International Journal of Innovation Sciences and Research
Vol.4, No, 11, pp.520-523, November- 2015

Available online at
http://www.ijisr.com

RESEARCH ARTICLE

RELATIONSHIP BETWEEN MOTIVATION AND PERFORMANCE IN K.C.S.E BIOLOGY IN SELECTED SECONDARY SCHOOLS IN NYAKACH DISTRICT, KISUMU COUNTY, KENYA

***Mr. OwinoOgutu Albert, Dr. Yungungu Alice M., Ahmed Osman and OgollaBernard, O.**

Department of Curriculum Instruction and Educational Media, P.O Box 3900-30100, Eldoret-Kenya

Accepted 13th October, 2015; Published Online 30th November, 2015

ABSTRACT

This paper identifies and discusses motivation related factors and how they influence performance in K.C.S.E Biology in selected secondary schools in Nyakach Sub – county, Kisumu County. The study was significant as performance in K.C.S.E Biology has been poor over the years; hence need to find out causes. The study was guided by the systems theory advocated by Gagne and Briggs (1979). The research was conducted through descriptive survey design by quantitative and qualitative approach. The target population was seven hundred and thirty Form four students, eighteen Biology teachers, and fourteen Principals. Stratified random sampling was used to select schools, purposive sampling for selecting teachers and Principals, form four students were first stratified then selected through simple random sampling. Data was collected using questionnaires for students, teachers and interview schedule for principals. Descriptive Statistics such as frequencies, percentages, correlation analysis, regression coefficient and coefficient of determination were used to analyze data using Statistical Package for the Social Sciences Programme (SPSS). The finding was that there was positive relationship between motivation and performance in K.C.S.E Biology. The study recommended that, teachers should always introduce motivational variables in their teachings.

Key Words: Relationship, Motivation, Andperformance and Multi-Media

INTRODUCTION

The use of MM in instructional delivery is said to motivate students' interest in learning. Motivation is a key variable in education. This view is in consonance with Okoromas (2000) who affirms that motivation is an important variable that arouses learners' interest and reinforces learning. Morris (2004) also affirmed that when visual, audio and synchronized MM are used for teaching, it stimulates several senses thus making the learning more involved in the learning process. Students feel excited and desire to put in their best in learning effort once they are motivated. The problem of poor performance in science subjects is global as indicated by studies done by Valverde and Schmidt (1997) in USA, Landry (1998) in Canada, Fonseca and Conboy (2006) in Portugal.

The Kenyan society has laid a lot of emphasis on performance tests because the immediate goal of learning is to pass tests that open doors to higher education pursuit. Success in school is determined by high passing scores in examinations. Science teachers need to understand the role of such factors as motivation, interest, attitudes and engagement on achievement in science. The science teachers also need to know how to apply motivational devices in their class room interactions to sustain students' interest in class room activities. Research findings of Fraser, Walberg, Welch and Hattle (Discussed by Sign, Granville and Dike (2002) showed that motivational variables and instructional time have the largest effect on eight grade achievement.

****Corresponding author: Mr. OwinoOgutu Albert,***
Department of Curriculum Instruction and Educational Media, P.O Box 3900-30100, Eldoret-Kenya.

Continuing Sing et – al noted that the body of accumulated research in the last two decades indicates that motivation is one of the salient predictors of achievement in Mathematics and Science, such research work which link achievement in science with motivation include the findings of: Weiner (1966), Walberg (1979), Walberg (1986), Brown and Walberg (1988), Nolen (2002), Geary and Hampson (2007). The issues of motivation of students in education and the impact on academic performance are considered as an important aspect of effective learning. Of all the personal and psychological variables that have attracted researchers in this area of educational achievement, motivation seems to be gaining more popularity and leading other variables (Tella, 2003). From the data in the table above, it is evident that the national performance of students in KCSE Biology is relatively low in the whole country.

In the year 2004 only 12.03% attained the high quality grades B+ to A. This declined to 7.7% in 2005, 6.13% in 2006, 8.79% in 2007, 5.08% in 2008, 4.39% in 2009, and 5.88% in 2010, showing that high quality grade passes are very low. On the other hand in 2004, 36.67% of the candidates obtained low quality passes D-E. In the years 2005 it was 43.61%, 2006 it was 49.64%, 2007 it was 40.76%, 2008 it was 34.08%, 2009 it was 32.11% and 2010 it was 29.4%. The majority of the candidates had low quality passes indicating that they obtained grades below stipulated mastery of the subject matter. Learning achievement was adopted as a key indicator of education during world conference of education for all (EFA) in Jomtien, Thailand (UNESCO, 2000).Since achievement in Biology at KCSE in Kenya has been consistently low over the years, this is an indication of low quality Biology teaching/learning.

Table 1.0. Performance of candidates in KCSE Biology national examination for 2006-2010

YEAR	No. of candidates	Percentage mean score
2006	217,657	54.89
2007	246,662	41.95
2008	270,000	30.38
2009	299,302	27.20
2010	315,063	29.23

Source: KNEC Reports – (2006-2010)

Table 1.1: National Percentage Passes in Biology

YEAR	High quality % (Passes B+ to A)	Low quality % (Passes D to E)
2004	12.03	36.67
2005	7.7	43.61
2006	6.13	49.64
2007	8.79	40.76
2008	5.08	34.08
2009	4.39	32.11
2010	5.88	29.4

Source: KNEC Reports (2004-2010)

The performance in Biology at KCSE for the years under review, clearly indicates that a large proportion of students who leave secondary school education cycle at form four in Kenya do not attain the basic mastery level of the secondary Biology course. Unless this trend is reversed, the prospects of attaining the goal of Kenya vision 2030 may not be achieved.

Table 1.2. Biology percentage passes 2008 – 2010national examinations (KNEC)

Grade	2008 (%)		2009 (%)		2010 (%)	
A	0.27		0.27		0.44	
A-	1.71	5.08	1.32	4.39	1.85	5.88
B+	3.1		2.80		3.59	
B	4.43		4.48		5.12	
B-	6.11		6.54		6.97	
C+	8.46		8.86		9.41	
C	11.32	60.79	11.91	63.49	12.35	64.65
C-	14.23		14.90		14.79	
D+	16.24		16.80		16.01	
D	17.78		17.68		16.04	
D-	13.96	38.08	12.66	32.11	11.62	29.4
E	2.34		1.77		1.74	
TOTAL	99.95	99.95	99.99	99.99	99.93	99.93

Source: KNEC Report 2010

The overall candidates performance in the table above shows clearly that very few candidates obtained high quality passes, B+ to A was 5.08% in 2008, 4.39% in 2009 and 5.88% in 2010, while low quality passes D – E in 2008 was 38.08%, in 2009 it was 32.11% and in 2010 it was 29.4%, this reveals that a third of the candidates get low quality grades, which cannot allow them to pursue Biology courses in further education. In general performance in sciences has been poor.

Knowledge of Biology contributes towards the socio -economic development of the country. The knowledge of genetics which is a branch of Biology has revolutionized determination of paternity disputes and identity of culprits of serious crime with precision and certainty through Deoxyribo-Nucleic Acid (DNA) sequencing and profiling, (Institute of Biology, 2007). The above table illustrates that through the years the percentage high quality passes has been below 9% while low quality passes has formed the bulk of the candidates with over a third of them.

Table 1.3. Sub – County percentage passes in Biology

Year	High quality passes % B+-A	Low quality passes % D-E
2010	6.2432	37.2851
2009	5.04854	35.9224
2008	8.09232	33.4286
2007	7.4382	36.2459
2006	8.1243	37.1876

Source: NyakachSub – County Education Days-(2006-2011)

This implies that more than a third of the candidates who sat for KCSE Biology in Nyakach Sub-County, failed to meet the expected mastery of the subject matter and this locked them out of careers where Biology is a prerequisite subject. Despite the efforts of the BOM, PAs, CDF, Government and communities, the performance in sciences and Biology in particular have not been impressive. Nyakach Sub – County has been producing very few high quality grade passes, less than 9% of students attain high quality grades B+ to A, and over 30% attain poor quality grades of D to E. Unless this trend is changed Nyakach as a Sub – county may not be able to produce students who may be admitted into high education level courses such as in Medicine, Agriculture and Environment. The researcher feels that there are factors which may be contributing to this state of affairs of poor performance in KCSE Biology in Nyakach Sub – County, Kisumu County.

Statement of the Problem

In the background section, it has been illustrated that there has been poor performance in KCSE Biology in Nyakach Sub – County as reflected by more low quality passes of D-E above 30% between the years 2006- 2010 and very few high quality passes, less than 9% within the same period. Biology has contributed to the development of new and better drugs and vaccines against many human and animal diseases such as measles, malaria, polio and rinderpest, and it has contributed towards conservation of environment and endangered species. Biology lays the foundation for careers in Agriculture, which is the engine for economic growth. Agriculture in Kenya earns 60% of foreign exchange and provides employment to over 70% of the population, (GoK, 2003).

Biology researchers have been able to develop high yielding, disease resistant and fast maturing food crops and animals to meet the food requirements of an ever increasing world population through continuous research. Despite the knowledge of the importance of Biology for socio-economic development of the country, the government and other stakeholders' efforts in provision of facilities and teachers, the performance in science and Biology in particular has not been impressive in Nyakach Sub – County. In view of students poor performance in KCSE Biology, there is need to establish the factors that promote poor performance in KCSE Biology. Therefore the researcher specifically set out to investigate factors that influence poor performance in KCSE Biology in selected secondary schools in Nyakach Sub – County, Kisumu County.

Limitations of the Study

The study confined itself to investigating motivation and its influence on performance in KCSE Biology. The results were, therefore, interpreted only in this context of the study. The study was limited to a small sample schools that were selected

and Form four Biology students, Biology teachers and principals participated. The study was further limited to the performance in KCSE Biology and to analyzing data given by the sources. The study had no control over the exact information students and Biology teachers chose to give or withhold. The study was also limited by inadequacy of time since the KCSE examinations were ongoing, which made the researcher to re-schedule the research process on the days where there were no examinations going on.

MATERIALS AND METHODS

The study was carried out in 14 selected secondary schools in Nyakach Sub – County, Kisumu County. It sought to capture useful data that was representative of the factors that influence performance of students in KCSE Biology in Nyakach Sub - County. The study design was descriptive survey research since it was a fact finding with an intention of establishing the truth. There were 41 secondary schools at the time of study, of which 14 were selected for the study based on whether they were boys', girls' or mixed schools. Form four Biology students, Biology teachers and principals were involved. 730 Biology students, 18 Biology teachers and 14 principals were used in the study. Owing to the varied nature of the schools, stratified sampling was used. Three categories were used for equal representation for boys', girls' and mixed schools. During sampling, 40% of the girls', 100% of the boys' and 85% of the mixed schools were used. Data was then collected from the sample selected using questionnaires and interview schedules. Both qualitative and quantitative data analyses were employed. Qualitative analysis involved derivation of explanations and making interpretations of findings and trying to establish relationships from information gathered. Quantitative analysis involved derivation of statistical descriptions and interpretations of data by use of descriptive statistics.

RESULTS AND DISCUSSIONS

The study sought to examine the motivational factors that influence performance in KCSE Biology. This was based on the premise that some factors are influential to performance in KCSE Biology. Therefore, these factors need to be understood and properly addressed in order to improve students' performance. The factors were measured by looking at motivation and performance.

The relationship between motivation and performance

A mean of less than 1.5 meant that motivational aspect in the specific question was not there, 1.5-2.5 was rarely practiced, 2.5-3.5 occasionally, 3.5-4.5 frequently and greater than 4.5 always practiced. On motivation of students through being given rewards, the mean was 2.876 which meant they were occasionally rewarded, on frequency of being allowed to go for academic trips, the mean was 4.03 means that they were frequently allowed to go for field trips, on frequency of allowing students to attend symposiums had a mean of 3.689 which implied that they were frequently allowed to attend symposiums, on rewarding students when they attained the most improved status the mean was 3.619 implied that they were frequently rewarded, on frequency of inviting motivational speakers and resource persons the mean was 3.664 meaning the school frequently invited resource persons.

On teachers' opinion, frequency to which students were rewarded had a mean of 3.333 meaning they were occasionally rewarded, on frequency of academic trip had a mean of 2.777 which implied that the students were occasionally allowed to go on trips, on frequency on which students were recognized the mean was 3.555 meaning they were frequently recognized when they attained the most improved status in class, on frequency of attending symposiums the mean was 2.444 meaning students were rarely allowed to go to or attend symposiums, on frequency of inviting motivational speakers a mean of 2.055 meant that school rarely invited resource speakers.

The study found that there was a significant positive relationship between motivation and performance in KCSE Biology. The correlation between students' motivation and performance was 0.3754, p-value of 0.046, meaning the null hypothesis could only be true for 4.6% cases while the alternative is 95.4% that is there is significant relationship between motivation and performance in KCSE Biology. The finding also corroborates that of Bank and Finlayson (1980) finding which stressed that successful students have significant high motivation for achievement than unsuccessful students. Similarly, the report by Johnson (1996) that academic achievement is highly correlated with students' motivation lends a good support to the present findings. The results reveal that highly motivated students perform better academically than the lowly motivated students. In this regard, a positively perceived reward induce positive motivation and subsequently realizes high achievement.

The negatively perceived reward leads to negative attitude and low achievement. Good impartation of Biology knowledge in the part of the teacher coupled with students' interest in the subject and display of positive attitude are good motivating factors which when combined together is assumed will result to better achievement in Biology. MM material like VCD and television are motivating devices when used to synchronize a lesson presentation to the experimental group in Biology produced greater academic performance in the experimental group than in the control group. Effective and efficient use of MM in teaching and learning offers both audio and visual messages or information and these appeals to the sense of sight and learning simultaneously. In Nyakach Sub – County MM instructions are virtually non-existent; this leads to poor performance in K.C.S.E Biology. In this study, the researcher found out that rewarding students as best performers, students taken for field trips e.g. Ecology, most recognized when attained most improved status in Biology class, allowing students to attend Biology symposiums, engaging resource persons to talk to students and use of MM in teaching and learning Biology were rarely practiced, this lead to poor performance in K.C.S.E Biology. (Owino *et al*., 2014) Attending symposia and exhibitions by students leads to their exposure, innovativeness and creativity which are required in the learning process (SMASSE, 2008). This is due to the exchange of ideas that students have with their colleagues pertaining different topics. Symposia help students to be aware of different Biology concepts and questions that normally give them problems. On the other hand, Biology exhibitions cultivate the idea of innovativeness and creativity which motivates the students and therefore stimulates their attitude, ambition and interest towards the subject hence affecting performance.

Originality and creativity amongst students is developed through activities such as symposia and exhibitions because students are able to gather ideas which perfect their thinking thus better understanding of the concepts. Exposure to different learning environments promotes interest in students' influencing their performance. This implies that the students in Nyakach Sub – County were not adequately motivated leading to poor performance in KCSE Biology. The significant difference between motivated and unmotivated students on achievement in science, tend to suggest that motivation has a strong influence on achievement. This finding is consistent with the findings of other researchers. Studies by Sing, Granville and Dike (2002), Nolen (2003) and Geary and Hamson (2007) indicate that motivation has very strong influence on students' achievement in science.

Conclusion

From the findings and discussions, it was concluded that:
Students in Nyakach Sub - County were motivated though to some extent more motivation is needed for not rewarding best performers, students not taken for field trips e.g. Ecology, nor recognizing students when they attain the most improved status in Biology class, not allowing students to attend Biology symposia, not engaging resource persons to encourage students, and not exposing students to different learning environments contributed to poor performance in KCSE Biology in Nyakach Sub - County.

Recommendation

Biology teachers introduce motivational variables in their teaching to enhance students' achievements in test and participation in class, allowing students to attend symposia, and taking students for field trips.

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