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Factors Influencing Performance Of Learners In Science Subjects At Ordinary Level In Wakiso District, Uganda.

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Abstract*: The study assessed the factors influencing performance of learners in science subjects at ordinary level in Wakiso District, Uganda. The study was guided by three objectives namely to establish how Learner factors influence performance of learners in science subjects at ordinary level; to establish how teacher factor influence performance of learners in science subjects at ordinary level and to establish the role of School based factors in influencing performance of learners in science subjects at Ordinary Level. The study used a cross sectional survey research design applying both qualitative and quantitative approaches. From a population of 300 respondents 207 formed a sample. The questionnaires, interviews and document review list were used to support data collection. The response rate of 97% was obtained where key findings revealed a significant positive influence of the learner factors (.397**), teacher factors (.305**) and school based factors (.537**) on the performance of learners in science subjects at ordinary level. From the discussion held about learner factor it can be concluded that encouraging students, changing their attitude, creating a good reading culture and concentration would improve learners' performance in science subjects. On teacher factors, rewarding teachers and availing them with essential training material would trigger academic excellence. On school based factors it can be concluded that employing qualified science teachers and closely monitor their teaching duties would improve teachers' performance in science subjects. The study recommended for counseling and motivational speeches to learners, use alumni to liaise with former old boys and girls, organize school science book festivals and practical science fares, conduct training of trainers, bench mark, internal school SACCO, lobby for external sponsorship-partnership, annual fundraising and corporate dinners. The study recommends a future study on the same topic but involving other districts and schools, since this may provide another card for a more holistic picture of performance of learners in sciences at ordinary level in schools.*

1.0 Introduction

This study assessed the factors influencing performance of learners in science subjects at ordinary level in Wakiso District, Uganda. According to Sekamwa (2000), formal schooling was introduced in Uganda by the Christian missionaries namely the Anglicans and Catholics in 1877 and 1889 respectively. Uganda was under British colonial rule from 1894 to 1962. Under the British rulers, some Christian missionaries started first missionary schools in Uganda in early 1890s.But education was very limited and only urban elites benefited from it (Kurgat, 2008). After getting independence from Britain in 1962, government immediately realized the importance of expanding the education to meet the national interests and needs. Government recognized illiteracy and ignorance as the main problems to tackle through education (Jepkoech, 2012). The enrolment of Ugandans in secondary schools was low and on that small numbers very few students chose to offer science subjects up to higher levels. Most of the students who offered sciences went to technical institutes and other tertiary institutes that were around by that time. The performance of science subjects has been poor ever since that time, however, there is a slightly considerable improvement in performance and enrolment in the past 10 years (MoE&S, 2010).

Historical sciences are recognized widely as being of great importance internationally both for economic well-being of nations and because of the need for scientifically literate citizens (Fraser & Wassanga, 2007). Knowledge of science and technology is therefore a requirement in all countries and all people globally due to the many challenges that are facing them. These challenges include emergence of new drug resistant diseases, effects of genetic experimentation and engineering, ecological impact of modern technology, dangers of nuclear war and explosions and global warming among others (Alsop & Hicks, 2001).

The world is dynamically adopting the use of sophisticated technological tools. As science and technology are advancing, it creates a greater demand for people to study science (Curran & Rosen, 2006). Our lives are directly or indirectly connected to science and technology innovations. The use of mechanical tools, chemical substances, communication and medical services are all related to high level of technological innovations. Development of science and technology demands the skilled people and disciplined ones from lower level of learning (Mabula, 2012). With this broad importance of scientific innovations, The Ugandan government has a sacred duty to ensure it creates the required environment to enhance creativity and advanced scientific innovations.

In sub-Saharan countries including Uganda, there is poor response in improving science education (Mabula, 2012). The Ugandan

government is trying to supply human and material resources to raise students' interest in studying science subjects. According to Ingersoll (2001), there is high rate of teacher turnover and due to large number of enrolled students; teaching and learning materials are inadequate. New teachers are leaving the profession very early due to unsatisfactory working environments (Flynt & Morton, 2009).

Over the past years there has been a poor performance in science subjects, as revealed by the Uganda National Examination Board (UNEB) results from 2000 to 2014. According to Siringi (2009), poor infrastructure, limited science equipment/apparatus, teaching materials, inadequate laboratories, a few/no qualified science teachers, poor methods of instruction, and lack of funds could be the contributing factors to poor performance in science subjects.
According to Ministry of Education and Sports (2010), ever since the time of independence the facilitation of science subjects in terms of equipment in science laboratories, availability of science books as well as small number of science teachers compared to the number of schools in Uganda has made the performance of science subjects to remain poor.

According to UNAS (2010), in 2005 the Government of Uganda made science subjects compulsory for secondary school students at 'O' level and committed itself to preferentially fund university students taking science courses. Under this new policy, biology, chemistry and physics classes were made compulsory for all secondary school students, and science students would receive the majority (nearly 75%) of government scholarships to universities and other tertiary education institutions. However, the performance of students in science subjects has remained poor. USE national statistics for the last 6 years from 2009-2014 indicate poor performance in science subjects specifically mathematics, physics, chemistry and biology among others. In summary, quantified national results still reveal poor UCE science exams grades (UNEB, 2012).
In the previous and present years, the performance of learners in science subjects in the selected secondary schools has been deteriorating in Uganda (Muwanga-Zake, 2012). According to Wakiso District Report (2013), the performance of students at ordinary level is less far below compared to that of art subjects.

2.0 Literature Review

Theoretical review

This study was conducted on the factors influencing performance of learners in science subjects at Ordinary level in Wakiso District. One of the theories onto which the study was anchored is the Difusion Innovation Theory (DI) propounded by Rogers. In relation to the Diffusion Innovation Theory, Rogers (2003) argued that innovations offering more relative advantage, compatibility, simplicity, triability, and observability was adopted faster than other innovations. Rogers (2003) does not caution, "Getting a new idea adopted, even when it has obvious advantages, is difficult", so the availability of all these variables of innovations speeds up the innovation-diffusion process. Adopters tend to have greater risk tendencies and the higher the risk, the shorter the rate of diffusion of a typical innovation. Research showed that all these problems influenced school members' likelihood of adopting a new technology into their teaching.
The Theory of Cognitive Flexibility is emphasized by Kirkpatrick's four levels of evaluation (Kirkpatrick, 1994). Kirkpatrick emphasizes reactions, learning, transfer and results. Level one is reactions and just as the word implies, learning at this level measures how participants in a training program react to it. It attempts to answer questions regarding the participants' perceptions - did they like it? Was the material relevant to their work? In addition, the participants' reactions have important consequences for learning (level two), although a positive reaction does not guarantee learning; a negative reaction almost certainly reduces its possibility (Winfrey, 1999).

Related Literature

This section reviews literature related to the respective specific objectives in this research.

The Learner Factors contributing to poor performance in science subjects

Raychaudhuri et al., (2010), found that students' academic performance in science subjects depends on a number of socio-economic factors like students' attendance in the class, family income, mother's and father's education, teacher-student ratio, presence of trained teacher in school, sex of the student, and distance of schools. Hijaz and Naqvi (2006) observed that there is a negative relationship between the family income and students' performance. Since the economic status of many families in Uganda is below average, most especially in Wakiso where many people are earning less than 2 U$ dollars per day (UBOS, 2013), many students do not pay school fees on time which make their presence at school to be irregular, they lack enough scholastic materials to enable them study sciences very well as well as walking very long distances to school. The above socio economic factors may also contribute to the poor performance in science subjects in Wakiso District.

In Nigeria, students poor performance in physics have been attributed to poor teaching methods, unqualified and inexperienced teachers, poor students attitude toward physics, poor learning environment and gender effects (Flynt & Morton, 2009). According to Wakiso District Report (2013), many students in Wakiso District are failing sciences because of their personal belief that sciences are hard to pass subjects. The report highlighted particular examples where students in a number of schools most especially average schools in Wakiso District are dodging physics and mathematics classes because they think that even if they put in much effort, they

have less chances of performing better in these subjects. This implies that the poor performance in these subjects may be greatly attributed to personal attitudes that the learners have towards these subjects.

The Teacher Factors influencing Performance in Science Subjects

According to Mabula (2012), satisfaction at work may influence various aspects of work such as efficiency, productivity, absenteeism, turnover rates, and intention to quit, and finally employees‟ including qualified educational staff. Satisfied teachers are expected to hold their jobs longer, to be able to engage in more responsive, positive and consistent interaction with students, and to positively influence students‟ performance (Fraser & Walberg, 2005).

Dissatisfied teachers who want to transfer to another school may be poor performers both because of general motivational factors (Good & Brophy, 2007) and also because they are simply waiting to move on to a different location, putting low effort into their current work duties and disregarding any longer term plans for their students. Teachers' motivation is therefore likely to be a relevant factor affecting students‟ learning. Motivated teachers are typically those who have chosen to be in a given school, while teachers just waiting to move to another school may be rather unmotivated. Using data of students in North Carolina, Jackson (2010) shows that teacher effectiveness is higher after a transfer to a different school and teacher-school matching can explain a non-negligible part of teacher quality.

Kungania (2015) contends that there is a growing demand from the Ugandan government and the public for teacher accountability in students' performance. Schools are commonly evaluated using results. Students and teachers cannot be disassociated from the schools they teach and academic results of the students. Teachers celebrate and are rewarded when their schools and subjects are highly ranked.

The School Based Factors influencing Performance in Science Subjects

It is quite known that clean, quiet, safe, comfortable, and healthy environments are an important component of successful teaching and learning (Good & Brophy, 2007). On this account, the literature indicates that some of structural features of schools that impact student achievement include indoor air quality, lighting, and facilities that support the delivery of curricular programs like libraries, laboratories and classrooms. According to Kungania (2015), class room structures in most of the schools in Uganda are in a poor state which cannot promote learners' concentration. In a study by Kurgat (2008), findings reveal that first class schools like Kings College Budo, St. Mary's college Kisubi and many others perform very well because they have a conducive school environment with full stocked libraries and equipped laboratories which makes the learning of sciences enjoyable and comfortable to the learners. It is therefore believed that poor structures of classrooms, lack of fully stocked laboratories and libraries is amongst the factors that result into poor performance in Wakiso District and Uganda at large.

3.0 Methodology

Research design

The study adopted a cross-sectional survey design to pick only some representative sample elements of the cross-section of the population (Kothari, 2004). The study used a cross-sectional design because it was conducted across respondents over a short period of time and it did not necessitate the researcher to make follow-ups of the respondents. The survey was also preferred because it allows the researcher to get detailed information about the factors influencing performance of learners in science subjects at ordinary level in Wakiso District. Quantitative and qualitative approaches were adopted for analysis.

Population

A study population is a set of individuals or objects with common observable characteristics (Amin 2005). Sekaran (2003) defines a population as a group of people, events and things of interest that the researcher wishes to investigate. The study was carried out in Wakiso District where three secondary schools were chosen. These schools included; Clive College Kireka, Nkumba College School and Kawuku Secondary School. According to schools registers for S.4 in the above school reveal that, the total number of senior four (S.4) students in Clive College Kireka is 80, in Nkumba college school it is 90 and that of Kawuku secondary school is 102. More still, records show that the above schools had an average of two teachers per science subject. Therefore, the study population was made up of 300 respondents, 272 students in senior four, 24 science teachers and 3 head teachers.

Sample and sampling techniques

A total number of 300 respondents were selected according to Krejcie and Morgan (1970) Table of sample size determination (see appendix 6). In each of the three schools, one head teacher and 8 teachers (2 from each science subject including; biology, mathematics chemistry and physics) head teachers were purposively selected due to the key information they have, simple random sampling technique was applied on the 60 students such that each of them had an equal chance of participating in this study. This resulted in a total study sample of 207 respondents from all the three schools.

Table : Sample Size

Category of respondents	Population	Number of respondents per school	Total number of respondents in three schools	Sampling technique
Head teachers	3	1	3	Purposive sampling
Teachers	25	8	24	Simple random sampling
Students (in S.4)	272	60	180	Simple random sampling
Total	**300**		**207**	

Source: primary data

Data collection methods

Data was derived from both primary and secondary sources. Secondary data was obtained from documentary review and external sources such as reports, websites while primary data was obtained using questionnaires and interview guide.

To investigate the variables exhaustively according to Amin (2005), the study used a combination of data collection methods by way of methodological triangulation. Primary data was obtained using: the questionnaires survey method and interview. Secondary data was obtained solely by means of document review method.

Data collection instruments

The study employed the self-administered questionnaire, interview guide, and documentary guide.

Quality control

The questionnaire guide was pre-tested to ensure validity and reliability of the study. According to Amin (2005), pre-test ensures the validity of appropriate instrument and reliability refers to consistency in measuring whether what is being measured is what was intended.

Data analysis

According to Hatch (2002), data analysis is a systematic search for meaning. It is a way to process qualitative and quantitative data so that the study is communicated to others. Data was analysed both quantitatively and qualitatively

Ethical Considerations

Ethics is a moral philosophy which deals with one's conduct and serves as a guide to one's behavior (Mugenda & Mugenda, 2003).According to Kothari (2005) a good research is carried out with openness, honesty, justice, integrity and objectivity. This study observed the following ethical issues: plagiarism and fraud; to avoid this, the researcher acknowledged other people's works in relation to this study.

4.0 Results of findings

Response rate

The study targeted 207 respondents of whom 27 were key informants and 180 were students. The response rate is summarized in Table 4.1 below.

Table : Response Rate

Category of respondents	Target population	Actual respondents	Response rate (%)
Head teachers	3	3	100
Teachers	24	18	75
Students (in O-level)	180	180	82
Total	**207**	**201**	**97**

Source: Primary data

According to Amin (2005), the response rate of 70% is high enough to generalize findings to the entire population. From the Table above the response rate of 97% was high enough, this was partly attributed to the procedures used for data collection whereby the researcher closely followed each one of them.

Descriptive presentation and analysis of the findings

Learner factors and Performance of Learners in science subjects at Ordinary level

The researcher asked respondents to express their opinions on how student factors influence performance of learners in science subjects at ordinary level and the results are presented in Table 4.3 below. From the Table below, seven questions were posed to respondents about students' factors influencing the performance of learners in science subjects.

Table : Descriptive Statistics for learner factors and performance of learners in science subjects at O level

Learner factors	SD	D	NS	A	SA	Mean	Std dev
Learners' lack of interest in science subjects	10 5.6%	35 19.4%	20 11.1%	100 55.5%	15 8.3%	3.417	1.066
Learners' negative attitude toward sciences	5 2.8%	83 46.1%	2 1.1%	83 46.1%	7 3.9%	3.028	1.090
Laziness on the side of students when studying science	4 2.2%	87 48.3%	9 5.0%	77 42.8%	3 1.7%	2.933	1.033
Learners sleeping in science classes	19 10.6%	28 15.6%	93 51.7%	30 16.7%	10 5.6%	2.967	0.956
Lack of Learners motivation for reading and studying science subjects	3 1.7%	21 11.7%	19 10.6%	128 71.1%	9 5.0%	3.967	0.813
Learners lack of concentration during science classes	9 5.0%	112 62.2%	3 1.7%	43 23.9%	13 7.2%	2.656	1.120
Poor reading culture on the side of students	10 5.6%	134 74.4%	0 0%	13 7.2%	23 12.8%	2.817	0.942

Source: Primary data

The findings as presented in Table above indicate that the majority of learners (100) 55.5% (std dev =1.066) agreed to the view that they lack interest in science subjects, (15) 8.3% strongly agreed, (35) 19.4% disagreed and with a mean of 3.417. Similarly, it was revealed that (83) 46.1% respondents agreed that they had negative attitude towards sciences, (7) 3.9% strongly agree while (2)1.1% were not sure, (83) 46.1% disagreed and (5) 2.8% strongly disagreed. The results suggest a perception problem with students about their ability to undertake science subjects at O level with a likelihood that they would not excel academically. This affects their expected academic performance. To affirm the findings was an interviewee who voiced out that: "*Teachers call for discussion and quarter of the class turn up, which demotivates teachers."*

Further to note, much as majority respondents (87) 48.3% (std dev=1.033) disagreed with the fact that laziness on the side of learners when studying was a contributing factor, (77) 42.8% agreed, (4) 2.2% strongly disagreed and (3)1.7% strongly agreed. In addition, (93)51.7% respondents were not sure about whether sleeping in science classes contributed to learners' performances in science subjects, however, (28)15.6% disagreed, (19)10.6% strongly disagreed, (30)16.7% agreed and (10)5.6% strongly agreed. The revelations suggest that some learners had adopted negative attitude towards academics thus had less interest in pursuing their education careers which manifested in laziness and sleeping in class hence poor academic performance of learners in science subjects at ordinary level.

Additionally, (128)71.1% respondents agreed, (9)5.0% strongly agreed that lack of motivation for reading and studying science subjects had a great impact on the performance of sciences at ordinary level however, (21)11.7% respondents disagreed, (19)10.9% were not sure and (3)1.7% strongly disagreed. Further still, majority (112) 62.2% respondents disagreed to the view that lack of concentration during science classes impact the performance in science subjects, (9)5.0% strongly disagreed, (43)23.9% agreed and (13)7.2% strongly agreed which meant that some learners lacked the self-drive to constantly practice science subjects for instance mathematics, biology, physics, agriculture and chemistry which exposed their academic weaknesses and therefore inability to excel academically.

Teacher factors and Performance of Learners in Science Subjects at O level

This section shows an investigation of how Teacher factors influence performance of learners in science subjects at ordinary level. This was investigated using eleven questions using a five point Likert scale as in the Table below.

Table : Descriptive Statistics for teacher factors and the performance of Learners in science subjects at O level

Teacher factors	SD	D	NS	A	SA	Mean	Std dev

Our science teachers make their subjects matter interesting and exciting	12 6.7%	94 52.2%	20 11.1%	50 27.8%	4 2.2%	2.672	1.066
Our science teachers use modern audio – visual aids to teach their subjects	24 13.3%	134 74.4%	10 5.6%	12 6.7%	0 0%	2.056	0.674
Our science teachers answer our questions to our satisfaction	6 3.3%	20 11.1%	18 10%	117 65%	19 10.6%	3.683	0.924
The teaching methodology of our science teachers is good	5 2.8%	70 38.9%	67 37.2%	33 18.3%	5 2.8%	2.794	0.869
Our science teachers provide guidance in their spare time to their students in their respective subjects	27 15%	122 67.8%	19 10.6%	11 6.1%	1 0.1%	2.094	0.737
Our science teachers encourage class discussion during every stage of learning	5 2.8%	20 11.1%	0 0%	133 73.9%	22 12.2%	3.817	0.887
Our science teachers have adequate knowledge of subject matter in the subjects they teach	6 3.3%	28 15.6%	30 16.7%	102 56.7%	14 7.8%	3.500	0.960
Our science teachers are courteous and respectful to their students	4 2.2%	15 8.3%	16 8.9%	127 70.5%	18 10%	3.778	0.822
Our science teachers are always present at school.	17 9.4%	132 73.3%	5 2.8%	23 12.8%	3 1.3%	2.239	0.854
Lack of teaching media and subject apparatus	0 0%	53 29.4%	20 11.1%	88 48.9%	19 10.6%	3.406	1.023
Science teachers use learner centered method which promotes students participation in the learning process	0 0%	52 28.9%	21 11.7%	88 48.9%	19 10.6%	2.96	1.458

Source: Primary data

Statistics as presented above reveal that (94) 52.2% (std dev=1.066) of the respondents disagreed with the view that science teachers made their subject matter interesting and exciting, (12) 6.7% strongly disagreed, (50) 27.8% agreed and (4) 2.2% strongly agreed. The result meant that science teachers tried their level best to follow the syllabus based on their lesson plans all was intended to ensure the expected in performance of learners in science subjects at Ordinary level. The findings concurs with one of the interviewees who observed that: "*Teachers have no time to prepare or plan for lessons, they spend most of the time Mugo parking (part timing) which results in deficiency in their effectiveness."*

Majority of the respondents (134) 74.4% (mean=2.056) disagreed to the view that science teachers use modern audio-visual aids to teach their subjects, (24) 13.7% strongly disagreed, while (12) 6.7% agreed and 5.6% (10). The results reveal that most teachers had no access to modern audio-visual for instance public address system, projectors, laptops, tripod stands, projection screens, flat screen among other teaching aids to facilitate teaching in their class room which negatively affected the delivery of lessons to O level students hence affecting the overall performance of learners in science subjects. "*The modern audio-visual aids are expensive for the secondary schools to secure and maintain on routine. These are therefore fewer in schools*"

In addition, majority (117)65.0% (std dev=0.924) of the respondents agreed that science teachers answer their questions satisfactorily, (19)10.6% strongly agreed, however, (20)11.1% disagreed and (18)10.0% were not sure. On the contrary, many respondents (70)38.9% disagreed that the teaching methodology of their science teachers were good, (5)2.8% strongly disagreed, (33) 18.3% agreed while (5)2.8% respondents were not sure which suggests that since science subjects for instance physics, mathematics, agriculture among others were more of practical subjects, teachers were mandated to use the most appropriate approach to deliver lessons to the O level students thus positively improving the performance of learners in science subjects. "*It is the teachers and students' responsibilities to ensure that they deliver knowledge and they are delivered to as expected. Students are allowed to ask questions as teachers provide answers to this effect*" was a statement made to complement on the above findings.

Further findings, reveals that majority (122)67.8% of the respondents disagreed, (27)15.0% strongly disagreed while (16)10.6% were not sure, (11)6.1% respondents agreed and (1)0.1% strongly agreed that their science teachers provide guidance in their spare time to students in their respective subjects. The statistical findings suggest that after class work, fewer of the students consulted their teachers for guidance. This negatively affected the performance of learners in science subjects at O level.

Respondents were asked whether the science teachers encouraged class discussion during every stage of learning. Responses obtained included majority (133)73.9% (mean=3.817) of the respondent agreed, (22)12.2% strongly agreed, while (5)2.8% strongly disagreed and (20)11.1% disagreed. The results suggest that teachers organize science interactive sessions where students interact with teachers. These findings were supported by one of the interviewees, who said,

> "*Science teachers put in a lot of emphasis on to hold class room discussion, some of these youthful students tend to be fourth generation students who express less interest in academics. The students are time and again distracted by social media for instance whatsup, face book and twitter among others hence having less time for discussion or revision negatively affecting their performance* ."

Majority (102) 56.7% (std dev=0.960) of respondents agreed with the fact that science teachers had adequate knowledge of the subject matter in their respective subjects, 16.7% were not sure, (28)15.6% disagreed and (14)7.8% strongly agreed. Similarly, majority of the respondents (127)70.5% (mean=3.50) of the respondents agreed, while (18) 10.0% strongly agreed that science teachers are courteous and respectful to their students. The findings suggest that such teachers are professions with required skills, competence and qualification to execute their tasks. In support of the above findings where one of the interviewees said

> "*Teachers are mandated to deliver lessons to students within a given time and using available resources however, at times teacher fail to provide learners with necessary information because of delayed salaries, allowance or performance thus science subject results will remain poor."*

Findings as presented in Table 4.4 above indicate that (132)73.3% of the respondents disagreed, while (17)9.4% strongly disagreed to the view that science teachers are always present at school while (5)2.8% were not sure however (23)12.8% agreed and (3)1.3% These findings reveal that many O level science teachers were absent during class time thus failure to deliver lessons and a danger to the performance of O level learners in science subjects. To cement the findings, one interviewee said: "*Science teachers are on market, once you get him/her paid well, it will limit on their movements, looking for money, with their motivation taken care of, teachers will settle and performance will be achieved."*

Furthermore, majority (88)48.9% of the respondents agreed while (19)10.6% strongly agreed that teachers lacked teaching media and subject apparatus nonetheless, (20)11.1% were not sure, (53)29.4% disagreed and none strongly disagreed which meant that the schools had fewer teaching media and subject apparatus which created a learning gap and overall performance of O level learners in science subjects. This was supported by one of the interviewees who said that "*The teaching approach is in most cases dictated by the resources provided by the school, this is why some practicals are conducted theoretically, there are no laboratories, and schools have chemical stores!"*

Finally, majority (88) 48.9% of the respondents agreed while (19)10.6% strongly agreed that science teachers use learner centered method of teaching which promotes learner participation in the learning process, (52)28.9% disagreed, and (21)11.7% were not sure. These results imply that science teachers offer their best but there could be other factors beyond their reach which would negatively hinder the best performance of learners in science subjects at Ordinary level in Wakiso District.

School based factors and Performance of Learners in Science Subjects at O level

This section shows the role of School based factors in influencing performance of learners in science subjects at Ordinary level in Wakiso District negatively. The investigation was carried out using nine questions using a five point Likert scale.

Table: Descriptive statistics for School based factors and Performance of learners in Science Subjects at O level

School based factors	SD	D	NS	A	SA	Mean	Std Dev
Lack of a good school learning environment	5 2.8%	143 79.4%	21 11.7%	11 6.1%	0 0%	2.211	0.588
Lack of teaching media and subject apparatus	5 2.8%	38 21.1%	52 8.3%	108 60%	24 13.3%	3.600	1.049
Lack of qualified teachers	12 6.7%	88 48.9%	20 11.1%	41 22.8%	19 10.6%	2.822	1.168
Lack of proper preparation before examinations	15 8.3%	54 30.%	15 8.3%	73 40.6%	23 12.8%	3.194	1.233
Lack of vocational guidance on different fields that are related to science	19 10.6%	50 27.8%	6 3.3%	51 28.3%	54 30%	3.394	1.420
Lack of a well-stocked library	12 6.7%	87 48.3%	0 0%	64 35.6%	17 9.4%	2.928	1.219
Lack of fully equipped science laboratories	2 1.1%	62 34.4%	12 6.7%	89 94.4%	15 8.3%	3.294	1.0660
The location of classrooms does not promote effective learning of sciences	8 4.4%	97 35.9%	19 10.6%	49 27.2%	7 3.9%	2.722	1.0360
Lack of access to computer services and internet which promote science learning and research	14 7.8%	88 48.9%	6 3.3%	68 37.8%	4 2.2%	2.778	1.164

Source: Primary data

Findings as presented in Table above reveals that majority (143)79.4% (std dev=0.588) of the respondents disagreed that schools lacked a good learning environment to foster the good performance of science subjects, (5)2.8% strongly disagreed while (21)11.7%

were not sure, (11) 6.1% agreed. The findings are an indicator that schools have constructed libraries; computer labs, dormitories, class room-office blocks and notices are fixed in designated marked areas among others to create good school learning environment for learners in science subjects to perform better at Ordinary level in Wakiso District. The findings are in line with an official who observed that:

"*Most of the secondary schools today have good facilities for instance well stocked library facilities, computer laboratories, class room and office blocks fully furnished among others that create conducive environment for teachers and learners to interact*"

Similarly, majority of the respondents (108)60.0% (mean=3.600) agreed that schools lacked teaching media and subject apparatus, (24)13.3% strongly agreed, (52)8.3% were not sure while (38)21.1% disagreed and (5)2.8% strongly disagreed. The results suggest that some schools had fewer teaching media and subject apparatus given their purchase cost however; such items were being minimally purchased to beef up stock. The availability of such teaching media and apparatus would better the performance of learners in science subjects at Ordinary level in Wakiso District.

Performance in Science Subjects

The researcher asked the respondents to express their opinion on the performance in science subjects in their schools. This was investigated using six questions about the assessment and evaluation of science subjects in their schools using a four point Likert scale. The mean close to 1.000, 2.000, 3.000, and 4.000 indicates a Distinction, Credit, pass, and failure respectively. Table : Performance in science subjects

Performance in science subjects	D	C	P	F	M	S.D
Average score of students in continuous assessment examinations/tests	4 (2.2)	30 (16.7)	84 (46.7)	62 (34.4)	3.2781	0.76975
Average score of students in final termly exams		18 (10.0)	60 (33.3)	102 (56.7)	3.4667	0.67186
Average score of students in external exams like external mocks		9 (5.0)	56 (13.1)	115 (63.9)	3.5889	0.58652
Average score of students in practical exams	30 (16.7)	50 (27.8)	92 (51.1)	8 (4.4)	2.4333	0.81946
Average score of students in SESEMAT trial examinations	41 (22.8)	57 (31.7)	49 (27.2)	33 (18.3)	2.4111	1.03454
Average score of students in final UNEB examinations	7 (3.9)	18 (10.0)	54 (30.0)	101 (56.1)	3.3833	0.82065

Source: Primary data

F = Failure, P = Pass, C = Credit, D = Distinction, M = Mean, S.D = Standard deviation.

From Table 4.6, the results revealed that 46.7% of the respondents observe passes and 34.4% are failures in the continuous assessment examinations/tests. The study revealed that majority (56.7%) of the respondents is in failures in the final termly examinations and 33.3% are in passes. The data indicated that 63.9% of the students were in failure in the external examinations like external mocks and only 5.0% had credits. This implies that majority of the students have great with external assessment. The data indicated that 51.1% of the students are passes in practical examinations and only 4.4% fail. One responding interviewee noted the *"For me I think the performance of largely depend on the exposure to external assessment, carrying out many practical and attending to seminars, and all these will require money. Those who can afford will do better but the majority will not afford."*

From the Table 4.6, it is revealed that majority (31.7%) of the students get credits in SESEMAT trial examinations and only 18.3% fail. The data shows that majority of the respondents observe failures in students final UNEB examinations. From the data, it revealed that the performance of learners in science subjects at ordinary level in Wakiso District is poor.

5.0 Discussion, Conclusion and Recommendations

5.3 Discussion of the findings

This section presents the discussion of the findings that were obtained from the study based on objective by objective it also relates the findings with earlier literature as presented in the second chapter.

5.3.1 Learner factors and performance of learners in science subjects at ordinary level

The discussion provided below is a reflection of issues pertaining learner factors and performance of learners in science subjects at O level in Wakiso District. Objective one of the study was centered on how learner factors for instance communication, attitude, family background and motivation influence performance of learners in science subjects at O level. In the event that information was elicited about student factors as listed above, a number of issues are hinted about in the discussion provided below.

Findings as presented in the earlier chapter reveal that learners' negative attitude toward sciences affected their academic performance. This issue has been at the center of focus to explain further, Aikenhead (2006) accords that personal attitudes associated with science affect learners' engagement in science as a subject and impact performance in science. The scholar adds that students' perception towards a subject is instrumental in registering success in that subject or not. In addition, Curran & Rosen (2006) suggest that learners' successful experience can help them develop positive attitude towards teaching such a subject hence learners' perception towards science subjects is enhanced through effective teaching strategies. It is also confirmed that effective teaching strategies create positive attitude on the learners towards science subjects.

Further discussion is centered on the fact that lack of learners motivation for reading and studying science subjects. This statement is in line with the Wakiso District Report (2013) which highlights that many learners in Wakiso District are failing sciences because of their personal belief that sciences are hard to pass subjects. The report highlighted particular examples where learners in a number of schools most especially average schools in Wakiso District are dodging physics and mathematics classes because they think that even if they put in much effort, they have less chances of performing better in these subjects. This implies that the poor performance in these subjects may be greatly attributed to personal attitudes that the learners have towards these subjects.

In any school settings the role of teachers is highly appreciated as they provide educational services to key beneficiaries who are seen to be either students or pupils therefore the issue that teacher related factors in form of teacher competence, experience, mode of delivery and motivation were found to influence the overall performance of learners in sciences at ordinary level in Wakiso District. The above paragraph is a true reflection of the positive scores that were obtained and presented in the previous chapter. Examples have cited where for instance results indicate that science teachers answered questions to their satisfaction. The findings are in line with two scholar Fraser & Walberg (2005) who argue that the teachers are always more responsive, positive and consistently are seen to interact with their own learners. This is seen to positively influence learners' ability to excel academically.

In addition, Mugdil (2008) argues that teacher minimum educational requirements were found to have a positive effect on student achievement. They add that holding a science degree in math and science would associate them with more learners. Similarly, Hanushek et al., (2005) found out that teacher experience had a statistically significant effect on learner achievement. The timely interaction held in classes between science teachers and learners provides good sharing of required information during class lesson. This is important as it brings awareness, learning, speaking, listening skills which are instrumental to the learning abilities of learners in any school environment. This is seen as a direction to better academic excellence however, it can be noted that some science teachers had occasionally failed to deliver as represented by respondents who disagreed. Such failure would be attributed to a presentation and knowledge gaps that need to be aggressively attended to.

5.3.2 Teacher factors and Performance of learners in science subjects at Ordinary level

Further to note, it was found out that science teachers had adequate knowledge of subject matter in the subjects they teach. The findings can be supported by Smith et al., (2006) argue that teachers with experience of less than two years below experience were less effective than senior teachers. However, the benefits of experience appear to level off after about five years. Teachers with more experience use classroom management approaches and methods to deliver as well as encourage learners to enhance their learning, reading and writing skills to excel academically (Wassanga, 2007) thus taking responsibility for learners learning needs, managing classroom problems and keeping learners on task (Curran & Rosen, 2006). The ability to possess wide knowledge by teachers in specific subject provides the fact that most questions posed are easily answered and therefore a gesture of an interactive class. Secondly, it explains the rate of expertise that a teacher possess in that particular field, level of competences among others which is equally important to learners learning and overall academic performance however, several indifferences were registered on the issue of knowledge where with the current trends of innovations in education, some of the secondary teachers were tagged to obsolete training materials in form of text books and other science related literature thus a gap.

Additionally, results obtained revealed that science teachers were always present at schools. The findings are a complement from Jebet and Naserian (2011) who in their study about teacher absenteeism carried out in 2004 in Uganda by Jebet and Naserian found out that an average rate of teacher absenteeism was 27 percent considerably high than most countries. In the study, imprompt visits were made to 160 Government/ private schools in Uganda. The schools where randomly selected across three regions (Western, Eastern, Central) six districts the rate of teacher absenteeism was found to be 23%. In addition, Jebet and Naserian (2011), add that work place satisfaction may influence various aspects of work for instance efficiency, productivity, absenteeism, turnovers rates and finally employees' well-being. In addition, satisfied teachers are seen to hold on their jobs longer, frequently engage with students, and consistently interact with students which positively influence learners' academic performance (Jepkoech, 2012). The essence behind teachers being present at school scores more merits compared to demerits in such a way that teachers are constantly consulted, they provide administrative support in case of emergencies and they are counselors among others. These tasks are intended to better day to day school operations for continuity however, other factors for instance incentives (inadequate pay, lack of accommodation and capacity building) among that are inaccessible to most teachers has driven them to search for green pasture which has increased school absenteeism. The absence of such teachers from the schools means discrepancies in the delivery of learning services to the learners hence a reflection of poor academic results specifically in the science subjects.

5.3.3 School based factors and performance of learners in science subjects at Ordinary level

From the study, it was established that school based factors inform of school status, classroom environment, library and laboratory others influence of learners in science subjects at Ordinary level in Wakiso District. This is a true descriptive findings obtained suggested revealed that lack of a good school learning environment affected the performance of learners. The issue about school learning environment is critical as supported by the Good and Brophy (2007) who argue that a healthy environment creates a foundation for successful teaching and learning of learners within a school environment. The scholars add that structural features of schools for instance indoor air quality, lighting, and facilities that support the delivery of curricular programs like libraries, laboratories and classrooms that impact student achievement.

In addition, Jebet and Naserian (2011) argued that the availability of a conducive environment, library facilities and computer laboratory extra in the institution significantly improves students' performance whereas Jackson (2010), argues that creating a learning style for all key school actors including teachers coupled with the proper use of school facilities improve learners' academic performance. The issue of having a good school learning environment in any school parameters is equally important to the expected academic excellence of learners adopting science subjects for instance libraries are stocked with books hence learners access and read. Laboratories are adequately with all required ingredients for practical nonetheless a number of school learning environment bottlenecks have been registered where facilities for instance libraries, labs and computer facilities among others still remain low in some schools and therefore hindrance to expected academic performance.

Findings presented in the earlier chapter reveal that lack of a well-stocked library and fully equipped science laboratories affected learners' capability to perform fairly in national examinations. These findings are in accordance with Kurgat (2008), findings reveal that first class schools like Kings College Budo, St. Mary's college Kisubi and many others perform very well because they have a conducive school environment with full stocked libraries and equipped laboratories which makes the learning of sciences enjoyable and comfortable to the learners. It is therefore believed that poor structures of classrooms, lack of fully stocked laboratories and libraries is amongst the factors that result into poor performance in Wakiso District and Uganda at large.

In addition, Curan and Rosen (2006) held the view that the use of library and level of their parental education boosted student performances. To further complement, Jepkoech, S (2012) argues that many schools in Uganda are not having enough facilities to enable the effective teaching of science subjects. These include science scholastic materials, appropriate technology, laboratories and libraries; this makes it hard to effectively teach science subjects. As highlighted above, a number of weaknesses have been cited as presented by scholars in the above literature and therefore a point of interest to close such gaps.

5.4 Conclusions

In this section, the researcher presents conclusions of the study findings objective by objective

The purpose of this study was to assess the factors influencing performance of learners in science subjects at ordinary level in Wakiso District.

5.4.1 Learner factors and Performance of learners in science subjects at Ordinary level

Findings of this study established that learner factors significantly positively (r=.397**, .000) influence the performance of learners in science subjects at Ordinary level in Wakiso District. In addition, learner factors were found to have a 16% variance on the performance of learners. In addition, it can be concluded that improving learners' interest, attitude, reading culture and concentration would better their performance as learners in science subjects at Ordinary level.

5.4.2 Teacher factors and Performance of learners in science subjects at Ordinary level

The findings revealed teacher factors strongly positively influence (r=.305**, p<0.05, .000) the performance of learners in science subjects at Ordinary level in Wakiso District.in addition ,teacher factors were found to have a 9% variance on the performance of learners. The study concludes that teacher factors have a great influence on the performance of learners in science subjects at ordinary level and therefore teacher factors such as rewards and availability of teaching material would facilitate good lesson that are geared towards academic excellence of learners in science subjects at ordinary level.

5.4.3 School based factors and Performance of learners in science subjects at Ordinary level

Findings revealed the school based factors are critical factor required to improve the performance of learners in science subjects at Ordinary level in Wakiso District reflected by r=.537** and a 29% variance score that school based factors were found to have on the performance of learners in science subjects at O level. In addition, schools need to employ qualified science teachers, appropriately reward them as well as monitor their performance. In the view of the findings, the study concludes that the school based factors greatly influence performance in science subjects.

5.5 Recommendations

From the findings of the research, the following recommendations can be made:

5.5.1 Learner factors and Performance of learners in science subjects at Ordinary level

In light of the discussion held about learner factors and performance of learners in Science subjects at Ordinary level. The following recommendations were made namely:

1) The study recommends that Wakiso District school administrators liaise with education counsellors who can provide counselling and motivational speeches to learners. This will change the learners' negative attitude towards science subjects.
2) The study recommends that school administrators consider using alumni to liaise with former OBs (girls and boys) on mainly the science subjects. In addition, to organizing dinners and school motivation talks. The purpose here will be to self-motivate learners specifically those studying science subjects.

3) The Wakiso District school administrators organize science book festival and practical science fares especially on weekends. This will foster information exchange among learners and teachers and foster better education delivery.

5.5.2 Teacher factors and Performance of learners in science subjects at Ordinary level

Based on the discussions held about teacher factors and performance of learners in science subjects at Ordinary level, gaps were identified and recommendations are provided below:

1) The study recommends that Wakiso District school administrators in line with the Office of the Head Teacher, budget, organize and conduct training of trainers (teachers). This is intended to enhance teacher skills, knowledge, competence and abilities in classroom. This will improve facilitation.
2) The study recommends that Wakiso District school administrators liaise with the Office of Head Teachers and Director of Studies (DOS) should consider bench marking in high science performing schools of how they manage their learning and use the experience or lessons learnt to better the delivery of science subjects at Ordinary level.
3) The study recommends that Wakiso District school administrators encourage teachers to formulate internal school SACCO where they can save and borrow loans that can be repaid back at a reducing balance.

5.5.3 School based factors and Performance of learners in science subjects at Ordinary level

The recommendations provided below represent gaps identified under the discussion held about school based factors and performance of learners in Science subjects at Ordinary level:

1) The study recommends that Wakiso District school administrators go an extra mile to lobby for external sponsorship and also form partnership. The partnership will create good exchange programs for school administrator for school visits and able to lobby for resources for instance scholastic materials, computers and funds that could be used to develop such schools.

2) The study recommends that Wakiso District school administrators through their administration offices should consider using annual fundraising and corporate dinners to raise more funds from alumni. The funds will be used to form a financial base that could be used to improve school facilities for instance libraries, computer laboratories, dormitories and class rooms that can carefully be enjoyed by students and better their academic performance.

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