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

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Abstract

Purpose: Chemistry has been identified as a key science subject and its importance in the logical and innovative development of any country has been widely detailed. The performance of students in chemistry among secondary schools in Kenya has remained poor for many years. The purpose of our study is to establish principal's perception of factors contribution to student's poor performance in chemistry in public secondary schools in Wajir County, Kenya.

Methodology: The paper used a desk study review methodology where relevant empirical literature was reviewed to identify main themes and to extract knowledge gaps.

Findings: Poor performance in Chemistry in Wajir County can be attributed to: The teaching methods used in most lessons were mainly teacher-centered; hence do not provide opportunities for students' participation to enhance learning, lack of motivation of teacher also contributes, to poor performance in chemistry and negative attitude of the students towards the subject especially towards the practical paper hence lack of interest in performing well in the subject especially in practicals.

Unique Contribution to Theory and Practice: The study recommends that the principal must foster processes that are in support of the empowering teachers in order for them to influence the students positively. Therefore, the principal can influence the students positively by motivating the teachers' efforts.

Keywords: *principals' perception, poor performance, chemistry, public secondary schools*

1.0 INTRODUCTION

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

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

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

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

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

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

The 1986 National Assessment of Educational Progress (NAEP) in a report concluded that young men performed better than girls in sciences in the United States of America and the sexual orientation gap was evident as the learners progressed through the academic ranks (Mullis &

Jenkins, 1988). An evaluated study conducted later by NAEP in 2007 indicated that boys continued to perform well in grades 4 and 8 respectively with the average scores being higher in 2007 as compared to 2005 (Lee, Grigg & Dion, 2007). George and Kaplan (1998) in their report concluded that there is no critical relationship between the availability and sufficiency of laboratory materials and hardware and the scholastic excellence of learners in science subjects of Physics, Biology and Chemistry in SSCE. Afolabi (2008) asserts that a positive connection between the alignment of materials has a positive and a compelling effect on the performance of secondary school learners in the science subjects of Physics, Biology and Chemistry and enhance the learners' academic progress. This observation is affirmed by Twoli (2007), who concluded that lack of offices and closed research facilities contributed negatively towards the performance of students in the science subjects of Physics, Biology and Chemistry in the national Examinations.

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

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

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

1.2 Statement of the Problem

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

In Wajir county especially Habaswein Sub county the performance of science subject which includes chemistry has continued to be a major concern for the county government and the national government at large (Mohamed, 2012). Being one of the sub counties located far from Nairobi which the national center for education and curriculum development its performance has remained poor due to a number of factors which include poor infrastructure and insecurity. The performance has led to low mean grades for most students and thus jeopardized their chances for upward social mobility.

At the national level, the poor performance has led to low uptake of careers in science and technology. In an effort to reverse the trend, the government adopted a number of interventions targeting students, teachers and the overall teaching and learning environment (K.N.E.C, 2014).

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

1.3 Objectives of the Study

The general objective of the study was to establish principal's perception of factors contribution to student's poor performance in chemistry in public secondary schools in Wajir county, Kenya.

1.4 Significance of the Study

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

This study may also be of beneficial to the school principals who will benefit from the suggestions on how to ensure an enabling learning environment for students and teachers to enhance performance in Chemistry. Students also will not be left out from benefiting from this study as they would leap from the suggestions on particular characteristics and study habits that enhance performance in Chemistry.

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

2.0 LITERATURE REVIEW

2.1 Principal's Influence on School Climate

Research studies so far indicate that the school principal can greatly influence the school's academic achievement by what kind of environment that he or she creates. According to DeAngelis

& Presley (2011), principals have the greatest influence on school achievement through their creation of the school climate and support. The climate of the school can influence the out of the school and students. According to Kane, Taylor, Tyler, & Wooten (2010), the principal can create a safe, orderly and strong environment on which the academic endeavors are carried out, which influences the outcome of the student.

DeAngelis & Presley (2011) further asserts that bright student taught by well qualified and experienced teachers but in a disorderly environment are unlikely to make it through. The principal has an influence in regard to providing infrastructure which are crucial for quality instructional practices. The facilities developed go a long way in motivating teachers positively which in effect enhance students' success. This conducive environment is directly impacted on the leadership which include the principal and the board of governors (Marzano, Waters, & McNulty, 2005).

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

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

2.1.1 Attitude towards learning of chemistry and performance

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

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

Hussain, et al (2011) discovered that, mentality is vital in understanding human conduct. To characterize what precisely a state of mind is, numerous endeavors have been made in writing. For the most part it is characterized as a complex mental state including convictions. It is a person's common propensity to react positively or horribly to a protest, individual or gathering of

individuals, organizations or occasions (Coren, 2006). States of mind figure out what every individual will see, hear, think and do. They are established in involvement and don't wind up programmed routine lead. Mentalities can be sure (qualities) or negative (bias). State of mind towards science indicates intrigue or feeling towards considering science. An exploration led by Olatunde (2009) demonstrated that state of mind in science implies the logical approach accepted by a person for tackling issues, evaluating thoughts and settling on choices in the sciences.

2.1.2 Students' Characteristics and their Chemistry Achievement

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

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

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

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

As per Wajir SMASSE (2010) pattern discoveries, there is a general inclination among students that Mathematics and Sciences (Chemistry included) are troublesome subjects. This inclination was observed to be more noteworthy in girls than boys. The sentiments were observed to be expected to; socio-social states of mind, teachers' disposition or inclination towards the understudies, school culture, showing technique and performance. This study means to facilitate this work and suggest to what degree the expressed issues may add to poor performance in Chemistry. At the point when motivational factors, for example, premium, disposition and yearning are instilled in the students, they have a tendency to invest more energy examining the specific subject. This converts into higher accomplishment in sciences. On the off chance that the instructive objective is to support the improvement of higher theoretical level with its related versatile limit and adaptability, at that point this examination will give a manual for working towards the long-term objective.

2.1.3 Teacher Characteristics and Students Achievement in Chemistry

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

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

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

2.2 Empirical Review

Musyoki (2015) carried out a study to investigate determinants of students' achievement in chemistry and the proposed strategies used to improve its achievement. A total of 300 respondents were used to derive the findings and conclusion of the study. The researcher adopted stratified sampling to select public schools and students per school were randomly selected while one chemistry teacher and the principal in the sampled school automatically became respondents in the study. Questionnaires were used to collect data. The findings of the study indicate that the perception of students towards chemistry was negative as observed by 64% of the chemistry teachers and 64% of the principals. Teaching experience was found to be significant in determining students' achievement in chemistry in secondary schools as agreed by 60% of teachers and 72% of the principals but academic qualification was insignificant. ICT materials and facilities were found to be available but were not used during teaching and learning of chemistry. Based on the findings the study concluded that students' perception in chemistry determines its achievement in examinations and that most students do not have positive attitude in chemistry. ICT materials and facilities are available but not used during teaching and learning of chemistry. Also, various teaching and learning resources are not adequate in many schools. The study recommends that the Government and school authorities should through the allocation of funds, materials and apparatus for sciences teaching make school laboratories more adequate for effective implementation for Chemistry curriculum so as to enhance students' performance. Students should be exposed to more laboratory applications and activities so that they can recognize laboratory materials and equipment.

Ogembo, (2013) carried out a study on determinants of students' poor performance in Chemistry in public secondary schools of Kwale county, Kenya. A sample of 482 forms three students were randomly selected using both simple and stratified random sampling to participate in a descriptive interactive survey study. Questionnaires and oral interviews were employed. Data obtained from the study as well as physical observation of the nature of the teaching and learning resources and the conduct of both the practical and theory chemistry lessons were analyzed using SPSS software. Results showed that student' background characteristics were the main causes of the students' persistent poor performance in Chemistry in Kwale County. It is recommended that the Ministry of Education through its various agents should, among other things, enhance supervision of curriculum implementation in schools, increase the amount allocated for tuition and release the funds in good time to enable prompt acquisition of learning materials. School managements, in conjunction with other stakeholders, should enhance teacher motivation and provide more and better teaching and learning facilities to enable a more conducive environment for learning. Finally, Chemistry teachers must enhance their teaching approaches by adopting a more practical approach to the teaching and learning practices that would motivate the students to perform better in the subject.

Orado (2011) conducted a study on factors influencing performance in chemistry practical work among secondary schools in Nairobi province, Kenya. The study adopted a descriptive survey design. The study utilized questionnaires, lesson observation schedules and document analysis guide to collect data. The main findings of the study indicated that science laboratories in secondary schools in Nairobi province were fairly equipped with basic apparatus, chemicals and materials and students were indeed involved in a variety of practical activities in chemistry. However, the activities the students were involved fostered the acquisition of mainly basic

scientific skills. Key scientific skills such as experimental design and hypothesis formulation were found lacking during practical work in secondary school chemistry in Nairobi province. On comparing the skills emphasized both in teaching and assessment of practical work, it was found that the skills were the same as those assessed by KNEC. This study thus recommended that KNEC needed to assess students in as many skills as possible in KCSE chemistry practical examination including simple aspects of experimental design if teachers were to be conditioned to also teach and assess such skills.

2.3 Research Gaps

A knowledge gap occurs when desired research findings provide a different perspective on the issue discussed. For instance, Musyoki (2015) carried out a study to investigate determinants of students' achievement in chemistry and the proposed strategies used to improve its achievement. A total of 300 respondents were used to derive the findings and conclusion of the study. Questionnaires were used to collect data. The findings of the study indicate that the perception of students towards chemistry was negative as observed by 64% of the chemistry teachers and 64% of the principals. Teaching experience was found to be significant in determining students' achievement in chemistry in secondary schools as agreed by 60% of teachers and 72% of the principals but academic qualification was insignificant. ICT materials and facilities were found to be available but were not used during teaching and learning of chemistry. Based on the findings the study concluded that students' perception in chemistry determines its achievement in examinations and that most students do not have positive attitude in chemistry. ICT materials and facilities are available but not used during teaching and learning of chemistry.

Secondly, a methodological gap can be identified from the research, for example, Orado (2011) conducted a study on factors influencing performance in chemistry practical work among secondary schools in Nairobi province, Kenya. The study adopted a descriptive survey design. The study utilized questionnaires, lesson observation schedules and document analysis guide to collect data. The main findings of the study indicated that science laboratories in secondary schools in Nairobi province were fairly equipped with basic apparatus, chemicals and materials and students were indeed involved in a variety of practical activities in chemistry. However, the activities the students were involved fostered the acquisition of mainly basic scientific skills. This study thus recommended that KNEC needed to assess students in as many skills as possible in KCSE chemistry practical examination including simple aspects of experimental design if teachers were to be conditioned to also teach and assess such skills. On the other hand, our study adopted desktop literature review method.

3.0 METHODOLOGY

The study adopted a desktop literature review method (desk study). This involved an in-depth review of studies related to principal's perception of factors contribution to student's poor performance in chemistry in public secondary schools in Wajir county, Kenya. Three sorting stages were implemented on the subject under study in order to determine the viability of the subject for research. This is the first stage that comprised the initial identification of all articles that were based on principal's perception of factors contribution to student's poor performance in chemistry in public secondary schools in Wajir county, Kenya. The search was done generally by searching the articles in the article title, abstract, keywords. A second search involved fully available publications on the subject on principal's perception of factors contribution to student's poor

performance in chemistry in public secondary schools in Wajir county, Kenya. The third step involved the selection of fully accessible publications. Reduction of the literature to only fully accessible publications yielded specificity and allowed the researcher to focus on the articles that related to principal's perception of factors contribution to student's poor performance in chemistry in public secondary schools in Wajir county, Kenya. which was split into top key words. After an in-depth search into the top key words (principals' perception, poor performance, chemistry, public secondary schools), the researcher arrived at 3 articles that were suitable for analysis. These are the findings from the research.

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4.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

School leadership plays an important role in the school and have an effect on the student's achievement within their schools. The principals are the managers who are tasked with all the functions of the school; these tasks include directing and supervising the delivery, implementing and assessing the national curriculum within their respective schools. Principals have the greatest influence on school achievement through their creation of the school climate and support.

Poor performance in Chemistry in Wajir County can be attributed to: The teaching methods used in most lessons were mainly teacher-centered; hence do not provide opportunities for students' participation to enhance learning, lack of motivation of teacher also contributes, to poor performance in chemistry and negative attitude of the students towards the subject especially towards the practical paper hence lack of interest in performing well in the subject especially in practicals.

4.2 Recommendations

The study recommends that the principal must foster processes that are in support of the empowering teachers in order for them to influence the students positively. Therefore, the principal can influence the students positively by motivating the teachers' efforts. Also, teachers be encouraged to form science or chemistry subject associations where they can share their experiences in teaching strategies and learning. Chemistry teachers should expose their students to more practical's individually, and also adopt a practical approach while teaching chemistry.

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