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RESEARCH ARTICLE

INFLUENCE OF STUDENT FACTORS ON STUDENTS' PERFORMANCE IN BIOLOGY IN PUBLIC SECONDARY SCHOOLS IN KENYA: AN EMPIRICAL STUDY ACROSS SECONDARY SCHOOLS IN NDHIWA SUB-COUNTY.

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ABSTRACT

Performance in Biology at Kenya Certificate of Secondary Education (KCSE) level is very low nationally and even at Sub County level despite provision of educational resources or inputs by the government. Thus, in the whole country candidates who sat KCSE examinations in the year 2016 only 71,348(13.99%) out of 509,822 scored C+ and above, in 2017, only 11,503(2.1%) candidates out of 546,014 scored C+ and above and in 2018, only 33,126(5.66%) candidates out of 584,924 scored C+ and above. In Ndhiwa Sub County, the performance of Biology was far much below the average for the last four years registering mean scores of: 4.83 in 2015, 2.90 in 2016, 2.27 in 2017 and 2.90 in 2018. The purpose of this study was to establish the influence of students' factors on performance in Biology in public secondary schools in Ndhiwa Sub-County. The study established that students' factors in Biology accounted for 11.6% of the variation in performance in biology however, the influence was not significant because the p-value was greater than 0.05. The study recommended that: Schools to intensify use of guidance and counseling to address student factors like punctuality, discipline, consulting teachers, and other factors that lead to poor performance; Quality Assurance and Standards Officer to regularly visit schools and monitor effective learning in schools and encourage provision of more learning resources while parents to devote their time to monitor learners and provide learning resources. The findings of this study will inform policy formulation and decision making with a view to enhancing student performance in Biology.

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INTRODUCTION

The significance of education in national development as well as individual development is indisputable. For any country, a highly educated human resource contributes maximally to national development in various spheres. Individuals have used education as a ladder to climb to desired social economic levels. Education is also viewed as a tool for social economic changes (Njuguna, 2011). There has been worldwide recognition of importance of science education in national development and this had found a central place in the curricula of schools at all levels (Ogbonna, 2007).

According to Olasehinde and Olatoye (2014), Science education is designed to guide the world toward a scientifically literate society and this is important for an understanding of science as it offers personal fulfillment and excitement in addition, Biology is usually regarded as the most simple to understand among all the science subjects and thus it is the one that usually attract the widest enrolment. The findings of a study carried out by Naugah (2011), on factors affecting the choice of science subjects among girls at secondary level in Mauritius showed that teaching approaches were mainly traditional and that both girls and boys prefer hands-on activities and contextual examples reflecting real-life situations.

The majority of the girls' experiences of science were negative and this deterred them from taking science beyond the compulsory level although they were aware of its importance. Teachers had positive opinions about girls' ability to do science but stated that lack of infrastructure facilities did not allow them to involve the pupils in practical work as much as they would wish. However, the study farther revealed that brighter girls' decisions to study sciences were not outweighed by these factors. Parents felt that they did not influence their daughters in the choice of subjects or eventual careers though they held science in high esteem. Samikwo (2012) asserted that Biology as a subject endeavors to enable one understand himself/herself, understand major biological processes that take place within himself/ herself for example digestion, respiration, circulation, excretion and gaseous exchange. Through Biology organisms tend appreciate the effect of these biological processes and the larger environment as a whole. Biology like other science subjects is a practical oriented discipline which seeks to develop in a learner, scientific inquiry and problem solving skills. He farther revealed that the general goals of Biology Education is to equip the learner with the basic knowledge, skills and attitude that will enable one to lead an independent and useful life both to himself/herself and the larger community in which she/he lives. The Biology subject caters for the needs of a learner who may pursue his /her studies in the subject and its related disciplines.

Ofoegbu (2003) asserted that Biology has a large student enrolment than any other science subject especially at the upper basic level of the Nigerian education. According to Akubuilo (2004), in spite of the popularity of Biology among students, the failure rate has remained very high. Despite the fact that Biology is the simplest to comprehend among the science subjects, the level of academic achievement is nonetheless not much different from other science subjects among the students. In addressing the question of poor performance in Biology, educational experts have considered several explanations for the poor performance in Biology examinations. Samikwo (2012) concluded that, availability of text books, laboratory apparatus and other learning resources contribute significantly to the performance of students in Biology examination. The researcher revealed that, students with positive attitude towards the subject register better performance than those who had a negative attitude. Those with positive attitude are motivated to work hard and this is reflected in the good marks scored in the examination. Suman (2011) conducted a research on influence of parents' education and occupation on academic achievement of students. He concluded that education and occupation of parents positively influence the academic achievement of children.

Synthesis of Literature On Influence Of Student Factors On Students' Performance In Biology: A number of studies have been carried out globally on student factors affecting their academic performance. For instance, Varaprasad and Manikanta (2018) carried out a study to investigate factors that influenced student academic performance. It was hypothesized to check the impact of the academic engagement, individual differences and proper guidance from teachers. The study used ex post facto research design and by using regression analysis, it established that there is a positive and statistically significant impact of academic engagement, individual differences and proper guidance from teachers on students' academic performance. It was further revealed that the most important factor is academic engagement, individual differences and proper guidance from teachers. They recommended that the performance of the management students can be improved by providing students with appropriate academic engagement and proper guidance by teachers. This study was not conducted in Kenya and used students from management institution unlike the current study which was conducted in Kenya and used all the public secondary schools in Ndhiwa Sub County. Moreover, the study analyzed only the impact of specific variables on the student performance leaving other factors the gap the current study addressed by looking at other factors like punctuality, personal timetable, Kenya Certificate of Primary Education Performance, participation in co-curricular, consulting teachers, discipline, gender and peer influence.

Ajibade (2016) on the other hand also carried out a study to investigate the influence of peer group relationship on the academic performance of student in secondary Schools. The study was limited to five junior secondary schools in Atiba Local Government Area of Oyo State and established that peer group influences learning and certain factors like the social economic status and parental factors as they determine membership in most groups. The study also found out that pupils are closer to their parents concerning their academics in addition; parents monitor their children's peer group association. This study had only 5 schools as the sample size to represent the entire schools population and was limited to Atiba Local Government Area of Oyo State unlike the current study that involved all the 52 Schools in Ndhiwa Sub County. Similarly, Deepika and Prema (2017) carried out a study on peer pressure in relation to academic achievement of deviant students. The study targeted 145 deviant students and the result revealed that there is no significant difference between male and female with respect to peer pressure and academic achievement and that there is a negative correlation that exists between peer pressure and academic achievement. The study further revealed that peer pressure plays a vital role in lowering of achievements in academics since peer pressure is one of the sources for deviant behavior. The studies by Ajibade (2016) and Deepika and Prema (2017) are both in agreement that peer pressure has some influence on students' academic performance. The only difference in the two studies is that Ajibade (2016) conducted a study with the ordinary students whereas Deepika and Prema (2017) used a special group of students, those who were deviant. The studies however, did not give the actual influence of peer pressure on students' academic performance in biology and were not done in Kenya, which the current study was all about.

In Kenya, Misanya (2013), also carried out a study on peer influence on academic performance of form one students in girls boarding secondary schools in Kanduyi Constituency and established that peer group members who scored good marks in Kenya Certificate of Primary Education had positive influence to girl student academic performance in girls' secondary schools. It was deduced that students' prior entry marks had more influence on girl student content mastery. Whereas this study focused on girls alone, the current study focused on both boys and girls in boarding and day schools. It was also not clear from this study, the actual influence the peer influence and Kenya Certificate of Primary Education entry marks had on students' performance in Biology in public secondary school. Adekunle and Femi-Adeoye (2016) in their study on students' attitude and interest as correlates to students' academic performance in Biology in senior secondary school, their findings showed that there is a significant relationship in

the students' attitude to biology and students' academic performance, and the findings also revealed that there is a significant relationship in the students' interest in Biology and students' academic performance in Biology. Whereas this study established a relationship that existed between students' attitude and students' academic performance in Biology, it was not clear to what extent the influence was in public secondary schools in Ndhiwa Sub County. Waseka and Simatwa (2016) carried out a study on student challenges influencing academic performance of students in secondary education in Kakamega County, Kenya. The study established that performance in Kenya Certificate of Primary Education, age, participation in co-curricular activities and exclusion from school were student challenges. They were found to be statistically significant predictors of students' academic performance in KCSE examinations. The student factors which were discussed in this study were looked at as challenges in enhancing students' performance. The current study was to establish the influence these aspects have on students' performance in Biology in public secondary schools in Ndhiwa Sub County, the knowledge gap this study was to fill in public secondary schools in Ndhiwa Sub County.

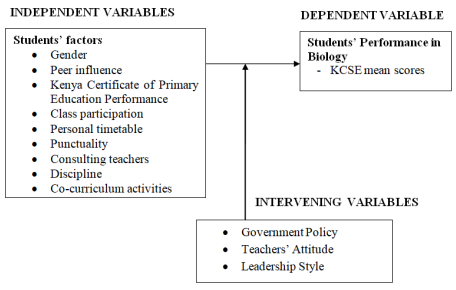
In addition, a study on the role of student - related challenges in the performance of Biology subject in secondary schools in Eldoret Municipality carried out by Mukhwana (2013), revealed that student related challenges affecting performance of biology in Eldoret municipality are: primary school science which provides requisite background at the secondary school level; interest in Biology (theory and practical) provides a force for learners to participate in the learning process; their ability to carry out practical effectively; and the students' ambitions and attitudes. Whereas this study revealed that student based challenges affected performance of biology, it was not clear to what extent the student factors had influenced the performance in Biology, the knowledge gap the current study sought to fill in public secondary schools in Ndhiwa Sub County. Indeed, the above studies identified a number of student factors which enhance students' performance in different regions over the world. However, it was not clear from the studies, the influence of student factors on students' performance in Biology in public secondary schools, Kenya, the knowledge gap this study sought to fill in public secondary schools in Ndhiwa Sub County, Kenya.

Research Objective

The research objective was to establish the influence of student factors on students' performance in Biology in public secondary schools in Ndhiwa Sub-County, Homa Bay County.

CONCEPTUAL FRAMEWORK

The conceptual framework (Figure1) postulates that student factors do influence students' performance in Biology.



A Conceptual Framework showing the influence of student factors on students performance in Biology in secondary schools

Source: Adapted from Waseka and Simatwa (2016)

The study was based on concept of performance advocated for by Waseka and Simatwa who state that selected factors interplay to influence students' performance in schools (Waseka & Simatwa, 2016). The conceptual framework was formulated based on Grounded theory (Creswell, 2005) who state that where there is no appropriate theory, data in literature can be used to generate a conceptual framework to guide a study. In this case the literature reviewed studies conducted by Waseka and Simatwa (2016), Mukwana, (2013), Samikwo, (2012) Onyara (2012) Goro, (2018) were used in formulating this conceptual framework. This conceptual framework assumed that independent variable which include student factors (students' personal time table, Kenya Certificate of Primary Education performance, punctuality, class participation, discipline, peer influence, consulting teachers, gender and participation in co curriculum activities) influence the dependent variables (students' academic performance in Biology at KCSE). This implies that performance is influenced by many factors but the key are the parental, students' and school factors. However, there are other factors like government policy, teachers' attitude and leadership style which in one way or the other, may intervene positively or negatively thus affecting students' performance in Biology at Kenya Certificate of Secondary Education.

RESEARCH METHODOLOGY

The study was based on the concept of performance advocated for by Waseka and Simatwa (2016). The conceptual framework was formulated based on Grounded theory (Creswell, 2005). Descriptive survey and correlational research designs were used. Study population was 52 principals, 124 Biology teachers and 2022 (2020 form four students (2020 cohort) totaling to 2198. Sample size of 46 principals, 46 biology teachers and 323 form four student was used for the study. Purposive sampling was used to select 1 biology teacher in schools where there were more than two form four biology teachers and one Sub-County Quality Assurance and Standard Officer. Questionnaire was used on Biology teachers, interview for Sub County Quality Assurance and Standards Officer and Principals while document analysis and focus group discussion for randomly selected form four students. Reliability of the instrument was established by piloting in 6(10%) of schools in Ndhiwa Sub-County. Face and content validity of questionnaire were determined by experts in educational administration. Qualitative data was transcribed, coded and analyzed thematically and reported in themes and sub themes. Quantitative data from questionnaires were analyzed using frequency counts, means, percentages and regression analysis.

RESULTS

Demographic Data of Respondents: The respondents involved in the study were: principals, teachers and the students. The teachers were asked to indicate their gender, age range, administrative post, qualification, and status of employment so as to establish the credibility of the respondents.

In addition, teachers were asked to indicate the 2019 KCSE mean score in Biology. The findings were as shown in Tables 1, 2, 3 and 4.

Table 1. Gender of Biology Teachers

Gender	Frequency	Percentage (%)
Male	30	65.2
Female	16	34.8
Totals	46	100

From Table 1 it can be observed that the number of male biology teachers was higher, 30 (65.2%), than the number of female biology teachers, 16 (34.8%). There was gender disparity of teachers teaching Biology in the sub county. It was also necessary to establish the gender of teachers because there are conflicting reports on their effectiveness in teaching Biology for example, Paulo and Armstrong (2015) found out that teacher gender may be important in explaining students performance if female and male teachers differs significantly from each other in terms of the ability to teach. The data collected was not biased on the basis of gender and was a good representative of the target population.

Table 2. Distribution of Teachers by their Age

Age (years)	Frequency	Percentage (%)
20-25	2	4.3
26-30	10	21.7
31-35	11	23.9
36-40	13	28.3
41-45	5	10.9
46-50	4	8.7
51 and Above	1	2.2
Total	46	100

From Table 2, it can be noted that most teachers were aged between 36 and 40 years (40.4%), then between 31 and 35 years (23.9%), 26-30 years (21.7%), 41-45 years (10.9%), 46-50 years (8.7%), 20-25 years (4.3%), and finally 51 and above years (2.2%). The fact that most teachers are aged above 30 years indicates that they are had sufficient experience and therefore could respond to questions in relation to influence of student factors, parental socio - economic factors and school factors on students' performance in Biology. There are indications from different research that old teachers perform better than the young, the opposite is also advocated for and that's why it was necessary to deal with this variable for example, Paulo and Armstrong (2015) states that age is inherent differences in the ability of teachers to improve student performance associated with teacher age. If the teacher age is controlled, the older the teacher, the better in improving student's performance due to differences in training received by teachers.

Table 3. Distribution of Biology Teachers by their Administrative Positions

Administration position	Frequency	%
Principals	0	0
Deputy Principal	3	6.5
Head of Department	12	26.1
Teacher	31	67.4
Total	46	100

From Table 3, it can be noted that most of biology teachers in Ndhiwa Sub County, 31 (67.4%), were not holding any administrative position in the school. This means that they have ample time to prepare adequately for biology lessons. Indeed, given their number, they were able to influence the performance of students in Biology. It may also mean that Biology is tedious science subject compared to chemistry and physic hence most Biology teachers do not prefer administrative responsibility. Biology teachers 12 (26.1%) were also found to be heads of department, meaning that they had gained experience because of the longer period they had taken in service. Administrative positions were considered because in most cases heads of department are appointed on the basis of good performance in the classroom and therefore it was an important variable to focus on as school factors on students' performance.

Table 4. Distribution of Teachers by their Professional and Academic Qualifications

Academic qualification	Frequency	%
Diploma	10	21.7
Bachelors degree	35	76.1
Masters degree	1	2.2
Total	46	100

From Table 4, it is clear that most teachers have Bachelors degree, 35 (76.1%). This may mean that most teachers go for Bachelor degree perhaps because of increased number of university offering degree programs or because of the affordable Bachelor degree fee. Only 1 Biology teacher (2.2%) hold a master degree, this low number may be because of the time taken to graduate with masters or because TSC does not pay salaries increment for masters certificates. There were 10 (21.7%) biology teachers who were diploma holders, this may mean that few teachers go for diploma certificate or few diploma teachers qualify for TSC employment. The fact that all respondents were trained and had professional qualification, means they credible respondents because they are highly educated and therefore student based factors', socio- economic factors and school based factors are not foreign to them. This is in agreement with Yolanda (2014) who carried out a study on determinant of high academic performance in secondary schools in Kilimanjaro region established that high performing secondary schools had enough qualified teachers. This means that qualified teachers have the training that enables them to posses the experience and the methodologies to pass the knowledge to the learners effectively. Their qualification also put them at a better position to respond to questions regarding students' performance in biology.

Table 5. Distribution of Teachers by Employment Status

Employment status (Employer)	Frequency	Percentage %
Teachers Service Commission	46	100
Total	46	100

From Table 5, it is clear that all the Biology teachers in Ndhiwa Sub County were employed by the Teachers Service Commission (TSC). Lack of Biology teachers employed as Board of Management may mean shortage of this caliber of teachers, the TSC regulation of employing only trained registered teachers as Board of Management may be also another factor for their absence since the trained one seek better pay in private schools, extra county and national schools.

The fact that all Biology teachers were employed by TSC would mean that they were well experienced and trained and were comfortable to teach Biology in public secondary schools effectively. This would mean that they are comfortable and effective respondent concerning the performance of Biology in public secondary schools.

School Data

The performance of Biology in public secondary schools in Ndhiwa Sub County was summarized as shown in Table 6.

Table 6. Kenya Certificate Secondary Education Performance 2019 by Schools in Ndhiwa Sub County

Mean Score	Frequency (f)	Percentage (%)
1.0 - 2.9	19	41.3
3.0 – 4.9	22	47.8
5.0 – 6.9	3	6.5
7.0 - 8.9	1	2.2
Total	46	100

Source: Homa Bay County Education Office (2020)

From Table 6, it was observed that most of the schools had biology mean scores ranging from between as low as 1.0 to 2.9 as reflected by 19 (41.3%) scoring between1.0 to 2.9 and 22(47.8%) scoring between 3.0 and 4.9. Three schools (6.5%) posted average performance while only one school had a better performance. This performance indicated that most schools in Ndhiwa Sub County performed below average in biology. This is the reason why it was necessary to establish the influence of students' factors, parental socio-economic factors and school factors on students' performance in Biology in secondary schools in Ndhiwa sub-county. KCSE performance by schools was important because it is the dependent variable of the study.

Research Objective

Research objective was to establish the influence of student factors on students' performance in biology in public secondary schools in Ndhiwa Sub County. To achieve this objective, biology teachers in public secondary schools were asked to respond to aspects of student factors in relation to the students' performance in Biology in Ndhiwa Sub-County, Homa Bay County by rating the influence of students factors on students academic performance in Biology and the results were as shown in Table 7. From Table 7, it was noted that class participation, Kenya Certificate of Primary Education performance and consulting teachers were highly rated by the teachers at 3.67, 3.54 and 3.53 respectively. This means that these three aspects had high influence on the performance of students in biology in public secondary schools as reported by Biology teachers. It was also noticed that discipline (3.28), punctuality (3.04), students' personal timetable (2.76), peer influence (2.71) and participation in co-curricular activities (2.67) moderately influenced the performance of students in biology in public secondary schools while Gender (2.21) had low influence on the performance of Biology in public secondary schools in Ndhiwa sub-county. Further, it was observed that gender had low influence on students' performance in biology as rated by biology teachers at 2.21. The study further sought to estimate the influence of the student factors on their performance in Biology and a coefficient of determination was computed and the results is shown in Table 8. From Table 8, it was established that student factors accounted for 11.6% of the variation in the performance of Biology. However; the influence was not statistically significant because P-value was greater than 0.05.Thus the null hypothesis was accepted.

Table 7. Influence of Student Factors on Students' Performance in Biology as rated by Biology Teachers (n = 46)

Aspects of Student Factors		Ratings					Total	MR
		1	2	3	4	5		
Students' Personal Time Table;	F	8	8	17	13	0	46	
	Score	8	16	51	52	0	127	2.76
	%	17.4	17.4	37.0	28.3	0	100	
K.C.P.E Performance;	F	1	6	15	15	9	46	
	Score	1	12	45	60	45	163	3.54
	%	2.2	13.0	32.6	32.6	19.6	100	
Punctuality;	F	10	4	10	18	4	46	
	Score	10	8	30	72	20	140	3.04
	%	21.7	8.7	21.7	39.1	8.7	100	
Class Participation;	F	0	5	10	26	5	46	
	Score	0	10	30	104	25	169	3.67
	%	0	10.9	21.7	56.5	10.9	100	
Discipline;	F	4	5	16	16	5	46	
	Score	4	10	48	64	25	151	3.28
	%	8.7	10.9	34.8	34.8	10.9	100	
Peer Influence;	F	11	11	11	6	7	46	
	Score	11	22	33	24	35	125	2.71
	%	23.9	23.9	23.9	13.0	15.2	100	
Consulting teachers;	F	4	2	12	20	7	45	
	Score	4	4	36	80	35	159	3.53
	%	8.7	4.3	26.1	43.5	15.2	100	
Gender;	F	16	12	11	6	1	46	
	Score	16	24	33	24	5	102	2.21
	%	34.8	26.1	23.9	13.0	2.2	100	
Participation in co-curriculum activities;	F	10	11	13	8	4	46	
	Score	10	22	39	32	20	123	2.67
	%	21.7	23.9	28.3	17.4	8.7	100	
Overall Mean Rating								3.05

KEY: F – Frequency MR – Mean Rating
Interpretation of Mean Rating:
1.00- 1.44 = Very Low,
1.45 – 2.44 = Low,
2.45 – 3.44 = Moderate,
3.45 – 4.44 = High,
4.45 – 5.00 = Very High

Table 8. Regression analysis of the Influence of Student Factors on their Performance in Biology

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.343[a]	.117	.116	1.43692	.117	.503	9	34	.862

Predictors: (Constant) Student factors

Table 9. ANOVA Output on the Influence of Student Factors on their Performance in Biology

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.344	9	1.038	.503	.862[b]
	Residual	70.201	34	2.065		
	Total	79.545	43			

a.Dependent Variable: Mean score in Biology
b.Predictors: (Constant) Student factors

Table 10. Multiple linear regression analysis between Student Factors and Students' Performance in Biology

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.542	1.545		2.940	.006
Students' Personal Timetable	.061	.334	.048	.181	.857
K.C.P.E Performance	-.465	.298	-.349	-1.559	.128
Punctuality	187	.219	-.184	854	.399
Class Participation	.469	.352	.286	1.334	.191
Discipline	.141	.244	.112	-.580	.566
Peer Influence	. 117	.234	-.121	.501	.620
Consulting Teachers	.002	.243	.002	.010	.992
Gender	.119	.262	.099	.455	.652
Participation in Co-Curriculum Activities	-.140	.225	-.131	-.624	.537

a Dependent Variable: Mean score in Biology

This means that student factors cannot be relied upon to predict students' performance in Biology. In order to find out whether the influence of student factors on their performance in biology was a significant predictor or not, ANOVA was used to calculate variance and the results were as shown in Table 9. From Table 9, it was revealed that the influence of students' factors on their performance in Biology was not significant predictor ($F(9, 34) = 0.503$, $P>0.05$). This means that student factors cannot be relied upon in determining the students' Performance in biology in public secondary school in Ndhiwa Sub County. This implies that the null hypothesis was rejected. This is also in agreement with the students' group discussion that argued out that the students factors can be managed with the ideal measures such as establishing guidance and counseling units in schools, use of peer counseling, rules and regulations. To confirm prediction power of student factors, the students factors were then regressed individually against students' performance in Biology and the result were as shown in Table 10. From Table 10, all student factors like class participation, participation in co-curricular activities, discipline, gender, peer influence, punctuality, consulting teachers, student personal time table and Kenya Certificate of Primary Education performance did not have significant influence on student performance; this is despite the fact that they seem to have had different level of influence as indicated by the coefficients for instance, Kenya Certificate of Primary Education performance had coefficient of -.465, meaning that they reduced the student performance by negative .465 and the P-value was.128 which is greater than 0.05 thus, not significant and therefore Kenya Certificate of Primary Education performance cannot be relied upon to explain students performance in Biology. This could be because Students who join secondary schools are known to have performed well in science at Kenya Certificate of Primary Education level meaning they are capable of doing well in Kenya Certificate of Secondary Education.

In addition, it can be argued that other factors may be responsible for students' performance in Biology besides other factors. Discipline also had coefficient of .141, meaning that they increased the student performance by negative .141 and the P value was .566 which is greater than 0.05 thus not significant and therefore discipline cannot be relied upon to explain students' performance in Biology. Peer influence had coefficient of .117% meaning that they increased the student performance by 117% and the P-value was .566 which is greater than 0.05 thus, not significant and therefore peer pressure cannot be relied upon to explain student performance in Biology. This may mean that schools have improved life skills and peer education. Participation in co-curriculum activities had coefficient of -.140 meaning they reduced the student performance by .140 units but the P-value was .537 which was greater than 0.05 thus, not statistically significant and therefore participation in co-curricular activities cannot be relied upon to explain students performance in Biology.

DISCUSSION

Student factors moderately influenced students' performance in Biology in public secondary schools in Ndhiwa Sub County. These evidence concurred with the findings of Waseka and Simatwa (2016) in their study on student challenges influencing academic performance of students in secondary education that established; Performance in Kenya Certificate of Primary Education, age, participation in co curricular activities and exclusion from school were student challenges that were found to be statistically significant predictor of student academic performance in Kenya Certificate of secondary education. Mukhwana (2013) also revealed the student related challenges affecting performance of Biology in Eldoret Municipality are; primary science which provide requisite

background at the secondary school level, and the interest in Biology provide a force for learners to participate in the learning process, their ability to carry out practical's effectively and the students' ambition and attitude. The findings also reflect the opinions from most of the students' focus group who argued that class participation and consulting teachers increased teacher student bonding leading to positive effect on performance of the subjects and the academic performance and supported by the principal interview that: "Learning is a process and a collective responsibility of the learner and the teacher whether in class, laboratory or outside the classroom. It is determined by readiness and commitment of the learner and the teacher. Students should not lose focus but participate fully on class activity and take time to consult teachers on areas of difficulty". This implies that learners should take responsibility to be punctual, participate in class, have discipline and consult teachers. Punctuality helps the learner to be in class in time and prepare for class activities like doing assignments. Discipline help learners to get and follow instructions, do appropriate gender roles, cooperation, harmony and team work. Consulting teachers enhanced individualized learning and improved incidental learning. Class participation helped to motivate the learner and the teacher and improves mastery of the content.

Further, it was observed that gender had low influence on students' performance in biology as rated by biology teachers at 2.21. This finding is also echoed by the findings of Deepika and Prema (2017) who notes that, there is no significant difference between male and female with respect to peer pressure and academic achievement. However, these findings are contrary with the findings of Alordiah, Akpadaka and Oviogbodu (2015) in a study of influence of gender, school location and parental socio-economic status on student academic achievement in mathematics that revealed male student performed better than female students, urban student perform better than rural students and students of parents with high parental socio-economic status performed better than students of parents with low socio-economic status. Zelalem and Kathiresan (2016) also established in their study from econometric result that entrance exam result, parent income, personal related factors, peer influence are the major factors that substantially determines the level of girls academic performance never the less, Misinya (2013) on peer influence on academic performance of form one students' in girls boarding schools established that peer group members who scored good marks Kenya Certificate of Primary Education have positive influence to girl student academic performance in secondary schools, it was deduced that students prior entry marks had more influence on girl student content mastery. Overall, student factors were found to influence students' performance in biology in public secondary schools in Ndhiwa moderately with an overall mean rating score of 3.05 meaning that students' factors are very important since they are the one who are the beneficiary or victims of the results from these examinations. Student factors cannot be relied upon to predict students' performance in Biology. The findings agree with those of the principal interview who argued that "Student's personal factors are very many and influence students' performance but the influence is not Significance because they can be controlled by introduction of ideal measures like guidance and counseling, parental counseling school regulations." This may also mean that there are other factors within and outside the school that influences the students' performance and factors related to students can be regulated since most of the secondary schools in Ndhiwa sub-county had well established school rules and guidance and counseling units which controlled some of the students' related factors like indiscipline, punctuality, consultations, time table, and peer influence. The student focus group also echoed the same sentiment that factors influencing students are many but little influence on the students' performance as most schools set some measures to regulate those factors that are likely to cause poor performance in school related exams. Principals during the interview claimed that "Many people assume that students' factors are the only factors influencing the students' academic performance yet there are many other factors like teachers' related factors, school related factors, community, parental related factors, environmental and management factors. This implies that performance cannot be explained by students 'factors alone" This may mean that factors influencing students' performance in KCSE Biology are profound and many and even more difficult to study them in a single research. The factors may include: school factors, parental factors, policy factors, leadership factors and Environmental factors. The finding that Kenya Certificate of Primary Education performance not being significant is contradicting Misanya (2013) who found that peer group members who scored good mark in Kenya Certificate of Primary Education had positive influence to girls' student academic performance in girls' secondary school. It was deduced that student's prior entry marks had more influence on girl student content mastery. Misanya (2013) looked at the girls' influence of prior entry mark on girls' student content mastery only, leaving behind boys and other student related factors. Moreover, it did not look at Biology performance. This is also echoed by the principal interview who argued that "It has become common in schools to find learners with poor entry in Kenya Certificate of Primary Education to perform better than expected in KCSE biology and today KCPE entry grade is not a sure way to predict student KCSE performance." This could mean that pupils who fail in KCPE tend to work extra hard once they join Secondary schools to compensate their previous failures and thereafter making them to perform well in the KCSE. KCPE though being a standardized test just like KCSE is not much comprehensive like KCSE and the issue of choices make it easier. This may also mean that pupils' performance was also not good hence reducing the performance at KCSE biology exams.

Discipline cannot be relied upon to explain students' performance in Biology. This may be because schools have introduced many ways to control misbehavior among learners like reprimand, penalties, loss of privileges and suspension. Moreover, it can be argued that other factors may be responsible for students' performance in Biology. The finding also concurred with the finding of Mukhwana (2013) that student related factors that affect performance of Biology in Eldoret Municipality are primary school science which provide a requisite background for Biology at secondary level, others student related factors based on knowledge acquisition noted was availability of reading materials, use of time table and organizing their work, employing study discussion groups and attending symposium, field trips and exhibition, on the contrary the study established that absenteeism, indiscipline and truancy in student posted poor/negative performance. In addition, it can be argued that other factors may be responsible for student performance in Biology. The finding is in agreement with Depeeka and Prema (2017) who established that there is no significant difference between male and female with respect to peer pressure and academic achievement and that there is a

negative correlation that existed between peer pressure and academic achievement. The study further revealed that peer pressure plays a vital role in lowering of achievement in academic. The result of the student focus group discussion also established same sentiments that peer group is a factor negatively influencing performance because peer is a social system and its is already established in the school community.
Participation in co curricular activities cannot be relied upon to explain students performance in Biology. This meant that schools have developed means to ensure that all learners take part in co-curriculum activities. In addition, it can be argued that other factors may be responsible for students' performance in Biology. In conclusion, it was found that the student factors influenced students' performance in Biology in Ndhiwa Sub County.

CONCLUSION

Student factors were found to influence students' performance in Biology in public secondary schools both positively and negatively but the influence was not statistically significant and cannot be relied upon to explain and predict students' performance in Biology.

Recommendation

Based on the findings of this study on influence of student factors on students' academic Performance in Biology, the following recommendations were made:

- Schools should intensify guidance and counseling to prevent deviant behaviors like indiscipline and improve on other significant factors so as to improve performance.
- The student factors that should be focused on should include entry behaviour, discipline, peer influence class participation, use of personal timetable and participation in co-curricular activities.

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