Assessing Competences of Geography Students Acquired through the Competence-based Teaching and Learning Approach in Rwandan Secondary Schools

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Abstract: This study sought to assess the level of competences acquired by Geography students through the Competence-based teaching and learning approach in the Rwandan Secondary Schools. It was conducted in six secondary schools, where geography is taught as a major subject. The study followed a quantitative approach with a cross sectional descriptive design. Data was collected using a test administered to 210 students of senior 5 and senior 6 on the content learned in senior 4 and 5 respectively. The findings highlight that students achieved the assessed competences at a high level. They performed well in human and economic geography than in physical geography. Students from boarding schools performed better than those in day schools in both sub-areas of geography and for both S5 and S6. Urban schools performed better than rural schools in physical geography for both S5 and S6 with exception in human and economic geography. The study recommends more support to all schools to achieve the expected performance in both physical and human and economic geography at an excellent level.

Introduction

Since 2015, Rwanda education system has been applying the competence-based teaching and learning approach in all subjects and levels of study. Competence-based teaching and learning approach shortened as competence-based approach (CBA) and known as competency based, mastery-based, proficiency-based and performance-based education is a major shift in school culture, structures and pedagogy focused on ensuring that all students succeed and addressing the fundamental shortcomings of the traditional model of education (Bader & Hamada, 2015; Levine & Patrick, 2019). CBA is an approach where teaching and learning are based on discrete skills rather than dwelling on only knowledge or the cognitive domain of learning. Learners work on one competence at a time in the form of concrete units with specific learning outcomes broken down into knowledge, skill, and attitudes. The student is evaluated against a set of pre-determined competences before moving on to another level of predetermined competences. In addition, the learning activities are learner-centered rather than the traditional didactic approach of teacher- centered (REB, 2015b). CBA stresses what learners can do, not what they know. In CBA, the curriculum, the syllabus, the teaching strategies and assessment tools are organized around competence rather than knowledge development (Bader & Hamada, 2015).

For successful application of the CBA in Rwanda, knowledge-based curricula (KBC) were replaced by the competence-based curricula (CBC) (Ngendahayo & Askell-William, 2016). Inherently, REB (2015a) defines CBC as a curriculum designed to develop learners' competences rather than just their knowledge. It focuses on what learners can do and it ensures their learning has greater purpose and is deeper than it would be otherwise. It is characterized by approaches that are largely learner-centered, criterion-referenced, constructivist and focused upon learning outcomes (rather than content definition) and with an emphasis on formative assessment. For REB (2015a), learning outcomes describe what learners are expected to know, understand and be able to do at the end of the learning process.

In Rwanda, the shift from KBC to CBC was a decisive step in the direction of the country's ambition to develop "a knowledge-based society and the growth of regional and global competition in the jobs market" (REB, 2015a). Thus, after eight years of the CBA implementation, there is a need to assess whether students acquire the expected competences as set out in the CBC to ascertain its effective implementation. Besides, there is a scarce of such studies, especially in the context of Rwanda. As a result, this study sought to fill the gaps by investigating the application of CBA in Rwandan secondary schools, with a particular focus on the assessment of the level of competences acquired by geography students, basing on competences stated in the geography curriculum. The study used performance-based assessment, which requires students to apply their knowledge and skills in a real-world context.

Geography was selected as one of the subjects concerned with the real world in which learners live and are capable of solving problems and developing knowledge, skills, attitudes and values which are relevant to their present and future lives (REB, 2015a). Its selection was also based on the knowledge and experience of the researchers on CBA, CBC and geography subject as either former secondary school teachers, university lecturers, program developers, textbooks writers and quality assurers on behalf of the Rwanda Basic Education Board (REB) in the framework of the In-house Textbook Production Initiative.

Literature Review

This section explores the key competences of students in physical and in human and economic geography sub-areas in upper secondary schools with a special emphasis on Senior Four (S4) and Senior Five (S5) students who are targeted in this study. It is noteworthy to mention that in the Rwandan education system, Senior Four and Senior Five students refer to secondary school students enrolled in grade four and five, respectively.

Learners' Competences in Geography Upper Secondary in Rwanda

In Rwanda, Geography subject is taught and learnt in upper secondary education (from S4 to S6) as a

core subject. At every grade, the curriculum is structured in topic areas, sub-topic areas where applicable and then further broken down into units. In this line, the geography curriculum for the Advanced Level has got three topic areas such as practical geography, physical geography and human and economic geography. Each topic area and each unit has key competences whose achievements are pursued by all teaching and learning activities undertaken by both the teacher and learner (REB, 2015a). In that context, geography teachers have to ensure that the learners are exposed to the tasks that help them to achieve the required competences.

In this study, the focus is put on the two topic areas of (1) physical geography and (2) human and economic geography and the required competences at the completion of Senior 4 and Senior 5 as set out in geography syllabus for advanced level in Rwanda (REB, 2015a). Practical geography could not be feasible because the study was conducted during the learning period and students could not be available for practical in the field.

Key Competences for Senior Four Physical Geography

According to Rwanda Education Board (REB, 2015a), a student who completes S4 should be able to: 1) use an appropriate field work techniques to collect, record and analyze the geographical data; 2) differentiate the types of cartographic projections and the categories of maps, 3) investigate the formation of major relief regions of Rwanda and evaluate their effects on the human activities; 4) compare different types of rocks and minerals of Rwanda and evaluate their importance, 5) compare different soil types in Rwanda, determine the causes and effects of soil erosion, the conservation measures and assess the importance of soils in Rwanda; 6) investigate the climate and seasons of Rwanda and explain their impact on human activities; 7) explain the importance of different types of vegetation, evaluate the methods of conservation in Rwanda, describe the drainage system of Rwanda and explain its relationship with human activities.

Key Competences for Senior Four Students in Human and Economic Geography

At the completion of the S4, students should demonstrate the following 12 competences: 1) Research demographic problems in Rwanda and evaluate their solutions; 2) describe accurately the causes and the effects of the rapid population growth and the migration in Rwanda, and evaluate some measures to control the rapid population growth; 3) describe, explain and evaluate the impact of the rural and urban settlements on the sustainable development in Rwanda; 4) describe the impact of rural and urban settlements on the sustainable development projects in Rwanda; 5) explain why the development projects are important and evaluate the success of the projects on long term sustainability; 6) investigate the impact of various agricultural activities on the sustainable development in Rwanda; 7) investigate the impact of forests and forestry on the sustainable development in Rwanda; 8) explain the impact of fishing on the sustainable development of Rwanda; 9) investigate the impact of mining on the sustainable development in Rwanda; 10) categorize the different sources of energy and investigate the impact of power and energy production on the sustainable development of Rwanda; 11) explain the factors for the industrial growth and explain the impact of industrialization on the sustainable development of Rwanda; and 12) investigate the impact of transport, communication and trade on the sustainable development of Rwanda (REB, 2015a).

Key Competences for Senior Five Students in Physical Geography

At the end of S5, a geography student should be able to: 1) distinguish between the components of the universe and the Solar system, locate the earth and the moon in the solar system; 2) discuss the different theories of the earth's origin and the mineral composition; 3) examine the internal processes responsible for the evolution of different relief landforms; 4) investigate the causes and consequences of vulcanicity and earthquakes on the landscape 5) investigate the different soil constituents and morphological properties of the soil; 6) appreciate the importance of the atmosphere, weather and the impact of climate on the environment and human activities in the world; 7) interpret the atmospheric phenomena and investigate the impact of the weather and climate on the environment and on the human activities; 8) appreciate the distribution of different types of vegetation in the world and 9) examine the classification and the characteristics of different natural vegetation of the world (REB, 2015a).

Key Competences for Senior Five Students in Human and Economic Geography

In human and economic geography, students should be able to: (1) discuss the problem of the population growth and the ways of controlling the population growth in the world; (2) explain the impacts of early sex, HIV/Aids, health risks and STDs on the world's population; (3) discuss the impact of settlement and urbanization on the sustainable development of different countries; (4) explain the impact of agricultural activities on the sustainable development of different countries in the world; (5) explain the impact of forests and forestry on the sustainable development; (6) explain the impact of fishing on the sustainable development of different countries of the world and clarify the minerals and explain the impact of mining on the sustainable development of different countries in the world (REB, 2015a).

Developing Learners' Competences in Geography

The section describes the role of the teachers and the learners in developing geography competences. It also presents the views of different researchers on performance of geography students considering the categories of schools.

The Role of the Teacher

Through CBA, the teacher is a facilitator of the learning and teaching process, playing different roles as follows (REB, 2015a): (1) Identify the needs of the learners, the nature of the learning to be done, and the means to shape the learning experiences accordingly; (2) organize learners in or outside the classroom and engage them to participate and interact in the learning processes by designing and introducing the tasks to the class for research, discussion, and group presentation; (3) guide the learners to work individually or in groups, explore or discover the content and developing their own knowledge, skills, attitudes, and values, to ensure that the learning is deep, personalized, active, enjoyable, participative, and cooperative; (4) select and/or develop appropriate learning and teaching materials like geographical documents, maps, atlases, local materials, teaching models, charts, talking and tactile materials which the learners will use in their work; (5) organize the fieldwork studies: identify the appropriate topic for study, the area of study and outline the methods to be used for the study, assess any risk, guide the learners on the field and organize the group discussions and presentations of the findings after the study.

The Role of the Learner

The activities of learners are indicated at each learning unit. They reflect appropriate participation of the learner in the learning process. The teaching/learning process is geared towards creating a learner centered environment based on the learners' capabilities, experiences, and interests. The learners use textbooks, internet and other resource materials to research for, and make use of the findings to improve their knowledge, skills, attitude, and values. In fieldwork studies, learners apply the knowledge and methods acquired to observe, ask questions, interpret and write down the findings from the study. After the field study, the learners discuss in groups and make presentation on the findings (REB, 2015a).

Performance of Geography Students

Different studies confirm that secondary school students in Africa perform poorly in geography (Anlimachie, 2019; Eze, 2021; Mwesiga, 2017; Opoku, et al., 2020; Yahaya, et al., 2021). By comparing rural and urban schools, some studies found that students from rural schools perform better compared with their counterparts from urban schools (Nidup, 2022; Oyeromi, et al., 2018;) and this contradicted by others revealing that urban schools perform better than rural schools (Opoku-Asare & Siaw, 2015; Sumida & Kawata, 2021; Vishwajeet & Girish, 2018).

The same debates raise when it comes to comparison of the students' performance between boarding and day schools. Some studies found that there is no difference (Andrew, et al., 2021; Obi-Nwosu, 2023) while others found out a significant difference proving boarding schools to be better than day schools (Ngetich, 2020; Zachariah & Joshua, 2016; Mushtaq & Munir, 2021; Ogechukwu & Chika, 2018). Concerning private and public schools, many studies confirm that students in private schools perform better than those in public schools (Bonsu, 2016; Frenette & Chan, 2015; Kunwar, 2021; Rong'uno, 2017; Sadaf, et al., 2017).

All taken into consideration, it is necessary to mention that generalizing in such circumstances is subject to bias because the conditions of teaching and learning of geography may differ from on context to another depending on various factors like available resources. This study brings its

contribution to the above debate and sheds more light on the case of Rwanda.

Methodology

This section describes the methodology used in this study. It presents the research design, population and sampling procedures, data collection instruments and their validity and reliability, data analysis and presentation and finally ethical considerations.

Research Design

The study follows a quantitative research approach with the cross-sectional descriptive design. This consists of collecting data at one point in time from a sample or the entire population of people about the current attitudes and practices, opinions, behaviors, beliefs or characteristics (Creswell 2012).

Population and Sampling

This study was conducted in the schools that offer geography as a major subject. The schools were sampled based on the following criteria: (i) private *versus* public schools, (ii) boarding *versus* day schools, (iii) rural *versus* urban schools, and (iv) distribution by province. Hence, six schools were targeted for the present study as concerned with description of data related with students' level of competences in Geography.

According to education system in Rwanda, secondary school students do major subjects in the advanced levels (S4, S5 and S6). As the study intended to analyse the competences that a student is supposed to demonstrate at the end of the school year, only S5 and S6 students were eligible as those of S4 were in S3 in their previous year of study. Therefore, the study engaged with 210 students studying in S5 (123 students) and S6 (83 students). From the sampled schools, students were selected through proportional sized stratified sampling and convenient sampling techniques. Table 1 shows the schools and students sampled.

Table 1: Sampled Schools and Students

School Name	Status		Location			Students	
	Private vs Public	Location	District	Province	Senior 5	Senior 6
School 1	Public _ day school	Rural	Nyabihu	Western	17	14
School 2	Public _ boarding	Rural	Musanze	Northern	24	17
School 3	Private	Urban	Muhanga	Southern	19	20
School 4	Private	Rural	Bugesera	Eastern	21	21
School 5	Public _ boarding	Urban	Nyarugenge	City of Kigali	18	8
School 6	Public _ day	Urban	Gasabo	City of Kigali	24	7
Total	6	6	6	5	123	87

Instruments

Data was collected by means of a test administered to the sampled 201 students. Questions in table 1 and 2 were set referring to the content and learning objectives related to each competence as per the geography syllabus of S4 and S5. The practical context especially the duration of the text and disturbance of the studies at schools at the time of data collection could not allow to assess all competences and aspects of each one; key aspects were selected for the test.

The test was made up of 10 open questions including 5 questions related to physical geography and 5 others related to human and economic geography for both levels of the study. In a 2-hours test, each sub area was marked out of 25, making a total of 50 marks in both sub-areas. Students gathered in their respective classrooms to do the test. Table 2 and 3 present the competence assessed and the corresponding question asked.

Validity and Reliability

A pilot study was conducted at two schools, one from Western Province and another from Kigali City. The instrument used to collect data (i.e., the geography test) was found reliable with the reliability coefficient (Cronbach's Alpha) of 0.869 for all the 10 items provided. Besides, the test was set based on the learning outcomes or expected competences of S4 and S5 geography students to ensure the validity of the test given.

SN	Questions for physical geography	Competence assessed	Questions for human & economic geography	Competence assessed
1	Name any two appropriate field work techniques	Use appropriate field work techniques to collect, record and analyze the geographical data	Describe one cause and one effect of the rapid population growth in Rwanda.	Describe accurately the causes and effects of the rapid population growth and the migration in Rwanda, and evaluate some measures to control the rapid population growth
2	Observe this map and identify the two main economic activities taking place in your district.	Differentiate the types of cartographic projections and the categories of maps	Describe the impact of the rural and urban settlements on land use	Describe and evaluate the impact of the rural and urban settlements on the sustainable development in Rwanda
3	Mention two effects of the topography on the human activities in your sector	Investigate the formation of major relief regions of Rwanda and evaluate their effects on human activities.	Describe two economic activities practiced in your sector.	Explain why the development projects are important and evaluate the success of the projects on long term sustainability
4	Name one cause, one effect of soil erosion and one conservation measures of soil in your sector/district.	Compare different soil types and assess their importance in Rwanda.	Suggest two suitable industrial activities for the development of your district.	Explain the factors for the industrial growth and explain the impact of industrialization on the sustainable development of Rwanda
5	Determine the influence of the climate on agricultural activities	Investigate the climate and seasons of Rwanda and explain their impact on the human activities	Describe two challenges of transport in Rwanda.	Investigate the impact of transport, communication, and trade on the sustainable development of Rwanda.

Data was analysed using the statistical methods including percentages by means of the SPSS and was presented in form of tables and in a narrative way. To analyze the performance, the researchers referred to the categorization used in other studies on students' skills and performance such as Ezeala and Siyanga (2015), Sekar and Rajendran (2015), Didarloo and Khalkhali (2014) and Pepe (2012), considering establishing the number of students with poor study skills (whose score is < 50% of the maximum achievable score), students with moderate study skills (whose score is between 50% and 75% of the maximum achievable score) and students with good study skills (whose score is > 75% of the maximum achievable score). In this study, the researchers assumed that the study performance below 50% is low. For other categories, it is considered as moderate performance if the number of students whose score is between 50% and 69% of the maximum achievable score, high performance from 70% to 79%, very high performance from 80% to 89% and excellent performance from 90%.

Ethical Considerations

A research permit was provided by the directorate of research at University of Rwanda- College of Education (UR-CE). Besides, school leaders of the selected schools were informed at the time of the research proposal and they accepted to be part of

the study. At the time of collecting data, students were informed about the purpose of the study. Voluntary participation was required and confidentiality of their names and the name of the schools was ensured.

Table 3: Tool used and competence assessed for S6 students

S/N	Questions for physical geography	Competence assessed	Questions for human and economic geography	Competence assessed
1	Locate the earth in the solar system.	Distinguish between the components of the universe and the Solar system, locate the earth and the moon in the solar system	Suggest two ways of controlling population growth in Rwanda.	Discuss the problem of the population growth and the ways of controlling the population growth in the world
2	Mention one physical aspects of Nyabihu district and one physical aspect of Kayonza district.	Examine the internal processes responsible for the evolution of different relief landforms	Identify two impacts of early sex to the future life of the young generation.	Explain the impacts of early sex, HIV/Aids, health risks and STDs on the world's population
3	Explain two consequences of volcanicity on the landscape.	Investigate the causes and consequences of vulcanicity and earthquakes on the landscape	Describe the contribution of urbanization to the development of Rwanda.	Discuss the impact of settlement and urbanization on the sustainable development of different countries
4	Describe any two types of vegetation in the world.	Examine the classification and the characteristics of different natural vegetation of the world.	Explain the challenges of fishing industry in Rwanda.	Explain the impact of fishing on the sustainable development of different countries of the world
5	Describe the impact of climate on the environment	Interpret the atmospheric phenomena and investigate the impact of the weather and climate on the environment and on the human activities	Describe the contribution of mining to the development of Rwanda.	Explain the impact of mining on the sustainable development of different countries in the world

Findings and Discussion

This section presents the findings of the study. Results are presented per question and per geography sub-area, either physical or human and economic geography. They highlight the general performance of the students and the comparison of schools based on their characteristics, basing on their location in rural or urban areas, their status as public or private and their types as boarding or day school.

General Performance in Geography

Table 4 below shows the performance of students in the combined sub-areas of physical geography, as well as human and economic geography. When considering the number of students who scored 50% and above (score ≥50%) along with the predefined performance levels, it is apparent that Senior 5 students exhibit a high performance level at 73.17%, while Senior 6 students demonstrate a higher performance at 80.455%.

Table 4: Performance of Geography Students in S5 and S6 (score ≥ 50%)

Class	School 1	School 2	School 3	School 4	School 5	School 6	All schools
Senior 5	70.58	83.33	72.91	66.66	100.00	57.89	73.17
Senior 6	75.00	82.35	92.85	68.75	100.00	62.50	80.45

Table 5: S5 Students' Performance in Physical Geography (Score ≥ 50%)

School	N	Q1		Q2		Q3		Q4		Q5		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
School 1	17	0	0	10	58.82	10	58.82	16	94.12	14	82.35	5	29.41
School 2	24	10	41.67	22	91.67	22	91.67	23	95.83	22	91.67	18	75.00
School 3	24	3	12.50	17	70.83	17	70.83	24	100.00	19	79.17	14	58.33
School 4	18	0	0.00	16	88.89	16	88.89	15	83.33	16	88.89	9	50.00
School 5	21	12	57.14	20	95.24	20	95.24	21	100.00	21	100.00	21	100.00
School 6	19	1	5.26	11	57.89	11	57.89	15	78.95	10	52.63	9	47.37
TOTAL	123	26	21.14	94	76.42	96	78.05	114	92.68	102	82.93	76	61.79

Table 6: S5 Students' Performance in Physical Geography by School Characteristics (Score ≥50%)

Characteristics of the School		N	Q1		Q2		Q3		Q4		Q5		Total	
			N	%	N	%	N	%	N	%	N	%	N	%
Location of the school	Rural area	59	10	16.95	48	81.36	48	81.36	54	88.14	52	88.14	32	54.24
	Urban area	64	16	25.00	48	75.00	48	75.00	60	78.13	50	78.13	44	68.75
Status of the school	Private	66	13	19.70	55	83.33	55	83.33	62	86.36	57	86.36	41	62.12
	Public	57	13	22.81	41	71.93	41	71.93	52	78.95	45	78.95	35	61.40
Type of the school	Boarding school	87	25	28.74	75	86.21	75	86.21	83	89.66	78	89.66	62	71.26
	Day school	36	1	2.78	21	58.33	21	58.33	31	66.67	24	66.67	14	38.89

This performance implies that in geography, students generally performed at a high level and had therefore achieved the acquired study competences. Considering the categories of schools, the results also indicate that school 4 and 6, a private and a public day school, respectively registered a moderate performance in both levels of study comparing to other schools while school 5 which is an urban public boarding school performed excellently in both S5 and S6.

Performance in Physical Geography

This section presents the performance of both Senior 5 and Senior 6 students in physical geography. It firstly shows the performance per school in general, and subsequently per specific school characteristics, including their location in rural or urban areas, their status as private or public, and their categorization as either boarding or day schools.

The table 5 presents the performance of Senior Five students vis-à-vis the five asked questions and table 6 gives details on the performance with regards to the school characteristics. The table considers the number of students who passed the test i.e. whose scores are ≥ 50% in Geography test.

As it is identified in the table 6, the performance of S5 students was relatively moderate when considering the various characteristics of the school. Out of 123 students, 64 students (52.03 %) are

found in schools located in urban areas. Furthermore, 87 students (70.73%) are in boarding schools and the same number performed better than others. To the contrary, the lowest performance in physical geography was identified in day schools with the rate of 38.89%. These data translate that the lowest performing students came from day schools (38.89) compared to boarding schools (71.26). Furthermore, it is evident that for S5 students, in physical geography, urban schools performed better that rural schools (68.75 against 54.24%), private schools performed slightly better than public schools (62.12 against 61.40%).

Senior 6 Students' Performance in Physical Geography

The table 7 and 8 present the performance of the senior 6 students in physical geography. Table 7 presents S6 students who scored 50% and above in physical geography for each of the five open questions. It is indicated that S6 students of all the six schools achieved the assessed competences at a high level (70.11%). Particularly, school 5 performed excellently at a rate of 100% of students who got the required pass mark (≥50, followed by school 3 with 85.71%.

Table 7: S6 students' performance in physical geography (score < 50%)

School	N	Q1		Q2		Q3		Q4		Q5		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
School 1	14	9	64.29	6	42.86	10	71.3	8	57.14	9	64.29	8	57.14
School 2	17	15	88.24	8	47.06	7	41.18	12	70.59	8	47.06	11	64.71
School 3	7	6	85.71	3	42.86	6	85.71	6	85.71	6	85.71	6	85.71
School 4	8	6	75.00	2	25.00	6	75.00	7	87.50	6	75.00	5	62.50
School 5	21	17	80.95	17	80.95	20	95.24	19	90.48	21	100.00	21	100.00
School 6	20	8	40.00	6	30.00	14	70.00	10	50.00	11	55.00	10	50.00
TOTAL	87	61	70.11	42	48.28	63	72.41	62	71.26	61	70.11	61	70.11

Table 8: S6 Students' Performance in Physical Geography by School Characteristics (Score ≥ 50%)

Characteristics of the school		N	Q1		Q2		Q3		Q4		Q5		Total	
			N	%	N	%	N	%	N	%	N	%	N	%
Location of the school	Rural area	39	30	76.92	16	41.03	23	58.97	27	69.23	23	58.97	**24**	**61.54**
	Urban area	48	31	64.58	26	54.17	40	83.33	35	72.92	38	79.17	**37**	**77.08**
Status of the school	Private	32	27	84.38	13	40.63	19	59.38	25	78.13	20	62.50	**22**	**68.75**
	Public	55	34	61.82	29	52.73	44	80.00	37	67.27	41	74.55	**39**	**70.91**
Type of the school	Boarding school	53	44	83.02	30	56.60	39	73.58	44	83.02	41	77.36	**43**	**81.13**
	Day school	34	17	50.00	12	35.29	24	70.59	18	52.94	20	58.82	**18**	**52.94**

The performance of school 6 was the lowest (50%) compared to the remaining five schools. Students scored lowest on question two which asked to mention one physical aspects of Nyabihu District located in a cold and mountainous area of the north-western part of Rwanda and one physical aspect of Kayonza District located in hot and lowlands area of the eastern part. This implies that the students did not achieve the expected competence of describing the regional specific physical features.

When considering the characteristics of the schools, S6 students at all schools (public and private, boarding and day schools, rural and urban schools) achieved the assessed competences (Score of ≥ 50% in all categories). Boarding schools performed very well with 81.33% compared to other types of schools. On the other hand, the students in day schools scored the lowest performance compared to other types of schools with 52.94% of performance. Besides, urban schools (77.08%) performed better than rural schools (61.54%), public schools (70.91) performed better than private schools (68.75) and boarding schools (81.13) performed better comparing to day schools (52.94).

Performance of Students in Human and Economic Geography

This section presents the performance of both Senior 5 and Senior 6 students in physical geography. It firstly shows the performance per school in general, and subsequently per specific school characteristics.

Senior 5 Students' Performance in Human and Economic Geography

Data highlighting the level of performance of the students of Senior 5 are presented in the tables 9 and 10.

Table 9: Performance of S5 Students in Human and Economic Geography (Score ≥ 50%)

School	N	Q1		Q2		Q3		Q4		Q5		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
School 1	17	17	100	13	76.5	14	82.35	7	41.2	13	76.47	14	82.35
School 2	24	23	95.83	23	95.8	23	95.83	17	70.8	18	75	22	91.67
School 3	24	21	87.5	22	91.7	20	83.33	16	66.7	20	83.33	21	87.50
School 4	18	14	77.78	13	72.2	14	77.78	12	66.7	15	83.33	15	83.33
School 5	21	21	100	19	90.5	21	100	18	85.7	21	100	21	100.00
School 6	19	18	94.74	10	52.6	17	89.47	5	26.3	10	52.63	13	68.42
TOTAL	123	114	92.68	100	81.3	109	88.62	75	61	97	78.86	104	84.55

Table 10: S5 Students' Performance in Human and Economic Geography by School Characteristics (Score < 50%)

Characteristics of the school		N	Q1		Q2		Q3		Q4		Q5		Total	
			N	%	N	%	N	%	N	%	N	%	N	%
Location of the school	Rural area	59	54	91.53	49	83.05	51	86.44	36	61.02	46	77.97	51	86.44
	Urban area	64	60	93.75	51	79.69	58	90.63	39	60.94	51	79.69	55	85.93
Status of the school	Private	66	58	87.88	58	87.88	57	86.36	45	68.18	53	80.30	58	87.88
	Public	57	56	98.25	42	73.68	52	91.23	30	52.63	44	77.19	48	84.21
Type of the school	Boarding school	87	79	90.80	77	88.51	78	89.66	63	72.41	74	85.06	79	90.80
	Day school	36	35	97.22	23	63.89	31	86.11	12	33.33	23	63.89	27	75.00

Table 11: S6 Students' Performance in Human and Economic Geography (Score ≥ 50%)

School	N	Q1		Q2		Q3		Q4		Q5		Total	
		N	%	N	%	N	%	N	%	N	%	N	%
School 1	14	11	78.57	10	71.43	13	92.86	12	85.71	14	100.00	13	92.86
School 2	17	8	47.06	12	70.59	16	94.12	17	100.00	16	94.12	17	100.00
School 3	7	5	71.43	6	85.71	7	100.00	7	100.00	7	100.00	7	100.00
School 4	8	4	50.00	7	87.50	5	62.50	6	75.00	6	75.00	6	75.00
School 5	21	21	100.00	21	100.00	21	100.00	21	100.00	21	100.00	21	100.00
School 6	20	16	80.00	13	65.00	15	75.00	17	85.00	14	70.00	15	75.00
TOTAL	87	65	74.71	69	79.31	77	88.51	80	91.95	78	89.66	79	90.80

Table 9 illustrates that S5 students achieved the assessed competences at a very high level (84.55%) in human and economic geography. School six has the lowest performance in relation to other schools. Besides, question four which asked students to suggest two suitable industrial activities for the development of Rwanda recorded the lowest score compared to other questions.

As the table 10 shows, S5 students from all types of schools (rural and urban, private and public, boarding and day schools) successfully achieved the assessed competences in human and economic geography. Considering the predefined performance levels. It is also evident that boarding school students performed at a very high level comparing

to other types of schools. Rural schools performed slightly better than urban schools (86.44% against 85.93%); private schools performed better than public schools (87.88% against 84.21%) and boarding schools did excellently as compared to day schools (90.80 % against 75.00%).

Senior 6 Students' Performance in Human and Economic Geography

The tables 11 and 12 show the students of senior 6 who scored above 50% in questions related to human and economic geography.

The table 11 reveals that S6 students scored at an excellent rate in almost all schools (90.80%) in human and economic geography. Students from three schools performed very highly at 100%; 1 school also performed excellently at 92.86 % while the other 2 schools performed at high level with 75% of performance.

In the table 12, the performance is very good in all types of schools. For S6 students in human and economic geography, rural schools performed better that urban schools (93.75% against 89.09%), private schools did excellently compared to public schools (93.75% against 89.09%) while boarding schools performed better that day school (96.23% and 82.35%). These findings show that S6 students achieved the assessed competences at a very high level for all types of schools.

Table 12: S6 Students' Performance in Human and Economic Geography by School Characteristics (Score ≥50%)

Characteristics of the school		N	Q1		Q2		Q3		Q4		Q5		Total	
			N	%	N	%	N	%	N	%	N	%	N	%
Location of the school	Rural area	39	23	58.97	29	74.36	34	87.18	35	89.74	36	92.31	**36**	**92.31**
	Urban area	48	42	87.50	40	83.33	43	89.58	45	93.75	42	87.50	**43**	**89.58**
Status of the school	Private	32	17	53.13	25	78.13	28	87.50	30	93.75	29	90.63	**30**	**93.75**
	Public	55	48	87.27	44	80.00	49	89.09	50	90.91	49	89.09	**49**	**89.09**
Type of the school	Boarding school	53	38	71.70	46	86.79	49	92.45	51	96.23	50	94.34	**51**	**96.23**
	Day school	34	27	79.41	23	67.65	28	82.35	29	85.29	28	82.35	**28**	**82.35**

Discussion

The study assessed the competences acquired by geography students by means of a test which was set in light of key competences as highlighted in the geography syllabus for the advanced level. In general, the findings indicate that students of both S5 and S6 achieved the assessed competences at a high level (73.17% and 80.45% respectively) in both physical geography and human and economic geography. In Rwandan context, these findings contradict previous studies (Anlimachie, 2019; Eze, 2021; Mwesiga, 2017; Yahaya, et al., 2021) which demonstrated that students performed poorly in Geography subject.

By comparing both geography sub-areas, both S5 and S6 students performed well in human and economic geography than in physical geography. This may result from lack of adequate learning materials and laboratories specific for physical geography, especially in day and private schools, to enable the effective application of CBA in teaching and learning. Therefore, this negatively affects the overall performance in physical geography as indicated by Mupa and Chinooneka (2015).

In relation to schools' location in urban or rural areas, the study revealed that urban schools performed better than rural schools for both S5 and S6 students in physical geography. Contrariwise, students from rural schools performed better than those from urban schools in human and economic geography. These results agree with previous studies which indicated that students from rural schools performed better compared with their counterparts from urban schools (Nidup, 2022; Oyeromi, et al., 2018). At the same time, the results contradict other studies which revealed that urban schools performed better than rural schools (Sumida & Kawata, 2021; Vishwajeet & Girish, 2018). This implies that the performance of students in both rural and urban schools may be context specific, likely related to the availability of teaching resources.

Concerning the students' performance in private and public schools, many studies confirmed that students in private secondary schools performed better than their counterparts in public schools (Bonsu, 2016; Frenette & Chan, 2015; Kunwar, 2021; Rong'uno, 2017; Sadaf, et al., 2017). This is the same as in this study except for the findings of S6 in physical Geography.

Regarding boarding and day schools, in both sub-areas and both level S5 and S6, boarding schools performed better than day schools. Such findings concur with previous studies (Ngetich, 2020; Zachariah & Joshua, 2016; Mushtaq & Munir, 2021; Ogechukwu & Chika, 2018) that boarding schools were better than day schools in performance of students. In the same context, the findings contrast previous studies which demonstrated no difference in performance between boarding and day schools (Andrew, et al., 2021; Obi-Nwosu et al., 2023). The good performance of boarding against day schools could be due to school facilities, suitable learning environment and time for revising which are relatively more available in boarding school than in day schools.

Conclusions and Recommendations
Conclusions
This study demonstrates that in general, students achieved the assessed competences at a high level. They performed well in human and economic geography than in physical geography. S6 students performed better than S5 students in both geography sub-areas. The study concludes that the performance of students in geography subject is context specific. There are disparities in performance based on demographic characteristics. Particularly, students from boarding schools performed better than those in day schools in both sub-areas of geography and for both S5 and S6. Private schools performed better than public schools in all considerations except for S6 in physical geography. Urban schools performed better than rural schools in physical geography for both S5 and S6 except in human and economic geography. Students registered low performance in physical geography compared to human and economic geography. The study did not explore reasons behind the disparities. This gives room to further studies in geography subject.

Recommendations
The study recommends teachers and students to play their respective roles when teaching and learning Geography. School leaders and other education stakeholders must conduct a deep investigation on the observed discrepancies in performance and find out a practical solutions, particularly giving more attention to day schools as they have limited facilities. Therefore, for the CBA to be fruitful and to enable students acquire expected competences in Geography, measures to be taken must focus on different aspects related to school status and location.

References
Andrew J., Martin, A.J., Burns, C.E., Kennett, R., Pearson, J. & Munro-Smith,V. (2021). Boarding and Day School Students: A Large-Scale Multilevel Investigation of Academic Outcomes among Students and Classrooms. Frontiers in Psychology, 11, 1-19. https://doi.org/10.3389/fpsyg.2020.608949.

Anlimachie, M.A. (2019). Understanding the Causes of Students' weak Performance in Geography at the WASSCE and the Implications for School Practices; A Case of Two Senior High Schools in a Rural District of Ghana. International Journal of Research and Innovation in Social Science (IJRISS), 3 (3), 295-311.

Bader, F. & Hamada, H. (2015). Competency Based Approach between Theory and Practice. Revue Sciences Humaines, n°44, Vol A, pp. 7- 19.

Bonsu, H. D. (2016). A comparative analysis of academic performance of public and private junior high schools in the basic education certificate in Sekondi/Takoradi. European Journal of Basic and Applied Sciences, 3 (1), 21-32.

Creswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.). Boston, MA: Pearson

Didarloo, A., & Khalkhali, H. R. (2014). Assessing study skills among university students: An Iranian survey. Journal of Educational Evaluation for Health Professions, 11(8), 1–4.

Eze, E. (2021). Why Secondary School Geography Students Perform Poorly in External Examinations.

Journal of Geography, 120 (2), 51-60 https://doi.org/10.1080/00221341.2020.1860114.

Ezeala, C. C., & Siyanga, N. (2015). Analysis of the study skills of undergraduate pharmacy students of the University of Zambia, School of Medicine. Journal of Educational Evaluation for Health Professions, 12(46), 1–7

Frenette, M. & Chan, P.C.C (2015). Academic Outcomes of Public and Private High School Students: What Lies Behind the Differences? Minister of Industry, Ottawa, Canada.

Kunwar, S. (2021). Academic Performance: A Comparative Study between Public and Private Secondary Schools in Nepal. A non- published Masters' dissertation, Oslo Metropolitan University.

Levine, E. & Patrick, S. (2019). What is competency-based education? An updated definition. Vienna, VA: Aurora Institute.

Mupa, P.& Chinooneka, T. A., (2015). Factors contributing to ineffective teaching and learning in primary schools: Why are schools in decadence? Journal of Education and Practice, 6(19),125-133.

Mushtaq, M. & Munir, T. (2021). Analysis of Academic Performances of Boarding and Non-Boarding Students at University Level in Azad Jammu and Kashmir. Pakistan Social Sciences Review, 5, (3),366-375.

Mwesiga, F. (2017). Factors influencing students' poor performance in geography subject in tanzania: the case of community secondary schools in Morogoro municipality. A non- published dissertation submitted to the Faculty of Social Sciences in Partial Fulfilment of the Requirements for Award of Master of Arts in Education (MAED) of Mzumbe University.

Ngendahayo E. & Askel-William, H. (2016). Rwanda's New Competence Based School Curriculum: New Approached to assessing Student Learning Needs, Sense Publisher, ISBN 9789463006705.

Ngetich, S.K. (2020). A Comparison of Academic Performance of Learners in Day Secondary Schools and Those in Boarding Secondary School in Kenya. International Journal of Research and Innovation in Social Science (IJRISS), 4 (8), 1-7.

Nidup, Y. (2022). Relationship between the Number of Students in the School and the Academic Achievement in the Secondary Schools in Bhutan. Anatolian Journal of Education, 7 (1), 139- 154.

Obi-Nwosu, A.L., Ubajaka, C. F., Ibeh, D. K., Nwosu, B. O., Ezemenahi, S. I., Nwosu, C. S., Azudialu, B. C., Ulochukwu, C. M., Obi-Nwosu D. I. & Ofiaeli, C. I. (2023). A Comparative Study of the Academic Performance of Boarding and Day Secondary School Students in a Rural Town in Southeastern Nigeria. Journal of Scientific Research and Reports, 29(8), 27-36.

Ogechukwu, O.F., & Chika, N.P. (2018). Extent of Academic Achievement of Day and Boarding Secondary Schools Students in Anambra State, Nigeria. International Journal of Scientific Research and Management (IJSRM), 6(1), 20-26. DOI: 10.18535/ijsrm/v6i1.el03.

Opoku-Asare, N. A. A., & Siaw, A. O. (2015). Rural–Urban Disparity in Students' Academic Performance in Visual Arts Education: Evidence From Six Senior High Schools in Kumasi, Ghana. SAGE Open, 5(4). https://doi.org/10.1177/2158244015612523.

Oyeromi, S., Omiyale, G.T., Lato, E. T., Oyebamiji, W. T. (2018). Analysis of Rural/Urban Students' Academic Performance in Oyo State, Nigeria: Implication for Educational Planners. International Journal of Research and Innovation in Social Science (IJRISS), 2 (7), 73-81.

Pepe, K. (2012). Study skills of students studying at different departments. Procedia- Social and Behavioral Sciences, 47, 1040–1047.

REB (2015a). Geography Syllabus Advanced Level S3-S6. Kigali.

REB (2015b). Competence Based- Curriculum. Curriculum framework pre-primary to upper-secondary. Kigali.

Rong'uno, S.K. (2017). A comparison of academic performance between public and private secondary schools in Wareng district, Kenya. British Journal of Education, 5 (11), 58-67.

Sadaf, Z. A., Hina, Z. A., & Muhammad, N. B. (2017). Comparative Study of Students Academic Performance between Private and Public Higher Secondary Schools of Wah Cantt. Journal of Education and Practice, 8 (16), 24-26.

Sekar, J. M. A., & Rajendran, K. K. (2015). Study skills of arts and science college students. Indian e-Journal on Teacher Education (IEJTE), 3(2), 46–55.

Sumida, S. & Kawata, K. (2021). An analysis of the learning performance gap between urban and rural areas in sub-Saharan Africa. South African Journal of Education, 41 (2), 1-17.

Vishwajeet, M. C., & Girish, M. C. (2018). School health performance score: a comparative study between rural and urban school performance. International Journal of Community Medicine and Public Health, 5(6):2421-2424. DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph201 82170.

Yahaya, A. M., Dutsinma, A. L., Suleiman, S., Abdulaziz Ahmed, A., (2021). The impact of teaching methods on the performance of geography students in some selected public secondary schools in Zaria local government area, Kaduna State, Nigeria. Journal of Social, Humanity, and Education (JSHE), 1 (2), 143-155. https://doi.org/10.35912/jshe.v1i2.369.

Zachariah, K.K. & Joshua, K.K (2016). Conflict and Trade-offs Between Efficiency and Access: A Case of Day and Boarding Secondary Schools in Kenya. Journal of Education and Practice, 7(26), 111-119.