

Teaching And It's Impact On Learning Of Chemistry In Secondary Schools Of Kisoro District: A Case Study Of Gasana Memorial Secondary School

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Abstract

The study aimed at teaching and its impact on learning of chemistry in secondary schools of kisoro district with a case study of gasana memorial secondary school and it was guided by the following objectives; To find out the factors affecting the teaching and learning of chemistry in secondary schools in Kisoro District, to find out the level performance of chemistry in secondary schools in Kisoro district and to find out the relationship between teaching and learning of chemistry in secondary schools in Kisoro District. The study was carried out from one of the selected secondary schools in Kisoro Municipality (Gasana Memorial Secondary school). Teachers considered may be of bachelors only because they seem to be having more experience in teaching and had taught for more than 5-Years and are the ones to be obtained from the school and the target population for this study will constitute of students and few teachers given the effects of the pandemic Covid-19, only S.3 Students and teachers in the school was considered for the study which was randomly selected from Gasana Memorial Secondary school. From the findings, majority of the respondents 38 (56.7%) said that it is not true that effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently while the minority 29 (43.3%) of the respondents said that it is true effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently. The researcher recommends the government, NGOs, and School management and other stake holders join hands and ensure that enough study materials like textbooks, charts, manilas, we stocked libraries among others are installed in schools so as to enhance student's learning of chemistry. Provision of scholarships to students who cannot afford to raise money for tuition should also be put into considerations this can be done by the government and other partners. Similarly, schools should avoid over hiking school fees to the levels that make a majority of students vulnerable.

Keywords: Teaching, Learning, Chemistry and Secondary Schools

Background of the study

According to (Anthony, Kazaara, & Kazaara, 2023), teaching is an intimate contact between a more mature personality and a less mature personality. Teaching in secondary schools is a big problem in many countries of the world. According to (Anthony, Kazaara, Kazaara, et al., 2023), teaching means the process of attending to people's experiences, feelings and needs and implementing specific interventions to help them learn specific things. Success is influenced by their emotional intelligence. Emotional intelligence related to moral behavior, way of thinking, problem solving, social interactions, personal emotions, and academic achievement (Godfrey et al., 2023). Teaching can be defined as engaging with students to enable them to understand and apply knowledge, concepts and processes (Kanyerere & Muhammed, 2023). It includes design, content selection, delivery, evaluation and reflection. To teach is to engage students in learning, and therefore teaching involves engaging

Received: 02.03.2024

Accepted: 10.03.2024

Published on: 30.03.2024

students in active knowledge construction (Christopher, Moses, et al., 2022). The work of teachers offers great interest and satisfaction in interacting with children and adolescents who have adult lives ahead of them and for whom they are acquiring knowledge and new skills. Teachers prepare young people as future members of society to provide for themselves and their future families while contributing to the intellectual, social and economic growth of the state (Ramadhan et al., 2023). Teachers are also aware of their key role in this process, as are various other sections of society, offering their views and explanations of what schools and teachers should and should not do.

Teaching is imparting attitudinal skills, appreciation, and the ability to read and write a document (Anthony, Kazaara, & Kazaara, 2023). On the other hand, some people believe that teaching takes place if teachers have been exposed to the basics of education. The philosophy of education is fundamental to the practice of teaching. In this regard (Goldhaber, 2020) suggested that “as we learn more about the teacher, we are likely to come closer to understanding how effective teachers are”. Knowledge of effective pedagogical practices appears to be relevant when creating a profile of effective teaching. Learning is defined as the act of acquiring new or modifying and strengthening existing knowledge, behavior, skills, values or preferences that can lead to a potential change in information synthesis, depth of knowledge, attitude or behavior in relation to the type and range of experience (Emmanuel et al., 2023). Chingos and West, 2010, argue that the quality of instructional materials, such as textbooks, is an important component in improving instruction. It is not the buildings themselves that are critical to effective chemistry teaching and learning, but the quality of the processes that take place in the buildings (Christopher, Moses, et al., 2022). Physical infrastructures will have an impact if they prevent work from being done. Peterson, 2009, blames the dramatically lower number of learning hours in developing countries. Students standing in classrooms without being able to take notes has a negative impact on the quality of teaching. (Brighton et al., 2023), found a high correlation between school electricity and student achievement. There are positive effects of electricity such as long hours of study, use of television, electronic devices and tools.

Statement of the problem

There are no clear studies in Uganda that link teaching to student learning in chemistry. However, a 2019 Rogers report blamed the government for not providing science teachers with teaching materials to use to bridge the gap in teaching chemistry performance (Ntirandekura et al., 2022), adding that the government should also motivate teachers by increasing their salaries and by balancing the ratio of teachers to students. The provision of effective instruction in secondary schools is compromised if attention is not paid to the general physical and psychosocial emotional environment (Christopher, Methodius, et al., 2022). Despite the Ugandan government's efforts to provide quality resources such as teaching materials, qualified staff, physical equipment, foreign teachers and financial assistance to support effective teaching and learning of chemistry in secondary schools, students still fail in their UACE Bryk, 1998 finals. The Ministry of Education and Sports in Uganda has been trying to implement a policy with the intention of minimizing failure especially in the UACE Michael examinations. There is a need to find out the truth or validity of the above factors influencing the teaching and learning of chemistry in secondary schools in Kisoro district.

Received: 02.03.2024

Accepted: 10.03.2024

Published on: 30.03.2024

Specific objectives

1. To find out the factors affecting the teaching and learning of chemistry in secondary schools in Kisoro District.
2. To find out the level performance of chemistry in secondary schools in Kisoro district.
3. To find out the relationship between teaching and learning of chemistry in secondary schools in Kisoro District.

Methodology

The study used descriptive research design because of the nature of the variables that were at hand, to produce data, required for qualitative and quantitative analysis to allow simultaneous description of views, perceptions and beliefs at any single point in time (white, B, 2000). Geneserth (1984) defines descriptive survey as a method of collecting information by interviews or administering questionnaires to a sample of individuals. This method is adequate for the study because it provides both qualitative and numeric descriptions of a sample of the population. The study was conducted in Kisoro Municipality in Kisoro District. Kisoro District is bordered with Kanungu district to the north, Kabale District to the east, Rwanda to the south, and Democratic republic of Congo (DRC) to the west. A target population as defined by Babbie, (2004) is aggregation of elements from which sample is actually selected. The study was carried out from one of the selected secondary schools in Kisoro Municipality (Gasana Memorial Secondary school). Teachers considered may be of bachelors only because they seem to be having more experience in teaching and had taught for more than 5-Years and are the ones to be obtained from the school and the target population for this study will constitute of students and few teachers given the effects of the pandemic Covid-19, only S.3 Students and teachers in the school was considered for the study which was randomly selected from Gasana Memorial Secondary school.

Mugenda and Mugenda (2003) asserts that the target population is the population to which a researcher wants to generalize the results of a study. Thus, the researcher used an estimated target population of 40 respondents from the school following the school calendar and payroll, list of April, 2021). This is so because only few students were allowed to operate as a measure to curb the spread of the pandemic Covid-19 and the school was also still new by that time thus only a few students joined and have continued with their studies as the school develops step by step. In addition to this, one head teacher and teachers were interviewed by asking them to answer both closed and open-ended questions in the semi-structured questionnaire.

A sample is a small subset of the total population (George & Mallery, 2003). A sample used to Kisoro municipality where there are many secondary schools but only one secondary school will be chosen for the study which is Gasana Memorial Secondary school.

The study sample was comprised of 90 respondents out of 150 of the total population, this was derived from using the Slovincs formula below;

$$n = \frac{N}{1 + Ne^2}$$

Where n= Sample size

N= Total population

Received: 02.03.2024

Accepted: 10.03.2024

Published on: 30.03.2024

e= error tolerance of 0.05

$$n = \frac{80}{1 + 40(0.05)^2}$$

$$n = \frac{80}{1 + 80(0.0025)}$$

$$n = \frac{80}{1 + 0.2}$$

n= 67 respondents

The respondents to interview will include teachers, students and the head teacher.

Table 1; shows different Categories of the People in the Study sample with their Sizes.

Population	Target
Head teacher	01
Teachers	20
Students	46
Total	67

Source from: Field Pre-survey data 2023

As each member of the population had an equal probability of being selected, simple random sampling is the best-known probability sample. Even though it may not be considered an ideal method of choosing the sample, still result obtained through this method has high external validity or generalizability as compared to some other method of sample selection. The researcher constructed an easy, clear, and straight-forward questionnaire for the comfort of respondents 'understanding, interpretation, and feedback. A structured questionnaire consisting of both open-ended and closed-ended questions based on a set of questions in relation to the study objectives as will be administered in order to gather relevant in-depth information. This helped the researcher to use respondents and help them to think more about the questions and give well explained and clear answers. Data processing was done through editing, coding and tabulation. Data analysis was done using computer analysis with the help of the SPSS (Statistical Package for Social Sciences). This helped the researcher to analyze the raw data and transform it into meaningful and usable information. After this process, a report was written based on the findings. Data analysis is the process of examining what has been collected in a survey and making deductions and inferences (Kothari, 2010). It involves scrutinizing the acquired information and searching for patterns of relationship that exist among the data groups (Kombo & Tromp, 2006, Kothari, 2010). The researcher employed both quantitative and qualitative research paradigms in data analysis for purposes of methodological triangulation in order to enhance the validity and reliability of the study findings (Amin, 2005).

Despite the fact that qualitative data was gathered during the study, this entailed the classifying, comparing, weighing and combining empirical material from the questionnaires, interview guides and field notes to extract the meaning for an understanding of the subject under study in coherent explanation. The data units were sorted according to the study objectives in order to produce coherent meaning. The data was then organized, entered into

the computer and analyzed using SPSS & STATA as a computer-based statistical application program, where both inferential and descriptive analysis was carried out (Nelson et al., 2022).

Results

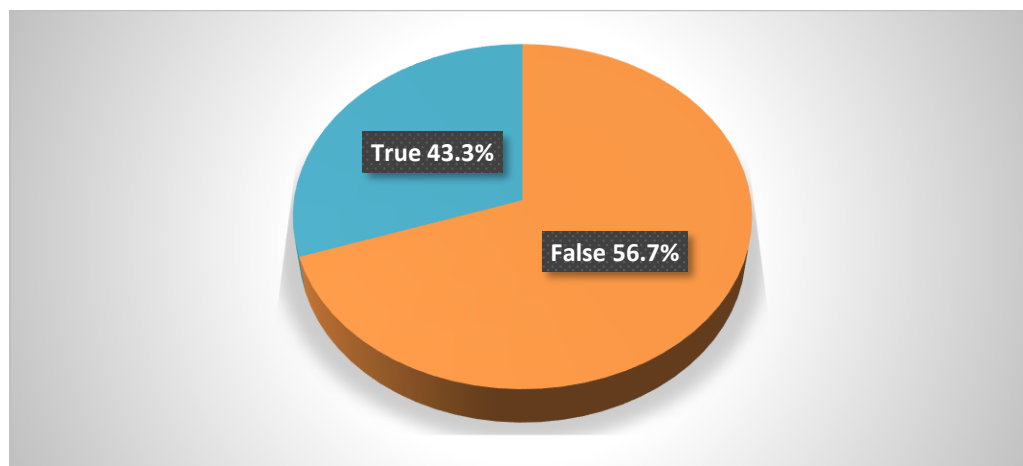
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Table 2: Showing respondents by who an effective teacher is.

An effective teacher	Frequency (n)	Percentage (%)
Prepares lesson plans and schemes of work	20	29.8
Communicates well, monitor students' understanding	05	7.5
Is passionate of his/her work	30	44.7
Creates a conducive learning environment for his learners	12	19.7

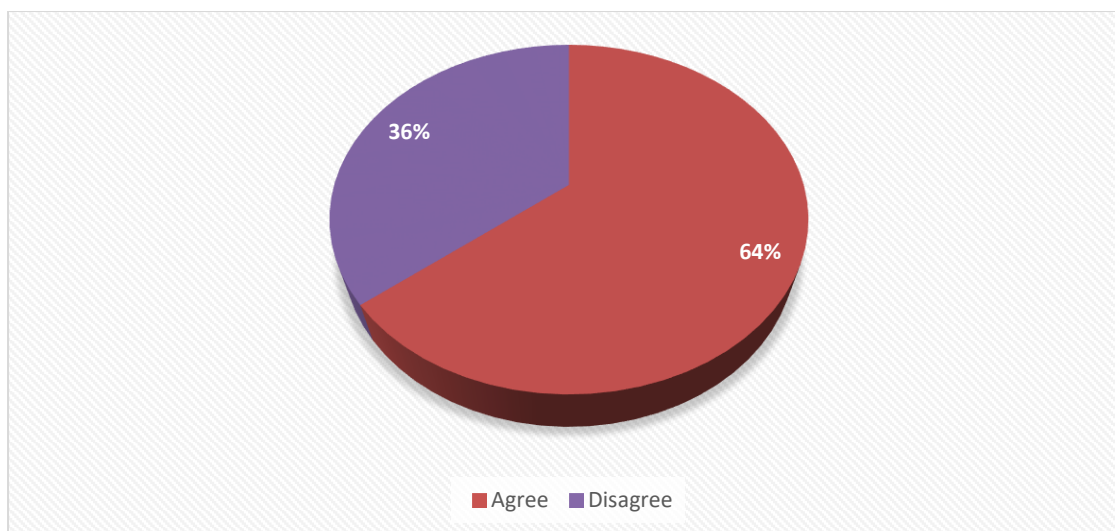
Most of the respondents 30 (44.7%) described an effective as one who is passionate of his/her work while the least 05 (7.5%) described an effective teacher as one who communicates and monitor students' understanding.

Figure 1: Respondents by effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently (n=67).



Majority of the respondents 38 (56.7%) said that it is not true that effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently while the minority 29 (43.3%) of the respondents said that it is true effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently (Emmanuel et al., 2023).

Figure 2: Respondents by whether for effective teaching to be attained, teachers should; exhibit passion for their subjects, be knowledgeable about and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context (n=67).



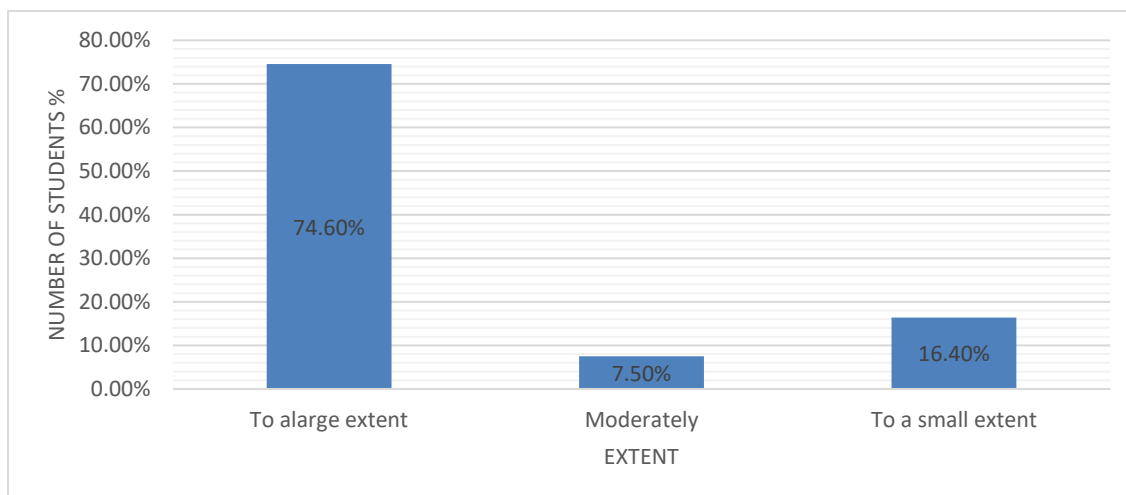
More than half of the respondents 43 (64%) agreed that for effective teaching to be attained, teachers should; exhibit passion for their subjects, be knowledgeable about and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context while less than half 24 (36%) of the respondents disagreed.

Table 3: Respondents by whether Schools' environment contributes to effective learning of chemistry and whether Schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments (n=67)

Statement	Strongly agree n		
	(%)	Agree n (%)	Disagree n (%)
Schools' environment contributes to effective learning of chemistry	33(49.3%)	21(31.3%)	13(19.4%)
Schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments.	15(22.4%)	36(53.7%)	16 (23.9%)

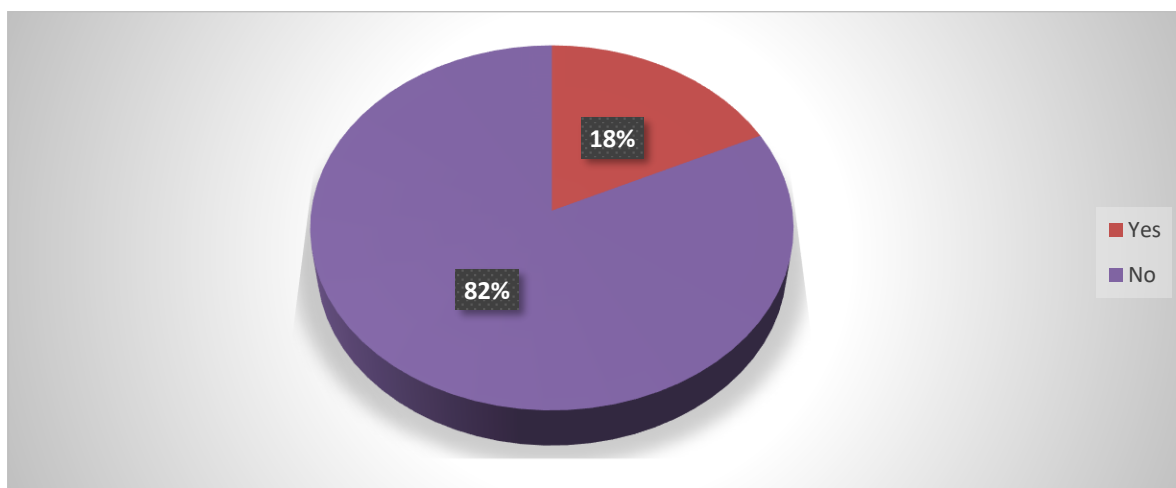
Majority of the respondents 33 (49.3%) strongly agreed that Schools' environment contributes to effective learning of chemistry while the minority 13 (19.4%) disagreed. In the other hand, majority 36(53. %) of the respondents agreed that Schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments while minority strongly agreed that Schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments (Godfrey et al., 2023).

Figure 3: Respondents by whether Students do not perform well as a result of being constantly sent home to collect fees (n=76).



Majority of the respondents 50(74.6%) said that to a larger extent, students do not perform well as a result of being constantly sent home to collect fees while the least 05 (7.5%) said students moderately perform well as a result of being constantly sent home to collect fees.

Figure 4: Respondents by whether the students' performance depend on the food he/ she eat (n=67).



Most of the respondents 55(82%) said that student's performance does not depends on the food he or she eats while the least agreed that student's performance does not agree on the food he or she eats.

Table 2: Respondents by whether the availability of textbooks and supplementary Teaching and Learning Materials (TLM), well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities improve learning and by whether the status of teachers and giving them renewed freedom and authority will make a significant contribution to improving schools and student`s learning (n=67).

Statement	Strongly agree n (%)	Agree n (%)	Disagree n (%)
The availability of textbooks and supplementary Teaching and Learning Materials (TLM), well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities improve learning.	37(55.2%)	19(28.4%)	11(16.4%)
The status of teachers and giving them renewed freedom and authority will make a significant contribution to improving schools and student`s learning.	44(65.6%)	10(14.9%)	13(19.4%)

Majority of the respondents 37(55.2%) strongly agreed that the availability of textbooks and supplementary Teaching and Learning Materials (TLM), well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities improve learning while the minority 11(16.4%) disagreed. On the other hand, more than half of the respondents 44(65.6%) strongly agreed that the status of teachers and giving them renewed freedom and authority will make a significant contribution to improving schools and student`s learning while the least 10(14.9%) agreed.

Discussions

The study findings revealed that most of the respondents 30 (44.7%) described an effective teacher as one who is passionate of his/her work. This study result appraises to us that a teacher who is passionate to his/ her work is an effective teacher (Christopher, Komunda, et al., 2022). This could be attributed to the fact that such teachers can work under minimal or even zero supervision. Effective teachers also exhibit passion for their subjects, are knowledgeable about their subjects and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context. This study finding correlates with Fuhrman et al (2010) who carried out a study on effective teaching and found that effective teachers exhibit passion for their subjects, are knowledgeable about and care for students, use a variety of teaching strategies.

Majority of the respondents 38 (56.7%) said that it is not true that effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently. This study result indicate that effectiveness of a teacher is not only measured by the available materials a teacher prepares but also other attributes. This could be due to the fact that a teacher may revise other ways of delivering his/her lesson besides the use of instructional materials. This study finding disagrees with Pietrzak, Duncan & Korcuska, (2008) who found effective teachers to be possessing a degree of knowledge, effective delivery style, organization and known for the amount of assigned homework (Gracious, 2023).

More than half of the respondents 43 (64%) agreed that for effective teaching to be attained, teachers should; exhibit passion for their subjects, be knowledgeable about and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context. This study finding is in line with Fuhrman et al (2010) study carried out a study effective teaching and found that effective teachers exhibit passion for their subjects, are knowledgeable about and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context.

Majority of the respondents 33 (49.3%) strongly agreed that Schools' environment contributes to effective learning of chemistry. This could be because conducive learning environment right from classroom like the displayed charts, diagrams in class rooms, presence of well-equipped laboratories can stimulate learning and makes it interesting hence effective learning of chemistry. This study finding outcomes agrees with Guffey (2013) who noted that school environment has an impact on the effectiveness of teachers and learners in the school.

In the other hand, majority 36(53. %) of the respondents agreed that Schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments. This could be because communication is bridges the gap between the superiors and their subordinates. It could also accelerate consultation between teachers and their learners hence yielding positive outcomes on the learning of chemistry. This study finding is in line with Guffey (2013) who insisted that schools where communication is considered as the lifeblood of the organization breed effective teaching and learning environments.

Majority of the respondents 50(74.6%) said that to a larger extent, students do not perform well as a result of being constantly sent home to collect fees. This is probably because when a student is sent home for school he/she will not attend classes these retardates syllabus coverage and even a student's academic consistency, consequently, students cannot be in a position to do well although schools have relevant and adequate resources to be utilized for the successful accomplishments of targeted goals and objectives. This study finding correlates with Caro (2009) who opined that some students do not perform well as a result of being constantly sent home to collect fees.

Findings also found most of the respondents 55(82%) said that student's performance does not depends on the food he or she eats. This means that the meals a student feeds on is directly related to his/her performance of chemistry and other subjects at large. This could be probably because brain development of a child also depends on the type of food a child is given, food that contain all the nutrients that is required for the growth and brain development of a child, food like eggs, Greek yogurt, greens, fish, nuts and seeds, oats meal and apples and plums should be given to children. The finding of this study agrees with Krueger, (2005) who states that the brain development of a child also depends on the type of food a child is given, food that contain all the nutrients that is required for the growth and brain development of a child. According to him, these foods items are very vital supplements for the child brain development. However, this study finding disagrees with Jeppson and Myers, (2006) study which asserted that when babies are born their brain is very ready to learn, based on this observation new born babies can understand certain things about objects and their relationship to each other. The brain

organizes what the child experiences into group in the memory, hence children are given the chance to touch, taste, see, hear and smell to enable the children develops their knowledge.

Majority of the respondents 37(55.2%) strongly agreed that the availability of textbooks and supplementary Teaching and Learning Materials (TLM), well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities improve learning. According to Department for International Development (DFID) in (Guidance note, a DFID practice paper, 2007) research evidence confirms that the most consistent characteristics in improving student performance are the availability of(a) textbooks and supplementary Teaching and Learning Materials (TLM), (b)well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities hence correlating it with the results of this study.

On the other hand, more than half of the respondents 44(65.6%) strongly agreed that the status of teachers and giving them renewed freedom and authority will make a significant contribution to improving schools and student`s learning. This is probably because some individual teachers do not want to work under strict supervision. This study finding is in line with study done by Berkowitz, M. and Bier, M. (2005) in Eritrea found out that Raising the status of teachers and giving them renewed freedom and authority will make a significant contribution to improving schools and student`s learning.

Conclusion

This study specifically sought to assess the relationship of teaching on student`s learning of chemistry in secondary school in Kisoro District. The study established that teaching directly influence students learning of chemistry with majority of the respondents 38 (56.7%) accepting that true that effective teachers have knowledge, prepare and manage instruction, promote learning and help students grow so they can learn independently, more than half of the participants 43 (64%) agreed that for effective teaching to be attained, teachers should; exhibit passion for their subjects, be knowledgeable about and care for students, use a variety of teaching strategies and help students appreciate the relevance of information to their own context, the performance of chemistry with 50(74.6%) of the participants saying that poor performance of chemistry is linked to, students do not perform well as a result of being constantly sent home to collect fees, majority of the respondents 37(55.2%) strongly agreed that the availability of textbooks and supplementary Teaching and Learning Materials (TLM), well trained, prepared, supervised and motivated teachers (human resources and(c) Adequate physical facilities improve learning.

In regards to these result from the study, the researcher therefore concludes that students learning is closely attached to teaching, students` performance of chemistry is poor, teaching directly affect the learning of chemistry.

Recommendations

The researcher recommends the government, NGOs, and School management and other stake holders join hands and ensure that enough study materials like textbooks, charts, manilas, we stocked libraries among others are installed in schools so as to enhance student`s learning of chemistry.

Provision of scholarships to students who cannot afford to raise money for tuition should also be put into considerations this can be done by the government and other partners. Similarly, schools should avoid over hiking school fees to the levels that make a majority of students vulnerable.

Received: 02.03.2024

Accepted: 10.03.2024

Published on: 30.03.2024

Teachers should be motivated for example by awarding the best performing teachers, paying them in time, and increasing their salaries, this will develop a teacher's passion in his or her work.

References

- Anthony, D., Kazaara, A. G., & Kazaara, A. I. (2023). *PERFORMANCE IN ENGLISH SUBJECT IN SECONDARY*. 2(2), 347–362.
- Anthony, D., Kazaara, A. G., Kazaara, A. I., Ismail, L., & Prudence, K. (2023). *The Impact of Teachers ' Teaching Methods on Students ' Performance in English Subject in Secondary Schools In Uganda , A Case Study Of Selected Secondary Schools In Kampala & Wakiso*. 7(3), 290–297.
- Brighton, B., Deus, T., Kazaara, A. G., Nelson, K., Catherine, M., Christopher, F., & Benefansi, I. (2023). *The Effect of Covid-19 Pandemic on the Education System and Institutions in Wakiso District . A Case Study of Gombe Sub County* . 7(2), 30–36.
- Christopher, F., Komunda, T. R., & Milton, N. (2022). *The Impact of Supervision on the Quality-Of-Service Delivery at Kirima Community Secondary School in Kanungu District , South Western Uganda*. 6(5), 157–162.
- Christopher, F., Methodius, T., & Peter, B. (2022). *Need For a Research and Publications Committee and Publishing at a Higher Institution of Learning*. 6(7), 97–99.
- Christopher, F., Moses, N., Muhindo, M. E., & Komunda, T. R. (2022). Employee Training and Organizational Performance: A Case Study of African College of Commerce and Technology in Kabale District, South Western Uganda. *International Journal of Academic Pedagogical Research*, 6(5), 1–7.
- Emmanuel, E., Rebecca, N., Kazaara, A. G., & Nicholas, K. (2023). *The Effects Of Job Training On Performance Of Local Government Employees In ganda : A Case Study Of Molo Sub- County , Tororo District* . 7(2), 65–73.
- Godfrey, W., Silvia, N., Kazaara, A. G., Nelson, K., Christopher, F., Deus, T., Micheal, T., & Catherine, M. (2023). *The Effect Of Teacher ' s Instructional Methods On The Learners Academic Performance In Mathematics Subject In Secondary Schools , A Case Study Of Buwesswa Secondary School In Manafwa District*. 7(2), 100–107.
- Gracious, A. (2023). *The Effects Of Electronic Banking On Customer Service Delivery , A Case Study Of Cairo Bank Uganda , Nakasero*. 7(2), 80–87.
- Kanyerere, O. E., & Muhammed, M. (2023). *The Factors Affecting Learners Attitude towards Offering Kiswahili Subject in Secondary Schools . A Case Study of Sironko Secondary School in Sironko District*. 7(3), 39–43.
- Nelson, K., Christopher, F., & Milton, N. (2022). *Teach Yourself Spss and Stata*. 6(7), 84–122.
- Ntirandekura, M., Ainebyoona, A., Registrar, D., District, B., & Commission, E. (2022). *HUMAN RESOURCE MANAGEMENT STRATEGIES AND ENHANCEMENT OF STAFF RETENTION IN PUBLIC SECTOR ORGANISATIONS : AN EMPIRICAL INVESTIGATION IN KABALE*. 6(7), 89–103.
- Ramadhan, B., Alex, I., Kazaara, A. G., Nelson, K., Deus, T., & Pascal, T. (2023). *Taxation and the*

Received: 02.03.2024

Accepted: 10.03.2024

Published on: 30.03.2024

Development of Small Businesses in Uganda , a Case Study of Iganga District. 7(2), 136–149.