

## Parental Influence on Secondary School Students' Attitudes towards Chemistry

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### Abstract

*The study investigated Parental Influence on Students' Attitude towards Chemistry in selected secondary schools in Nyamaiya division, Nyamira County, Kenya. The study adopted an ex-post facto design and the target population comprised 2890 secondary school students. Simple random sampling was used to select 300 respondents. Data was analysed using descriptive and inferential statistical techniques. The null hypothesis was tested using the Pearson Product Moment Correlation Coefficient at  $\alpha = 0.05$  significance level. The study findings reported that, there was an average positive correlation ( $r = 0.594$ ) between parental influence and the students' attitudes toward chemistry. The findings may further help parents to realise that they also play a role in shaping the academic attitudes and general behaviour of their children. The study findings provide relevant information to the education policy makers in formulating policies intended to promote performance in Chemistry at the secondary school level of education.*

**Keywords:** Parental Influence, Students, Attitude, Chemistry, secondary, schools

### 1. Introduction

Chemistry has been identified to be one of the important subjects needed for the sustenance and transformation of the national economy, and hence should be accorded adequate attention. Advancement in science and technology has created a greater demand for more people to study chemistry and this is particularly important in the realisation of Kenya's vision to become industrialised. Acquisition of appropriate scientific and technological skills is necessary to cope with the challenge presented by the evolving needs of the modern work place in the industries and the ever growing non-formal sector. Education and training systems that responds adequately to these demands will therefore, contribute to the efforts to overcome the growing unemployment and marginalization of majority of the population. Providing access to appropriate learning experiences, designed to broaden skills and knowledge can increase productivity and significantly improve the fortunes of the unemployed, thereby reducing poverty and unemployment amongst the youth (Adesoji, 2008). It is as a result of the recognition given to Chemistry in the development of the individual and the nation that it has been made a core pre-requisite subject for offering most science oriented courses in the tertiary institutions and this calls for the need in teaching it effectively.

It is worth mentioning that the development of the students' positive attitude is necessary because attitude is linked with academic achievement (Cheung, 2009). Similarly, a study conducted by Kelly (1998) concluded that the British students' liking for a specific science subject were the actual predictor of their choice in school in various subjects like Physics, Biology and Chemistry. Therefore, all stakeholders should consider the development of positive attitude towards the chemistry subject as one of their central responsibilities (Cheung, 2009). In Kenya, the students' performance in chemistry in the Kenya Certificate of Secondary Education (KCSE) examination has persistently remained below average. This has been attributed partly to the negative attitudes adopted by the students towards the chemistry (Siringi, 2010). This further underscores the importance of promoting positive attitudes towards Chemistry which has been made

almost compulsory by internal policies of most secondary schools. Table 1 below shows chemistry means of Nyamira district for the last five years.

**Table 1:** KCSE Examination Chemistry Means for Nyamira District, Kenya

Year.	Chemistry Mean.
2012	3.979
2011	3.344
2010	3.112
2009	3.256
2008	3.037

**Source.** Courtesy Nyamira DEO's Office (2013).

A number of factors have been identified as related to students' attitude towards Chemistry; such factors include teaching methods, teacher attitude, influence of parents, gender, age, cognitive style of pupils, career interest, and social implication of Chemistry and achievement (Adesoji, 2008). However, this study will focus on the Parental Influence on secondary school Students' Attitudes towards Chemistry.

## 2. Theoretical Framework and Literature Review

### 2.1 Theoretical Framework

The theoretical framework for this research is based on Albert Bandura's Social Learning Theory. Social learning focuses on the learning that occurs within a social context. It considers how people learn from one another, encompassing such concepts as observational learning, imitation and modelling (McLeod, 2011). Social learning emphasizes the value of observing and modelling behaviours, attitudes and emotional reactions of others. The social learning theory states that people learn behaviours through observation, modelling, and motivation such as positive reinforcement (McLeod, 2011). Social learning theory has been applied extensively in understanding classroom motivation, learning, attitude formation and achievement (Schunk & Zimmerman, 1998). Social learning theory is based on the idea that learning and the subsequent performance of certain behaviours are the result of the on-going and reciprocal interaction between a person, the environment, and the already learned behavioural patterns of the individual and group (Bandura, 1986). Each student, therefore, responds to instruction and modelling through the lens of these three elements.

The social learning theory is relevant to the current research in that home environment (teachers and peers) can shape the student as an individual and therefore his or her attitude toward chemistry. Social learning theory also puts forth the concept of model: another person whose actions and the results of those actions inform the individual's behavioural decisions (Bandura, 1986). Social learning theory presumes that students will only adopt the behaviour of models they deem similar to themselves (for example, peers) or whom they esteem (for example, parents or older siblings). A third key idea from social learning theory is self-efficacy: one's perception that s/he can successfully achieve a particular outcome (Bandura, 1986). The concept of self-efficacy is important in the classroom context because it determines the extent to which a student will persist in any task (Bandura, 1986), or the career choice a student will make.

One of the great strengths of Social Learning Theory is integration; it combines several important models of learning. It is clearly behaviourist in that it advocates that children are motivated to imitate behaviour if that behaviour is seen as resulting in praise or some other kind of reward. It is cognitive in that this learning process goes from imitation to mastery, a point is reached where the model is no longer necessary, and the child can then go her own way (Johnson, 2012). The other strength is optimism, children are seen according to Social Learning Theory as fairly easy to teach. Motivation comes largely through praise. The praise, however, is seen indirectly, since it is the model that is praised, not the child (at first). Once motivated, the model provides the bulk of the teaching. The general concept is that children just need the right environment to begin learning useful skills. Finally, the other strength of Social Learning Theory is accuracy. It is easy to see students mimic masters in learning new tasks (Johnson, 2012). When a student wants to learn how to titrate, he may watch his teacher perform the titration, who will provide the inspiration and motivation. It is an easy theory to grasp and it seems to be generally proven by actual experience.

## 2.2 Review of literature

Several related studies have been carried out on Parental Influence on Students' Attitude towards Chemistry. For example, Cao, Bishop & Forgasz (2006), explored the differences and similarities in parents' influence on students' mathematics learning as perceived by different groups of students in China and Australia. The participants in this study comprised 346 primary and secondary school students in China, and 406 primary and secondary school students in the State of Victoria, Australia. They were distributed over three year levels, Years 5, 7, 9. The reasons for choosing these three specific year levels were that Year 9 is the last year of compulsory education in China (even though the last year of compulsory of education is Year 10 in Australia), Year 7 is the first year of secondary schooling in both China, and the State of Victoria, Australia, and Year 5 is close to the end of primary schooling in both countries and is also one of the earliest year levels considered appropriate to use questionnaires. In order to measure the levels of perceived parental influences on students' learning of mathematics, a Perceived Parental Influence (PPI) scale was developed. The instrument consisted of 16 items, eight measuring mother's influence on mathematics learning as perceived by students, and eight measuring father's influence. One-way Analysis of Variance (ANOVA) for each subscale by year level was also used to analyse the data. Independent sample t-tests by country were conducted on the means of the PPI scale for all students and for students at each of the three year levels, to compare the levels of parental involvement between the countries. The findings suggested that there were significant differences by country for students at each year level and for the whole sample, with students in China having a higher mean score in each case. Effect sizes were medium at Years 7 and 9, and large at Year 5 and overall. The results indicated that there are significant differences in the perceived levels of parental influence between students from the two countries. Overall, and at each year level, students from China considered that their parents had a stronger influence on their mathematics learning than did the Australian students. The above reviewed study explored the differences and similarities in levels of perceived parental influence on students' learning of mathematics between china and Australia but did not focus on how parental influence affected students' attitudes towards chemistry as a subject. Hence, the current study will focus on the effects of parental influence on the students' attitude towards chemistry.

Oludipe (2009) studied the influence of early literacy parental involvement on science achievement of junior secondary school students in Nigeria. The study adopted an ex-post facto research design. The target population was made up of all Junior Secondary School II Integrated Science students in Osun State, Nigeria. Simple random sampling was used to select 400 students (200 males and 200 females) from these schools. The Questionnaire, titled: Early Literacy Parent Involvement Questionnaire (ELIPIQ) was developed by the Reading and Speech Clinic and adapted for use in this study. The second instrument was an Integrated Science Achievement Test (INSAT) developed by this researcher. It was made up of 24 items in essay format, picked from concepts of Energy. Data were analysed using frequency counts, percentages, Pearson Product Moment correlation, regression and t-test analyses. The findings revealed that parental involvement in literacy acquisition of boys and girls in this study were to the same degree. The findings also revealed a positive but average relationship between parental involvement in early literacy level acquisition and students' achievement in integrated science and this was found to be significant at 0.01 level of significance. The above reviewed study was carried out in Nigeria and hence its findings may not be generalised to Kenya. Further, the study indicated an average positive relationship between parental involvement and students' achievement in science but did not indicate the effects of parental involvement on students' attitude towards chemistry. Therefore, the current study will fill this gap in literature.

Oluwatelure & Oloruntegbe (2010) also investigated the effects of parental involvement on students' attitude and performance in Biology and Chemistry in ten selected secondary schools Ekiti State, Nigeria. In exploring this attitudinal construct, items were drawn relating to concepts which are important components of the attitudinal measures considered in this research. They were Likert scale item type questions, in which respondents choose from 5-point scores such as strongly agree (SA), agree (A), undecided (U), disagree (D), strongly disagree (SD). The data obtained were analyzed using Analysis of variance (ANOVA) and Pearson product Moment correlation coefficient. Descriptive statistics was also employed so as to provide answers to the research questions raised in the research. The findings revealed that there was a significant difference in the attitude of respondents towards biology and chemistry with respect to the level of their parental involvement. It also emerged that level of education of parents, availability of reading materials at home, home possession, parental support in education, familiarity with English at home are major factors causing variation in students attitudes and academic achievement in biology and chemistry. The above reviewed study was carried out in Nigeria and hence the findings of the study may not be generalised to Kenya.

Alrehaly (2011) studied parental attitudes and the effects of ethnicity and how they influence children's attitudes toward science education in Arkansas, USA. The research was an ethnographic study with interpretive design in which

seven males and females who work at a South –Eastern University, who have children in junior or senior high schools, and who are from diverse ethnic backgrounds were interviewed. Seven people participated in this study and each individual was interviewed for about 40 minutes. The digital-recordings were transcribed immediately after each interview since this gave a greater likelihood of remembering the discussion where the tape was indistinct. The date, number, time and venue of each interview were recorded at the top of each transcript. The findings reported a significant relationship between many types of parental involvement and students' attitudes from different ethnic and economic status groups. For example, frequent discussions between parents and students about education produced significantly more predictive of gains in positive attitudes and achievement among white American students than among other groups. Parent involvement (e.g., communicating with the school, checking homework, encouraging outside reading) among Latinos had more influence upon their children than it did for Asian Americans. It also emerged that parents' socioeconomic status and educational levels were typical examples of social structural aspects and as education is associated with cost, limited financial resources can substantially slow or retard academic achievement. Parents' educational level also may present different types of involvement because involvement may differ in regard to parent disposition. Parents with low levels of education, for example, may be less involved at school because they feel less confident about communicating with school teachers and administrators for a variety of reasons, which may include lack of language skills, lack of knowledge about the school system, or reluctance to approach authority figures. The above reviewed study used only interviews to collect data and hence may have missed the chance to collect more information as can be gotten from structured questionnaires.

Oloruntegbe (2012) investigated parental influence as a factor in helping students establish a match between science concepts learnt in schools and the activities they carry out daily at home and hence promotion of positive attitudes towards science. The research design employed in the study was a causal comparative and survey. One hundred and ten parents, 62 females and 48 males, having children in secondary schools selected from Ikare, an urban center, in Ondo State of Nigeria constituted the sample. Sixty-seven of the one hundred and ten were of science backgrounds while forty three were with background in social and management sciences, arts and humanities. They were drawn using stratified and purposive sampling. The data obtained were analyzed using Analysis of variance (ANOVA) and Pearson product Moment correlation coefficient. The findings showed that engaging children in chores at home was a potential source for children's learning. It also emerged as a fact that children achieve more in academic work and express positive attitudes when parents get involved in their learning particularly at home level. It was also observed that children from low socio-economic background who were often engaged in chores and other activities like gardening and selling in the market could neither establish useful relationship between nor consolidate school science and home activities when compared to children from well to do families. Such children tended to have low academic achievement and attitudes towards science. The above reviewed study was carried out in Nigeria and hence its findings may not be generalised to the Kenyan situation.

From the review of literature review, most previous studies have been done based on the western contexts and other African countries, and very scanty literature was available regarding Kenyan context. Moreover, some studies have adopted a qualitative approach, while the current study filled this gap by using the quantitative approach.

The following hypothesis was tested:

*Ho1: There is no statistically significant relationship between parental influence and the students' attitude towards Chemistry in Nyamaiya division, Nyamira county, Kenya.*

*Ha1: There is statistically significant relationship between parental influence and the students' attitude towards Chemistry in Nyamaiya division, Nyamira county, Kenya.*

### 3. Research Methodology

#### 3.1 Research design

This research adopted a survey using *ex-post facto* research design. The *ex-post facto* design is a systematic, empirical research, in which the researcher does not have direct control over the independent variables because their manifestations have already occurred (Kerlinger, 2000). The independent variable in this study, is parental influence, is already manifested in the respondents and therefore, cannot be manipulated by the researcher. Likewise, the dependent variable, that is, the students' attitude towards Chemistry, has already developed and the researcher has no control over it.

### 3.2 Study participants

The target population of this study were students in all secondary schools in Nyamaiya division of Nyamira county, Kenya. According to the Nyamira District Education Officer's (DEO) records for the year 2013, the division has 15 secondary schools. The target population comprises 2890 students. Data was collected from all the 15 secondary schools in the division. In order to get the sample size, the researcher used Mugenda and Mugenda (2003) thumb rule of 10% of the target population. The 10% of the target population of 2890 respondents made a sample size of 300 respondents. Simple random sampling was used to select 20 students from the form three classes from each of the 15 schools to get the required sample.

### 3.3 Research instruments

The researcher used questionnaires to collect data. The first student questionnaire addressed the independent variable, that is, parental influence with a 4-point likert scale. The second student questionnaire addressed the students' attitude towards chemistry. The validity of the questionnaires was ensured by using university lecturers, as indicated by Borg and Gall (1989) that content validity of an instrument is improved through expert judgment. Reliability of the questionnaires was ensured by using the Split-Half technique, whereby the pilot questionnaires were divided into two equivalent halves and then a correlation coefficient for the two halves computed using the Spearman Brown Prophecy formula. The coefficient indicates the degree to which the two halves of the test provide the same results. The correlation coefficient of 0.7 obtained recommended as indicating that an instrument is reliable (Wells & Wollack, 2003).

### 3.4 Data collection procedures

Permission to carry out the study was first obtained from Laikipia university Kenya and then two approved copies of research proposal were forwarded to the Ministry of Education Kenya for issuance of research permit. The researcher duly informed the respondents in the study that their participation was voluntary and that they were free to omit answers to any particular questions if they so chose. The researcher also protected their confidentiality and identity through use of numbers in line with recommended procedures that the participants should remain anonymous throughout the study.

### 3.5 Data Analysis

Quantitative data was collected from the 300 students from the 15 secondary schools in Nyamaiya division of Nyamira county using a questionnaire. The quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) version 20. Positive items will be scored from four to one; from strongly agree to strongly disagree, respectively, while negative items were scored in the reverse order. Descriptive statistics involved the use of means and percentages while an inferential statistical test was used to test the hypothesis. Pearson's Product Moment Correlation coefficient was used to establish the relationships between the variables. The hypotheses will be tested at 5% level of significance in determining whether to accept or reject the study hypotheses at  $\alpha = 0.05$  level of significance.

## 4. Findings and Discussion

### 4.1 Overall Students' Attitude towards Chemistry

The study sought to find out the overall students' attitude towards chemistry. From table 2, it was established that many students held favourable attitudes towards chemistry as a subject; about 81% of the students said chemistry is one of the most interesting school subjects and further 75% of the students suggested that schools should have more chemistry lessons each week. Most (86%) of the students said working in a chemistry laboratory would be an interesting way to earn a living and 86.7% of the students said they would like to be given a chemistry book or a piece of scientific equipment as a present. Over 86% of the students said they would like to belong to a chemistry club while at school and 80% of the students said they would like to teach chemistry when they leave school. The findings also revealed that about 81% of students rejected the notion that school would be more interesting when chemistry is not taught at school. Table 2 shows percentage score on responses on student attitudes toward chemistry.

**Table 2:** Percentage Score on Responses on Student Attitudes toward Chemistry

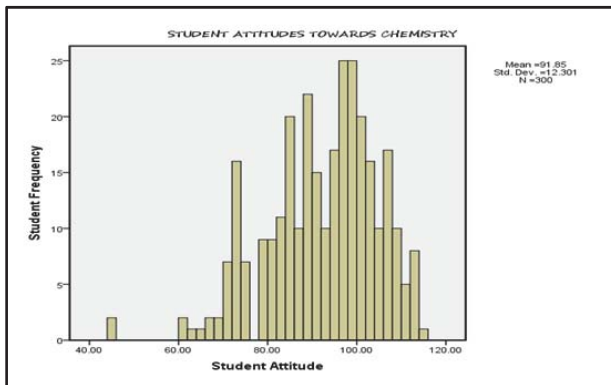
Statement	SA	A	D	SD
1 Chemistry lessons are fun.	28.7	23.7	17.3	28.7
2 I would like to belong to a chemistry club.	51.7	35.3	7.7	5.0
3 Chemistry is man's worst enemy.	6.7	6.3	20.0	66.7
4 I get bored when watching chemistry programs on TV at home.	4.0	10.0	30.0	55.7
5 Public money spent on chemistry in the last few years has been used wisely.	28.0	36.7	16.3	19.0
6 School should have more chemistry lessons each week.	39.7	35.3	12.3	12.7
7 I would like to be given a chemistry book or a piece of scientific equipment as a present.	54.7	32.0	5.3	7.7
8 I would dislike a job in a chemistry laboratory after I leave school.	11.3	11.0	21.0	56.3
9 I dislike reading books about chemistry during my holidays.	12.0	14.0	21.7	52.0
10 Working in a chemistry laboratory would be an interesting way to earn a living.	43.0	31.7	15.7	9.7
11 Chemistry is one of the most interesting school subjects.	47.0	33.7	10.7	8.0
12 I would like to do chemistry experiments at home.	31.3	30.7	13.3	24.3
13 A career in chemistry would be dull and boring.	10.3	7.7	22.0	59.7
14 I dislike chemistry lessons.	6.7	8.7	29.7	54.7
15 Too many laboratories are being built at the expense of the rest of education.	20.3	20.7	28.0	30.3
16 Chemistry lessons are a waste of time.	7.0	5.0	25.3	62.3
17 Talking to friends about chemistry after school would be boring.	14.0	11.7	25.0	49.3
18 I would like to teach chemistry when I leave school.	49.7	30.7	5.0	14.7
19 Chemistry helps to make life better.	51.0	34.3	9.7	5.0
20 In chemistry experiments I like to use new methods which I have not used before.	33.7	30.7	16.3	19.0
21 I would enjoy having a job in a chemistry laboratory during my school holidays.	42.3	29.7	15.0	13.0
22 This country is spending too much money on chemistry.	16.3	19.3	25.3	39.0
23 The material covered in chemistry lessons is uninteresting.	10.3	9.0	33.7	46.7
24 Listening to talk about chemistry on the radio would be boring.	14.7	10.7	23.7	51.0
25 Chemistry can help to make the world a better place in the future.	53.0	23.7	13.0	10.3
26 I would prefer to do an experiment on a topic than to read about it in chemistry magazines.	32.7	36.0	14.0	17.0
27 In chemistry experiments, I report expected results as well as unexpected ones.	21.3	27.3	29.0	22.3
28 I would prefer to do experiments than to read about them.	24.7	24.0	27.3	24.0
29 I dislike reading newspaper articles about chemistry.	8.3	10.3	35.3	45.7
30 I would enjoy school more if there were no chemistry lessons.	15.0	3.7	22.7	58.7

In order to investigate the general attitude of students towards chemistry, descriptive analysis was done on the scores on the 30 items in the students' attitude towards chemistry questionnaire. Most favourable attitude towards chemistry would score a maximum of 120 points, while the least favourable attitude would score 30 points. The SPSS output is shown in table 3.

**Table 3:** Descriptive Statistics on Student Attitudes towards Chemistry

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Students' Attitudes	300	30	120	91.85	12.301	-.674	.141
Valid N (listwise)	300						

The results in table 3 showed that, the mean score on attitude was 91.85 points with standard deviation of 12.30. This mean (91.85) indicates that most students had favourable attitudes towards chemistry.



**Figure 2:** Histogram on Student Score on Attitude

The histogram on student score on attitude is shown in figure 1. The negative skewness of the histogram confirms that the majority of the students held favourable attitudes towards chemistry.

#### 4.2 Findings on parental influence on students attitudes towards chemistry

The study investigated whether parental influence had a statistically significant effect on students' attitude towards chemistry. A general inquiry was done on the percentages of responses on various statements. The information presented in Table 4 shows percentages of frequency counts on responses on various statements made by the respondents.

**Table 4:** Percentage Response on Parental Influence

Statement	SA	A	D	SD
1 My parents told me even before I got into secondary school that chemistry is a difficult and volatile subject and so I dare not like it.	14.0	8.6	15.3	62.1
2 My parents fear that girls who pursue chemistry develop pride which often results into their late marriages.	13.0	9.6	26.6	50.8
3 Due to lack of sufficient resources, parents avoid taking their children to chemistry courses which are seen as more costly than art courses.	28.6	19.3	28.2	23.9
4 My parents' belief that there are limited employment opportunities for chemistry graduates.	19.6	18.6	28.6	33.2
5 My parents' religious and cultural beliefs do not favour girls' chemistry education.	16.6	23.6	21.3	38.5
6 My parents promote the value of chemistry related professions.	32.9	41.2	17.6	8.3
7 My parents/guardian advocate for the choice of chemistry subject / chemistry related profession.	28.2	39.9	15.6	16.3
8 My parents strongly approve of formal education.	36.2	28.6	20.9	14.3
9 My parents always check chemistry homework to make sure it's done.	25.6	30.2	18.3	25.9
10 My parents believe that I will be a success in the future in chemistry research.	40.2	29.2	15.6	15.0

The results presented in table 4 indicates that, over 70% (Strongly Agree = 32.9%, Agree = 41.2%) of respondents' said their parents promote the value of chemistry/chemistry related professions; many respondents (68%) said that their parents/guardians advocated for the choice of chemistry/chemistry related profession and 69% of respondents said that their parents believe that they will be successful in the future in chemistry research. A large majority, over 77% of the respondents denied their parents had told them even before they got into secondary school that chemistry is a difficult and volatile subject and so they dare not like it. About half (50.8%) of the students strongly rejected the notion that some parents fear that girls who pursue chemistry are often proud resulting into their late marriages.

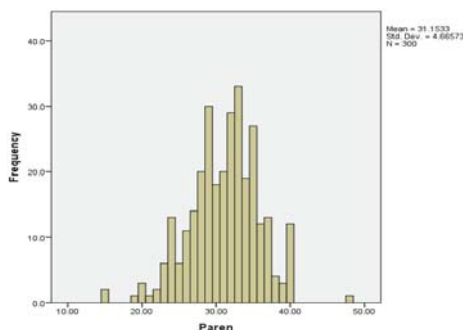
In the parental influence questionnaire, a four-point Likert scale ranging from strongly agrees (SA) to strongly disagree (SD) was used in the 10 statement items. The positive items (favourable parental influence) were scored from 4 to 1; from strongly agree to strongly disagree, respectively, while negative items (less favourable parental influence) were

scored in the reverse order. This meant that the maximum possible favourable parental influence was a score of 40 points and least favourable parental influence score was 10 points. Descriptive analysis was done on the scores on the 10 items in the parental influence questionnaire. The SPSS output is shown in table 5.

**Table 5:** Descriptive Statistics on Parental Influence on students attitude towards chemistry

	N	Minimum	Maximum	Mean	Std. Deviation
Parental influence on students	300	10.00	40.00	31.1533	4.66573
Attitude towards chemistry	300	30.00	120.00	91.8467	12.30126

The mean score was 31.15 with standard deviation of 4.66 as shown in table 5. This mean (31.15) implies that generally, a majority of the students said that their parents had favourable influences towards chemistry. Figure 2 shows a histogram on the distribution of students score on parental influence.



**Figure 2:** Histogram on Student Score on Parental Influence

The figure 2 shows a histogram on distribution of students score on parental influence. It reveals a negative skewed graph, meaning there were generally many students who reported favourable parental influence.

To determine whether parental influence had any statistically significant influence on the students' attitude towards Chemistry, a statistical test that is a bivariate Pearson product moment correlation coefficient was calculated. It was reported that, there was an average positive correlation ( $r = 0.594$ ) between parental influence and the students' attitudes toward chemistry as shown in table 6. This means that, as favourable parental influence towards chemistry increases, secondary school students' positive attitude toward chemistry also increases.

**Table 6:** Correlation between Parental Influence and Students' Attitude

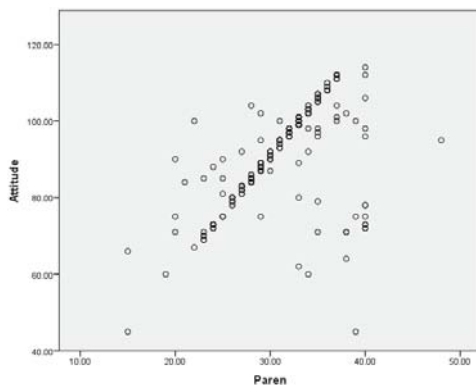
		Parent	Attitude
Parent	Pearson Correlation	1	.594**
	Sig. (2-tailed)		.000
	N	300	300
Attitude	Pearson Correlation	.594**	1
	Sig. (2-tailed)	.000	
	N	300	300

Note: \*\*. Correlation is significant at the 0.05 level (2-tailed).

When the hypothesis which stated that "There is no statistically significant influence between the parental influence and the students' attitude towards Chemistry in Nyamaiya division, Nyamira district, Kenya" was tested, the results in table 8 showed that there was a statistically significant influence between the parental influence and the students' attitude towards Chemistry ( $p < 0.0005$ ) at 0.05 level of significance; Hence, the null hypothesis that there is no statistically significant influence between the parental influence and the students' attitude towards chemistry in Nyamaiya division, Nyamira district, Kenya was rejected. Therefore, the alternative hypothesis was accepted.



Moreover, the scatter diagram in figure 6 shows an average positive correlation between parental influence and student attitudes towards chemistry.



**Figure 3:** Scatter Diagram on parental influence Vs Student Attitude

The scatter diagram in figure 3, further confirms that there was an average positive correlation between parental influence and student attitudes towards chemistry. This means that, an increase in favourable parental influence leads to an increase in students' positive attitude towards chemistry. This finding is consistent with Oludipe (2009), whose findings revealed a positive but average relationship between parental involvement in early literacy level acquisition and students' achievement in integrated science. Similarly, Oluwatele & Oloruntegbe (2010) also established a significant difference in the attitude of respondents towards Biology and Chemistry with respect to the level of their parental involvement. This finding is in conformity with what Kamuhanda (1999) who observed that parental involvement in adolescents' activities is very significant in shaping the adolescent's behaviour. Further, Oloruntegbe (2012) also found out that, children achieve more in academic work and express positive attitudes when parents get involved in their learning particularly at home level. Hinds, et al. (1999) similarly found out that, the most important influences on students attitudes towards school come from the most significant adults in these young people's lives, and these are parents and teachers.

The implication of these findings is that parental influence has a significant influence on students' attitude towards Chemistry. Therefore, parents should be sensitised on the fact that they play an important role in influencing student attitudes towards chemistry. For example, the parents/guardians should be sensitised on the importance of advocating for the choice of chemistry as a subject, and promoting the value of chemistry related professions. Similarly, parents/guardians should be educated on the need to drop religious and cultural beliefs that do not favour girls' chemistry education so as to promote positive attitudes towards chemistry in female students. Parents should be exposed to the fact that always checking chemistry homework and making sure that chemistry holiday assignments are done can influence and/ lead to the development of positive attitudes towards chemistry among the students.

## 5. Concluding Remarks

The study investigated the relationship between parental influence and students attitudes towards chemistry. The findings indicated that there was a statistically significant influence between parental influence and the students' attitude towards Chemistry in Nyamaiya division, Nyamira county, Kenya. The results reported an average positive correlation between parental influence and students' attitudes towards chemistry, that is, as positive parental influence increase, the students' positive attitudes towards chemistry also increase. Students' attitude towards chemistry was influenced by the extent of parental involvement / parental influence. The level of education of parents, availability of reading materials at home, and parental support in education, can cause variation in students' attitudes and academic achievement in chemistry.

Based on the findings of the study, several recommendations were made. Since the students' attitude towards chemistry was influenced by the extent of parental involvement / parental influence, then this has implications. First, the kenyan government should create forums with parents with the objective of educating them on the importance of providing an enabling home environment, which will in turn boost students' attitudes. The government should consider the training of family counsellors and dispatch them to serve in the local communities even at the divisional levels, so as to facilitate

the provision of counselling services to the locals, especially the parents so as to get information on effective ways of bringing up children. The Ministry of Education should also initiate self-help projects among the poor communities in order to alleviate poverty. Low income may lead to unavailability of reading materials at home. It may also lead to child labour hence reducing time for studying at home, the negative home influence may impact negatively on students' attitude towards academics.

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