

Teaching Resources and Students' Academic Performance in Technical and Vocational Education and Training (TVET) in Rwanda

A Survey of Selected Public and Private Vocational Training Centres (VTCs) in Gasabo District

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Abstract: This study sought to investigate the effect of teaching resources on Students' Academic Performance in Public and Private TVET schools in Gasabo District-Rwanda. The specific objectives included; to examine the availability of teaching resources in Public and Private TVET schools in Gasabo District, to determine the level of Students' Academic Performance in Public and Private TVET schools in Gasabo District and to assess the effect of teaching resources on students' academic performance in Public and Private TVET Schools in Rwanda. The study used descriptive research design because it enabled the description of the variables in this study as they are and their relationship. The target population was 180 teaching staff and students of selected public and private VTCs Schools; Gacuriro VTC (Public), Centre des Métiers Assomption Kabuye (Private) and Esther's Aid School (Private). A sample of 124 was calculated using Yamane's formula and purposive and simple random sampling techniques used to select sample respondents. Questionnaires, interview guide and observation checklist were used to collect primary data from the respondents. The findings indicated that physical resources were inadequate (most supported by less than 40% of teachers) save for chairs and tables in staffroom which was found adequate by over 60% of teachers and students. Human resources were however found adequate supported by over 70% of teachers and students. However, 60% of teachers opined that number of teachers are not adequate in various departments. The students were poor at time management though they were confident of the skills they acquired (mean of 4) save for tailoring and hairdressing students who opined not ready to practice what they have learnt (Mean of 3). The competency skills acquired varied with some courses feeling more competent than others. Pearson correlation coefficient between physical resources and students' academic performance was 0.656 while that for human resources and academic performance was 0.714 with significance of 0.000 for both cases. The regression coefficients for physical and human resources were 0.464 and 0.548 respectively with 0.000 significance value in both cases. The study concluded that physical resources were inadequate in TVET schools both public and private save for tables and chairs in staffroom while human resources were adequate. The study also concluded that the students' academic performance in TVET schools is satisfactory as most students acquired the skills and competences for the job market and they were ready for the job in addition to better performance in terms of exam mean score. Lastly the study concluded that there is positive significant effect of teaching resources on academic performance of students in TVET schools. It is recommended that MINEDUC and other stakeholders should consider increasing allocations for equipping the TVETS with Human and physical resources. The Schools themselves need to improvise through networking with other well-endowed TVETs in providing training to TVET students.

Keywords: Teaching Resources, Academic Performance, Public Tvet, Private Tvet

Date of Submission: 07-10-2022

Date of Acceptance: 19-10-2022

I. Introduction

1.1. Background

The need of skilled human resource of a nation is a global key strategic development plan and particularly education sector is one of key pillars for such visionary structures.

Technical and Vocational Education and Training (TVET) is greatest pillar of Rwanda's poverty reduction strategy. (Ministry of Education, 2008). Rwanda's TVET has been continuously provided by various institutions both private and public majorly at upper secondary level.

There has been stigmatization concerning TVET that its only for the failures and this has to some extent affected the performance of technical school students (M O E, 2008). Studies by ministry of education in

2006 did report that 48% of entrepreneurs were less satisfied by performance of graduates which could still reflect the poor academic performance exhibited by these students at the schools. This scenario can be explained by among other factors unavailability of teaching resources. Teaching resources are utilized by teachers in their daily teaching activity to assist students in acquisition of relevant knowledge. Library books and websites are some of the valuable resources that aids teachers in preparation hence meeting the needs and enhance interest of their students.

In a study which was done by Okemakinde, Adedeji and Ssempebwa (2009) inferential statistical findings did indicate an association between teaching resources use and availability and academic performance of technical students. The study concluded that 100% increase in teaching resource availability would increase academic performance by 28%. Education consists of two components, the inputs and the out puts (Akungu, 2004). The author noted that inputs consisted of resources both human and material while goals and outcomes of education constituted the outputs. Private Technical Secondary Schools mostly offer commercial courses since they require less resources unfortunately there is less response of such courses to needs of labour market (Okemakinde, Adedeji and Ssempebwa, 2009).

All entrepreneurs demanded that the graduates must have more practical skills. Availability of teaching and learning resources (TLR) enhances the effectiveness of technical schools as these are basic things that can bring about outstanding academic performance among students (Ambogo, 2012). The influence of teaching resources in promoting students' academic performance and teaching and learning in educational development is indisputable (Owoeye and Yara, 2013; Nzabihimana, 2010). The materials used by teachers to teach and drive home their subject points at Vocational schools is incontrovertibly a paramount important issue in practical classroom interaction and successful transfer of knowledge from the teacher to the learners. Owoeye and Yara (2013) observed that the use of teaching resources in the teaching and learning of concepts obviously improves the academic performance of students.

According to Osayame and Iyamu (2011), 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 et al. (2011) revealed that some schools have standard instructional materials, yet others have improvised instructional material and many other schools use conventional instruction. It was also reported by Obioha (2006) and Ogunleye (2002) 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.

Rwanda's Education Ministry in 1998 vowed to match resources with the requirements and improve learning infrastructure with the set standards. This however, did not include technical schools which are privately owned. The plan was to ensure provision of textbooks, school laboratories particularly science and ICT to be well equipped as per curricula requirements (Bizimana, 2014). Therefore, the current research focus on teaching resources availability and academic performance in technical schools.

1.2 Statement of the problem

The limited number of trained technical and vocational teachers in Rwanda who even lack enough teaching resources to aid learning to some extent has affected the academic performance of students. According to a study which was done in Nigeria by Okemakinde et al., (2009), it was noted that most of the employers demanded that the graduates should have both practical and theoretical skills although more practical skills were preferred. The Ministry of Education of Rwanda reported that in the two studies which were conducted in 2006 showed that 48% of 25 interviewed entrepreneurs were not satisfied by the graduates' performance which still reflects on the students' poor academic performance exhibited in technical schools. This however may not be blamed on the students alone because most teachers have low productivity because of the inadequate use of teaching resources which limits students' involvement in the learning process (MOE, 2008).

Ogunleye (2002) in a research reported that there was scarcity of both printed and audio-visual materials in most of the schools and a few schools which had them, had insufficient quantity or quality. There are concepts which cannot be retained effectively without the use of relevant teaching resources in technical schools and this impairs learning and academic performance.

Learning occurs through teaching which involves passing of ideas and skills from the teacher to learner though faced with a number of obstacles in most cases. Osayame and Iyamu (2011) reported that experience accounts for the greatest percentage of learning at 80% followed by discussion with other people at 40% and lastly through hearing at 10%. In light of this, to effectively achieve desired learning outcomes, practical experience is key and not only verbal communication. Technical schools have always experienced poor subject performance in examinations which could be accounted for by lack of enough and efficient learning materials and the methods of improvisation of these resources are also not so clear. Teaching resources aids in smooth learning as students are able to access the learning materials such as books which improves their academic performance. Teachers are very essential as they guide the students during learning activities hence improving their academic performance. Additionally, physical resources subsidize the learning process and make the

learning environment conducive which makes the students to gain the relevant academic skills hence improving their academic performance. In studies done, there was a positive relationship between use of teaching resources and academic performance of students. For example, Kemakinde (2008) in Nigeria reported that teaching resources have a significant positive association with academic performance and that if resources are increased by 100% academic performance would increase by 28%.

There is need therefore, for teachers to know which teaching resources are available, which instructional method is "right" for a particular lesson depending on the development level of the students, the subject matter, the objective of the lesson, time, space, and the physical setting of the class. Studies have been done in Rwanda concerning teaching resources and academic performance (Habiyaambere, 2015, Muhire, 2016) but majority have focused on secondary and primary schools while TVET schools have been neglected by researchers despite the critical role that they play in providing technical skills required in the labour market. This study therefore assessed the effect of teaching resources on the academic performance of students in both government and private owned technical school.

1.3 objectives of study

- i. To examine availability of teaching resources in Public and Private TVET schools in Gasabo District.
- ii. To determine the level of Students' Academic Performance in Public and Private TVET schools in Gasabo District.
- iii. To assess the effect of teaching resources on Students' Academic Performance in Public and Private TVET Schools in Rwanda.

II. Literature Review

2.1 Empirical Review

A study was conducted by Adalikw and Lorkpilgh (2012) concerning instructional materials and students' academic performance taking a case of senior secondary schools. The study adopted quasi experimental design and simple random and stratified sampling techniques. A section of students was taught using instructional materials while another group without then they were given the same assessment test. The findings revealed that those who were taught with instructional materials outperformed the group taught without. Pearson correlation coefficient between teaching resources and academic performance was found to be 0.67. This is an indication that there was significant association between use of instructional materials and academic performance. The study recommended the use of instructional materials in conducting chemistry lessons.

In Oyo State Nigeria a study was carried by Kemakinde (2008) on teaching resources and academic performance in technical schools. The study adopted descriptive design with data collected using questionnaires and through documentary review. The study findings revealed that technical colleges deferred in terms of resource availability though generally they were still under facilitated. Secondly from the inferential statistics findings, the study reported a significant association between resource availability and utilization and academic performance. If resources are increased by 100% academic performance would increase by 28%. The study recommended that putting the resources in place was necessary but also optimal use of such resources was also called for.

In another study by Jekayinfa (2012) efforts were made to determine the effects of teaching resources on academic performance in Nigeria targeting secondary school students taking history. The study utilized primary data collected among history students and teachers and principals of 11 selected schools in Oyo state using questionnaire. The study findings indicated that availability of teaching resources is a very significant determinant of academic performance. Schools with adequate physical resources and qualified teachers stood higher chance of attaining better grades in history than those without. The study recommended the government to supply adequate resources to schools in order to achieve better performance.

A study was conducted in Islamic University of Bahalpur to find out the determining factors of academic performance. Descriptive study design was adopted and data collected from 100 students using questionnaires. The study findings revealed that the socio economic status of father/guardian, study hours and age significantly affected academic performance.

A study was conducted in Vihiga County, Kenya by Asike and Achoka (2017) to analyze the effects of teaching and learning resources on students' academic performance. The study adopted descriptive research design and data was collected using questions. The study findings did indicate schools in Vihiga County have inadequate teaching resources and this affects negatively the academic performance of students. The study recommended that the government should set special fund for financing provision and improvement of physical resources in schools to enhance students' performance.

Contrastingly, a study in Rachuonyo South Sub County, Kenya by Ojuok and Olel(2020) focused on determining the influence of physical facilities on academic performance of secondary school students. The

study adopted descriptive survey and correlation research designs. The findings did indicate that physical facilities particularly science laboratories, computer laboratories and quality classroom had weak significant correlation with student academic performance. The study recommended that the government should provide required resources to enhance learning in secondary schools.

A study was conducted in Rwanda by Nyambura and Sikubwabo (2017) to assess the relationship between physical facilities and students' academic performance in Gasabo District using descriptive design approach. The study findings did reveal that some secondary schools in Gasabo district have physical facilities like libraries, laboratories and classrooms while other schools did not have adequate facilities. Additionally, the study did find that some of the physical facilities are underutilized in some schools. There was a moderate positive relationship between physical facilities and students' academic performance. The study recommended that the availability of facilities alone is not enough but additionally they should be effectively utilized to raise students' performance. The study also recommended that the government should budget for more physical facilities in schools that have inadequate.

Ntawiyanga *et al* (2020) in Rwanda also conducted a study on determinants of school performance in selected public secondary schools in Rwanda. The study adopted descriptive survey and correlation design with use of both qualitative and quantitative data. The study findings did reveal that the schools are not adequately provided by education inputs and that physical resources were one of the key determinants of school performance. The study recommended that the government should improve investment in performance determinants like physical resources for a better performance secondary schools.

2.2 Critique of Literature and Research Gap

Many studies have been conducted on teaching resources and academic performance mostly in primary schools while little has been done concerning TVET schools of which this study gives a focus.

Study by Adalikw and Iorkpilgh (2012), only looked at teaching resources and academic performance in senior secondary schools focusing on only chemistry subject in Cross River State and in one school which did not have a vocational section. This leaves out the section of vocational subjects and there is therefore no data shown on the academic performance of students in either government or private owned technical schools. In addition, this study did not look at the available teaching resources and did not still categorize these resources. In the current study, the researcher intends to look at the different teaching resources and categorizes them into two categories; the human and the material or physical teaching resources.

The study of Kemakinde (2008) however did not look at a comparison of government aided and private aided schools. The researcher used only one technical school and did not also reveal to the readers the other factors which affect the utilization of these resources. This study therefore compared availability of teaching resources and academic performance of students in both governments aided and private owned schools.

The study of Shoukat *et al.*, (2014) however assessed specific factors which affect academic performance in general but did not look at the availability of the different teaching resources and how they affect the academic performance of learners. In addition to the above, the study looked at University students who are so different from the technical students in terms of the texture of the class. Most university students join Universities as a result of passing from one level to another. The current study looks at technical schools where student's enrollment is not basically due to excellent performance but those who fail to continue with the academic pressures opt to join these technical schools. The current study therefore looked at the technical schools and how these schools perform.

In Jekayinfa (2012) study there was a variation of schools but the investigator used only one subject history to relate the use of instructional material and the academic performance. In the current study, the researcher intends to also use internal examination and continuous assessment which are given at a national level considering that all the vocational schools completed their syllabi.

Studies in Rwanda have focused on secondary schools while overlooking the state of teaching resources in technical schools. Additionally, the studies have analyzed public schools and not private schools. This scenario leaves gap that this study filled by focusing on both public and private technical schools.

2.3 Constructivist Theory

This study is anchored on Constructivist learning theory. This theory stresses the constructive nature of learning process. Teachers who embrace the constructive nature of learning engage their students on continuous assessment to strengthen their understanding and enable them to constantly question themselves hence becoming experts in learning. A well-planned and resourced classroom environment offers students a chance to learn effectively. The theory considers that students differ in terms of speed of learning hence teachers must be considerate. Learning methods range from lectures, reading, audiovisual, demonstration, discussion group, practices by doing and teaching others with information retention rates of 5%, 10%, 20%, 30%, 50%, 75% and 90% respectively. It is therefore important to note that teaching others has the highest information retention rate

while lectures has the least retention rate. Prior knowledge is also important in the learning process and determines a person's ability to construct a meaning. People's experiences and cultures among other factors defines their prior knowledge in addition to the nature of environment where the person is brought up. Prior knowledge is important in the learning process though faced with challenges of wrong information and misconceptions. In that regard, a considerable time has to be spent on improving prior knowledge before a new learning process occurs. This theory admits the different learning among students but when various teaching methods are adopted then learning improves to a greater extent. This theory is relevant to this study since it embraces the use of several methods in class teaching of which use of teaching resources is important and encourages effective discussions and practice. In government aided category of schools, lack of instructional resources could hamper the successful use of combination of teaching methods with teachers forced to adopt only lecture method which ultimately yields only 5% retention rate. Therefore, there is need to fully resource the schools if effective learning is to be achieved.

III. Methodology

Descriptive cross sectional I research design was adopted. The population size was 180 consisting of teachers and students of 3 TVET schools namely Gacuriro VTC (Public), Centre des Métiers Assomption Kabuye (Private) and Ester's Aid School (Private). The sample size was 124 drawn from the population using Yamane's formula. The study adopted purposive and simple random sampling techniques. Data was collected using questionnaires, interview guides and observation checklist. The researcher ensured that the instruments passed the reliability and validity test before utilizing them in actual data collection. Data was analyzed using IBM SPSS version 21 and descriptive statistics such as means, percentages and standard deviation utilized in presenting findings. Additionally, the study computed correlation coefficient and regression coefficients to assess the effects of teaching resources on academic performance. The findings were presented using tables and figures.

IV. Research Findings

4.1 Availability of Physical Resources in Public and Private TVET Schools

The physical resources that the study sought to assess their availability included classroom, staffroom and labs, library, latrines, dining halls, departmental offices, recreational resources, water and power, amongst others. The researcher assessed the availability of physical resources by getting the response from teachers, students and self-observation.

The teaching staff indicated their level of agreement concerning the availability of these resources on a scale of 1 to 5. The following table summarize the findings.

Table 1: Teachers Response to Availability of Physical Resources

	SA	A	N	D	SD	Mean	Std Dev
Physical resources	%	%	%	%	%		
Tables and chairs in the staffroom	63	16.7		6	14.3	4.1	0.22
Classroom desks and chairs	14.1	33.3	28.5	16.7	7.4	3.5	0.17
The capacity and resources in the library		16.7		16.6	66.7	1.6	0.17
Labs equipment and capacity	16.7	16.7	12	21.3	33.3	2.6	0.23
The facilities in the agriculture room	21	19.7	15	22.7	21.6	3.0	0.22
The number of latrines/toilets		33.3		66.7		2.7	0.14
The number of offices allocated	14.4	21.6	17.6	29.7	16.7	2.9	0.20
Dining hall capacity				16.7	83.3	1.2	0.06
Playground size	5	12		16.4	66.6	1.7	0.18
Reliability of water supply		36.7		43.3	20	2.5	0.18
Reliability of power supply	11	43.3	14	16.7	15	3.2	0.20

Legend: SA- Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

Source: Primary data, 2022

From the above findings, 63% of respondents indicated that there was adequate chairs and desks in the staffroom a sign of comfort for teachers hence they can adequately prepare for their lessons. However, concerning classroom chairs and desks, 33.3% of respondents did agree that they are adequate. This is an

indication that the learners comfort had not been given much attention even though is very critical for better academic performance. Concerning the adequacy of library resources, only 16.7% reported that they are adequate. This percentage is too low signifying that school libraries are not well resourced. Additionally, the findings also indicated inadequacy of equipment in labs, the agriculture room was not well resourced, latrines/toilets were few and the staff offices were also few and not well resourced. Lastly a large percentage of respondents also reported limited playground size, inadequate supply of water and power and the dining halls had little capacity. The maintenance of these facilities was also seen to be not given attention.

In terms of the mean and standard deviation, availability of chairs and tables in the staffroom had the highest mean of 4.1 with higher standard deviation of 0.22 an indication that the average respondents agreed that they are available. However, in all the remaining cases, the mean was 3 and below and the least mean was 1.2 with generally low standard deviation indicating that in those remaining cases the availability of the remaining physical resources was very low.

Interview by the head teachers did reveal that indeed their availability of staffroom chairs and tables but the classroom is not well equipped with desks and chairs. Additionally, there still shortage of other physical resources such as playground, power supply, library and lab resources are inadequate and water supply is also still not to the standard.

Regarding the students' response on availability of physical resources in TVET schools, the findings are summarized in the below table

Table 2: Students Response to Physical Resources

Statement	SA %	A %	N %	D %	SD %	Mean	St. D
Teacher's table	51.5	10.6	36.4	0.0	1.5	4.1	0.13
Furniture in classroom	76.1	16.4	6.0	1.5	0.0	4.7	0.08
Adequate lib resources	35.4	32.3	21.5	1.5	9.2	4.0	0.15
Laboratory equip adequate	60.6	24.2	4.5	6.1	4.5	4.3	0.13
Latrines adequate	51.5	25.8	10.6	6.1	4.5	4.2	0.14
DH large enough	19.7	7.6	19.7	3.0	50.0	2.4	0.20
Playground to standard	51.5	15.2	13.6	10.6	9.1	4.0	0.17
Water is available	83.1	16.9	0.0	0.0	0.0	4.8	0.05
Power is available	83.6	11.9	3.0	1.5	0.0	4.8	0.07
Teaching materials adequate	47.6	14.3	19.0	4.8	14.3	3.8	0.18
Computers used in teaching	68.8	15.6	12.5	3.1	0.0	4.5	0.10

Legend: SA- Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

Source: Primary data,2022

According to the findings in Table 2 above, 51.5% of respondents did strongly agree that teachers had personal tables in the classroom, there were adequate furniture in the classroom, (76.1%), laboratory was equipped, (60.6%), water was available in the schools, (83.1%) and the schools had power supply that was stable, (83.6%). Inadequacies in the schools included teaching material and Dining hall.

The findings of students contradicted those of the teachers probably because students may not be apt with the standards required by MINEDUC and also could have wanted to portray a positive image of their school. For example, the high number of responses for neutral (3) indicates inability to express one's opinion about many of the statements.

The availability of physical resources plays an essential role towards students' academic excellence and indeed there is a close association between the two (Padmanabhan, 2001). The availability of physical resources is directly linked to quality of education. As Pearls (2000) puts it, classroom teaching though is a formal requirement by teachers does not necessarily account much in the teaching process but the student day to day interaction with the physical environment outside classroom account much to teaching package. Well-equipped library enhances teaching and learning as it promotes learner centered approach.

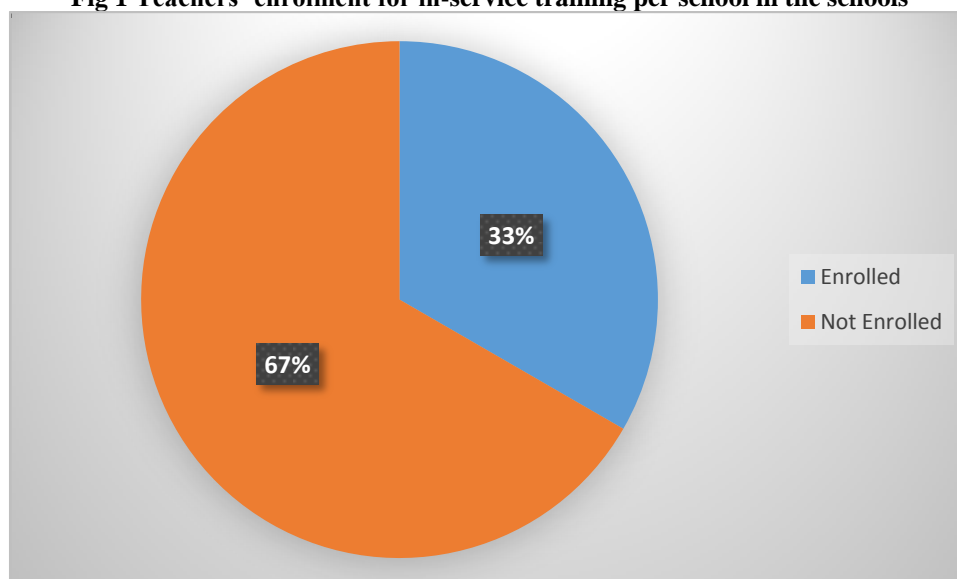
Laboratories and agriculture rooms supplement classroom teaching as they offer an opportunity for the students to make an observation for what they are taught in class thus effective learning promotes exploration and discovery of new ideas in the environment (Oyeniran, 2003). Therefore, this study gave focus the adequacy of physical resources in schools.

Lastly the researcher did observe the physical resources in the three schools and found that the schools did lack most of the physical resources with only chairs and tables in staffroom being adequate and also the researcher did observe that students' classrooms have adequate chairs and desks.

4.2 Availability of Human Resources in Public and Private TVET Schools

The availability of human resource mainly teachers in schools was assessed by first enquiring the employment status and in service training enrolment.

Fig 1 Teachers' enrolment for in-service training per school in the schools



From the above figure 1, 33% enrolled for in service training program whereas 67% had not done so. This trend could be due to lack of training opportunities in most districts because of busy schedules of teachers in schools and family commitments back home. This makes them to find it hard to enroll for such training since they will not have time to attend regularly as required, deteriorates their skills acquisition thus negatively affecting students' performance.

Table 3: Teachers opinion on availability of human resources

Statement	SA %	A %	N %	D %	SD %	Mean	Standard dev
The number of teachers in our faculty are adequate	10	50		40		3.85	0.22
Am well trained in my area of specialization	50.5	49.5				4.6	0.07
We conduct practical for students	20	56		24		4.1	0.15
I perform my duties on time	60	40				4.8	0.05
I give my students home assignments regularly	40.5	59.5				4.7	0.02

Source: primary data, 2022

From the table 3, its evident that teachers are indeed available to carry out their duties save for adequacy in the number of teachers. In terms of the adequacy of the number of teachers, 60% of teachers did agree that they have adequate number of teaching staff in their faculty while 40% were of opposite opinion. Additionally, in terms of the training of teachers, 50.5% did agree strongly that they are well trained while 49.5% agreed. Majority of teachers conduct practical supported by 76% of teachers while 24% did not agree. Teachers in TVET are punctual in their duties as 60% did indicate that they agree strongly while 40% agreed. Lastly, 40.5% of teachers did agree strongly that they give their students home assignments while 59.5% did agree too that they give home assignments. the means for the statements are above 4 except for the case of adequacy of teaching staff with minimal standard deviation. These findings indeed indicate that teachers' availability is good in TVET schools in Rwanda. However, the number of staff still seems to be inadequate.

Table 4 Students response to Human Resource Availability in their schools

Statement	SA %	A %	N %	D %	SD %	Mean	St.D
Explains well concepts	65.6	14.1	6.3	0.0	14.1	4.2	0.17
Punctual in class	81.0	6.3	6.3	6.3	0.0	4.6	0.10
Marks books	82.3	16.1	1.6	0.0	0.0	4.7	0.06
Helps do practical	84.1	12.7	1.6	1.6	0.0	4.7	0.07
Gives home assignment	76.2	19.0	0.0	3.2	1.6	4.6	0.18

Legend: SA- Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

Source: Primary data,2022

The findings show that 65.6% of students strongly agreed that their teacher explained the subject matter well with the majority agreeing as shown by mean of 4.2 and small deviation of 0.17. The teachers were punctual in class supported by 81% of students, marked their books everyday (82.3%), helped them during their

practical lessons (84.1%) and gave them assignments to do from home, (76.2%). All the means were above 4 with small standard deviations implying majority of the students strongly agreed with the statements.

These schools are practical oriented schools, it's obvious that teachers must pass around and evaluate the students' acquisition of competencies. For this reason, the teachers of these schools must have the adequate skills to teach the practical lessons thereby giving students a level of satisfaction with their training.

4.3 Academic Performance of the Students in TVET

This formed the second objective of this study and the researcher achieved this objective by seeking the respondents' opinion on the skills and competencies of the students and the mean score for the students in the exams.

Skills and Competence

Table 5: Students opinion on skills and Competencies acquired

	Culinary art			Construction			Hair dressing			Hospitality			Sewing& design			Tailoring		
	Total			Total			Total			Total			Total			Total		
	N	M	St. D	N	M	St.D	N	M	St. D	N	M	St. D	N	M	St.D	N	M	St. D
Able to practice what's learnt	40	4.2	0.1	1	5	0	12	3	0.3	4	5	0	2	5	0	16	3.3	0.1
Feel ready to find a Job	40	4.8	0.2	1	5	0	12	4.4	0.2	4	4.8	0.3	2	5	.	16	4.3	0.1
Learning useful in finding a job	40	4.7	0.1	1	5	0	12	4.8	0.2	4	5	0	2	4	0	16	4.7	0.2
Able to start own Business	40	4.7	0.2	1	4	0	12	4.3	0.1	4	5	0	2	4	0	16	4.8	0.2
I need more Training	40	4.8	0.3	1	4	0	12	4.2	0.2	4	4	0	2	4	0	16	4.8	0.1

Source: Primary data, 2022

In table 5, the opinions of students concerning the courses well completed are presented. The mean (M) and standard deviations (St.D) were used to rate the responses. About whether they were able to practice what they learnt at school, hospitality, sewing & design and construction the mean was 5 an indication that the respondents strongly agreed, culinary art agreed but tailoring and hair dressing were not sure with a mean of 3.

Concerning the feeling of being ready for the job, the mean for Culinary art, construction, hospitality, sewing and design was approximately 5 meaning that the students strongly agreed that they felt ready for the job market. However, the mean for hair dressing and tailoring was approximately 4 an indication of agreement. Whether learning was useful, culinary art, hospitality, tailoring, hair dressing and construction strongly agreed while sewing and design agreed. If after finishing they would start their own business, culinary art, hospitality and tailoring strongly agreed while construction, sewing and design and hair dressing agreed but not strongly. Culinary art and tailoring were the only ones that strongly agreed that they would require more training after their courses while the rest just agreed.

Table 6: Teachers opinion on skills and competencies acquired

Statement	SA %	A %	N %	D %	SD %	Mean	St.D
Students do quality work	69.4	12.9	8.1	6.5	3.2	4.7	0.13
Students able to manage time well	38.8	28.8	12.1	13.6	6.7	4.4	0.18
Students can work under minimum supervision	15.6	17.2	7.8	20.3	19.1	3.6	0.19

Legend: SA- Strongly Agree, A-Agree, N-Neutral, D-Disagree, SD-Strongly Disagree

Source: Primary data, 2022

Asked if students do quality work, 69.4% of teachers strongly agreed with only 9.7% in disagreement. Additionally, 67.6% of teachers agreed that students were able to manage their time well while 11.1% were of contrary opinion. Lastly 52.8% of teachers indicated that students can work under minimum supervision while 39.4% were of the opinion that students need maximum work supervision. The means from the table 6 shows that teachers generally agreed that students do quality work and manage their time well though in terms of work supervision, the teachers were generally undecided with a mean of 3.6 since most were on agreement side while also a significant number was also on the disagreement side. From the interview by the head teachers of the three schools, they indicated that their students have acquired relevant skills for the job market and they are ready for the job. Additionally, they indicated that they are confident that their students are able to practice what they have learnt in school comfortable

Students Mean Score

Academic performance was also measured by looking at the number of students who attained various range of mean score in the terminal exams for five years from 2013 to 2017 and the findings summarized in the below table. These data were provided by the head teachers of the three schools.

Table 7: Number of students and exam scores categories per school for five years

Year	Gacuriro			Assomption			Esther's Aid		
	41-60	61-80	81-100	41-60	61-80	81-100	41-60	61-80	81-100
2013	36	88	10	1	18	1	29	38	4
2014	21	95	2	2	21	-	7	56	5
2015	50	58	10	1	20	1	15	53	6
2016	19	86	10	2	17	7	23	52	5
2017	25	73	9	-	11	2	53	51	3

Source: School documentaries (2013-2017)

From the table 7 above, more than 50% of students who sat for the exams scored marks in the range of 61-80 at Gacuriro school while the least students scored marks in the range of 81-100 for the five year running. Additionally, more than 80% of students scored marks in the range of 61-80 and few students scored marks in the range of 41-60 and 81-100 at Assomption school for the five years. At Esther's Aid school, more than 50% of students scored marks in the category of 61-80 while few students scored marks in the category of 81-100 for the five years. However, a big number of students also scored marks in the category of 41-60 at Esther's Aid school for example in 2017 where more than half scored 41-60 marks.

From these findings, it can be concluded that the performance of students was good since majority in all the schools scored above 60% marks in the exams. This is an indication of a good academic performance among students of TVET schools in Rwanda.

The interview by head teachers, did also confirm these results. They indicated that most of their students perform well and score more than 60% with a few scoring less than 60%.

4.4 Relationship between teaching resources and academic performance in public and Private TVET Schools

In order to determine the relationship between teaching resources and academic performance, the researcher conducted correlation analysis and the findings presented in the table 8 below.

Table 8: Correlation between teaching resources and academic performance

		Academic Performance	Physical Resources	Human Resources
Academic Performance	Pearson Correlation	1	.656**	.714**
	Sig. (2-tailed)		.000	.000
	N	111	111	111
Physical Resources	Pearson Correlation	.656**	1	.365**
	Sig. (2-tailed)	.000		.000
	N	111	111	111
Human Resources	Pearson Correlation	.714**	.365**	1
	Sig. (2-tailed)	.000	.000	
	N	111	111	111

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data, 2022

According to findings in table 8, the Pearson correlation coefficient for physical resources and academic performance was 0.656 with significance value of 0.000 while the Pearson correlation coefficient for human resources and academic performance was 0.714 with a significance value of 0.000. These findings indeed indicate that there is a moderate positive significant relationship between the physical and human resources and academic performance in technical schools. As more human and physical resources are employed, the academic performance of students improves. The findings further indicate that the association between human resources and academic performance is higher than the association between physical resources and academic performance. This supports the critical role that human resources particularly the teachers play in academic performance of students.

4.5 Regression analysis

Table 9: Model Summary

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	.690	.684	.28327

Predictors: Physical resources, Human Resources, Constant

Source: Primary data, 2022

From the table 9 above, the value of coefficient of determination (R Squared) is 0.684. This implies that teaching resources explains 68.4% of the variations in academic performance of students. The remaining percentage (31.6%) is explained by other factors affecting academic performance not captured by the model.

Table 10: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.298	2	9.649	120.249	.000 ^a
	Residual	8.666	108	.080		
	Total	27.964	110			

Source: Primary data, 2022

The ANOVA determines the validity of the model used in a study to determine the relationship between variables in the study. From the table 4.14, the F statistics value calculated is 120.249 with a significance value of 0.000. since the P value is way less than 0.05, the regression model adopted in this study was appropriate to analysis the relationship between teaching resources and academic performance.

Table 11: Coefficients

Predictors	Coefficient	Std. Error	t-statistic	Sig
(Constant)	-.043	.307	-.141	.888
human resources	.548	.058	9.518	.000
Physical resources	.464	.059	7.929	.000

Dependent Variable: Academic performance

Source: Primary data, 2022

This study sought to determine the effects of teaching resources particularly human and physical resources on the academic performance of students. The table 11 above presents the findings of the coefficients and significance values. From the findings, the coefficients of human resources and physical resources were found to be 0.548 and 0.464 respectively while the constant term coefficient is -0.043. The significance values for the constant term, human resources and physical resources were found to be 0.888 and 0.000 for human and physical resources. These results indeed indicated that human and physical resources had positive significant effect on academic performance of students in technical schools. Additionally, keeping other factors constant, one percent change in human resource leads to 54.8% change in academic performance while one percent change in physical resources leads to 46.4% change in academic performance.

With the beta coefficients known, the regression model fitted in chapter three is now completed as

$$Y = -0.043 + 0.464 \text{ Physical resources} + 0.548 \text{ Human resources}$$

Where Y is academic performance of technical school students.

V. Conclusion And Recommendations

5.1 Conclusion

The main objective of this study was to assess the effect of teaching resources on academic performance of students in selected public and Private TVETS in Rwanda. The study was guided by three specific objectives and subsequently answered three questions.

The study examined availability of physical and human resources in Public and Private TVET schools in Gasabo District. The study concluded that TVET schools have inadequate physical resources except for staffroom and classroom chairs and tables. The study findings indicated that chairs and desk were available in staffroom catering for comfort of teachers while they were inadequate in classroom which implied that the students comfort was not well catered for despite its essential role in propelling students' performance. The school had inadequate library resources, less capacity and equipment in the labs, inadequate facilities, few number of latrines/toilets and offices allocated, inadequate dining hall capacity and small size of the playground, unreliable water and power supply. Consequently, less focus was given to facilities renovation and expansion.

On the other hand, the human resource in the school was adequate with majority of the teachers qualified, able to explain the subject matter, punctual in class, marked their books every day, helped students during their practical lessons and gave them assignments to do from home.

This study intended to determine the level of Students' Academic Performance in Public and Private TVET schools in Gasabo District. The study did conclude that there is high level of students' academic performance in TVET schools. Particularly, the study concluded that the students acquired relevant skills and competence from various courses ranging from culinary art, tailoring, hairdressing, construction, hospitality and sewing and design. The study also concluded that students generally performed well in terms of mean score hence higher academic achievement.

Lastly, this study aimed at establishing the effects of teaching resources on Students' Academic Performance in Public and Private TVET Schools in Rwanda. The study concluded that there is positive significant association between teaching resources mainly physical and human resources and academic performance of students in both Public and Private TVET Schools. Additionally, the study concluded that there is positive significant effect of teaching resources both physical and human resources on academic performance of students in both Public and Private TVET Schools.

5.2 Recommendations

From the findings the following recommendations are forwarded to different stakeholders concerned in the field of study.

- 1) The study found that physical and human resources have a positive effect on students' academic performance of students in TVET. This finding has a bearing on how the TVETs are budgeted for and resources are allocated for by the MINEDUC and other policy makers. Providing adequate resources both physical and human in form of training, the teachers will increase how the students are instructed and therefore improve their confidence to face the field or market.
- 2) On the same note the schools need to find creative means to improvise for physical resources as much as possible so that the graduates do not complete with a low confidence for the market. Internal training services as well as networking with other well-endowed TVETs would produce collaborative approach to training the Rwandan TVET student.
- 3) It is recommended to schools and stakeholders to provide required and necessary classroom equipment, give learners comfort utmost priority to boost academic performance through provision of chairs and desks in classrooms.
- 4) It is recommended to MINEDUC and school administration to adequately equip libraries in TVET schools since the findings indicated that libraries were not well resourced.
- 5) It is recommended to MINEDUC and school administration to avail and increase capacity and equipment in the labs, facilities in the agriculture room, number of latrines/toilets, number of offices. Findings shows that there was inadequacy of capacity and equipment in the labs, facilities in the agriculture room, number of latrines/toilets, number of offices allocated.
- 6) It was recommended to schools for expansion and renovation of the dining hall, size of the playground, reliable water supply and reliable power supply somehow neglected.
- 7) It is recommended to school to organize in service training programs or continuous professional development for staff to upgrade their professional skills. It was found that a small number of the teaching staff had enrolled for in service training programs.
- 8) Schools to organize more practical sessions to build confidence of students and be prepared for the work competition. Through practice, it is conclusive that students will have an exciting completion rate given that they looked forward with energy to join the job market and even create their own jobs.
- 9) It is recommended to schools to motivate students and provide adequate career guidance in tailoring and culinary, hair dressing and sewing & Design. This finding shows that some students felt less advantaged than others in terms of their course options which would affect their confidence to compete in the marketplace.

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