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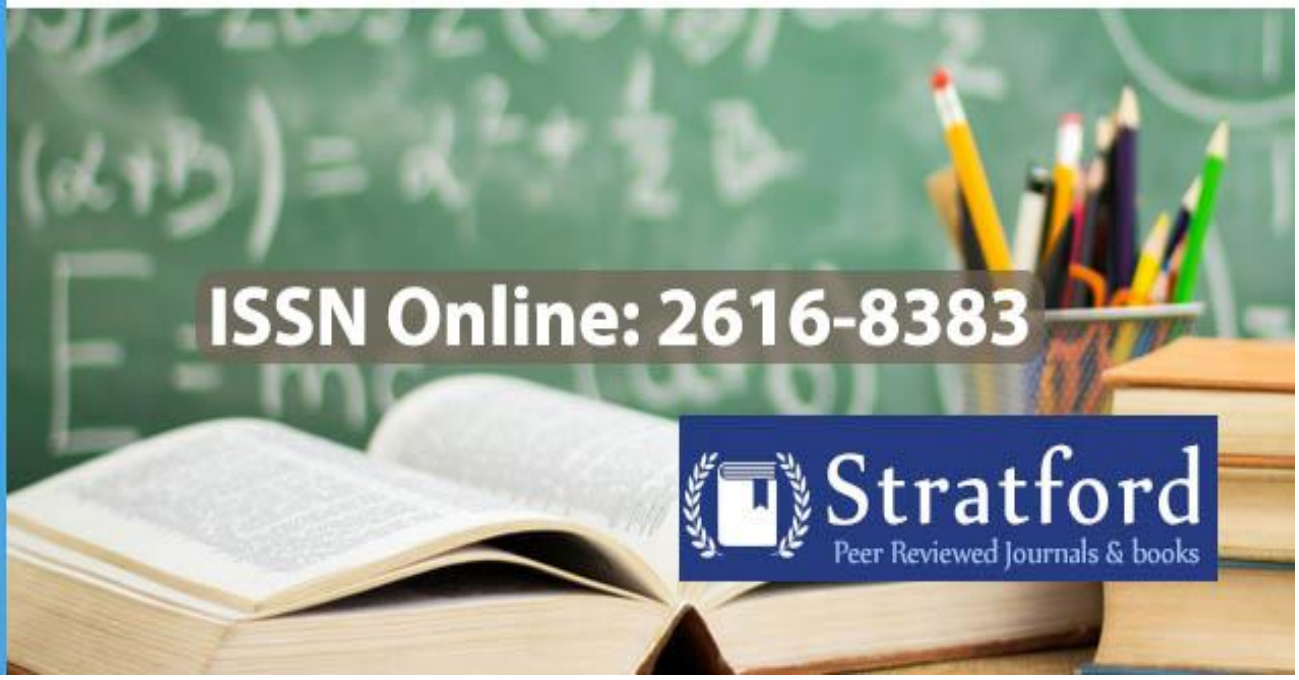

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Effect of Instructional Materials Utilization on Students' Academic Performance in Twelve Years Basic Education in Rwanda

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Abstract

The effective use of instructional materials play a significant role in the promotion of students, teachers and school performance which also refers to the effectiveness of utilizing such materials as skills teachers have. The purpose of this study was to determine the relationship between instructional materials utilization and learners' academic achievement in Twelve Years Basic Education in Kicukiro District in Rwanda. The study adopted a cross-sectional survey design including; a descriptive survey design and a correlation research design. The target population for this study was 308 people, which corresponded to a sample size of 174 respondents using Solvin's formula. Interview guide, direct observation, documentations and questionnaire were used as research instruments for data collection. Through data analysis, the study revealed that instructional materials have a great influence on improving learners/students' capacity for understanding and increasing their academic performance and achievement. It was noted that instructional materials are essential to improving quality education. It was also revealed that there will be a significant positive correlation in the performance of students in 12 years of basic education when they are taught the subject with instructional materials. The study concludes that several schools sampled do not have enough suitable instructional materials underutilization. There is a significant gap between the availability of instructional materials and the educational needs of schools, which could negatively impact student performance. The lack of adequate and accessible instructional materials hampers effective teaching and learning. The study recommends that governments should avail financial resources to ensure equitable distribution of learning materials to schools in both urban and rural areas for effective learning and teaching science related courses. Teachers should encourage students to actively participate in classroom tasks using interactive learning materials. It is important to provide teachers with additional training on how to effectively use instructional materials to enhance teaching and improve student outcomes.The government should consider expanding the use of technology-based instructional aids in the classroom to engage students more effectively.

Keywords: *Academic performance, Instructional Material and Twelve Years Basic Education, Rwanda*

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1.0 Introduction

Instructional resources have been observed as a powerful strategy to bring about effective and actual teaching, coaching and learning worldwide (Oke, 2016). The importance of quality and adequate instructional materials in teaching and learning can occur through their effective utilization during classroom teaching as supported by Afoma and Omotuyole (2018). Instructional resources and materials here comprise all the apparatuses that the instructors can use to enable the learning more stimulating and motiving as well outstanding. It's undoubtedly that instructional resources are very paramount that bring practical skills to learners to fully actively learn and understand the context. Instructional resources are also actions for assessments at a multiple of levels siting examples; text books, internet, computers.

According to Farombi, (2016), instructional materials include books, audio-visual, software and hardware of educational technology. He further opines that the availability, adequacy and relevance of instructional materials in classrooms can influence quality teaching, which can have positive effect on learning and academic performance. The insight from Farombi on linking instructional resources to academic performance serve critical in the provision of quality education. In Latin America secondary education investment does not exceed 0.6% of the Gross National Product and instructional materials provision is below 10 % when compared to early childhood education and primary as well as high education (UNESCO, 2016). The government of Mexico employed free textbook provision policy as instructional materials to improve educational efficiency and equity. Teachers in Philippines who were oriented to a special secondary schools' program were provided with instructional materials such as manipulative toys, blocks, activity sheets, poems, jingles, rhymes and songs. Consequently, the absenteeism rate for students who had been in the summer day secondary schools was 10 % compared to the 15 % for those students without the summer class (UNESCO, 2018).

High academic achievement is realized when day secondary schools Care and Education are provided with school instructional resources particularly with instructional materials (OECD, 2015). Studies done by Carron and Chau, (2015) in India, and Willms (2018) in Latin America indicated acute shortage of school facilities such as classroom materials and inadequate library which led to poor academic performance in the areas most affected by this problem in these countries. A survey which was conducted by UNICEF/UNESCO in 2014 in 14 least developed countries showed that the size of classes ranged from fewer than 30 students in rural and urban Bhutan, Madagascar, and the Maldives, to 73 in rural Nepal and 118 in Equatorial Guinea (Postlewaithe, 2017).

In South Africa; day secondary schools and care services are provided basing on support and funding from agencies from abroad such as donors where most educational agencies provide instructional materials as well as significant advocacy role with government department. UNESCO (2016); conducted a study and revealed that the international development goals on day secondary schools and care services achievement may lead to effective work of international donor agencies as focused in universal education and MDGs. In Kenya, just like most of the countries in Africa, day secondary education has been run by communities and private sector. For public day secondary schools, communities establish and provide physical facilities such as land, building materials, furniture, labor, equipment and above all provide management (Ogutu, 2015). The type and

adequacy of the physical facilities therefore largely depend on the economic ability of the community. Republic of Kenya (2015) noted that procured instructional materials are of quality and relevance to the students. The schools adhere to the approved book policy when carrying out procurement. Funding for instructional materials demands that the funding agency like Counties and others to deposit money via School Instructional Materials Bank Accounts (SIMBA). SIMBA is for teaching and learning materials, while GPA is for other general purposes such as utility bills and support staff. Since the inception of Free Basic Education in Kenya in 2003, the government mandated every secondary school to open the SIMBA and GPA as an intervention measure for the provision of instructional materials in both primary schools and public secondary schools.

In Rwanda, Ministry of Education (MINEDUC,2010-2015) reports that around 40% of teachers in Rwanda has less than 5 years of teaching experience while only 36% and 33% have teaching qualification in secondary schools. The Republic of Rwanda; Ministry of Education, Science and Technology as well as Scientific researcher John and James (2015) committed to match availability of resources with resource requirements, providing enough infrastructure and provide equipment in accordance with set standards. Benjamin, (2014) revealed that the plans of the Government was to provide relevant textbooks, equip Science and ICT labs in Schools to meet curricula demands especially teaching and learning materials for science and technology, expand education facilities specifically.

1.1 Statement of the Problem

The majority of African countries face a shortage of qualified teachers at all levels. Classroom instruction is frequently provided by unqualified or inadequately trained teachersGiven this situation, it is evident that provision of good teaching resources is likely to improve the quality of learning. This is likely to be the case because provision of such instructional materials will help promote the proper sequencing of learning activities in the classroom and supplement teachers' limited knowledge. Many researchers have found that most students struggle to learn and understand due to a lack of instructional materials. It is therefore critical to ensure that instructional materials are used in the classroom to support teachers and students. As stated by Oke (2016), instructional materials are tangible or physical objects which provide severe; visual or both to the five senses during teaching and learning process. Hence instructional materials comprise all forms of information carriers that can be used to stimulate and boost effective teaching and learning accomplishments. Instructional materials if effectively used are capable of captivating interest; stimulating desires in learning and make them participates in the lesson (Mba, 2014). In addition to this; use of instructional materials should be compulsory in Twelve Years Basic Education where students should learn by touching; seeing; hearing; smelling and tasting through experience; hence this can lead to academic achievement (Hirst *et al* ;2015).

Instructional materials are perquisite to foster quality which makes learning or doing things easy or simple for example computer, videos, graphic materials and so on. Instructional materials like electronic communication, internet modes improve academic performance if provided and maintained. Even though Rwanda government has put more effort in empowering and supporting secondary schools especially twelve years education there is still existing a sizeable gap in academic quality and performance in Twelve Years Basic Education; This may be caused as a result of inadequate and limited availability and use of instructional materials such as textbooks,

laboratory manuals, kits, and multimedia materials as well as charts which leads may lead to low academic performance. This brings arouses and provokes the researcher to dig down in depth to find out and thus come up with this topic as illustrated. This study therefore sought to determine the relationship of instructional materials utilization on learners' academic achievement in Twelve Years Basic Education in Kicukiro District in Rwanda.

1.2 Objective of the Study

The objective of this study was to determine the relationship of instructional materials utilization on learners' academic achievement in Twelve Years Basic Education in Kicukiro District in Rwanda.

2.0 Literature Review

The literature review is discussed in sections.

2.1 Instructional materials utilization

There are two types of instructional materials which help in teaching and learning process, types include human resource and material resource (Obioha, 2016). Teaching is a total package; it is true that teacher is the best instructional material because a teacher is the one who manages the classroom. As the saying goes “you are the captain of your mind and the master of your soul a teacher is the captain of the classroom because of moulding the minds of the students to become competent and independent individuals when it comes to excellence (Owoeye & Yara ,2015). Using different instructional materials and techniques that are varied makes teaching effective and meaningful and also it is a big factor for the students in that it builds their confidence and have mastery of the subject matter Mbaria (2016). Organizations responsible for educating others typically adopt a standard curriculum that includes educational materials such as textbooks or workbooks Doublegist (2015). These materials are supplemented by the educator to meet the needs of the learners. Instructional materials are chosen based on their alignment with the accepted curriculum, their effectiveness at increasing student interest and adherence to organization policy in regard to racial or language 10 bias (Atkinson, 2018). Instructional materials covering controversial issues should represent multiple viewpoints and be free of historical omissions or prejudice. Momoh (2019) states that Media should comply with all organizational standards in relation to age-appropriateness. In addition, instructional materials should be accessible to the diverse student body in terms of learning styles and special needs. Laboratory equipment and similar learning materials should be developmental and appropriate for the learners' skills and operate in safe working order. In some instances, students should be given direct instruction on how to use instructional materials appropriately as stated by World Bank (2016). For example, students using graphing calculators to support their math education may need instruction on how to use the materials prior to application.

2.2 Concept of learner’s academic performance

Wanzare (2016) postulates that instructional supervision deals with monitoring teachers’ instruction-related duties, providing teachers with teaching resources, visiting classrooms to observe lessons, and providing assistance and support to help teachers do their work effectively.

According to Osman and Mukuna (2018), instructional supervision roles performed by head teachers include; monitoring of teachers‟ attendance during lessons, preparation and use of lesson plan, checking and ensuring adequacy of teaching resources. Ganira, Odundo and Muriithi (2016) considers professional development as a rigorous and continuous exercise to improve teachers' effectiveness in enhancing learner's achievement. In order for teachers and school managers to accomplish the set goals and objectives, they need keep abreast with the emerging information and maintain the best practices in education indicated by academic performance. In this regard, Githae, Odundo and Mwangi (2015) maintain that financing professional development for preschool teachers should be a priority in order to equip teachers with problem solving skills and creativity which are crucial at that level. Further, a well-planned professional development is expected to influence quality instruction, team building, curriculum development, leadership and mentoring skills. Cognate to this observation, Duflo et al., (2017) found out that children attained high test scores, better grades, better self-esteem, and show higher aspiration and motivation when assigned to teachers with effective professional development. However, Ganira et al., (2016), disclosed teachers who manage their classrooms through using instructional materials indicate high academic achievement.

2.3 Instructional materials utilization and learner's academic performance

The role of instructional resources in promoting academic performance, teaching and learning in educational development is indisputable (Owoeye *et al*.,2015). The materials used by teachers to teach and drive home their subject points at secondary school levels in education system is incontrovertibly a paramount issue in practical classroom interaction and successful transfer of knowledge from the teacher to the learners. Owoeye and Yara (2016) observed that the use of instructional materials in the teaching and learning of economics obviously improves the academic performance of students. Instructional resources are key resources used by teachers every day to help students acquire knowledge. From textbooks to library books to web sites, a wide variety of resources are available to help teachers meet the needs and pique the interests of their students. According to Osayame Ekhovbiye et al., (2018) students learn and remember 10% of what they hear 40% of what they discuss with others and as high as 80% of what they experience directly or practice. Oladejo, Olosunde, Ojebisi and Amos (2017) revealed that teachers of some schools use standard instructional materials, some improvised instructional material and others still employ conventional instruction. It was also reported by Obioha (2016) and Ogunleye, (2015) that there are inadequate resources for teaching Science subjects in secondary schools and the few available ones are not usually in good conditions therefore teachers end up improvising.

2.4 Influence of instructional materials utilization on learner's academic performance

In his study Adeogun (2015) revealed a strong positive link between instructional resources and academic performance. According to Adeogun, schools that possess more instructional resources performed better than schools that have less instructional resources. This finding supported the study by Babayomi (2016) that private schools performed better than public schools because of the availability and adequacy of teaching and learning resources. Adeogun (2015) noted that there was a low level of instructional resources available in public schools and hence commented that public schools had acute shortages of both teaching and learning resources. He 19 further

commented that effective teaching and learning cannot occur in the classroom environment if essential instructional resources are not available. Fuller and Clark (2016) suggested that the quality of instructional processes experienced by a learner determines quality of education. In their view they suggest that quality instructional materials creat into the learners' quality learning experience. Mwiria (2018) also supports that performance is affected by the quality and quantity of teaching and learning resources. This implies that the schools that possess adequate teaching and learning materials such as textbooks, charts, pictures, real objects for students to see, hear and experiment with, stand a better chance of performing well in examination than poorly equipped ones.

The influence of instructional materials in promoting academic performance and teaching and learning in educational development is indisputable. The use of instructional materials in the teaching and learning obviously improves the performance of students both at primary and secondary level Owoeye & Yara, (2015) Schools which provide enough instructional materials enable teachers clarify their lesson and make hard subjects simple. Osayame and Iyamu, (2019) reported that the low percentage of performance in business studies in JSS certificate examination in Edo State was due to absence of equipment and materials in the system. This shows that instructional materials and resources have a very important role in education. The study by Adalikwu and Iorkpilgh (2020) revealed that students

who were taught with instructional materials performed significantly better than those taught without instructional materials and also that the use of instructional materials generally improved understanding of concepts and led to high academic achievements. The author stressed that instructional materials help to improve knowledge, abilities, and skills, to monitor their assimilation of information, and to contribute to their overall development and upbringing. It also clarifies important concepts to arouse and sustain student's interests, give all students in a class the opportunity to share experiences necessary for new learning, help make learning more permanent. Jekayinfa (2019) added that it is also very vital to have sufficient and adequate human resources in terms of teacher quality for the teaching of all subjects in the school curriculum. Without the teachers as implementing factors, the goals of education can never be achieved.

2.5 Government policy

In Rwanda; Nine Years Basic Education policy (9YBE) was introduced in 2006 where free and compulsory basic education was expanded from 6years covering primary one to 9 years covering lower secondary (senior three). According to the Economic Development and Poverty Reduction Strategy (EDPRS), the high-level objectives for education are to improve and increase: Access to education for all, Quality education at all levels, Equity in education at all levels, Effective and efficient education system, Science and technology and ICT in education, and Promotion of positive values, critical thinking, Rwandan culture, peace, unity and reconciliation. REB being responsible for providing instructional materials in all schools in Rwanda,it is also entitled to assure effective instructional materials utilization and how they affect academic performance specifically in 12YBE. Ministry of Education (MINEDUC,2010-2015) reports that around 40% of teachers in Rwanda has less than 5 years of teaching experience while only 36% and 33% have teaching qualification in secondary schools. The Republic of Rwanda; Ministry of Education,

Science and Technology as well as Scientific researcher John and James (2015) committed to match availability of resources with resource requirements, providing enough infrastructures and provide equipment in accordance with set standards. Benjamin, (2014) revealed that the plans of the Government was to provide relevant textbooks, equip Science and ICT labs in Schools to meet curricula demands especially teaching and learning materials for science and technology, expand education facilities specifically.

3.0 Research Methodology

This study employed a cross-sectional survey design including; a descriptive survey design and a correlation research design. The target population of this study was 308 people comprising 11 head teachers and 297teachers. The sample size was 174 respondents by using Solvin's formula such as 6 head teachers and 168 teachers. Stratified and purposive sampling techniques were adopted where interview guide, direct observation, documentations and questionnaire were used as research instruments for data collection. IBM SPSS vision 21 was used as software for data management.

4.0 Findings

This study was established to determine the relationship of instructional materials utilization on learners' academic achievement in Twelve Years Basic Education in Kicukiro District in Rwanda. IBM SPSS vision 21 was used as software for data management.

4.1 Extent in the use of instructional materials in 12 YBE

Table 1 shows how much instructional materials are used in 12 years of basic education.

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Table 1: The extent of use of instructional materials in 12 YBE

Indicators		SD	D	N	A	SA	Total	Mean	SD
Instructional materials like text books and chemicals are used in this school	Frequency	0	0	12	78	84	174		
	Percentage	0%	0%	6.4%	44.8%	48.2%	100%	4.67	0.543
Instructional materials like laboratory manuals and kits are used at school	Frequency	0	6	20	78	70	174		
	Percentage	0%	3.4%	11.4%	48.8%	40.2%	100%	4.43	0.725
Teachers use instructional materials in all subjects	Frequency	0	2	19	81	72	174		
	Percentage	0%	1.1%	10.9%	46.5%	41.3%	100%	4.21	0.966
Teachers in 12 YBE use multimedia materials as well as charts in this school	Frequency	0	6	14	63	91	174		
	Percentage	0%	3.4%	8%	36.2%	52.2%	100%	4.28	0.872
Biology charts as well as periodic table are found in classes	Frequency	0	4	10	65	95	174		
	Percentage	0%	2.2%	8%	37.3%	54.5%	100%	4.17	0.762

Table1 for each indicator shows the percentage and frequency shows the mean and standard deviation of the responses elicited from the respondents. The findings show the extent for instructional materials like text books and chemicals are used in this school. None of the respondents disagreed nor strongly disagreed to the instructional materials like text books and chemicals are used in this school. The neutral responses comprised of 12 (6.4%), 78 (44.8%) respondents agreed to the instructional materials like text books and chemicals are used in this school while 84 (48.2%) strongly agreed that instructional materials like text books and chemicals are used in this school, with a mean of 4.67 and standard deviation of 0.543 as shown. It was found that there are instructional materials like text books and chemicals are used in this school.

The study further depicts that 6 (3.4%) of the respondents disagreed and were 20 (11.4%) neutral that instructional materials like laboratory manuals and kits are used at school, 78 (48.8%) agreed while 70(40.2%) strongly agreed, with a strong mean and standard deviation of 4.43 and 0.725 respectively. From the tables, 2(1.1%) of the respondents disagree that teachers not use instructional materials in all subjects, 19(10.9%) are neutral, 81(46.5%) of the respondents each

agreed and 72(41.3%) strongly agreed that teachers use instructional materials in all subjects with a strong mean of 4.21 and standard deviation of 0.966 showing that they all have heterogeneous responses or varying perceptions and there is a very significant level of assessment by the teachers use instructional materials in all subjects.

Furthermore, none of the respondents strongly disagreed that there is no teachers in 12 YBE use multimedia materials as well as charts in this school, while 6 (3.4%) disagree that there is not teachers in 12 YBE use multimedia materials as well as charts in this school. 14 (8%) are neutral with the statement, 63 (36.2%) agree and 01(52.2%) strongly agreed that teachers in 12 YBE use multimedia materials as well as charts in this school, with a mean of 4.28 and standard deviation of 0.872 which shows that teachers in 12 YBE use multimedia materials as well as charts in this school. Finally, finding shows that 4 of respondents representing 2.2% are disagree that there isn't Biology charts as well as periodic table are found in classes, 10 of respondents with 8% are neutral, 65 respondents with 37.3% are agree that Biology charts as well as periodic table are found in classes while 95 of respondents with 54.5% are strongly agree that Biology charts as well as periodic table are found in classes, hence with 4.17 mean and 0.762 stand deviation shows the strong mean and heterogeneous answers.

Both teachers and students need learning materials to successfully teach and learn any subject (Janovsky, 2015). In this case, Msafiri (2017) believes that teaching materials can help teachers to easily achieve learning objectives and help students to understand the content in a practical way. Ogbu (2015) observed that teachers who use teaching aids to teach more facts in less time than teachers who rely only on oral instruction. In a study of 57 schools in England and Wales, Brudett and Smith (2003) concluded that institutions with rich teaching and learning resources performed better than institutions without rich teaching and learning resources. Unfortunately, many schools in Rwanda have inadequate teaching materials, resulting in low education.

(Nizeyimana and Nkiliye, 2021) In most cases, many students find it difficult to understand certain mathematical concepts because they have a basic level of cognitive operations. However, when schools lack or do not have access to standard teaching materials, learning can be enhanced by "improvising" materials using locally available materials (Ndihokubwayo et al., 2020). Onasanya et al. (2008) stated that improvisation requires risk-taking, creativity, curiosity and commitment from the teacher. Iji (2014) believes that improvisational learning materials can help students improve accuracy, comprehension and efficiency.

Abimbade (2004) stated that the approach of using improvised materials in mathematics classrooms helps to introduce new skills correctly, develop understanding and demonstrate the correct way of doing things. Egbu (2012) also believes that involving students in classroom activities is essential because it makes teaching student-centered. Therefore, educators should emphasize the use of learning materials to ensure a sustainable education system (Ng'etich and Chemwei 2015). On the other hand, Umugiraneza et al. (2018) that teachers in schools in KwaZulu-Natal, South Africa did not use educational technology in mathematics courses because they lacked sufficient confidence in preparing and using the tools. The researchers also found that students were not familiar with these technological tools. Ogbondah (2008) argued that factors inhibiting the use of teaching materials include lack of information on where to find tools, lack of basic skills of teachers in the design, selection and use of these tools and lack of electricity. However, all agree that learning with instructional support can increase students' awareness of

self-regulated learning in mathematics (Agwagah, 2001; Bala & Musa, 2006; Meyer & Turner, 2002).

This study is based on constructivist learning theory, which is rooted in the famous ideas of Jean Piaget, John Dewey and Jerome Bruner, that is, when students actively engage in the learning process and construct knowledge, learning takes place instead of passive learning. students receive information) (Aljohani, 2017).

Constructivist learning theory supports students' active participation in the construction and creation of knowledge (Elliott, Kratochwill, Littlefield, & Travers, 2000). A study by Meyer & Turner (2002). It also shows that the information that students acquire and retain in long-term memory is what they acquire through learning by doing.

4.2 Level of students' academic performance in twelve years basic education

Table 2 displays the academic performance of students over twelve years of basic education.

Table 2: Level of students' academic performance in twelve years basic education

Indicators		SD	D	N	A	SA	Total	Mean	SD
This school experience high promotion rate	Frequency Percentage	0 0%	0 0%	0 0%	76 43.6%	98 56.3%	174 100%	4.41	0.815
Students improve their grades in this school	Frequency Percentage	0 0%	9 5.1%	9 5.1%	75 43.1%	81 46.5%	174 100%	4.26	0.958
Class participation keep on improving	Frequency Percentage	0 0%	0 0%	7 4%	78 44.8%	89 51.1%	174 100%	4.01	1.040
Rate of homework completion improved	Frequency Percentage	4 2.2%	6 3.4%	14 8%	90 51.7%	60 34.4%	174 100%	4.08	0.166
Rate of time wastage for unexpected actions reduced	Frequency Percentage	2 1.1%	8 4.4%	10 5.7%	89 51.1%	65 37.3%	174 100%	4.20	0.886

Table 2 for each indicator shows the percentage and frequency shows the mean and standard deviation of the responses elicited from the respondents. The findings shows that the 174 respondents, table 2 shows that 98(56.3%) strongly agreed and 76(43.6%) agreed that this school experience high promotion rate. None were neither neutral nor strongly disagreed to this fact and disagreed with the statement. Most of the respondents witnessed that this school experience high promotion rate with strong mean and standard deviation of 4.41 and 0.815 respectively, implies

that this school experience high promotion rate. Most of the respondents also confirmed that the students improve their grades in this school as it can be seen from table 2 where 9 of respondents with (5.1%) are disagreed and neutral with the statements, 75 (43.1%) agreed and 81(46.5%) strongly agreed that the students improve their grades in this school with strong mean and standard deviation of 4.26 and 0.958 respectively. Class participation keep on improving 89(51.1%) are strongly agreed and agree 78(44.8%) all show that some of the respondents are neutral 7(4%) respectively. The strong mean and standard deviation of 4.01 and 1.040 respectively, further shows that most of the respondents where class participation keeps on improving.

Also, 60(34.4%) strongly agreed and 90(51.7%) agreed that the rate of homework completion improved. The total number of respondents, 14(8%) were neutral to this, 6(3.4%) disagreed and 4(2.2%) strongly disagreed, with a response mean of 4.01 and standard deviation of 1.040. This shows that the respondents are all in line to this statement. Finally, 2 of respondents with 1.1% are strongly agree that there isn't rate of time wastage for unexpected actions reduced, 8 of respondents with 4.4 % are disagree that there is not Rate of time wastage for unexpected actions reduced, 10 of respondents with 5.7% are neutral with the statement, 89 of respondents with 51.1% are agree that there is rate of time wastage for unexpected actions reduced while 65 of respondents with 37.3% are strongly that there is rate of time wastage for unexpected actions reduced with 4.20 mean and 0.886 standard deviation.

Science education is a dynamic and relatively broad field. It is considered the basis of school education in many countries, and mathematics and science subjects in higher education are considered key components to meet social needs and ensure sustainable economic development. In all areas of social life, young people should be interested in learning mathematics, science and technology at school, exploring the world and discovering new things (Brock, 2020). The goal of the 2030 Global Agenda for Sustainable Development is to build a world with equal and universal access to quality education at all levels, in particular by strengthening science education to promote social development in some countries and train the new generation to develop capacity in all areas of science, theme and Rwandan national vision. However, Vision 2020, now extended to 2050, focuses on transforming the lives of Rwandans, especially young citizens, into a more economically dynamic and productive population by promoting mathematics and science education. To achieve this goal, all children must receive free education as a universal human right in accordance with the 1948 United Nations Declaration of Human Rights. Equally important are the provisions of the Convention on the Rights of the Child (Rose & Alcott, 2015).
Therefore, the Rwandan government has implemented a policy to promote literacy through education for all and established a basic education system with a greater emphasis on science subjects (including 12 years of basic education - 12YBE). However, some challenges are related to students' unsatisfactory academic achievement in science subjects (Rwanda Basic Education Board [REB], 2017).

According to Hacklin et al. (2001), high-quality science education that meets the developmental needs of humanities universities is a global issue. For example, in recent years, the level of performance of science education researchers in different countries has been unsatisfactory (Lerman, 2014). Similarly, a study on the challenges of teaching science in secondary schools in Nigeria concluded that students have fear of science, negative attitudes and poor academic

achievement (Abulude & Olawale, 2016). A study in Ghana showed that all facilities can be created for students from the poorest families to enroll easily, promoting inclusive and equitable quality education and promoting lifelong learning opportunities for all (Akyeampong, 2009). In terms of primary education, experiences in Uganda, Tanzania and Kenya show that an increase in primary school enrollment increases the demand for secondary education, which requires parental involvement (Oketch & Rolleston, 2007). In Kenya, interventions in primary education have improved by expanding universal enrolment, where students perform better and have the opportunity to continue to higher levels, but learning outcomes in public schools remain low, reducing universal access. However, the advantage is that in Tanzania, Kalolo (2015) suggests that science teachers should emphasize the content that students need to improve their performance.

4.3 Correlations between instructional materials utilization and academic performance

The aim was to establish the nature and strength of relation between instructional materials utilization and academic performance of students. The correlation significance is indicated by a probability value of less than 0.05 or 0.01. This means that the probability of obtaining such a correlation coefficient by chance is less than five times out of 100 or is less than one times out of 100, so the result indicates the presence of a relationship.

Table 3: Correlations between instructional materials utilization and academic performance

			Instructional materials utilization	Academic performance
Spearman's rho	**Instructional materials utilization**	Correlation Coefficient	1.000	.993*
		Sig. (2-tailed)	.	.000
		N	174	174
	Academic performance	Correlation Coefficient	.993*	1.000
		Sig. (2-tailed)	.000	.
		N	174	174

*. Correlation is significant at the 0.05 level (2tailed).

The variation of Spearman Coefficient correlation is between -1 and 1. Spearman Coefficient correlation has significance when it is equal or greater than 0.01. According to the research, the correlation of 0.993 (91.4%) is located in the interval [0.75 - 1.00] categorized as positive and strong correlation. As the significant level is at 0.01 (1%), the p-value of 0.000 (i.e. 0.0%) is less than 1%. This leads to confirm that there is significant relationship between instructional materials utilization on academic performance in Twelve Years Basic Education case study Kicukiro district.

4.4 Effect of instructional materials utilization on students' academic performance

Multiple Linear regressions were computed at 95 percent confidence interval to establish the relationship between instructional materials utilization and students' academic performance.

Based on the model summary, the coefficient of determination (R squared) shows the overall measure of strength of association between independent and dependent variables.

Table 4: Model Summary on instructional materials utilization

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782[a]	.612	.603	.748

a. Predictors: (Constant), Instructional materials utilization

The study results in table 4 show that instructional materials utilization has statistically significant effect on academic performance in Twelve Years Basic Education case study Kicukiro district with a positive coefficient of determination of 0. 612 indicate that there is a positive correlation between independent values and dependent value.

5.0 Summary of findings

The objective of this study focused on determining the relationship of instructional materials utilization on learners' academic achievement in Twelve Years Basic Education in Kicukiro District in Rwanda. It was noted that 174 respondents, that 90 (52.8%) strongly agreed and 64(36.7%) agreed that students get good grades, 18(10.3%) neutral and none of strongly disagreed to this fact and disagreed with the statement. The strong mean and standard deviation of 4.26 and 0.855 respectively, implies that there is students get good grades in Twelve Years Basic Education in Kicukiro district. Most of the respondents also confirmed that teachers use instructional materials in any teaching session or relevance at hand as it can be seen where 60 (34.4%) agreed and 88(50.5%) strongly agreed that teachers use instructional materials in any teaching session, 10 of respondents with 9.1% are neutral the statement while 10 of respondents with 5.7% are disagree. The strong mean and standard deviation of 4.22 and 0.039 respectively, implies that teachers use instructional materials in any teaching session. The rate of homework completion increased 75(43.1%) are strongly agreed and agree 80(45.9%) all show that some of the respondents are neutral on 14 (8%) and 5(2.8%) are disagreed respectively. The strong mean with standard deviation 4.01 and 0.126, further shows that the rate of homework completion increased. Also, 87(50%) strongly agreed and 70(40.2%) agreed that multimedia materials as well as charts are used, 10(5.7%) were neutral to this, 4(2.2%) disagreed and 3(1.7%) strongly disagreed, with a response mean of 3.90 and standard deviation of 0.062. This shows that the respondents are all in line to this statement.

6.0 Conclusion

The study concludes that several schools sampled do not have enough suitable instructional materials underutilization. They do not have instructional materials that the schools need to improvise in increase student academic performance. Although all the teachers agree that instructional materials are important in contributing to students' academic performance, instructional materials are very limited and there is a need to increase in number and accessibility for teachers and students. The study's findings indicate a significant gap between the availability of instructional materials and the educational needs of schools, which could negatively impact

student performance. The lack of adequate and accessible instructional materials hampers effective teaching and learning. This situation underscores the urgent need for investment in educational resources to improve both the quality of instruction and student outcomes in academic performance.

7.0 Recommendations

Through the presented findings of this study as well as drawn conclusion, the recommendations were also established.

1. Governments must provide readily available financial resources to ensure equitable distribution of learning materials to schools in both urban and rural areas for effective learning and teaching of science.
2. Teachers should encourage students to actively participate in classroom tasks using interactive learning materials.
3. The schools set up fully equipped laboratories in all schools. Teachers should improvise learning materials for the learning process.
4. It is important to provide teachers with additional training on how to effectively use instructional materials to enhance teaching and improve student outcomes.
5. The government should consider expanding the use of technology-based instructional aids in the classroom to engage students more effectively.

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