

**RESOURCES, TEACHERS QUALITY, AND ACADEMIC
PERFORMANCE IN CHEMISTRY, AWENDO DIVISION
MIGORI DISTRICT,
KENYA.**

**A RESEARCH PROJECT SUBMITTED TO THE INSTITUTE
OF OPEN AND DISTANCE LEARNING IN PARTIAL
FULFILLMENT FOR THE REQUIREMENTS FOR
THE AWARD OF A BACHELORS DEGREE
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KAMPALA INTERNATIONAL
UNIVERSITY.**

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DECLARATION

This is my original work and has not been submitted for any degree or PGDE in any university.

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APPROVAL

This project has been submitted for examination by my approval as a university supervisor.

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DEDICATION

My dedication goes to all those who assisted me in writing this research proposal especially my wife Rose Bungu who gave me moral support throughout, my friends Ochindo , Ogolla and others. May God bless you abundantly.

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CHAPTER ONE

1.1 Introduction

Although various researchers have carried out research on the causes of poor performance in science subjects, chemistry has remained one of the poorly performed subjects in the National Examinations.

According to Kenya Times (12th Aug, 1993), observes that “a teacher with good qualifications, appropriate training and experience is the greatest asset a school can have” (pp14) a teacher who knows little will be severely handicapped when faced with teaching in class. Since chemistry is seen as a hard nut to crack by a majority of students, a teacher should demonstrate great understanding and sympathy in the actual classroom teaching process. This research will therefore help find out the impact of teacher quality and teaching resources and performance of chemistry in secondary education.

1.2 Background of the study

Chemistry is a science that deals with the study of matter and their mutual relationship. The subject requires that learners be made aware of the numbers, related theories, concepts and rules. The teacher quality should be geared towards the students having a logical and systematic criterion of dealing with the said numbers. Since chemistry is fundamental to many professional careers schools should improve on the learning process of the subject in-order to achieve the set objectives and goals of education.

A survey carried by the third international mathematics and science study (TIMSS, 2003), revealed that Iranian 4th and 8th graders understanding of mathematics and science on average ranked very poorly among participating countries and hence Iranian students performed poorly.

A similar survey carried by the same organization in 1997 surprisingly revealed a large percentage of South African pupils performed worst in mathematics and science while Singapore, Hong Kong, Korea and Japan were top performers. *

Kenya Certificate Secondary Examinations results released in 2005 in Kenya showed that performance in chemistry is continuously declining (Daily Nation, March 2005).

1.3 Statement of the problem

The main purpose of this study was to find out the impact of teachers' quality and teaching resources on students' performance in chemistry in KCSE level.

Although various researchers have carried out research in this area, chemistry has remained one of the poorly performed subjects in the National Examinations.

1.4 General objectives

The purpose of the study is to examine the implications of the teaching resources and teacher's quality on the academic performance in chemistry at secondary level.

1.5 Specific objectives

The following objectives were studied:

- (i) To determine the effect of teaching resources used in chemistry on its performance at Kenya Certificate Of Secondary Education level.
- (ii) To determine the effect of the teacher's quality on the performance of chemistry at Kenya certificate of secondary education level.

1.7 Significance of the study

Technological advancement of any country greatly depends on the quality of its Citizens and maximum utilization of the available resources. Chemistry is the basis of many technologies. Due to the ever-growing population, there is need to advance so that the scarce resources can be effectively and efficiently used for optimum results. In this study, the researcher hoped to establish the impact of the teacher's quality and teaching resources on performance of Chemistry. The researcher hopes that, the findings will in turn assist the curriculum developers, administrators, teachers, students and society at large in both planning and implementation of the Chemistry curriculum in such a way that will optimally utilize the available resources for better results.

1.8 Scope of the study

The study focused on form three and four students from the selected schools of Awendo division, Migori District.

1.90 Assumptions of the study

The following assumptions were made for the purpose of this study;

- i)The sample is representative of all schools in, Migori District
- ii)Time allocated for Chemistry on the school timetable is uniform for all schools
- iii)All schools follow guidelines as governed by the prescribed Kenya Institute of Education (K.I.E) Syllabus and Kenya National Examination Council (KNEC) regulations
- iv) The population is homogenous one, and that the small sample is sufficient.
- v)The test instruments used are valid and reliable for this study.

1.91 Definition of terms

The following terms are defined as used in the study.

(i)Teaching Resources

These are teaching aids, which include charts, graphs, maps, models and other community resources that can be available to illustrate and demonstrate what is being taught. Others include Chemistry textbooks and wall charts prepared by Kenya Institute of Education (KIE).

(i)Teacher quality

Teacher's quality refers to the qualification and experience of the teacher in the teaching

Profession. It also includes the ability of a teacher to being examiner with the Kenya national Examination Council, or even being a Head of Department (HOD). Included is whether or not, a teacher has been involved in setting examinations either locally or nationally. Also, whether a teacher has been involved in restructuring the Chemistry curriculum.

(iii) S.M.A.S.S.E.

Strengthening of Mathematics and Science in Secondary Education;- This is an in-service course for science teachers conducted by the Ministry of Education to sensitize teachers on new teaching methodology.

1.92 Limitations

There was insincerity and inaccurate responses especially where opinion questions were involved.

Non-response and incomplete information significantly reduced the sample size

1.93 Research questions

The following research questions acted as a guide to the study;

(i) To what extent do the teaching resources affect the performance of Chemistry at K.C.S.E. level?

(ii) To what extent does the teacher's quality affect the performance of Chemistry at K.C.S.E. level?

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Chemistry is a requirement for admission to very many tertiary institutions hence a fundamental to many professional career.

According to the daily nation (march 2005), students are avoiding Chemistry, therefore it calls for attention to carry out a study on the same because of the importance of the subject that leads to its professions such as engineering, architecture, medicine and surgery.

2.2 Performance in chemistry

A survey carried by Third International Mathematics and Science Study (TIMSS, 2003) revealed that contrary to the common belief that the K-12 education in Iran does a better job of teaching Maths and Science than that of the developed countries (the United States being a frequently used basis of comparison among Iranian-Americans). It demonstrated a rather disappointing and troubling state of affairs. Briefly, Iranian 4th and 8th graders understanding of Maths and science ranked very poorly among participating countries in 2003.

A similar survey carried in 1997, showed a surprisingly 76% of South African pupils who felt that good luck was major importance for doing well in Chemistry. The preliminary results of Grade 7 and 8 students, which were published, revealed that South African pupils performed worst in both mathematics and science, while Singapore, Hong Kong, Korea and Japan were top performers. From Singapore, a top achieving country; 92% agreed that hard work was needed to do well in Chemistry.

According to the daily Nation (August 12th, 1995) stresses that Chemistry remains one of the most abnormally performed subject in Kenya schools. Every year, Chemistry takes the lion share of Grade E, which is the lowest grade in Kenya Certificate of Education (KCSE).

In the analysis done by the District Award Committee in the results released of 2004 in Migori District, over 80% of the students who sat for examination obtained a C- (minus) and below in Chemistry.

This result is indeed alarming, reason why the researcher has undertaken to carry out this research in Migori District.

2.3 The teaching resources

In teaching and learning, sight is the most powerful sense of human communication, learners tend to understand and retain more of what they see than what is presented through other senses. Research has found out that people learn 11% through hearing and 83% through sight, 20% of what is heard is retained while 80% of what is seen and heard is retained.

“The demonstrative use of models will be more to the professional teacher of Chemistry. The corrective value of models is associated with Chemistry exhibition. A good Chemistry exhibition arouses interest...” (Curdy, Rollet, 1981, pp. 14)

The instructional materials are useful in teaching of Chemistry because they bridge the gap between concrete and abstract. They actually influence performance of the subject in the examinations.

Resources are very important (Ayot, Patel. 1987). They point out that resources enhance practical experience of skills and concepts. They can come in handy in teaching Chemistry, which require interest especially on the part of the learner.

2.4 Teacher quality

The qualification, attitude and characteristic of a chemistry teacher can influence students' performance a great deal. Depending on how he/she handles the subject and students they may either like or hate the subject. "Students usually observe their teacher when he/she comes to class and they will assess him/her from all angles. His/her appearance, clothing, personality and the way he/she uses language. After being taught for sometime, they will have known the teacher well enough to judge him" (Ayot et al 1987 pp 198). The teacher of Chemistry should design tasks that students should do in order to discover Chemistry facts. This can be done in small groups that accord a learner an opportunity to contribute. Group findings can be presented to the class and form the basis of discussion. These require great care and planning and time to design tasks for group activities. (Otieno, Onditi, 1996). Observe that, this is a technique many pupils appreciate and understand but which teachers find difficult to implement. Group work takes the act of doing from the teacher and places it where it belongs, on the learner. Textbooks should be mainly used as reference materials rather than courses of study." (pp 16).

On marking assignments and exercises given in class, (Wilkins, 1975) observes that, for effective evaluation, the teacher has to mark the work, being attentive to the procedures followed by an individual student in problem solving. Marking assists the teacher to:

- Identify the student's mistakes and help to adopt the correct procedures of problem solving.
- Show the learner correct procedure and why the learner was unable to obtain expected solution.

2.5 Usefulness of chemistry

Industrialization depends on having a workforce extremely skilled in many aspects of Chemistry. Ashworth, 1981 comments that "Mathematics is necessary in the study of most science subject." (pp 23) perhaps that's why students are avoiding chemistry. Only 26.98% of the total number of students who sat for KCSE in the year 2004 did chemistry. Chemistry is useful as it is a requirement for most professional courses and also applicable in the daily life.

"80% of secondary school leavers who fail in Chemistry are technically barred from entering many professions." (Muya, 1996 pp 13).

2.6 Teaching methodology

From an article carried in Daily Nation (Kanyandon'g, 2002) says, the cane is used against pupils who do not do well in Chemistry. This in turn perpetuates hatred and students tend to loose interest. A teacher is supposed to be warm and understanding, above all gives encouragement to his/her students.

Chemistry teachers sometimes use poor methods of teaching such as lecturing; this method does not give a learner an opportunity to participate. Instead methods like group discussion and assignments should be adopted. Learners should be given a chance to go to the board to present their findings in class. This in turn can be another basis of a discussion for the whole class.

2.7 In - service courses

College degree alone may not be a pre-requisite to effective teaching. Teachers need to upgrade and come into realities with emerging issues so as to guide learners well.

The fact that some other teachers are not trained is indeed an added disadvantage to effective teaching (SMASSE, 2002).

The most popular teaching methods in schools are teacher- centered and includes lecturing and note taking. Attending seminars such as SMASSE (Strengthening Mathematics and Science in Secondary Education), may make the teachers to change his/her approaches.

It is also alarming to note that about 70% of those admitted to colleges to train as teachers in 2002 failed chemistry at form four, with less than 5% having scored B+ (plus) and above (SMASSE Survey: Teachers weekly June 2002)

The fact is that these are the teachers that are expected to give a foundation to students before joining secondary education. It is therefore very likely that incompetence or some negative attitude may be noticed in them and these gives learners an impression that mathematics is "a tough" subject

2.8 The learning environment

Different environments affect learners in varied ways. It has been observed that they greatly affect and influence their attitude and performance in Chemistry.

Home environment may enhance positive esteem which may improve that academic performance especially the parents' view and not their status (cooper, 1987)

Among children with good education capacity as estimated by intelligence tests those from better home conditions were more successful in school (Punnet, 1989). It is possible for parents who are knowledgeable and at the same times willing to boost the attitudes of their children, parental influence which is more in the home environment can greatly affect the attitude of learners towards any subject.



"We believe therefore, that it is more important for schools to make active efforts to enlist the help of parents by explaining the approaches to chemistry which they are using and the purpose of chemistry activities which parents themselves may not have undertaken while in school (Cockraft, 1981. Pp62)

In view of the above literature, it was therefore important to establish the impact of the said factors since Chemistry is very essential in day to day activities. It is therefore important to note that the researcher hoped to establish findings that will enable both the curriculum developers, implementers and parents to adopt guidelines that will make mathematics objectives measurable and achievable.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The purpose of this study was to establish the extents the teachers' quality and use of teaching resources can affect performance in Chemistry. This chapter deals with the methodology and procedures that was followed in carrying out this study.

3.2 Research design

The research covered Migori District and its environments.

Migori District is one of the twelve districts in Nyanza Province. It shares a common boarder with Rongo District to the east, Kuria District to the south, Suba District to the southwest, Rachuonyo District to the North and Kisii to the Southwest.

3.3 Population

The research study targeted a total of seven hundred students and chemistry teachers. From the students' population, only form three and form fours was considered for the basis of this study.

3.4 Sample and sampling technique

A sample of 150 was considered for the purpose of the study. Simple random sampling was the major technique though strategic sampling technique was used where schools are mixed (boys and girls), followed by simple random sampling. This ensured gender balance in the mixed schools. Simple random sampling was chosen to be the major technique because it gave the chosen population an equal opportunity to be included in the sample. The sampled populations were required to fill in a questionnaire.

3.5 Instrumentation

The main instrument used by the researcher was the questionnaire, one for the chemistry teachers and the other for students. Those questionnaires are included in the appendix.

1. The students questionnaire was intended to provide information about their interests, experiences, attitude, and their source of motivation,
2. The teachers' questionnaire was intended to provide information about their qualification, teaching methodology and resources, working experiences and personal opinion.

3.6 Procedure on how the study was carried out

To ensure that the research instrument was valid and consistent, the researcher administered nine questionnaires to students and three questionnaires to teachers of the same school. The questionnaires were found to be valid and consistent.

3.7 Data collection

The researcher took questionnaires to the selected secondary schools in the district and administered them. After completion of the questionnaires, they were collected and analyzed statistically. For direct observations, the researcher requested for permission to attend randomly selected lessons in some schools to observe teaching methodology and use of resource materials.

3.8 Data analysis

This has been discussed very briefly in the abstract. Data collected using questionnaires was registered, coded and translated in such a way that it could assist in answering the research questions of the study. Descriptive and inferential statistics was majorly used in the analysis of data.

3.9 Time frame

<u>Time frame</u>	<u>Activity</u>
Feb - 2008	proposal writing
Mar - 2008	preparation of instruments
May- 2008	data collection and analysis
July - 2008	report writing
Aug - 2008	submission of final report

CHAPTER FOUR

PRESENTATION OF FINDINGS.

From the data collected, the researcher was able to come up with the following results.

Table 1. Academic/Professional qualification of teachers:

Academic/Professional Qualification	NO.	%
KCSE / KACE	-	-
DIPLOMA	2	20
BSC / BA	2	20
BED	6	60
TOTALS	10	100

From table 1, it suggests that the majority of the teachers teaching chemistry in Migori District are trained.(i.e 70%) however, not all the teachers trained are acquainted with the teaching of the current 8 – 4 – 4 chemistry syllabus. From analysis, it is realized that only 40% of the teachers are trained to teach the current chemistry syllabus of the 8 – 4 – 4 system of education. This is shown in table two.

Table 2: Teachers trained to teach the current 8 – 4 – 4 chemistry syllabus.

Training	NO.	%
Trained to teach the current 8 – 4 – 4 chemistry syllabus	4	40
Not trained to teach 8 – 4 -4 syllabus	6	60
TOTAL	10	100

Table 3: Teaching methodology

Method	Hardly ever		Neutral		Occasionally		Regularly		Much regularly	
	NO	%	NO	%	NO	%	No.	%	No.	%
Lecture Method	NO	-	-	-	2	20	3	30	5	50
Inquiry/delivery method	8	80%	1	10%	10	10%	-	-	-	-
Group discussion	5	50%	-	-	4	40%	1	10%	-	-
Questions/Answers Method and Reinforcement	-	-	-	-	-	-	1	10%	9	90%
Set Induction	7	70%	3	30%	-	-	-	-	-	-
Verbal exposition	6	50%	4	40%	-	-	-	-	-	-
Using examples & Illustrations	-	-	-	-	-	-	-	-	10	100%

From table 3, it indicates that the methods used are teacher centered as opposed to student centered.

Teaching methodology in which a student discovers are given little preferences simply because they may take time and are quite involving.

As a result teachers use methods that are easier but not appropriate in teaching a particular topic. It's evident that most teachers teach using examples and illustrations.

Table 4: Teaching methodology and use of teaching Resources.

Key: S/A – strongly agree, D – Disagree, N- Neutral, A – Agree, & D – strongly disagree

Statement	S/D		D		N		A		S/A	
	No	%	No	%	No	%	No	%	No	%
Teacher encourages discussion in small groups during Chemistry lesson	18	15	60	50	20	16 $\frac{2}{3}$	18	15	4	3 $\frac{1}{2}$
Teachers allows you to solve problems on the board. During chemistry lesson	-	-	18	15	30	25	48	40	24	2
Teachers encourages you to go for consultation	20	16 $\frac{2}{3}$	42	35	18	15	18	15	15	12
It is easy to understand during consultation than lesson time	-	-	-	-	15	12	21	17 $\frac{1}{2}$	84	70
Teachers use models, charts or graphs when teaching	60	50	30	25	12	10	18	15	-	-
Teachers guidance is essential for easy understanding of chemistry	-	-	-	-	-	-	48	40	72	60
I have group activities	20	16 $\frac{2}{3}$	40	33 $\frac{1}{3}$	18	15	42	35	-	-

From table 4, it seems to suggest that students strongly feel that they understand concepts easier during consultation time. 100% of the students felt that the teacher's guidance is very essential. On a close examination, 80% of the students feel that the teaching resources are not used during the chemistry lesson. Group activities in which a learner has total control has not been given priority. It is therefore important to note that for effective consultation, the quality of the teacher is important. It's also alarming to note that 80% of the teachers do not use teaching resources.

Table 5: Guidelines in teaching chemistry.

Key: S/D – Strongly Disagree, D – Disagree, N – Neutral, A – Agree, SA – Strongly Agree

Aspects	S/D		D		N		A		S/A	
	No.	%	No.	%	No.	%	No.	%	No.	%
Teaching method	—	—	3	30	—	—	6	70	1	10
Depth of coverage	—	—	—	—	—	—	8	80	2	20
Scope of coverage	—	—	—	—	2	20	5	50	3	30
Area of emphasis	—	—	4	40	2	20	2	20	2	20
Recommended textbooks	—	—	—	—	—	—	—	—	10	100

From table 5, it suggests that in most schools of Migori District, emphasis has been laid on recommended textbooks. This means that, teachers don't get a chance to get varied approaches in the teaching of the subject. It also indicates that most schools emphasis on the depth of coverage but have done little in the area of emphasis, this means that students don't get to know and prepare for areas which are mostly tested.

Table 6 below shows responses as regards the use of teaching and personal opinion.

Table 6: Teaching Resources and Personal Opinion

Key : S/D – Strongly disagree, D – Disagree, N – Neutral, A – agree, S/A – Strongly Agree

Statement	S/A		A		N		D		S/D	
	No	%	No	%	No	%	No	%	No	%
The school has enough textbooks	—	—	—	—	—	—	8	80	2	20
For teaching chemistry	—	—	—	—	—	—	9	90	1	10
The school has enough models	—	—	—	—	—	—	—	—	—	—
And charts for teaching chemistry	—	—	—	—	—	—	—	—	—	—
Students should be assessed	—	—	—	—	—	—	—	—	—	—
At the end of every topic	3	70	8	80	—	—	—	—	—	—
There are some chemistry topics	—	—	—	—	—	—	—	—	—	—
in the syllabus that are	—	—	—	—	—	—	—	—	—	—
difficult to understand.	2	20	7	70	1	10	—	—	—	—
The headteacher encourages	—	—	—	—	—	—	—	—	—	—
and provides for the use of	—	—	—	—	—	—	—	—	—	—
teaching resources	—	—	6	60	2	20	2	20	—	—
There is team teaching among	—	—	—	—	—	—	—	—	—	—
the Chemistry teachers	—	—	1	10	4	40	—	—	5	50

From table 6, it suggests that textbooks for teaching chemistry are not adequate. 100% of the teachers felt that it's a reason why they do not give enough homework. All teachers seemed to concur with the fact that there are no models and charts for teaching. They felt that it makes their teaching very abstract and that it could be much easier if these resources were availed. Although most teachers agreed that it is important to give assessment after every topic, in reality this was not confirmed to take place. Otherwise they felt it could be another burden if they did so. Although 60% of the teachers agreed that their head teacher encouraged the use of teaching resources, little was done to avail them, otherwise they stressed on improvisation. There is a controversy in team teaching. 50% felt it was important though they stressed that with the workload, it was almost impossible. Most of them could wish it was done but because of the situation they found it better for each teacher to handle his or her own class.

Table 7 below shows the average number of students per chemistry textbook.

Table 7: Average number of students per chemistry textbook.

Average number of copy	No	%
.2	1	25
.3	2	50
None	1	25
Totals	4	100

From table 7, it suggests that there is a serious lack of chemistry textbooks in most of the schools in the district. There is a case where students are not allocated completely. It is also evident from the responses that most of the classes are above forty surprising the recommended ratio.

Table 8; Mean Score for chemistry for the past 5 years at KCSE level of 4 studied schools

School	Mean Score			
YEAR	A	B	C	D
2002	7.77	3.79	4.98	3.15
2003	7.16	2.97	5.090	2.94
2004	6.01	3.52	5.00	3.18
2005	6.40	3.75	5.68	3.02
2006	6.77	3.78	5.44	2.98
2007	5.60	2.65	5.68	2.35

From table 8, it indicates that there has been poor performance in chemistry in the Migori District schools. It's even worse to note that performance is declining year after year. A part from school C whose performance seems to be constant, other schools shows a great disparity.

Table 9 below shows the type of schools and the number of students who gave responses to the questionnaires. It also shows the gender consisted in the sample group

Table 9. Type of school and number of students and teachers used.

		NUMBER OF STUDENTS		NUMBER OF TEACHERS		
CODE	TYPE OF SCHOOL.	BOYS	GIRLS	MALE	FEMALE	TOTALS
A.	BOYS BOARDING	30	-	2	1	33
B.	GIRLS BOARDING	-	30	1	2	33
C.	MIXED DAY	15	15	1	1	32
D.	MIXED DAY & BOARDING	15	15	2	-	32
	TOTALS	60	60	6	4	130

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS.

5.1 Summary,

The following objectives were studied;

- (i) To examine the effect of teaching resources used in chemistry on its performance at KCSE level
- (ii) To examine the effect of the teacher quality on the performance of chemistry at KCSE level

From the results discussed in chapter four, it indicates that very few schools use teaching resources in their chemistry lessons. And indeed some of these schools have recorded an improved performance. Most teachers are trained but are not very conversant with the requirements of the new syllabus, and these seem to affect the result. In schools where in-service courses have been given priority, an improved performance has been recorded.

5.2 Conclusion

In this study, the finding is that there is a strong relationship between the quality of teachers and use of teaching resources and the general performance in chemistry. Therefore, these factors should be given priority if performance has to be improved in the Migori District Schools, it thus indicates that school administrators should pump resources to ensure that the researched factors are addressed.

5.3 Recommendations.

1. Curriculum developers should reduce the work volume so as to avoid cases whereby teachers rush through the syllabus.
2. All teachers teaching chemistry should attend year to year in-service courses so as to keep abreast with emerging challenges in the teaching of chemistry.
3. School administrators should ensure that necessary resources for smooth teaching of chemistry are put in place.
4. Teachers should ensure that, their methodologies are interesting to the learner so as to make lessons enjoyable rather than the normal boring sessions as witnessed in this study.

5.4 Recommendation for future research.

1. Apart from teaching resources and teacher quality, other factors that need to be researched so as to come up with better results include
 - (i) Student – teacher ratio.
 - (ii) Socio – economic backgrounds
 - (iii) Student environment
 - (iv) Student's attitude
2. Face to face interviews should be intensified and actual classroom teaching should be encouraged to enable the research to get relevant data.
3. The research should be conducted for a longer period, at least two years and if possible have a control experiment.

APPENDICES

APPENDIX A

Students' questionnaire

You are kindly requested to attempt out the questions in this questionnaire. You are not required to write your name and your identity will be kept anonymous. Please attempt all questions

Tick where applicable.

i Gender and form

Male ()

Female ()

1. Which form are you?

Form Three ()

Form four ()

ii. Teaching methodology and use of teaching resources.

Below is a list of statements relating to teaching methodology and use of resources. Use the suggested scale to rate them according to your opinion.

Circle the appropriate score

1. Strongly disagree 2. disagree 3. Neutral 4. Agree 5. Strongly agree.

<u>STATEMENT</u>	<u>SCORE</u>
a)Teacher encourages discussion in small groups during chemistry lesson	1 2 3 4 5
b)Teacher allows you to solve problems on the board during chemistry, lesson	1 2 3 4 5
c) Teacher encourages you to go for consultation	1 2 3 4 5
d) It is easy to understand during consultation than lesson time	1 2 3 4 5
e) Teacher uses models, charts, or graphs when teaching.	1 2 3 4 5
f) Teachers guidance is essential For easy understanding of chemistry	1 2 3 4 5
g) You have group activities	1 2 3 4 5
h) Chemistry textbooks are adequate in school library	1 2 3 4 5

iii. Attitude and motivation.

Below is a list of statements relating to attitude and motivation, use the suggested scale to rate them according to your opinion, circle the appropriate score.

1.Strongly disagree 2. Disagree 3 Neutral 4 Agree 5. Strongly agree

<u>STATEMENT</u>	<u>SCORE</u>
a) Some topics are difficult to understand in the chemistry syllabus	1 2 3 4 5
b) I like chemistry assessment	1 2 3 4 5
c) I like chemistry because my parents encouraged me to do it.	1 2 3 4 5
d) I do chemistry because I would like to pursue a course in chemistry after school	1 2 3 4 5
e) I do chemistry because I t is compulsory subject	1 2 3 4 5
f) I like chemistry than other subjects	1 2 3 4 5
g) Explanations given by my teacher on some chemistry concepts are really motivating	1 2 3 4 5
h)I only like some topics in chemistry that are simple and interesting	1 2 3 4 5
i)Chemistry is a hard subject to understand	1 2 3 4 5
j)Chemistry assessments should be given more frequently	1 2 3 4 5

APPENDIX B

Teacher's questionnaire

The following is a questionnaire that intends to establish the learning conditions and learning of chemistry in your school. The identity of the respondent to the questionnaire is assured anonymity.

Please attempt all questions

Tick where applicable

I.1. Gender

Male ()

Female ()

1. What is your academic / professional qualification?

K.C.S.E / KACE () DIPLOMA () BSC / BA ()

BED () Any other _____

2. Are you trained to teach the current 8-4--4 chemistry syllabus

YES ()

NO ()

ii. Teaching methodology

Below is a list of teaching methodology that can be used in the teaching of chemistry in your school. Use the suggested scale to rate them according to your opinion.

Circle the appropriate score.

1. Hardly ever 2. Neutral 3. Occasionally 4 Regularly 5 Much regularly

Score

a) Lecture method

1 2 3 4 5

b) Inquiry / discovery method

1 2 3 4 5

c) Group discussion

1 2 3 4 5

d) Questions / Answer method and reinforcement skill	1	2	3	4	5
e) Set induction	1	2	3	4	5
f) Verbal exposition	1	2	3	4	5
g) Using examples and Illustration	1	2	3	4	5

iii. Issued guidelines

Below is a list of statements regarding the guidelines that can be issued in your school for the purpose of teaching chemistry use the suggested scale to rate them according to your own opinion. Circle the appropriate score.

1. Strongly disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly agree.

<u>STATEMENT</u>	<u>SCORE</u>				
a) Teaching methods	(1)	(2)	(3)	(4)	(5)
b) Depth of coverage is stressed	(1)	(2)	(3)	(4)	(5)
c) Scope of coverage is stressed	(1)	(2)	(3)	(4)	(5)
d) Area of emphasis is given	(1)	(2)	(3)	(4)	(5)
e) There are recommended textbooks for teaching	(1)	(2)	(3)	(4)	(5)

iv. Tick where applicable regarding the following questions

- a) How many textbooks have been recommended for use in your school?
Only one () Two () Three () None ()

Name
.....
.....

- b) How many students have you allocated per chemistry textbook
Only one () Two () Three () None ()

- c) How many students do you have in your class?
Less than 25 () Less than 40 () Above 40 ()

v) **Teaching Resources and Personal Opinion**

Below is a set of statements regarding teaching resources and your personal

opinion use the suggested scale to rate them according to your opinion. Circle the appropriate score.

1. Strongly disagree

2. Disagree

3. Neutral

4. Agree

5. Strongly agree

a) The school has enough textbooks for teaching. (1) (2) (3) (4) (5)

b) The school has enough models and charts for teaching chemistry. (1) (2) (3) (4) (5)

c) Students should be assessed at the end of every topic. (1) (2) (3) (4) (5)

d) There are some topics in the syllabus that are difficult for students to understand. (1) (2) (3) (4) (5)

e) The head teacher encourages and provides for the use of teaching resources (1) (2) (3) (4) (5)

f) There is team teaching among the chemistry teachers (1) (2) (3) (4) (5)

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