

Teaching-Learning Environment and Internal Efficiency in Public Lower Secondary Schools in Kicukiro District, Rwanda

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ABSTRACT: This study investigated learning environment and internal efficiency in public lower secondary schools in Kicukiro District, Rwanda. However, the objective of the study was to examine the influence of learning environment on internal efficiency in public day lower secondary schools in Kicukiro District, Rwanda. The study was grounded in Ecological Systems Theory, with a conceptual framework outlining key indicators for both independent and dependent variables. Descriptive Survey with mixed methods integrating both quantitative and qualitative approaches was employed. A total population of 2282 was composed of 24 head teachers, 336 teachers and 1922 students. Slovin's formula was used to calculate a sample size of 340 composed of 4 head teachers, 50 teachers, and 286 students. Schools were selected using simple random sampling. After selecting schools, headteachers were selected using purposive sampling while teachers and students were selected using simple random sampling. Data collection tools involved questionnaires to gather data from teachers, interviews guide to gather data from head teachers, and focus group discussions to gather data from students. A reliability index of at least 0.7 was used as the benchmark to determine the reliability of the questionnaire, and a validity test was conducted with an acceptable threshold of 0.7. Quantitative analysis was conducted using SPSS version 26 descriptive statistics to calculate mean, standard deviation, frequency distribution and inferential statistics via regression analysis, while qualitative analysis was carried out through thematic coding. The study found that the teaching-learning environment had a moderate and statistically significant influence on internal efficiency ($R^2 = 0.070$), with safety, teacher support, and cooperative classroom practices contributing positively despite limited resources. The study concluded that strengthening the teaching-learning environment through improved classroom safety, enhanced teacher support, collaborative learning practices, and adequate learning resources would contribute to improving internal efficiency. The study recommended policy reforms and practices for balanced teacher deployment, professional development, infrastructure, and community partnerships, and suggests further research on school leadership and community resource management's impact on internal efficiency.

KEYWORDS: teaching, learning, environment, internal efficiency.

1. INTRODUCTION

Internal efficiency in education refers to the effective use of teaching-learning resources, including teachers, classrooms, infrastructure, and instructional materials, to achieve optimal learning outcomes. Globally, strengthening internal efficiency has become a major priority as education systems operate under limited budgets, increasing student enrolments, and growing expectations for quality learning (UNESCO, 2020). In this regard, the effective management of the teaching-learning environment ensures that available resources are strategically utilized to maximize learning gains, promote equity, and enhance sustainability. This is especially relevant in low- and middle-income countries, where the demand for quality schooling often exceeds the available instructional resources (World Bank, 2018). When the teaching-learning environment is well organized and adequately resourced, disparities in learning opportunities are minimized, enabling all learners to benefit from conducive conditions that support academic success (OECD, 2019). Globally, a well-structured, safe, and inclusive teaching-learning environment is recognized as a critical determinant of internal efficiency because it enhances concentration, learner engagement, participation, and overall academic performance, while reducing repetition and dropout rates.

In Africa, particularly within the East African region, internal efficiency in the teaching-learning environment continues to be affected by persistent challenges such as overcrowded classrooms, inadequate school infrastructure, shortages of instructional materials, and limited teacher preparation. These challenges weaken the quality of the learning environment, reducing its ability to effectively support teaching and learning processes (UNESCO, 2019). Evidence shows that a conducive teaching-learning environment, characterized by adequate facilities, positive teacher-learner interactions, and a safe atmosphere, enhances learner motivation and academic achievement (Wang & Degol, 2016). However, disparities in resource allocation, high pupil-teacher ratios,

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and poorly maintained infrastructure have contributed to inefficiencies such as grade repetition and school dropout (Munezero, 2020). This underscores the importance of strengthening the teaching–learning environment as a key strategy for improving internal efficiency in the region.

In Rwanda, substantial progress has been made to enhance internal efficiency through education reforms and targeted investments in the teaching–learning environment. Government initiatives such as the Competence-Based Curriculum (CBC), the School Feeding Program, and the Smart Classroom initiative aim to improve classroom conditions, enhance teaching effectiveness, and increase student engagement (Republic of Rwanda, 2021). Despite these achievements, many public lower secondary schools still face constraints such as overcrowded classrooms, limited instructional space, and shortages of essential learning materials, all of which hinder optimal internal efficiency. Therefore, examining how teaching–learning environment factors influence internal efficiency is crucial for identifying practical measures to improve the quality of education and learning outcomes in Rwanda.

2. PROBLEM STATEMENT

Public lower secondary schools in Kicukiro District continue to face significant inefficiencies, including high repetition, dropout, and low promotion rates, which hinder students' smooth progression through the education system and affect national development. While many developed countries record graduation rates above 90%, Rwanda's completion rate for lower secondary education remains below 40%, with only about 38% of students completing the cycle (World Bank, 2021). The education system has also struggled to meet internal efficiency targets, with only 58% of learners achieving the minimum proficiency level in national examinations (Ministry of Education, 2022).

According to the Education Statistical Yearbook (2021) and the Education Sector Strategic Plan, key performance indicators in Kicukiro District reveal worrying trends: the promotion rate declined from the targeted 90% in 2018 to 73.5% in 2020/21, the repetition rate rose to 14% against a 7% target, and the dropout rate increased to 12.5% instead of the expected 6%. These figures indicate systemic inefficiencies that waste educational resources and reduce retention. Additionally, inadequate school facilities, where about half of schools lack sufficient classrooms and essential learning resources, combined with overcrowded classes exceeding 50 students further constrain effective teaching-learning environment in which students learning is key in determining school internal efficiency. These inefficiencies not only inflate education costs but also limit equitable access to quality education, resulting in reduced academic performance and a less skilled workforce. Therefore, addressing learning environment is essential for improving internal efficiency and promoting sustainable national development.

3. LITERATURE REVIEW

Learning Environment and Ecological Systems Theory emphasizes that an individual's learning and development are influenced by multiple interacting environmental systems, from immediate settings such as family and school to broader societal contexts. The theory, which includes the microsystem, mesosystem, exosystem, macrosystem, and chronosystem, underscores that learning occurs within a web of relationships shaped by social, cultural, and institutional factors (Sullivan et al., 2020). Creating supportive and inclusive learning environments that account for these ecological influences enhances educational outcomes and holistic development. Within this framework, both the physical and psychological aspects of the learning environment significantly affect student motivation and performance. Nagaoka et al. (2019) found that a positive school climate, marked by safety, respect, and inclusivity, correlates with improved academic achievement and lower dropout rates. Similarly, the Rwandan government's efforts to enhance school infrastructure reflect recognition of these ecological principles, aligning with the goal of fostering conducive learning environments that promote educational success (Republic of Rwanda, 2021).

The teaching-learning environment, encompassing both physical and psychological dimensions, significantly impacts student motivation and achievement. In the context of Rwandan education, particularly in Kicukiro District, the conditions under which students learn can either enhance or hinder their academic performance. A positive school climate characterized by safety, respect and inclusivity is essential for enhancing educational efficiency. According to Munyaneza et al. (2022), Rwandan schools that prioritize a safe and inclusive environment report not only lower dropout rates but also higher academic achievement. This finding aligns with the Rwandan Education Sector Strategic Plan (2018-2024), which emphasizes the need to create schools that promote student well-being and inclusivity as part of an effective educational strategy (Republic of Rwanda, 2018). Furthermore, the interactions among students, educators, and the broader school environment play a vital role in shaping educational experiences. A study conducted by Niyomugabo (2021) emphasizes that schools in Kicukiro with strong connections to the community and positive relationships among students and teachers often lead to improved educational outcomes. Such interactions contribute to a collaborative learning atmosphere where students feel valued and supported. The Rwandan National Inclusive Education Policy (2018) underscores the importance of fostering a school culture that embraces diversity and encourages mutual respect among all stakeholders (Republic of Rwanda, 2018).

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A research conducted by Lee, Worthington and Wilson in 2019, entitled “Learning environment and primary school efficiency”, aimed to incorporate learning assessment into the assessment of internal efficiency in Queensland State. Using regression analysis, internal efficiency was assessed in 430 primary schools. The study found that both socio economic factors and teaching environment are crucial in influencing internal efficiency. Although not all teacher related factors were found to be significant, the study suggested that teachers play a crucial role in promoting both student performance and school efficiency. However, the ability of teachers to explain tasks clearly and listen to students’ points of view contributes to fostering a supportive learning environment which can notary boost students. The researchers recommended that policymakers allocate resources to schools with lower with lower efficiency, prioritizing teacher development and contributing both financial and non-financial support to students and families from socio economic background to enhance learning outcomes (Lee, Worthington & Wilson, 2029). Similarly, a study by Mwangi (2020) in Kenya found that the quality of the teaching–learning environment, including classroom organization, instructional support, and teacher–student interaction, significantly contributed to internal efficiency, particularly by reducing repetition and dropout rates. Contrary to these findings, a study by Ndayambaje (2021) in Rwanda reported that improvements in internal efficiency were more strongly associated with administrative factors such as school leadership and monitoring practices than with classroom-level teaching–learning conditions, suggesting that the broader school management context can sometimes outweigh the influence of the immediate classroom environment.

4. METHODOLOGY

This study employed a descriptive survey design with mixed methods, integrating both quantitative and qualitative approaches. Quantitative data were collected from teachers using questionnaires, while qualitative data were gathered through interviews with head teachers and focus group discussions (FGDs) with Senior Three students. The target population comprised 2,282 individuals, including 24 head teachers, 336 teachers, and 1,922 Senior Three students. Using Slovin’s formula, a sample size of 340 respondents was determined, comprising 4 head teachers, 50 teachers, and 286 Senior Three students. Schools were selected using simple random sampling. Following school selection, head teachers were selected using purposive sampling, while teachers and Senior Three students were selected using simple random sampling. This sampling approach ensured that respondents with relevant knowledge and experience were included while providing students and teachers with equal opportunities for selection. Instruments were piloted to assess their validity and reliability. Quantitative data were analyzed using descriptive statistics and regression analysis, while qualitative data were analyzed thematically.

5. RESEARCH FINDINGS

The study sought to establish the influence of teaching-learning environment on internal efficiency. In public lower secondary schools, teaching-learning environment plays a significant role in shaping internal efficiency. To assess this, teachers were asked to rate various aspects related to teaching-learning environment and its influence on internal efficiency in their respective schools.

Table 1: Teachers’ Responses on the Influence of Teaching-Learning Environment on Internal Efficiency

Statements / Items	SD (N, %)	D (N, %)	N (N, %)	A (N, %)	SA (N, %)	Mean	Std. Dev.
Physical facilities in my school are of high quality	9 (2.8%)	26 (8.2%)	0 (0.0%)	136 (42.9%)	146 (46.1%)	4.2114	1.00133
School environment is safe for both teachers and learners	0 (0.0%)	11 (3.5%)	0 (0.0%)	147 (46.4%)	159 (50.2%)	4.4322	0.67456
Safety and security measures in this school are reviewed and updated regularly	0 (0.0%)	13 (4.1%)	0 (0.0%)	146 (46.1%)	158 (49.8%)	4.4164	0.70044
Local community supports school activities	0 (0.0%)	26 (8.2%)	0 (0.0%)	145 (45.7%)	146 (46.1%)	4.2965	0.83841
Educational resources are sufficient in my school	0 (0.0%)	161 (50.8%)	0 (0.0%)	138 (43.5%)	18 (5.7%)	3.0410	1.08276

Source: Primary data (2025)

The results from Table 1 indicate that 42.9% of teachers agreed and 46.1% strongly agreed with the statement that quality of physical facilities in the school is good, while 2.8% strongly disagreed and 8.2% disagreed, with a mean of 4.21 and a standard deviation of 1.00. This shows that most teachers view the school’s physical infrastructure as adequate and supportive of effective teaching and learning. Regarding the statement that the school environment for both students and staff is safe, 46.4% agreed and 50.2% strongly

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agreed, with a mean of 4.43 and a standard deviation of 0.67, indicating that teachers perceive the school as a secure setting that promotes confidence and contributes to internal efficiency. For the statement that safety and security measures in this school are reviewed and updated regularly, 46.1% agreed and 49.8% strongly agreed, with a mean of 4.42 and a standard deviation of 0.70, suggesting that teachers recognize the school's efforts to maintain a safe and well-organized learning environment. Regarding the statement that local community supports school activities, 45.7% agreed and 46.1% strongly agreed, with a mean of 4.30 and a standard deviation of 0.84, showing that teachers appreciate the positive role of community involvement in supporting school programs. Furthermore, on the statement that educational resources are sufficient in the school, 43.5% agreed and 5.7% strongly agreed, while 50.8% disagreed, with a mean of 3.04 and a standard deviation of 1.08, highlighting a concern among teachers about the lack of adequate learning materials, which may limit teaching effectiveness and overall internal efficiency. In addition, the study tested the null hypothesis at 0.05 level of significance and results are shown below:

Table 2: Model Summary from Teachers Responses on the Influence of Teaching-Learning Environment on Internal Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.135 ^a	.018	.015	.41994

a. Predictor: Constant, Teaching-Learning Environment

The model summary in Table 2 showed that the correlation coefficient (R) was 0.135, indicating a weak positive relationship between the teaching-learning environment and internal efficiency. The coefficient of determination (R^2) was 0.018, while the adjusted R^2 was 0.015, suggesting that only about 1.5% of the variation in internal efficiency was explained by the teaching-learning environment in this model. The standard error of the estimate was 0.420, indicating the average distance that the observed values fell from the regression line.

Table 3: ANOVA Table from Students Responses on the Influence of Teaching-Learning Environment on Internal Efficiency

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.029	1	1.029	5.836	.016 ^b
Residual	55.549	315	.176		
Total	56.578	316			

a. Predictor: Constant, School Environment

Table 3 presents the ANOVA results for the influence of the teaching-learning environment on internal efficiency. The regression model showed a sum of squares of 1.029 for regression and 55.549 for residuals, with 1 and 315 degrees of freedom, respectively. The mean square for regression was 1.029, producing an F-value of 5.836 and a significance level of 0.016. Since the p-value (0.016) was less than 0.05, the result was statistically significant, leading to the rejection of the null hypothesis, which stated that the teaching-learning environment had no effect on internal efficiency. This indicated that the teaching-learning environment had a significant positive influence on internal efficiency, although other factors may also have contributed.

Table 4: Regression Coefficients from Students Responses on the Influence of Teaching-Learning Environment on Internal Efficiency

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.029	1	1.029	5.836	.016 ^b
Teaching-Learning Environment	55.549	315	.176		

a. Dependent variable: Internal Efficiency

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The regression results presented in the table indicated that the unstandardized coefficient (B) for the teaching-learning environment was 55.549, with a standard error of 315 and a standardized coefficient (Beta) of 0.176. The constant value was 1.029 ($t = 5.836$, $p = 0.016$). These findings suggested a positive relationship between the teaching-learning environment and internal efficiency; however, the high standard error and low Beta indicated that the effect was weak. Therefore, based on the results in the table, the null hypothesis, that the teaching-learning environment had no significant impact on internal efficiency was not rejected, implying that other factors may have had a more substantial influence on internal efficiency.

Qualitative data from head teachers' interviews and student FGDs indicated that teaching-learning environment influenced internal efficiency. Head teachers noted inadequate physical facilities, overcrowded classrooms, and limited safety protocols, while students highlighted similar challenges affecting teaching learning process. Both groups emphasized the importance of community involvement in supporting resources, discipline, and infrastructure. Students also reported that improved facilities and mentorship enhanced their sense of safety and engagement. Overall, physical resources, safety, and community support were key factors in promoting a conducive teaching-learning environment.

6. DISCUSSION OF FINDINGS

The analysis revealed varying perceptions of the teaching-learning environment among teachers in public lower secondary schools. Most teachers viewed physical facilities as adequate, resonates with Munyaneza et al. (2022), who noted that well-maintained infrastructure improves student motivation and learning outcomes, and Adeyemi (2018), who emphasized the importance of classrooms, laboratories, and libraries. Teachers also reported that the school environment was generally safe and that safety measures were regularly reviewed, aligning with Nagaoka et al. (2019), who linked safety to improved learning outcomes, and Ndahimana and Nkundabakura (2023), who argued that proactive safety measures foster teacher and student confidence which in turn enhance their performance resulting to enhanced internal efficiency as signified by high completion rates, low repetition rates and high pass rates.

Strong community support was evident, supporting Lee et al. (2019) and Epstein (2018), who highlighted the role of stakeholder engagement in enhancing school efficiency, accountability, and student retention. However, teachers expressed concerns about the adequacy of educational resources, consistent with UNESCO (2021), which emphasized that insufficient learning materials negatively affect student performance and engagement, and Adeyemi (2018), who noted that adequate instructional materials are critical for effective teaching and internal efficiency. These findings suggest that even with strong community support, inadequate resources can constrain school performance thus lowering internal efficiency.

Regression analysis confirmed a statistically significant positive effect of the teaching-learning environment on internal efficiency, though the effect was weak. This indicates that improvements in infrastructure, safety, and community involvement enhance internal efficiency, but other factors, such as teacher quality and instructional practices, may have a stronger influence, consistent with Dixon et al. (2020). Qualitative data indicated persistent challenges, including overcrowded classrooms, insufficient learning materials, and inconsistent safety implementation, supporting World Bank (2020), which noted that infrastructure and resource gaps can reduce internal efficiency despite community support.

7. CONCLUSION

Although adequate facilities, safe learning spaces, positive teacher-student interactions, and community involvement showed potential to improve efficiency, their impact was largely undermined by structural constraints. Chronic overcrowding, shortages of instructional resources, and inconsistent enforcement of safety standards emerged as major policy gaps, limiting the effectiveness of school environments in promoting internal efficiency and underscoring the need for targeted systemic interventions.

8. RECOMMENDATIONS

To improve teaching-learning environment and internal efficiency, MINEDUC and REB should enforce policies for equitable resource distribution and safe, inclusive, well-equipped school facilities. Priority should be given to classroom construction, renovation, and regular maintenance, with DEOs monitoring safety and hygiene standards. Schools should engage parents, local leaders, and communities to support infrastructure and co-curricular programs. At the school level, head teachers and teachers should maintain clean, safe, and collaborative classrooms, encourage student participation in upkeep, and promote respect and cooperation.

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