal must foster processes that are in support of the empowering teachers in order for them to influence the students positively. Therefore simply put the principal can influence the students positively by motivating the teachers' efforts. According to Smith and Piele (2006), the principal positively impacts the school climate; the effect allows teachers to help bring about positive student academic outcomes.

It is imperative to understand the principal's perception regarding the development and maintenance of a conducive learning environment and climate that have a potential in bringing instructional changes which enhance student performance by impacting posting positively on the teachers which make them understand their expectations as they prepare the students for chemistry examinations. According to Lin (2012), school with principals who have a capacity to cultivate a positive environment are better placed to bring out good results in examinations.

When a school succeeds in examinations, the success is attributed to the principal and vice versa (Dhuey & Smith, 2014; Ojera & Yambo, 2014; Mutch, 2015). According to Duze (2012), when the school's programme fail the blame is on the school and ultimately the principal

2.3 Attitude towards learning of chemistry and performance

Hussain, Ramzan, and Qadeer(2011) states that attitude is a complex of mental state involving beliefs. Attitudes can determine what an individual intend to do. Attitudes are both acquired as well as innate. Some attitudes can be helpful while others can be detrimental. Helpful attitudes are positive while detrimental one are negative. As per Hussain, Ali, Khan, Ramzan and Qadeer (2011), learners anticipate the chance to pick their scholarly plans and classes. This reality is upgraded through the subjective commitment hypothesis, enabling students to pick which classes they enlist in builds inspiration and freedom which expands an understudy's psychological preparing and execution (Arong & Ogbadu, 2010).

Learners are affected by the distinctive scholastic parts of the class, for example, the estimation of the substance, the structure, and the workload. They likewise need to choose what is essential to them with respect to their interests, individual scholarly objectives, and their timetable. Be that as it may, students don't settle on these choices alone in light of the fact that they do at times look for exhortation from their family, staff, or potentially companions.

Hussain, et al (2011) discovered that, mentality is vital in understanding human conduct. To characterize what precisely a state of mind is, numerous endeavors have been made in writing. For the most part it is characterized as a complex mental state including convictions. It is a person's common propensity to react positively or horribly to a protest, individual or gathering of individuals, organizations or occasions (Coren, 2006). States of mind figure out what every individual will see, hear, think and do. They are established in involvement and don't wind up programmed routine lead. Mentalities

can be sure (qualities) or negative (bias). State of mind towards science indicates intrigue or feeling towards considering science. An exploration led by Olatunde (2009) demonstrated that state of mind in science implies the logical approach accepted by a person for tackling issues, evaluating thoughts and settling on choices in the sciences.

Instructors have a definitive part in any instructive framework and their skills don't consequently guarantee inspirational mentalities towards the educating procedure.

Basically, instructor states of mind are critical in light of the fact that they influence the understudy. Instructor states of mind assume a huge part in forming the classroom condition which affects an understudy's self-viability which thus impacts an understudy's conduct. These variables which can be inexactly ordered as condition, individual elements, and conduct interface and play off each other consistently (Woolfolk, 2007).

Papanastasiou (2001) ascertained that those who have positive attitude toward chemistry in particular tend to perform better in the subject. The effective behavior in the classroom are firmly identified with accomplishment, and science mentalities are found out (De Leeuw, Valois, PAjzen, & Schmidt, P. (2015)). The educator assumes a critical part amid the learning procedure and can straightforwardly or in a roundabout way impact students' dispositions toward science which in outcome can impact students' accomplishment. Educators are, constantly, good examples whose practices are effortlessly emulated by learners. What educators like or disdain, acknowledge or dislike and how they feel about their learning or studies could significantly affect their students. By augmentation, how educators instruct, how they carry on and how they

associate with learners can be more vital than what they educate (Wajir County, SMASSE, 2004).

All the more imperatively however, in the event that educators can adjust their classes to better address the issues of students, the learners will be more drawn in which will build their understanding and fervor for the educational modules, which ought to be any instructor's definitive objective (Arong & Ogbadu,2010).). From the Kenya National Examinations Council KCSE Report (2008), the rate candidatures for physics for the years 2009, 2010, and 2011 were 30.41%, 26.69% and 26.78% respectfully. The other science subjects had figure over 90%. In that year physics subject was preferred performed over chemistry and biology. This demonstrated in spite of the fact that learners can score high evaluations in physics subject, different variables were frustrating them. It might be that the state of mind that learners create towards a subject is reliant on their encounters in school.

Statistics from the Wajir District comes about reports uncovered that in the years 2006, 2007 and 2008, the most elevated candidature enrolled for physics in the locale was 23.31% out of 2007. This represents to low candidature enrollment for the subject and predicts negative state of mind towards science. Kungania (2006) directed an examination on the elements impacting mentality of recognition educator students towards science and arithmetic in Kenya. The examination discoveries uncovered that student have an uplifting state of mind towards science, see the science's educators as able and they see the science research centers also prepared.

Student's attitude toward the learning of Chemistry is a factor that has since a long time ago pulled in the consideration of scientists. Disposition as a full of feeling develop has been portrayed as the reason for both "scholarly readiness" and inspiration in learning. This study subsequently endeavored to research the chaperon commitment of student's attitude towards Chemistry and the Chemistry educator's view of their students' capacity in Chemistry as a supporter towards poor performance in Chemistry in Habaswein Sub County.

2.2 Students' Characteristics and their Chemistry Achievement

Twoli (2006) states that sex contrasts are especially identified with sciences enthusiasm for that boys were more intrigued by physical sciences while girls were more inspired by the organic sciences. This demonstrates there could be a connection amongst sexual orientation and subject decision and presumably performance. The investigation looks to comprehend whether there is a huge connection between sex, subject decision and performance of Chemistry. Sex uneven characters among educators could have a course on sex separation of subject decision.

Measurements from Equal Opportunity Commission (1987) demonstrates that teachers' subject capability have a tendency to strengthen sex stereotyping in educational programs decision in light of the nonappearance of non-cliché good examples as referred to in Singh (1994). There are generally less female educators teaching Chemistry in secondary schools subsequently girls need what might be their quick good examples in Chemistry training (Wajir SMASSE, 2004). Whatever degree does this impact the educating and learning of Chemistry in Wajir County? Is a critical question which solutions have not yet achieved.

According to Ogembo (2012), peer connections apply their impact through the dispositions, desires and comprehension of parts that they leave with the people. While exploring on young ladies in science and innovation (GIST) found that young men steadily scare young ladies in the science research facility and denied them access to types of gear. They accordingly prescribe evacuating of the more overwhelming group. He additionally advocates for seclusion of young ladies through single-sex school (young ladies' schools) by saying that avoidance enables ladies to express and approve their own particular encounters to build up some self-sufficiency, and to construct some certainty. The inquiry that this examination proposed to seek after was whether there existed variety in execution of young ladies in single sex schools (girls' schools) to those in blended schools of a similar level in Chemistry.

As per UNESCO (2012), Africa falls behind whatever is left of the world in science and innovation advancement, a sign of the relative disappointment of science training in Africa. For Kenya to grow mechanically upgrades are vital in the arrangements for science training and specifically Chemistry instruction at all levels in the nation. Twoli (2006) found out that when motivational factors, for example, premium, state of mind and yearning are taught in the students, they have a tendency to invest more energy considering the specific subject. This converts into higher accomplishment in sciences. learners see better when they invest more energy considering Chemistry and will in this manner accomplish to expected standard. On the off chance that the instructive objective is to support the improvement of higher reasonable level with its related versatile limit and adaptability, at that point this investigation will give a manual for working towards the long haul objective.

As per Wajir SMASSE (2010) pattern discoveries, there is a general inclination among students that Mathematics and Sciences (Chemistry included) are troublesome subjects. This inclination was observed to be more noteworthy in girls than boys. The sentiments were observed to be expected to; socio-social states of mind, teachers' disposition or inclination towards the understudies, school culture, showing technique and performance. This study means to facilitate this work and suggest to what degree the expressed issues may add to poor performance in Chemistry.

At the point when motivational factors, for example, premium, disposition and yearning are instilled in the students, they have a tendency to invest more energy examining the specific subject. This converts into higher accomplishment in sciences. On the off chance that the instructive objective is to support the improvement of higher theoretical level with its related versatile limit and adaptability, at that point this examination will give a manual for working towards the long term objective.

2.4 Teacher Characteristics and Students Achievement in Chemistry

Teachers assume an essential part in deciding the atmosphere of their classroom (Trowbridge, 2004). This gets the possibility that the teacher himself/herself may be a determinant of performance. In the discourse about students' performance, instructors are particularly likely focuses of feedback. They would be better prevailing; it is charged on the off chance that they were better instructed (Stevenson, and Stigler, 1992). He additionally states that gauges set the course, evaluation give the benchmarks, however the encouraging must be enhanced to push us along the way to progress. Might this likewise be the solution for Chemistry in Wajir County and the nation at large?

As though reacting to issues raised by Stevenson and Stigler, (1992) Wajir SMASSE (2010) in their gauge study's discoveries recommends that when proficient approach is grasped in instructing and learning process, the utilization of aberrant verbal conduct, for example, acknowledgment of learners' sentiments, commendations or consolation is improved, might be related with a more uplifting state of mind towards learning and higher accomplishment by students. Gachathi Report (1976) lingerie: Wajir SMASSE (2008) found that some science (Chemistry) educators subjected students to customary "telling" or the portrayal drilling which prompts inadequate learning of information, abilities and ideas required in Chemistry as a commonsense subject. They in this way recommend it be made basic for Chemistry and additionally different subjects to be taken care of by educators who are in fact qualified. Stigler and Hiebert (2009) recommends that educating is the following wilderness in the proceeding with battle to enhance tutoring. teacher's capability runs with their viability in the classroom. They assume an imperative part in educating and impact the students' securing of information, abilities and ideas.

Teachers settle on imperative choices every day. Such choices incorporate choosing exercise substance, content and materials, method of introduction, learning exercises and assessment strategies to build classroom educational modules. The expert self-governance related with these decisions describes origination of educators as experts. Additionally, in-benefit instructional classes are fundamental since educators who go to them become acquainted with the adjustments in the educational modules to the extent the topic and encouraging strategies are concerned (Beck and Earl, 2002).

The teacher's attitude and inspiration assume a urgent part in the instructing and learning process. Educationists and managers realize that it is basic to inspire students and representatives with the goal that they can strive to create great outcomes in whatever they do (Kithinji 2007, as referred to in Twoli, Maundu, Muindi, Kiio, and Kithinji, 2007). As per Wajir SMASSE District INSET-2009, in spite of the fact that Science and Mathematics educators may have uplifting disposition, they are plagued with issues that baffle their endeavors to instruct viably and productively.

As indicated by Wajir SMASSE (2010), teachers are the most critical specialists that can impact change in students' attitude towards Mathematics and Sciences. They are in contact with the learners more often than not. Through such contacts, they convey their view point and desires to learners and the learners are probably going to loyally trust them. An investigation by Fuller (1985) on factors impacting performance demonstrates that around 80% of studies affirm that in-adjusting of educators is emphatically corresponded to accomplishment and 70% of the examinations uncovered a positive connection between long stretches of tertiary instruction and instructor preparing to accomplishment.

In like manner the instructors settle on critical choices day by day. These choices incorporate choosing exercise substance, content and materials, method of introduction, learning exercises and assessment techniques to build classroom educational programs. The quantity of Chemistry instructors in work in schools in Habaswein Sub County, their level of training, long periods of administration, security and other imperative educator attributes shapes some portion of this study. Exceptionally compelling for this study incorporates the level of readiness of the teachers in teaching Chemistry in the

provincial schools from a urban preparing foundation, their disposition in handling the difficulties the rustic schools offers generally with poor framework and normal or now and again below average students.

2.5 Learning Environment and Achievement

The kind of classroom communication plumps the adequacy of the learning circumstance, as well as the states of mind, premium and partially, even the identity of the youngster. Gammage (1971) contends that with regards to classroom collaboration, identity, as it seems to be, influences learning. The youngster's response to progress, disappointment, acclaim and fault in respect to the cooperation with the educator, end up critical since they relate not exclusively to the student's social and passionate conduct in the classroom yet in addition to inspiration. The educator should in this manner be watchful about what occurs in the initial couple of experiences with the learners as it is probably going to set up the classroom condition of the specific class. The learning condition or air found inside the classroom is of outrageous significance in trim the character of the learners and deciding the proficiency with which learning happens. The inspiration of the student to accomplish might be improved or harmed by the instructor's mentality towards the learners and how he or she interfaces with them (Flanders, 1970; Anderson, Ryan and Shapiro 1989). The teacher can influence the learners to be anxious to learn or repress their advantage and states of mind.

Classroom educator-learner cooperation is imperative since it either improves or represses compelling discovering that converts into higher or bring down accomplishment. Wayman, Brewer and Stringfield, (2009) The high performing schools apply strategies that encourage an environment conducive to learning. The adequacy of

training methodologies to a great extent relies upon the match between the levels of ideas being experienced and the improvement level of the kid (Barbara and San, 2006). Life has numerous anxieties and both the instructor and the student experience the ill effects of them. In some cases an educator may experience the ill effects of „burn out“ (a mental condition delivered by pressure). A few instructors let out on the understudies which significantly meddle with the learning regarding state of mind, inspiration, understudies' confidence and even their feeling of anxiety (Anderson, 1989). As indicated by Wajir SMASSE (2010), the learner thinks more about how as an instructor, you identify with them than the amount you know. On the off chance that they are sure about you, they will search for more positive things about you. The classroom cooperation that represents verbal correspondence between the educator and the student are found out over the span of youngsters' learning encounters. Numerous signs go between the educator and the student, which pass on sentiments about a subject and give data, which help sort out discussion.

Franyo (2007) contend that if these signs are reacted to properly, it is workable for successful correspondence to occur. Among the instructors, there are the individuals who disregard or don't see these prompts, so they impact the correspondence to be uneven. Such are dictatorial instructors and in this way make the students to pull back and wind up uninterested in learning. In this circumstance, the listener(s) can indicate objection in different ways-production express comments about the subject which compels them to have a negative disposition bringing about low accomplishment. The nature of teacher-learner communications which at last impacts the nature of encouraging learning background is a state of center for this investigation.

As indicated by Wajir SMASSE report discoveries of 2002, heads of auxiliary schools must play a more dependable part both in managerial and scholastic exercises in the schools they head. DeAngelis and Presley(2011) state that from multiple points of view, the school principal is the most imperative and persuasive individual in any school. It is his/her administration abilities that set the benchmark, the heading, the tone and the learning condition. His/her administration is critical for the ethics of the instructors and set the level of worry for what understudies could possibly progress toward becoming. One fundamental part of schools is to give a reasonable situation helpful for learning. Thusly, the heads ought to guarantee that every single accessible asset are coordinated towards this end. Beginning ventures for it without due thought of high scholastic accomplishment incorporating into Chemistry is a disappointment with respect to heads. The void research facilities, libraries and stores in schools are because of absence of prioritization in the utilization of pitiful assets created (Wajir SMASSE, 2005). Instructors work inside progressions in establishments that place exceptionally unmistakable limitations upon their expert carefulness (Hawthorne, 1992). Instructor's endeavors which have any kind of effect in the students' accomplishment are impacted by the school organization. Could this be a factor adding to the poor execution of Wajir County Chemistry understudies?

The heads of schools can't get away from the fault for the steady poor execution of understudies in Chemistry in Kenyan schools. This is on account of a school's execution is an impression of the head's administration style (Wajir SMASSE, 2006). Kombo (1998) states that the fundamental reasons why a few schools perform superior to anything others in examinations is that while some school heads compose the learning

procedure for their learners, others abandon it to risk. Head educators who are focused on their work are dependable and have a sound good direct and give great learning condition to understudies. The degree to which the managerial style of a school's Principal impacts the learning condition and at last execution in Chemistry in Wajir County framed a necessary piece of this investigation. What is the connection between the instructors and their Principal? What is the connection between the Principal and the understudies? Do the understudies take it that the Principal cares whether they pass or flop in Chemistry? What are a portion of the commitments of the neighborhood network in molding the learning condition? These among numerous others are questions that this investigation attempted to reply.

2.6 Summary of Literature Review

From the foregoing review, it is evident that appropriate effort has been expended by various researchers to address the poor performance in sciences in general and Chemistry in particular. The efforts have attempted to isolate various factors that contribute to low achievement in Chemistry at the national level. In the course of the review it was realized that the factors considered tended to be more related to low achievement of the Sciences in general and not Chemistry in particular. The factors therefore may not apply to achievement in Chemistry in Wajir County. This is more so when it is considered that no empirical and systematic studies on factors that affect achievement in Chemistry in Wajir County have so far been done. The researcher therefore sought to determine which factors among those advanced in the review are responsible for the persistent poor achievement of students in Chemistry in Wajir

County. An appropriate research methodology including instruments for data collection was therefore prepared for this task.

2.7 Research Gaps

It is clear from the literature that poor performance in chemistry is real. The main question that needs to be answered by the stakeholders is what is the reaction of the principal to this trend. Poor performance in education and especially core subject such as chemistry triggers a vicious cycle wherein poorly educated students are left out in the job market. Research has been conducted on the factors that contribute to the poor performance in chemistry. However the perception of the principal regarding the poor performance has not been adequately addressed. The principal is very crucial in creating a conducive learning environment which enhances the teacher's motivation as well as the students motivation to achieve academic excellence. understanding the perceptions of principals regarding the preparation of students taking the KCSE chemistry will greatly contribute to closing the research gap on this aspect of school leadership. This understanding should help educators as they continue to work towards creating a more effective educational climate. The understanding and critical analysis of the teachers' characteristics is crucial in addressing the key factor of the teacher involvement in education developments. The student cannot perform well without the assistance of teachers and instructors. In order for the school and the employer to address the issue of teacher need analysis it is important to critically analyze the qualification and experience of the teacher. Motivation of both students and teachers has been cited as a factor determining performance.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology proposed to be followed in carrying out this study. The chapter is arranged in the following subheadings: Research design, location of the study, target population, sampling techniques and sample size, research instruments, pilot study for instruments, data collection procedure, data analysis, logistical and ethical considerations.

3.2 Research Design

This study utilized descriptive survey design. According to Best and Khan (1993), the descriptive survey design is concerned with conditions of relationships that exists, practices that prevail, beliefs, points of views or attitudes that are held, processes that are going on, effects that are being felt or trends that are developing. According to Kathuri and Pals (1993), survey research usually use questionnaires and interviews in order to determine the opinions, attitudes, preferences and perceptions of groups of people of interest to the researcher. In conclusion, Kilemi and Wamahiu(1995) argue that, any researcher who adopts this descriptive survey design attempts to produce data that is wholistic, contextual, descriptive in depth and rich in details. The research design was applied since is the best suited to establish the principal's perception on the poor performance in Chemistry in Habaswein sub county. Descriptive research design

is the best method of social scientists and educators who are interested in collecting original data for the purpose of describing a population (Mugenda and Mugenda, 2003).

3.2.1 Variables of the Study

The variables in this study included students' performance which is the dependent variable while the independent variables included perception of the principals in relation to attitude, teacher characteristics, use of resources and facilities, students' characteristics, learning conditions in the school and assessment. The study variables were measured using nominal scale which grouped the subjects into two according to their gender, (male or female). The researcher found the interval at which chemistry influence general performance in KCSE level. Both family and school factors were considered in interpretation of the research variable.

3.3 Location of the Study

Wajir County is a county in the former North Eastern Province of Kenya. Its capital and largest town is Wajir. The county has a population of 661,941 and an area of 55,840.6 km². In Wajir County, 84% of the population lives below the poverty line. The county has 16 public secondary schools which has an enrolment of 2098 students. The students' ratio in the county is 1:53. The rationale for choosing this area for the study is that the area is in what is classified as Arid and Semi-Arid Land (ASAL) in Kenya and this is where the marginalized communities in Kenya live.

3.4 Target Population

According to Ngechu (2004), a population is a well-defined set of people, services, elements, and events, group of things or households that are being investigated. The

target population of this study will be all public secondary school in Habaswein Sub County. This target population was heterogeneous in the sense that some schools are boys boarding, mixed boarding, girls boarding and mixed day schools. Therefore they may not have similar characteristics, since even the personnel in different department within the same school environment may not always think similarly over a given issue. According to the county education office records in 2014 there are 2098 student, 64 teachers and 16 principals in the sub county (Wajir County Education Office, 2014).

3.5 Sampling Techniques and Sample Size

Gay (1992) has shown that a sample size of 10% - 30% of the total population is adequate for a study in descriptive research. Through the stratified random sampling technique the study selected 4 secondary schools which comprise 25% of the targeted schools in the County. There are 16 schools in the county hence through random stratified sampling technique, four (4) schools made up of (1) girls' school, (1) boys' school (1) mixed boarding school and one day school were selected. All the principals of the selected schools were included in the study sample. The researcher selected 160 students, 16 chemistry teachers and all the 4 principals of the selected schools. The researcher decided to divide the schools into 4 categories of boys boarding schools, girls boarding schools, mixed boarding and day schools from which the researcher had to select from each strata in order for the sample to be representative.

Table 2-1 Target Population and the Sam

Population	Number	Frequency	Percentage
School	16	6	25%
Students	2098	160	7.63%
Teachers	64	16	25%
Total	2178	180	57.63

Source: Author, 2015

3.6 Data Collection Instruments

Researchers prefer using methods that provide high accuracy, generalizability and explanatory power, with low cost, rapid speed and maximum management demands and administrative convenience (Mugenda and Mugenda, 2003). Basing on this fact, a combination of the Questionnaires and interview schedules was used for this study.

3.6.1 Questionnaires for Principals and Students

A questionnaire is a research instrument that gathers data over a large sample (Kombo & Tromp, 2006) and is one way to elicit self-values. According to Zikmund, Babin, Carr, and Griffin (2012), a questionnaire can be used to reach out to a large number of respondents unlike other methods of collecting data Further the questionnaire is relatively cheap and cost effective. A questionnaire was used to collect data from students and principals since they are the major targeted group in this study. This was done independently to avoid the chances of manipulation from the researcher and

among the respondents themselves. The questionnaire consisted of both open-ended and closed questions which have been designed specifically for principals and students in line with the research objectives.

3.6.2 Interview Schedules for Chemistry Teachers

Interview schedules was used to collected data from the chemistry teachers in the selected school. This method calls for direct contact between the researcher and the study subject (Kothari, 2004) it involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. Face to face interview will be carried out. According to Zikmund, Babin, Carr, and Griffin (2012), an interview schedule can be used to obtain detailed in depth information regarding perception, feelings and opinions and can achieve a high response rate. The interview method was therefore, allowed the researcher to get in-depth information from teachers and head of science department on the type of teaching strategy in their school and how these affect their performance.

3.7 Pilot Study

Pilot study was conducted to pre-test the research instruments. Pilot study was carried out in two schools which was selected before the actual collection of data where a total number of 20 students was sampled .The two schools was not considered during the actual study. The purpose of the piloting is to assist the researcher to discover the weakness in the research instruments, check the clarity of the questions or items and also elicit comments from respondents that will help in the improvement of the instruments. According to Zikmund et. al (2012), a pilot study is a small-scale research project that collects data from respondents similar to those that will be used in the full

study and It serves as a guide for a larger study; examines specific aspects of the research to see if the selected procedures will actually work as intended.

3.7.1 Validity of the Instrument

Validity in the context of this study is concerned with establishing whether the questionnaire is measuring what it is supposed to measure. Kothari (2004) defines validity as the extent to which variations found with a measuring instrument reflect true variation among those being tested. There are two ways of setting up the validity of a research tool or instrument, that is, logic and statistical evidence. First, the researcher ensured that the instrument was related to the objectives of the study and it contained all the necessary information. To determine the content validity of the instruments, the instruments were given to a group of experts in the school of Education of Kenyatta University so as to get their views. The items which appeared unclear were dropped or rephrased.

3.7.2 Reliability of the Instruments

Reliability measures degree of accuracy in the measurements instruments provided. It ensures that the instruments generate similar data when used by independent researchers; further to remove errors, every instrument should be tested before it is formally administered (Bryman and Bell, 2015). Test –retest method helped the researcher to assess time taken and adjust accordingly for example if it takes too long it could help reduce problems of phrasing questions that can lead to being technical and too abstract which could be detected from the responses (Orodho, 2012).

This study used test-retest method technique to ensure reliability of the study instrument. This was done by administering to the same group of principals and

students questionnaires and for the teachers the same interview questions. Two sets of the measuring instruments at an interval of two weeks and their responses compared to see if the two tests was similar. Results were analyzed and comparisons made. Cronbach's Alpha Coefficient was used to establish the extent to which the content of the items in the questionnaires and the interview schedule are consistent in eliciting the same responses when administered at different times to the same group. Test-retest technique was taken at 0.7 Cronbach's Alpha which is a method of internal consistency.

3.8 Data Collection Techniques

Permission to carry out research was obtained from NACOSTI as required by the law. A transmittal letter and pre-notice letter was sent to County Education Officer, Wajir County and the Principals .An introductory letter to the principals was obtained from the Sub County Education office (Wajir County). The researcher sought permission from the school administration to carry out research in the sampled schools. A preliminary visit was made to each of the schools to inform the principals of the intended research and a date to administer the questionnaire was arranged. The researcher pre-visited the sampled schools to establish rapport with respondents. Consent for participation was sought before administering the questionnaires. The questionnaires were personally administered by the researcher during the data collection. Arrangements for filling in the questionnaires within two weeks was made. At the end of the two weeks completed questionnaires were personally collected by the researcher ready for data analysis.

3.9 Data Analysis

This study employed descriptive analysis method complemented with ANOVA which is the most common form of analysis in quantitative and qualitative research. This involved

cleaning the data through sorting out the questionnaires that have been filled properly then data was coded according to the variables that are being investigated. Data was entered in the computer and the researcher used statistical package for social sciences (SPSS) version 20 software and Microsoft excel to organize the data. In this study quantitative data which was collected using questionnaires was analyzed and descriptive statistics were used. Descriptive statistics such as means and percentages were obtained. Data was presented in frequency tables and pie charts. This was followed by explanations through qualitative analysis which was aided by ANOVA.

3.10 Logistical and Ethical Considerations

3.10.1 Logistical considerations

A research authorization permit was obtained from NACOSTI as required by the law and a copy submitted to the CEO Wajir -county. The researcher made an appointment with the principal of the selected schools and permission to participate in this study was sought before administering the questionnaire .Sampled schools were pre-visited to establish rapport with the respondents. Informed consent for participation was sought before administering the questionnaires. Confidentiality and integrity was highly upheld.

3.10.2 Ethical considerations

To ensure confidentiality and reduce research bias all questionnaires were coded then a separate list to be created linking survey numbers to their admission numbers. The list was kept separate from survey data. No identifying information was given on the questionnaires. Teachers together with the school head teacher witnessed as the form four students signs consent forms. Cover letters was affixed to the questionnaires

provided explaining the reasons for the study and reassuring the respondents of privacy .The respondents were given directions on how the questionnaires was to be filled and returned. The rationale behind this is to help reduce the likelihood of obtaining biased responses. Consent of the respondents was sought before participating in the study, and the participants in the study were assured of confidentiality, on the information given. The instruments were pretested to ensure that all the mechanics of data collection are efficient. The respondents were well protected by keeping the information given confidential and by making them remain anonymous to protect their identity.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATIONS AND INTERPRETATION

4.1 Introduction

The chapter outlines an analysis of the data collected from a sample of 180 respondents who includes 160 students 12 Chemistry teachers and 4 school principals including head of science subjects department. This study used a calculation of percentage approach which was tabulated to represent different category of data.

4.2 General and Background Information

Regarding the general information the researcher first assessed the respondent rate which was to show the return rate of the research instruments and find out the creditability of the study variables. Gender, age bracket of students and education level of chemistry teachers and principals was included in this section.

4.2.1 Response Rate

This information is based on the response rate of those who were targeted by this study. It includes those who responded and those who did not respond or return the research items. This is clearly illustrated in the table 4.1 below.

Table 0-1 Response Rate

	Frequency	Percentage
Response	180	100%
Non response	0	0%
Total	180	100%

Table 4.1 shows that all the items presented to the respondents were 180(100%). The respondents responded 100% of the items. These clearly show that 180 of the items were filled ready for analysis. This implies that the response was excellence. According to Mugenda and Mugenda (2009) a 50% response rate is adequate, 60% good, 70% rated very good and above 70% the response is excellent. It is a clear indication that the instrument was well understood and answered well according to different respondents' opinions without any interference.

4.1.2 Gender of the Respondents

Figure 4.1 presents the gender of the respondents who contributed to the success of this study. This includes all the respondents who responded and returned the items for data analysis.

Figure 0-1 Respondents' Gender

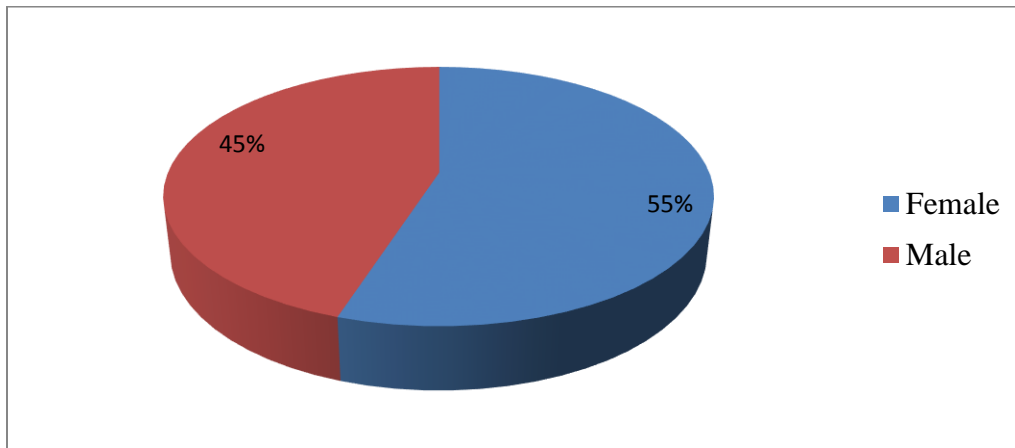


Figure 4.1 shows 45% of the learners were male while 55% were female. This demonstrates that more female attend secondary education compared to male students as reported by chemistry teacher, students and the principals who participated in this study. This might be credited to recent rallies of the importance of girl child education.

A perception by the researcher is that the sorts of schools in the region support girl child training. Many schools are either mixed schools or girls' schools with the minority being boys' schools. The distinction in sexual orientation boarding rates in Habaswein Sub County however are little, accordingly the sample achieved close sex equality in the population under this study.

4.2.2 Age Bracket of Students

The students who were among the targeted group were asked to indicate their age. Their information was presented in the table below.

Table 0-2 Respondents' Age

Age (years)	Frequency	Percentage
14 and below	0	0
15-17	120	75%
18-21	40	25%
Above 21	0	0
Total	160	100%

Table 4.2 clearly shows that 75% of students aged between 15 to 17 years which was the majority whereby 25% aged between 18-21 years. No students mentioned age of 14 and below or even above 21 years. This implies that most learners begin school at an early age and complete their secondary education between 17 and 19 years rather than begin late and finish at twenty one and above.

4.3 Perception on the Factors affecting the performance in Chemistry

The principal and teachers were requested to indicate the factors that they perceive affect the performance in Chemistry. The findings are presented in Table 4.3

Table 0-3 Factors affecting performance of students in Chemistry

Factors	Mean	Standard deviation
Availability of Instructional resources	6.25	0.01
Learner's academic ability	5.72	0.72
Students attitude towards Chemistry	5.72	0.69
Teacher's motivation	3.25	0.85
Language used by the teacher	4.00	0.67

All teachers did not agree that their motivation affected learners. This according to table 4.3 has the least mean which is 3.25(std.dev 0.85) while the highest being availability of instructional resources that had a mean of 6.25 (0.01). on the item on learners academic ability the mean was 5.78 (std.dev 0.72) who contained 25% of response while the other 25% respondent who had a mean 5.72 (std.dev 0.69) mentioned that it is students' attitude towards the subject that affected performance in Chemistry. Considering that 75% of the schools had 0-1 chemistry reference books, this suggests that presence of textbooks for Chemistry is very important. This study in agrees to that conducted by UNESCO (2009) who viewed resources such as textbooks are useful to learners for revision and doing homework. Such activities have been known to improve performance in mathematics and other subjects in general. Textbooks

at school library are motivators for students to engage in personal study and hence improved outcomes in subjects such mathematics and chemistry.

Likewise, the outcome, of the discoveries concurred with that of Mutai (2006) who attests that learning is fortified when there are sufficient reference materials, for example, reading material, practice books, showing helps, classrooms and the scholastic accomplishment outlines per magnificence the right utilization of these materials. The ramifications of this outcome is that arrangement of favorable classrooms, research facilities and other educating/learning assets can emphatically change educators' state of mind to the instructing of science and influence the subject to be extremely intriguing, important and energizing to the students and subsequently to will support specialized study and control by learners which will keep them alive and considering and will likewise enable them to understand the utilizations of science to their future life.

4.3.1 Gender-Related Factors that Influence Performance in Chemistry

The study further sought to identify the opinions of students towards learning and performance in chemistry. Students were asked to indicate the extent to which their learning and chemistry performance is affected. This helped in detecting the gender-related factors that influence performance in chemistry. The responses were put under five categories of a five-point Likert-scale which included strongly agree, agree, undecided, disagree and strongly disagree. The study measure of positive response is Strongly agree and Agree, while the negative response is Strongly disagree and Disagree. The results are indicated in table 4.4.

Table 0-4 The effect of Gender in Learning and Chemistry Performance

Statement	SA(%)	A(%)	N(%)	D(%)	SD(%)	Totals (%)
Being a girl or a boy interferes with my learning and my performance of chemistry (boys school)	5	25	5	0	60	100
I learn chemistry well regardless of the gender of my teacher (boys' School)	48.8	35.4	5.6	2.8	6.3	100
Being a girl or a boy interferes with my learning and my performance in chemistry (girls school)	12.2	5.8	1.6	10.3	70.1	100
I learn chemistry well regardless of the gender of my teacher (girls school)	45.3	15.4	5.6	12.8	6.3	100
Being a girl or a boy interferes with my learning and my performance of chemistry (mixed school)	20.6	14.2	12	9.3	43.9	100
I learn chemistry well regardless of the gender of my teacher (mixed school)	51.1	27.8	10.3	2.5	8.3	100

In the analysis, (SA and A) were considered positive while (D and SD) were considered negative. Using these indicators, findings indicated that a small proportion of boys agreed that their gender interferes with their learning of chemistry, while three quarters among boys gave a negative response to the statement. A small percentage among girls

gave a positive response to the statement and more than three quarters disagreed that being a boy or a girl interferes with learning of chemistry.

In mixed school, slightly above half of the students gave a negative response. Gender seems to be a non-issue when it comes to chemistry performance especially if the discipline is handled without discriminating on the basis of gender as the issues cited by the respondents cut across all the gender with no significant differences in any of the school studied in this research.

The teachers' gender only affects a very small number of respondents. This result is reflected in all the categories of school in this research. This is in contrary to report by UNESCO (2004) which indicates that teachers' gender has an impact on learning and achievement in mathematics and science oriented subjects. The fewer female chemistry teachers in the sample imply that girls have few role models and it also reinforces the stigma that chemistry is a men's domain. At any rate, all the students care about is an instructor who will deliver the lessons in an organized manner in such a way that it is easier to understand the complex concepts in chemistry.

4.3.2 Education level of Chemistry Teachers

Chemistry instructors were asked to indicate their professional qualifications. Professional achievement is one of the determinants of chemistry teachers effectiveness in teaching chemistry. The result was presented and analyzed in table 4.5.

Table 0-5 Professional Qualification of Chemistry Teachers

Educational level	Frequency	Percentage
Diploma	0	0
Bachelor's degree in education science /PGDE	10	62.5%
Post graduate Master's degree in chemistry	6	37.5%
PHD	0	0
Total	16	100%

Most of the chemistry teachers as indicated in table 4.5 were bachelors' degree holders in education science whereby others had Post graduate diploma in education who were 62.5% compared to 37.5% with post graduate masters degrees. No teacher had diploma or PHD as indicated in the table above. This clearly implies that those teachers teaching chemistry in the surveyed school were qualified to handle the subject regardless of the poor performance of the subject in the area hence this study focused on the specific factors affecting the performance of chemistry as viewed by school principals.

Njagi (2013) finds that ability of an educational structure is particularly related to the limit of its instructors. From now on the more qualified and better prepared teachers are, the less difficult it is to affect instructive method use. Despite how perceived the people from a wander amass are, the methods by which purposely composed another course is, the way by which magnificently the distinctive informational media have been abused, the accomplishment or frustration of any advancement eventually relies upon the openness and adaptability of the classroom instructor.

This was in simultaneousness with the discoveries of Sidhu, (1991) found out that, high ability of the teacher makes valor in the instructor and sets him up to accomplish appealing standards in teaching. Consequently, the readied teachers are likely going to use training styles that are learner centered since they are displayed to a variety of instructing methodologies.

4.3.3 Principals' Professional Qualification

The principals were asked to indicate the academic qualification. Their response was recorded in 4.4 below.

Table 0-6 Principals' Professional Qualification

Educational level	Frequency	Percentage
Diploma	0	0
Bachelor's degree in education science /PGDE	3	75%
Post graduate Master's degree in chemistry	1	25%
PHD	0	0
Total	4	100%

Most of the principals as indicated in table 4.4 were bachelors' degree holders in education whereby others had Post graduate diploma in education who were 75% compared to 25% with post graduate masters degrees. No principals had diploma or PHD as indicated in the table above. This clearly implies that those principals managing secondary schools where curriculum supervision is included were qualified to supervise the teaching and learning of chemistry subject regardless of the poor performance of the subject in the area.

This study concurs with that of MoEST(2011) which contended that principals need the hypothetical learning, expertise and satisfactory encounters in school initiative and administration and additionally ought to have a profile of ownership of different trainings on school authority and administration in order to play dynamic and powerful authority style in school change programs which incorporates each subject performance particularly sciences where chemistry is one of the subjects apparent to be troublesome by learners.

4.3.4 Teaching Method Mostly used by Chemistry teachers

The respondents were required to show on their questionnaires the strategies they mainly apply to teach chemistry during lessons. The results is presented in table 4.5 which uncover that lecture technique was the most well-known having 47.78 % followed by demonstration with 37.04% and the least method that was utilized is group discussion having 18.33%.

Table 0-7 Teaching method mostly used by Chemistry teachers

Teaching method	Frequency	Percentage
Group discussion	33	18.33%
Lecture method	86	47.78%
Demonstration method	61	33.89%
Total	160	100%

The data acquired from the observed classes gave comparative findings, that the chemistry teachers mostly utilized lecture method and was specifically required in the lesson as shown in table 4.5. This is a reasonable sign that the instructors ruled the lessons constantly (90.91%). Along these lines the classroom instructing was essentially

educator centered technique which proposes that understudy centered approach was slightest used. The chemistry teachers contributed an expansive segment of their vitality doing the majority of the work as opposed to outfitting learners with learning conditions that would enhance understanding.

Muthwii (1987), analyzing similarly saw that the teacher talk was overpowering with the learners talk taking only 16.7% of the total talk. There is have to enhance open doors for students' cooperation and communication in order to rouse and connect with leaners in tackling science issues that includes adjusting of science conditions.

Table 0-8 Teaching method and Performance

Teaching method	Performance Mean	N=180	Standard deviation
Lecture	4.24	15	0.00
Discussion	6.52	40	0.72
Demonstration	5.75	25	2.66
Question- answer	10.12	100	1.95

The research question was whether there is a relationship between teaching method and students' achievement. One-way ANOVA was run for within and between groups and the results revealed that there was a positive significant influence on students' performance when the question/answer method of teaching was used ($p < 0.05$ at 95% confidence level) as shown in table 4.7. The other teaching methods (lecture, demonstration, discussion) did not show a significant influence on the achievement by the student ($p > 0.05$ at 95% confidence level).

The question/answer method is mainly learner-centered, indicating a high degree of learner involvement. The other teaching methods influence students' performance indirectly.

Table 0-9 One-way ANOVA for performance by teaching method

	Sum squares	df	Mean square	F	Sig.
Between groups	52.322	3	17.442	5.237	0.02
Within groups	33.302	10	3.331		
Total	85.624	13			

F test with (3,10) degrees of freedom performed on the teaching method indicated significant difference in performance when question/answer method was used.

$$F(3,10)=5.237 > F_{crit}(3,10)=3.7083; p < 0.05.$$

4.3.5 Students' Attitude Towards Chemistry and its Effect on its Achievement

A Likert- 5 point questionnaire was used to collect data on student characters and their Chemistry achievement in the sample population and sampled secondary schools. Student attitude towards chemistry was determined.

Table 0-10 Students' Response on Attitude towards Chemistry

Statement	SA(%)	A(%)	N(%)	D(%)	DS(%)	Totals (%)
Our principal encourages us to like chemistry because it is useful in our future life	32	50	5	10	3	100
Even if our principal works hard for us to pass chemistry I do not like Chemistry at all	20	60	5	10	5	100
Practicals make chemistry difficult	17.5	52.5	0	0	30	100
Calculation bit of Chemistry makes it difficult	20	32.5	12.5	5	30	100
There are too many facts to be learnt in Chemistry	45	47.5	2.5	5	0	100
In my future Career I would like to use Chemistry learnt in school.	25	42.5	0	32.5	0	100
Understanding Chemistry will not lead to having a brighter future.	10	12.5	0	2.5	75	100

Most students said that their principals encourage them to like chemistry since it is useful to their future; the percentage amounted to 50%. It is important to note that the remaining students strongly agreed (32%) that Chemistry is useful to their future while 10% disagreed that Chemistry is not of any importance to their future life.

On whether the principals works hard for them to pass chemistry students do not like chemistry at all, there was a 60% agreement to that, the rest 20% strongly agreed, 10% disagreed, 5% were not sure and the remaining 5% strongly disagreed.

52.5% that is more than a half agreed that practical make Chemistry is a difficult subject. From earlier findings from the questionnaire, practical were done but not very often. This could be the cause of such an attitude towards Chemistry. Most students also

agreed that calculations make Chemistry difficult. However a slightly smaller, 30%, population of students strongly disagreed with this point. 47% of the students strongly agreed, 42.5% agreed, 2.5% were not sure and 2.5% disagreed that Chemistry had too many facts to learn.

Some students were aware of the importance of Chemistry in their careers while 32.5% of the students strongly disagreed that Chemistry is important in their careers. Most students, 75% agree that understanding Chemistry would lead to a brighter future. This is a positive indicator on how the students perceive the subject despite the fact there are a few who agree, 12.5% and those who strongly agree, 10%, that understanding the subject would not lead to a brighter future.

This research concurs with that of Ogembo (2012), who discovered that 80% of students in science subjects performance is specifically affected by attitude they have towards it. He additionally discovered that 25% of learners, peer connections apply their impact through the attitude, desires and comprehension of parts that they leave with the people. This study additionally is in concurrence with that of Wajir SMASSE (2010) standard discoveries, who discovered in an example of 500 respondents 45% concurred that there is a general inclination among learners that Mathematics and Sciences (Chemistry included) are troublesome subjects. This inclination was observed to be more noteworthy in girls than boys.

4.3.6 Teachers Response on Students Attitude towards Chemistry

The principal and teachers were requested to state the learner's attitude towards Chemistry as they perceive it. The findings were analyzed and presented in Table 4.9.

Table 0-11 Teachers Views on learners' Attitude towards Chemistry

Description	Frequency	Percentage
Very good	0	0
Good	0	0
Average	10	62.5%
Below average	6	37.5%
Total	16	100%

Source

Table 4.9 indicates that 62.5% of the teachers who were 10 in number out of the possible 16 mentioned that attitude was averagely, while 37.5%, responded that it is poor. This is worrying as attitude towards a subject will determine the performance in the subject. This study goes in line with that conducted by UWEZO (2014) where the findings of that study was 75% of students' attitude was averagely were 25% was very poor. This gives an implication that most students in Kenya have a negative attitude towards chemistry that result to poor performance of the subject in most schools in Kenya.

Table 0-12 Principals' Perception on Learners' Attitude towards Chemistry

Description	Frequency	Percentage
Very good	0	0
Good	1	25
Average	1	25%
Below average	2	50%
Total	4	100%

50% of the Head teachers responded that attitude was below average, 25%, thought it was average while the rest 25% responded that it was good.

4.3.7 Students' Career Aspirations

Students were asked to indicate their future career aspirations. The findings are represented in table 4.13

Table 0-13 Students Career Aspirations

Description	Frequency	Percentage
Medical doctor	60	37.5%
Nurse	5	3.13%
Journalist	40	25%
Teacher	10	6.25%
Pilot	5	3.13%
Engineer	2	1.25%
Surveyor	3	1.88%
House and building engineer	2	1.25%
Veterinary officer	3	1.88%
Clinical officer	5	3.13%
Lawyer	5	3.15%
Researcher	3	1.88%
Dentist	2	1.25%
Office secretary	15	9.38%
Total	160	100%

Out of the 15 careers students were interested in, only two careers; journalism and surveyor are not exclusively science oriented. Many students therefore would like to branch into careers, such as medical doctor, nurse, pilot, engineering, veterinary officer, researcher, architect, clinical officer, and teaching, that would require the knowledge of Chemistry but from an earlier finding represented in Table 4.8 on whether they think Chemistry will lead to a good future, 75% of the students strongly disagreed that knowledge of the subject would lead to a good future.

4.3.8 Teacher motivation and performance of Chemistry

Teachers were asked to indicate the factors that affected their motivation and how they affected the Students' performance in Chemistry. The findings are presented in the Table 4.16

Table 0-14 Effect of teacher motivation on the performance in Chemistry

Factors	Frequency	Percentage
Monetary benefits	0	0
Availability of instructional resources	4	25
Fringe benefits	0	0
None of the above	12	75
Totals	16	100

As represented in table 4.16, 75% of the teachers mentioned that monetary benefits, fringe benefits and availability of instructional resources did not affect their motivation.. However 25% responded that availability of instructional resources affect their motivation which in turn affects the performance in Chemistry.

4.3.9 Rating Student Performance in Chemistry

Teachers were asked to rate the performance of their students in Chemistry. The findings were summarized in the Table 4.17.

Table 0-15 Rating Student Performance

Factors	Frequency	Percentage
Good	4	25
Fair	12	75
Poor	0	0
Total	16	100

As indicated in table 4.15, it is clear that 75% rated performance in Chemistry as fair while 25% rated it as good. Most teachers therefore thought that the results could have been better than that if reforms can be made in the way the subject is handled. This study concurs with the discoveries of Rukangu (2000) that, boys have a tendency to perform better to girls in science. This discovery negates the discoveries by Miheso (2002), who ascertained that girls performed poorly as compared to boys in science. They both consent to the way that performance of science in many schools is reasonably performed contrasting with different subjects, for example, physics and mathematics. Encourage these discoveries are in concurrence with the discoveries of Carole La Campagne (2002). As indicated by Carole La Campagne in her paper, Panel One (Internet), sexual orientation contrasts in science subjects accomplishment in the course of recent years have been diminishing, and a more prominent level of ladies are taking science situated courses at college level.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section outlines a synopsis of the study findings, conclusions and recommendation for this study. The study was done to determine factors adding to poor performance in chemistry during K.C.S.E in public secondary schools in Kenya specifically in Habaswein Sub County, Wajir County. The variables that were explored were students characteristics which includes student attitude and career aspirations, gender difference in performance, teaching-learning resources and instructor techniques. Information for study was acquired by utilization of Questionnaires with both open-ended and close-ended inquiries. Three sorts of polls were given to cover the three distinct gatherings of respondents who are the principal, the Chemistry instructor and Form four students who take Chemistry. The questionnaires have two areas, A and B. sections. A looks to get the statistical data while the other section focused on examination of various factors. The questionnaires were coded, subsequently reactions were stamped and rates worked out for correlation. Illustrative and quantitative information examination methods were connected.

5.2 Summary of findings

From data examination in chapter four, the investigation separated a few variables which were observed to be adding to the poor performance of student in Chemistry in public secondary schools in Habaswein Sub County, Wajir County. The components of the analysis can be summarized as follows:

5.2.1 Teaching methods

Teachers prefer demonstration method compared to practicals despite the presence of equipped laboratories. The students therefore are not well versed with the practical dimension of Chemistry. Classes in which the teacher mainly used question/answer method performed significantly different from the others taught using other methods. This led to most of them saying that the practicals make Chemistry a difficult subject.

5.2.2 Students' Attitude

Most students did not respond positively to questions that investigated their attitude towards Chemistry. Teachers neither were not better as 62.5% of them responded that it was below average too. The students have a negative attitude towards Chemistry despite the fact that they are interested in careers that need the knowledge of Chemistry. Students' attitude towards the subject has affected the performance in the subject.

5.2.3 Availability of Teaching and Learning Resources

Schools have a library which is not well equipped. The available texts however are relevant and student to book ratio is adequate the laboratory is well equipped but teachers prefer the demonstration method. Lack of the hands on approach has led to students perceiving the subject as difficult due to the presence of practicals.

Therefore there is underutilization of the resources. This agrees with the findings of Miheso (2002), Rukangu (2000) and Nyambura (2004), who indicated a positive relationship between textbook availability and students' performance. The findings in this study reveal that students' performance in chemistry can be improved through increasing number of textbooks available to the students. Thus, the students should be

provided with a variety of textbooks and also the teachers should ensure they utilize them effectively to improve students' performance.

5.2.4 Gender of the Students and Performance

The research question was whether students' gender influences performance in chemistry. The findings in this study showed that in mixed schools, boys performed better than girls while in single sex schools, girls performed better than boys. On average, the male students performed better than female students, however, the gender differences were not significant. In single sex schools which were mainly boarding, all the students had equal learning opportunities and girls showed higher achievement level than boys although the differences were not statistically significant. This indicates that given equal learning opportunities, the gender differences in achievement would be minimal. Siringi (2010), observe that females have demonstrated that they are equally capable of learning and mastering chemistry concepts and knowledge as their male counterparts.

5.2.5 Motivation of the Teacher

Majority of the teachers responded that they were not motivated by money, fringe benefits and availability of instructional resources. 25% noted that availability of instructional resources was a motivating factor for them. When asked about the factors that affected performance of Chemistry in their schools, teachers, a majority responded that availability of instructional materials was key, followed by learners academic ability and student attitude towards the subject. None commented that teachers motivation affected performance. Therefore, from the study, teacher motivation does not affect the performance of the students in Chemistry.

5.2.6 Other Supplementary Findings

Absenteeism was a factor noted to influence performance negatively, thus, it needs to be investigated and the extent of its influence appropriately documented. Attitude was implied in some of the situations as having a negative influence on students' performance in chemistry.

5.3 Conclusion

From the summary above poor performance in Chemistry in Wajir County can be attributed to:

- i. The teaching methods used in most lessons were mainly teacher-centered; hence do not provide opportunities for students' participation to enhance learning. For example there is lack of exposure of students to practical before K.C.S.E hence inability to tackle practical work well by students due to preference of demonstration method by teachers over practical approach.
- ii. There is need for the teacher to use interactive teaching and learning approach to promote student-centeredness learning and thus increase student participation to improve students' performance.
- iii. Negative attitude of the students towards the subject especially towards the practical paper hence lack of interest in performing well in the subject especially in practicals.
- iv. Inadequate reference textbooks in the laboratory hence lack of adequate individual revision by the students.

- v. Lack of motivation of teacher also contributes, to poor performance in chemistry. There is need to motivate teachers in terms of payment of salaries and promotions.

5.4 Recommendations

- a) Policy makers should put in place policies that emphasize that:
 - i. Teachers be encouraged to form science or chemistry subject associations where they can share their experiences in teaching strategies and learning.
 - ii. Students be maintained in school throughout the term and ensure that bursaries are given to the needy students.
 - iii. Heuristic approaches to teaching should be integrated with expository approaches to enhance teaching and learning.
 - iv. Cooperative learning be emphasized among teacher- students and students- students to cover chemistry concepts that are complex for easy understanding hence improving chemistry subject performance.
- b) The school management should provide more instructional resources in form of a variety of Chemistry textbooks for the students in the library.
- c) Chemistry teachers should expose their students to more practical's individually, and also adopt a practical approach while teaching chemistry.
- d) Teachers of Chemistry should organize motivation talks that would help alleviate the negative attitude towards Chemistry.

e) There is need to develop and maintain a good guidance and counseling programme for all secondary school students in Kenya where they are advised on importance of chemistry in different careers.

f) Absenteeism in school should be addressed since it was noted to influence performance.

5.5 Suggestions for Further Research

The researcher recommends the following areas for further study:

- i. An investigation as to why teachers prefer demonstration over individual practicals in schools with equipped laboratories.
- ii. Impact of teachers' intrinsic motivation on performance of Chemistry in Public Secondary Schools.

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APPENDIX I

QUESTIONNAIRE FOR STUDENTS

Introduction

The statements below are intended to gather information on factors that might be contributing to performance of students in Chemistry in your school. Suggest to the best of your ability your opinion against each of the statements. Thanks for accepting to take part in this programme.

Section A: Background characteristics.

1. What is the name of your school? _____
2. What is the category of your school? Girls Only [] Boys Only [] Mixed []
3. Which type of primary school did you attend? [Tick only one]
Public [] Private []
4. What is your age? _____
5. Are you a boy or a girl? (Tick one) Boy [] Girl []
6. What is the average number of students in your present class [stream]? [Choose one]
0 – 10 [] 11 – 20 [] 21- 30 [] 31- 39 [] 40-44 [] Above 45 []
7. What is your residential status as a student?
Boarder [] Day scholar []
8. What was your grade in Science in KCPE?
A, [] B, [] C, [] D, []

SECTION II

For MOST statements in this section, the abbreviations [SA] Strongly Agree, [A] Agree, [NS] Not sure, [D] Disagree, and [SD] Strongly Disagree appear. Please respond to all the statements by ticking the one you consider most appropriate.

Statement	SA	A	NS	D	SD
Our principal encourages us to like chemistry because it is useful in our future life.					
Even if our principal works hard for us to pass chemistry I do not like Chemistry at all.					
The principal perceived that negative attitude towards chemistry contribute to poor performance of chemistry.					
The principal always punish us when we failure chemistry practical papers hence we hate chemistry.					
Principals perceive that learners in their schools see chemistry as a difficult subject.					
Principals perceive that students' backgrounds contribute to poor performance in chemistry.					
The principals perceived that peer influence contributes to performance of chemistry.					
The principal view that poor teaching methods of teachers contributes to poor performance of chemistry.					
The principals perceived that if chemistry teachers are friendly and supportive students will perform high in the subject.					
The principal feels that if the chemistry teacher usually promptly marks and returns the practical work done before the next one will improve the performance of chemistry.					
The principals also view that if Chemistry teacher usually gives assignments and marks them promptly will improve chemistry performance.					
The school principals always follow the chemistry syllabus coverage.					
The school principals perceive that if they provide adequate teaching-learning facilities the students will improve their performance.					

22. We have a Chemistry club in the school. Yes [] No []

23. I am a member of the Chemistry club. Yes [] No []

24. Where do you perform your Chemistry practical?

Classroom [] Science Room Laboratory []

25. If your answer is yes, are the computers being used to teach your class Chemistry?

Yes [] No []

STATEMENT	SA	A	NS	D	SD
The school principal ensures there is Our school an up to date separate Chemistry laboratory.					
The school principal has employed a supportive laboratory technician.					
The school principal perceives that the apparatus and chemicals must be adequate enough for our use so as to improve chemistry performance.					
The school has adequate Chemistry text books.					
Resource persons especially Chemistry specialists are periodically invited to come and speak to us by the school principal.					
The school has adequate and supportive Chemistry teaching staff besides our Chemistry teacher.					
The chemistry teacher always uses charts, models and other teaching aids during Chemistry lesson					

26. To help improve the performance of Chemistry, what do you consider the

following should do?

- i. Your fellow student's _____
- ii. The Chemistry teacher _____
- iii. The School administration _____
- iv. Yourself _____

APPENDIX II

QUESTIONNAIRE FOR PRINCIPALS

Introduction

The statements below are intended to gather information on factors that might be contributing to performance of students in Chemistry in your school. Suggest to the best of your ability your opinion against each of the statements. Thanks for accepting to take part in this programme.

Section A: Background characteristics.

1. What is the name of your school?
2. What is the category of your school? Girls Only [] Boys Only [] Mixed []
3. How many years have been the school principals this school?
4. What is the level of your academic achievement? Tick your level please.
PhD Masters Bachelor's degree Diploma
5. What is your gender? (tick one)
Male Female
6. What is the average number of students in your present school? [Choose one]
0 – 10 [] 11 – 20 [] 21- 30 [] 31- 39 [] 40-44 [] Above 45 []
7. Do you inspect teachers schemes of work and lesson plans regularly?
Yes No

SECTION II

For **MOST** statements in this section, the abbreviations [**SA**] **Strongly Agree**, [**A**] **Agree**, [**NS**] **Not sure**, [**D**] **Disagree** and [**SD**] **Strongly Disagree** appear. Please respond to all the statements by ticking the one you consider most appropriate.

Statement	SA	A	NS	D	SD
I do teach sometimes chemistry beside the administration duties.					
I motivate my teachers and students to like chemistry.					
I encourage my teachers to participate in chemistry workshops					
I organize provide chemistry resources regardless of their scarcity					
My school lacks practical facilities due to lack of enough funds.					
I like qualification of my Chemistry teachers.					
I encourage may students to enjoy doing Science subjects including Chemistry					
I encourage my teachers to apply concept mapping teaching method in chemistry.					
My friendly to Chemistry teachers and supportive					
16. I involve my chemistry teachers in decision making pertaining the improvement of chemistry.					
17. I encourage my chemistry teachers to usually give students assignments and mark them promptly.					
My Chemistry teachers usually insist that students do correction and remark them as the school curriculum rule.					
My school encourages teachers to gives students group tasks which he/she ensures is done.					
I encourage my students to like doing chemistry for their bright future					

21. Do your school have a Chemistry club? Yes [] No []

22. Where do your students perform their Chemistry practical?

Classroom [] Science Room Laboratory []

23. Are there computers in your school? Yes [] No []

25. If your answer is yes, are the computers being used to teach Chemistry?

Yes [] No []

Strongly [SA], Agree [A], Strongly Disagree [SD], Disagree [D]

STATEMENT	SA	A	NS	D	SD
My school has an up to date separate Chemistry laboratory					
My school has a supportive laboratory technician					
The apparatus and chemicals are adequate enough for students use.					
My school has adequate Chemistry text books.					
I invite resource persons especially Chemistry specialists periodically to come and speak to my students.					
My school has adequate and supportive Chemistry teaching staff besides Chemistry teachers.					
My Chemistry teachers always uses charts, models and other teaching aids during Chemistry lesson					

26. Are you satisfied with students' performance in Chemistry?

Very Satisfied [] Fairly Satisfied [] Satisfied [] Not Satisfied []

APPENDIX III:

INTERVIEW SCHEDULE FOR THE CHEMISTRY TEACHER

This interview aims at obtaining information on factors that contribute to students' performance in chemistry in your school. The information you provide will be highly confidential and will only be used for the purposes of this study. Your cooperation is highly appreciated.

1. In your opinion, how do you rate the performance of sciences in your school?
[Probe: Chemistry]
2. What is the nature of students in your school i.e. based on entry behaviour, societal background, and peer influence etc.?
3. What is your comment about the conditions under which students learn in your school? [Probe: your relationship with both the students and teachers]
4. What is your school doing to ensure learning takes place under favourable conditions?
5. Have you attended SMASSE training? [Probe: Has the training affected your approach to the teaching and learning process? Do you feel that the training is relevant?
6. What are the challenges of teaching chemistry in the rural setting such as Habaswein Sub County?
7. SMASSE advocates for improvisation. How easy is it to improvise chemistry materials/glassware?
8. Information technology is revolutionizing education systems the world over. Are there computers in your schools? [Probe; are the computers being used in the teaching and learning of chemistry? In your opinion, what do you think should be done to improve students' performance in chemistry?

APPENDIX IV: RESEARCH PERMIT

**THIS IS TO CERTIFY THAT:
MR. ABDULLAHI MUHUMED AHMED
of KENYATTA UNIVERSITY , 22-70201
HABASWEN, has been permitted to
conduct research in Wajir County**

**Permit No : NACOSTI/P/18/45177/21237
Date Of Issue : 13th March,2018
Fee Recieved :Ksh 1000**

**on the topic: PRINCIPALS PERCEPTION
OF FACTORS CONTRIBUTION TO
STUDENTS POOR PERFORMANCE IN
CHEMISTRY IN PUBLIC SECONDARY
SCHOOLS IN HABASWEIN SUBCOUNTY,
WAJIR COUNTY, KENYA.**



**for the period ending:
13th March,2019**

**Applicant's
Signature**

**Director General
National Commission for Science,
Technology & Innovation**

APPENDIX V: NACOSTI LETTER



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: 020 400 7000,
0713 788787, 0735404245
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kubete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/45177/21237**

Date: **13th March, 2018**

Abdullahi Muhumed Ahmed
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Principals perception of factors contribution to students poor performance in chemistry in public secondary schools in Habaswein Sub county, Wajir County, Kenya*" I am pleased to inform you that you have been authorized to undertake research in **Wajir County** for the period ending **13th March, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Wajir County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Wajir County.

The County Director of Education
Wajir County.

APPENDIX VI:

BUDGET

a) ITEMS (STATIONARY)	Quantity	Cost in ksh
Pens	6 dozens@ 10	60/=
Pencils	5@10	50/=
Rubber	50@2	100/=
Flash disk	2@1500	3000/=
Paper	8reams@500	4000
Sub total		<u>7,210/=</u>
b) TRAVELING EXPENSES		10,000
TRANSPORT		5,000/=
Administering questionnaires		8,000/=
Lunch @400per day for 60 days		24,000/=
Sub total		<u>47,000/=.</u>
c) SECRETARIAL SERVICES		
Research proposal research, typing, printing and binding		8,000
Researching, Typing, printing and binding the final report		17,000
Photocopying questionnaires		2,000/=
Sub-total		<u>27,000/=</u>
d) COMMUNICATION SERVICES		
Telephone services		7,000/=
Sub-total		<u>7,000/=</u>
e) Miscellaneous expenses		10,000
Sub-total		<u>10,000/=</u>
GRAND TOTAL		<u>98, 210/=</u>

APPENDIX VII

**LETTER OF RESEARCH APPROVAL FROM GRADUATE
SCHOOL**