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Original Article

Applying Resource Dependence Theory to Examine Resource Capacity, Instructional Efficacy, and Curriculum Implementation Fidelity in Uganda's Lower Secondary Schools

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Curriculum, Fidelity, Resources, Capacity, Efficacy, Implementation, Resource Dependence Theory (RTD).

ABSTRACT

This study investigated how instructional efficacy mediates the relationship between resource capacity and competency-based curriculum (CBC) implementation fidelity in Uganda's lower secondary schools. Firmly grounded in the RTD framework, which theorises that educational resource capacity exerts its influence on curriculum outcomes through proximal teacher-level response mechanisms, particularly instructional efficacy, and guided by systems and instructional effectiveness perspectives, the study examined the extent to which school resources enhance teacher instructional efficacy, which in turn influences faithful implementation of learner-centred CBC practices. An explanatory sequential mixed-methods design was employed, collecting quantitative data from 972 teachers, administrators, and NCDC staff, alongside qualitative data from 11 (eleven) in-depth interviews. Quantitative analysis utilised hierarchical multiple regression with bootstrapped mediation to estimate indirect effects, a regression-based approach sometimes referred to as PROCESS-style mediation analysis. Results revealed that resource capacity significantly predicts instructional efficacy, which partially mediates the effect of resources on CBC implementation fidelity. Teachers with higher instructional efficacy reported stronger engagement with students, greater adaptability, and more consistent adherence to curriculum objectives. While resources directly support curriculum implementation, their impact is substantially amplified when teachers perceive themselves as capable and confident in their instructional practices. Qualitative findings further contextualised these results, highlighting the importance of supportive leadership, collaborative school environments, and structured professional development in translating resources into effective teaching practices. The study concludes that enhancing CBC implementation requires coordinated investment in resources and teacher capacity development, coupled with strengthened school-level leadership. It recommends institutionalised professional development programs, strategic allocation of school resources, and ongoing monitoring and support to sustain high levels of instructional efficacy and curriculum fidelity across Uganda's lower secondary schools.

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INTRODUCTION

The new lower secondary school competency-based curriculum adopted at the start of 2020 in Uganda was designed with the aim of addressing technological advancements, shifting educational paradigms and the evolving needs of learners in the 21st century. It shifted from a traditional model to a more dynamic one that emphasises the integration of modern technologies into teaching and learning processes. However, despite the comprehensive nature of the curriculum, its successful implementation has been impeded by various factors. While numerous studies like Mulenga (2020), Akampurira (2022), Changwe (2019), Hughes (2021) and Kibuuka (2022) have explored and investigated the common challenges that could lead to the failure of curriculum implementation such as teacher preparedness, institutional readiness and student engagement, there remains a critical gap in addressing one fundamental yet often overlooked aspect: instructional resources. The importance of appropriate, accessible and effective instructional resources cannot be overstated in ensuring the success of the 2020 curriculum. These resources, which include textbooks, digital tools, learning platforms and materials aligned with new technological advancements, are crucial in supporting both teachers and students in the transition to this updated educational framework (Akampurira, 2022). However, there has been limited attention given to the availability, accessibility and quality of these resources, particularly in the context of rapidly evolving technologies. Without sufficient, reliable and innovative instructional resources that match the objectives of the curriculum, the gap between the envisioned results and real classroom experiences widens.

In many Ugandan secondary schools, libraries are stocked with outdated resources that are no longer relevant to the needs of students, and laboratories remain in a deplorable state (Nakabugo et al., 2023). However, the reality in many secondary schools in Uganda is that these resources are either scarce or completely absent. This gap in resource availability significantly constrains the implementation of the new lower secondary curriculum, further intensifying the challenges teachers face in delivering a competency-based approach (Kibuuka, 2022). Beyond resource limitations, a particularly critical research gap in curriculum implementation lies in the misalignment between the *intended curriculum* as envisioned by curriculum developers and policymakers and the *implemented curriculum*, which reflects the realities of classroom teaching and learning. Despite sustained efforts to develop

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comprehensive curriculum frameworks, a persistent disconnect remains between planned curricular intentions and actual instructional practices. This misalignment undermines effective curriculum delivery, resulting in substantial gaps in students' learning outcomes and limiting their acquisition of the intended competencies.

As Mwanza and Changwe (2019) assert, a competency-based curriculum, no matter how meticulously designed, is rendered irrelevant if it is not effectively implemented. Given the critical role of instructional resources in bridging the gap between the intended and implemented curriculum, this study aims to examine the relationship between instructional resources and the effective implementation of the competency-based curriculum in lower secondary schools in Uganda. Addressing this issue is essential not only to ensure the curriculum's relevance but also to optimise the quality of education and equip students with the skills necessary for their future success.

Statement of the Problem

The successful implementation of curriculum in educational institutions is not solely dependent on its design, but also on the intricate power relationships, traditions and roles within the school system (Mulenga & Luangala, 2019). Research by Fatameh et al. (2020) highlighted that teachers face significant challenges in delivering quality lessons due to inadequate funding, shortages of qualified curriculum teachers and a lack of essential teaching and learning materials. Kibuuka (2022) and Akampurira (2022) further corroborated these findings, noting that a shortage of instructional resources, including teachers and textbooks, has a detrimental impact on the implementation of the curriculum. While previous studies have attempted to explore the continuum of curriculum implementation, none have opined how instructional adaptability, in response to resource shortages, can mediate the relationship between resources and curriculum outcomes. While existing literature identifies that the availability of educational resources significantly impacts curriculum implementation, there remains a critical gap in the exploration of how instructional adaptability serves as a mediator between resource constraints and successful curriculum outcomes.

Many teachers have voiced that they are not equipped to fully engage with the competency-based curriculum due to the absence of essential resources, leading to challenges in delivering effective lessons (Kibuuka, 2022). This situation is exacerbated by the increasing student enrollments, where the number of learning materials and teaching venues does not scale in proportion to the growth in student numbers. These contextual challenges founded in the resource dependence and fidelity theory in curriculum implementation disrupt the culture of teaching and learning in lower secondary schools. The failure to adequately address these resource gaps threatens the overall success of the curriculum implementation process. If left unaddressed, the quality of teaching and learning will continue to decline, undermining the intended goals of the curriculum and diminishing students' ability to acquire the competencies necessary for their academic and professional success. Therefore, it is critical to assess the relationship between educational resources and the implementation of the competency-based curriculum in lower secondary schools in Uganda, particularly in Wakiso, to identify the root causes of these implementation challenges.

Purpose of the Study

The purpose of the study is to investigate the mediating role of instructional efficacy in the relationship between resource capacity and competency-based curriculum implementation fidelity in lower secondary schools in Uganda.

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Hypotheses

Hypothesis 1 (H1)

H1: Resource Capacity significantly predicts Curriculum Implementation Fidelity.

Hypothesis 2 (H2)

H2: Resource Capacity significantly predicts Instructional Efficacy.

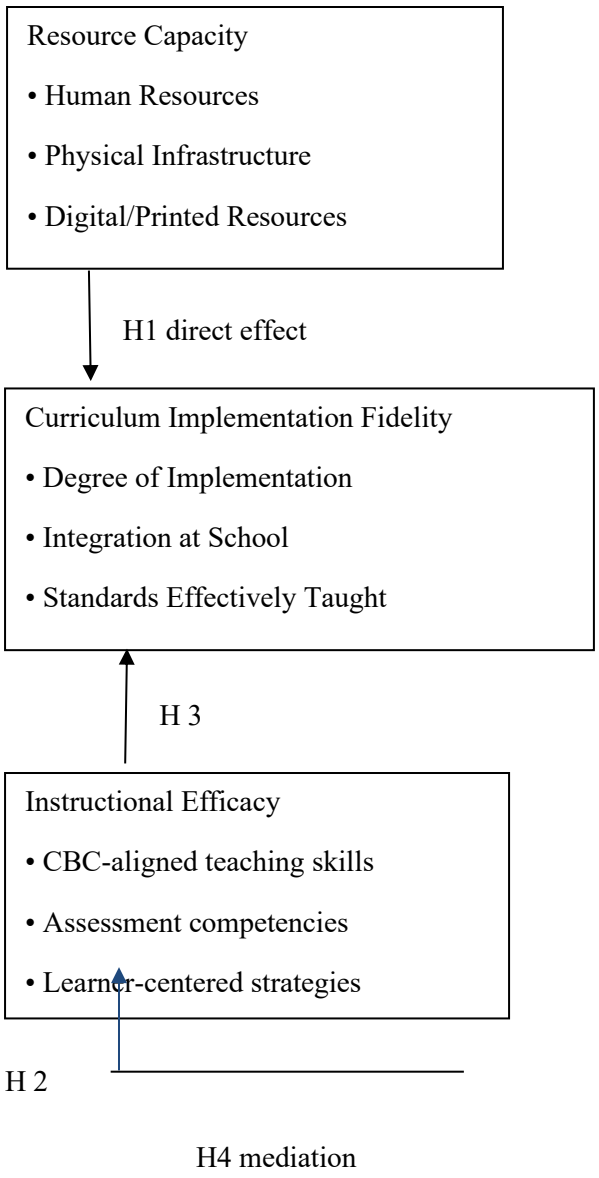
Hypothesis 3 (H3)

H3: Instructional Efficacy significantly predicts Curriculum Implementation Fidelity, controlling for Resource Capacity.

Hypothesis 4 (H4)

H4: Instructional Efficacy mediates the relationship between Resource Capacity and Curriculum Implementation Fidelity.

Figure 1: Unified Conceptual Framework for CBC Implementation Study



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Explanation of Paths:

Within this framework, the hypothesised paths are specified to allow empirical testing of both direct and indirect effects. The direct path from Resource Capacity to Curriculum Implementation Fidelity (H1) captures the immediate influence of resources on implementation outcomes, while the direct path from Resource Capacity to Instructional Efficacy (H2) examines how resources strengthen teachers' capacity to deliver CBC effectively. The path from Instructional Efficacy to Curriculum Implementation Fidelity (H3) represents the independent contribution of teacher competence to fidelity, controlling for resource availability. The indirect path (H4) tests the mediating role of Instructional Efficacy in transmitting the effect of Resource Capacity on Curriculum Implementation Fidelity, illustrating how resources enhance implementation primarily by improving teacher performance and readiness. Together, these paths provide a comprehensive depiction of the mechanisms through which schools' structural and human resources translate into high-quality CBC delivery.

LITERATURE REVIEW

Resource Dependence Theory

From the Resource Dependence Theory (RDT) perspective, the effectiveness of curriculum implementation is shaped by the availability, access, and strategic management of critical resources within schools (Pfeffer & Salancik, 1978). Successful delivery of Uganda's competence-based curriculum (CBC) depends on teachers' ability to leverage human, material, and infrastructural resources to support instructional practices and sustain student learning outcomes (Kisige et al., 2021). Adequate resource capacity, including staffing, learning materials, classrooms, and digital tools, enhances teachers' instructional efficacy, enabling them to implement learner-centred pedagogies effectively (Mulenga, 2020). Conversely, resource constraints create dependencies that can limit teacher flexibility, reduce engagement, and hinder curriculum fidelity, highlighting the centrality of resource management and institutional support in educational practice (Efoghe, 2022). Integrating RDT into curriculum planning emphasises that policy and school-level strategies must focus not only on defining curriculum goals but also on ensuring that schools are sufficiently resourced to meet these objectives, thereby bridging the gap between intended curricula and classroom realities.

Resource Capacity and Curriculum Implementation Fidelity

The literature on the availability of both printed and digital resources, alongside the physical learning environment, reveals a multifaceted discourse on their combined role in effective curriculum implementation. Muhwezi (2021) and Amadi (2021) discuss the significance of printed materials, such as textbooks and reading materials, as fundamental components of education. They argue that access to printed resources is pivotal to enabling students to engage with the curriculum. However, they acknowledge that many schools in Uganda suffer from a shortage of textbooks and instructional materials, which limits students' ability to learn independently and explore subjects beyond the classroom. This lack of printed resources, when coupled with inadequate infrastructure, results in a significant limitation of the curriculum's potential for delivery.

CBC assumes that access to relevant digital and print resources directly enables the development of key competencies such as problem-solving, collaboration, and critical thinking. However, findings from UNEB (2024) suggest that schools with limited access to textbooks, science kits, and ICT tools tend to perform poorly in practical assessments, casting doubt on the logical consistency of CBC goals in under-resourced environments. While the curriculum framework promotes experiential and discovery-based learning, UNEB's national assessment results indicate that most learners are still evaluated through traditional testing methods, often due to a

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lack of practical instructional tools. This contradiction highlights a logical fallacy in policy implementation: expecting competency development without equipping learners and teachers with the tools necessary to practice and demonstrate those competencies. Thus, the logic behind CBC in Uganda remains fragile unless it is supported by coherent investment in instructional resources that align with intended learning outcomes.

Instructional Efficacy

Instructional efficacy, which refers to the capacity of educators to improve teaching and learning environments, plays a critical role in the implementation of competence-based curricula(Muzaale et al., 2026). Akampurira (2022) emphasised that instructional efficacy contributes to the identification of both teachers' strengths and weaknesses, fostering a positive working environment. Kibuuka (2022) further elaborated that the improvement of instructional processes, particularly through effective supervision, is essential for enhancing teacher performance. Supervision enables teachers to critically assess their teaching practices and align them with professional standards (Kyobe & Rugumayo, 2021). However, while these studies acknowledge the importance of instructional efficacy in curriculum delivery, a gap remains in the literature concerning the specific mechanisms through which instructional efficacy influences the successful implementation of competence-based curricula in Wakiso District. Empirical research is needed to investigate the causal pathways that connect teacher efficacy with curriculum implementation outcomes, particularly within the context of developing countries with limited resources, such as Uganda.

The importance of instructional supervision in fostering teacher competence is widely recognised in the literature. Kisige et al. (2021) observed that effective supervision allows teachers to be groomed through critical feedback and reflection, which can improve their instructional practices. Mugimu and Rwandembo (2019) also argued that the lack of supervision could undermine the achievement of educational objectives. However, empirical studies that evaluate the specific impact of supervisory techniques on teachers' instructional efficacy and competence in the context of competence-based curriculum implementation are scarce. The existing works tend to focus on the broader role of supervision in teacher development, without sufficiently addressing how different types of supervision contribute to specific curriculum outcomes in Wakiso District.

Bandura's (2006) theory of self-efficacy, which highlights the essence of teachers' belief in their ability to produce positive educational outcomes, is fundamental to understanding instructional efficacy. Muzaale et al (2026) asserted that teachers' self-efficacy is closely linked to job satisfaction and their perception of leadership support. Teachers with high self-efficacy are more likely to adopt innovative teaching strategies and stay motivated despite challenges. Furthermore, collective efficacy, or the shared belief in the ability of a group to achieve goals, has been shown to enhance school-wide performance and educational outcomes (Ahaotu & Ogunode, 2021). Despite these findings, there is a notable gap in the literature concerning how individual and collective teacher efficacy specifically impacts the implementation of competence-based curricula. More empirical research is required to assess how instructors' beliefs in their instructional abilities translate into the use of competency-based teaching methods and the extent to which collective efficacy among staff influences curriculum implementation at the institutional level in Wakiso District, Uganda.

METHODOLOGY

Research Design

The study employed an explanatory sequential design within a mixed methods approach. According to Bill (2019), the explanatory sequential design begins with the collection and analysis of quantitative data, followed by

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qualitative data collection and analysis, which ultimately informs interpretation. This approach allows researchers to identify which quantitative results require further exploration.

Population

The population for the study was 8,693, and the sample size was 972, made up of Teachers, Headteachers and NCDC Officials. In total, a study population of 7,992 teachers, 580 Headteachers, and 121 NCDC Officials were sampled for this study. 7,992 teachers in Wakiso teach in lower secondary schools in Wakiso (Wakiso DEO Report, 2023). The unit of analysis was the competency-based lower secondary curriculum (Ragin, 2019).

Sample Size and Selection

The stratification matrix outlines a comprehensive sampling framework designed to ensure representativeness and statistical rigour in studying the influence of educational resources on Competence-Based Curriculum (CBC) implementation. The matrix considers three key stratification levels: school type**,** school location, and stakeholder category, each representing distinct contextual factors that could influence access to and utilisation of educational resources.

Table 1: Showing Category of Respondent, Target Population, Sample Size, and Sampling Techniques

Category	Population	Sample Size	Sampling Techniques
Head teachers	580	238	Probability Proportional to Size (PPS)
Teachers	7992	726	Probability Proportional to Size (PPS)
NCDC Officials	121	12	Probability Proportional to Size (PPS)
Total	**8,693**	**972**	

Source: *Wakiso DEO Report (2024) & NCDC Statistical Abstract (2024)*

Probability Proportional to Size (PPS) sampling, as demonstrated in Table 1, was used to ensure that the sample is representative and that each respondent's probability of selection is proportional to their size within the population.

Data Collection Methods

Data collection was in two phases. The first phase and the 2nd phase. In the first phase, quantitative data was collected using questionnaires, and in the second phase, qualitative data was collected using interviews. The study used survey questionnaires, interviews and document reviews as the key data collection methods. These data collection methods elicited information on the study.

Validity

The quantitative validity of the study instruments was demonstrated through a combination of expert-based content review, robust factor analytic procedures and criterion-based validation. The statistical evidence, including high factor loadings, acceptable KMO values, significant Bartlett's test, strong Eigenvalues and meaningful correlations, confirms that the instrument validly captures the constructs of interest. These results provide a sound empirical foundation for subsequent inferential analyses examining the relationships between educational resources and competence-based curriculum implementation in Ugandan lower secondary schools.

A Content Validity Index (CVI) was computed by averaging the proportion of items rated as "relevant" or "very relevant." A CVI score of 0.86 was achieved, exceeding the 0.80 threshold recommended by Lynn (1986), indicating strong content representativeness of the constructs measured.

Data Analysis

Quantitative data were analysed using IBM SPSS version 25. Correlations and hierarchical regression analysis was used to analyse data.

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Structural Equation Modeling (SEM) was utilised to analyse the objective. IBM SPSS AMOS facilitated testing of both direct and indirect relationships among the variables by constructing structural models for each mediating hypothesis. The software estimated standardised regression weights for each path, enabling a rigorous analysis of mediating effects and the assessment of complex interrelationships within the model. Thematic Analysis was used to analyse qualitative data. Thematic analysis focuses on identifying and interpreting patterns or themes within data (Creswell, 2023).

EMPIRICAL FINDINGS

This section presents the empirical findings of the study on instructional efficacy and resource capacity as predictors of competency-based curriculum (CBC) implementation fidelity in Uganda's lower secondary schools. The findings are drawn from both quantitative and qualitative strands of the explanatory sequential mixed-methods design adopted in the study.

Table 2: Factor Loadings and Descriptive Statistics for Resource Capacity (Independent Variable)

Item Statement	Component 1: Teacher–Student Ratio (Loading)	Component 2: Teacher Competency Scores (Loading)	Component 3: Quality of Teacher Lesson Plan (Loading)	Mean	Std. Deviation
The number of students in my class allows for effective use of ICT facilities	.837			4.0556	.84967
I can provide individual support to learners due to a manageable class size.	.808			4.0051	.81501
The teacher-student ratio in my school affects the quality of CBC implementation.	.765			3.8868	.82915
Large class sizes limit my ability to apply learner-centred strategies.	.737			3.1986	1.41810
The school has sufficient teaching staff to support the use of e-technology.	.687			3.2726	1.52046
The current student population allows effective use of available textbooks and other instructional materials.		.943		3.7891	1.28997
The number of classes are adequate for all students.		.926		3.9146	1.22702
I am confident in using e-technology in class.		.907		4.4877	.76540

Model Summary:

Eigenvalues = 28.951, 22.313, 19.702

Cumulative Variance Explained = 70.97%

KMO = .753

Bartlett's Test of Sphericity: $\chi^2(66) = 7774.009$, $p = .000$

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The factor analysis reveals a strong three-component structure underlying resource capacity influencing CBC implementation, explaining 70.97% of the total variance. The KMO value (.753) indicates good sampling adequacy, and the highly significant Bartlett's Test ($p < .001$) confirms the suitability of the data for factor analysis. Component 1, interpreted as Teacher–Student Ratio, shows strong loadings (.687-.837), indicating that class size, staffing levels, and manageability of learners are closely related constructs. The relatively high mean scores for manageable class size (4.01) and effective ICT use (4.06) suggest that many teachers perceive class organisation as supportive of CBC implementation. However, the lower mean (3.20) and high variability (SD = 1.42) for the statement on large class sizes limiting learner-centred strategies indicate inconsistency across schools, suggesting that overcrowding remains a contextual challenge in some settings. This justifies continued policy focus on equitable teacher deployment and class size regulation.

Component 2, reflecting Teacher Competency and Resource Adequacy, demonstrates very strong factor loadings (.907-.943), highlighting a cohesive relationship between instructional confidence in e-technology and adequacy of learning resources and class structures. The highest mean (4.49) for confidence in using e-technology indicates strong perceived digital competence among teachers, which is critical for CBC implementation. However, the comparatively moderate means and larger standard deviations for adequacy of textbooks (3.79, SD = 1.29) and number of classes (3.91, SD = 1.23) suggest disparities in resource distribution. Overall, the results justify the conclusion that while teacher competency, particularly in digital skillsis a major strength, structural resource inequalities and staffing imbalances may limit consistent CBC implementation. From a Resource Dependence Theory (RDT) perspective, schools rely on critical internal and external resources to sustain effective curriculum delivery, and deficits in these resources create dependencies that constrain instructional efficacy. Policy and practice should therefore combine continued teacher capacity building with strategic investment in staffing, learning materials, and infrastructure to ensure balanced and effective curriculum delivery, thereby reducing resource-based constraints and enhancing the fidelity and quality of CBC implementation.

Table 3: Factor Loadings and Descriptive Statistics for Instructional Efficacy (Mediating Variable)

Item Statement	Component 1: Students' Engagement (Loading)	Component 2: Student Learning (Loading)	Mean	Std. Deviation
I regularly update my knowledge on using modern instructional tools and digital platforms.	.597		3.9280	.32563
I am skilled at incorporating digital and printed resources into CBC instruction.	.588		3.8776	.53549
I receive adequate support from peers and administration to teach CBC.	.583		3.9270	.35419
I feel confident in delivering CBC lessons effectively.	.582		4.4506	.49781
I can modify CBC lesson activities for large or diverse classrooms.	.568		4.1039	.64862
I can deliver lessons that meet CBC goals even under resource constraints.	.538		4.0442	.59095
I am able to maintain learner engagement during competence-based activities.		.947	4.2994	.45822

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Item Statement	Component 1: Students' Engagement (Loading)	Component 2: Student Learning (Loading)	Mean	Std. Deviation
I feel prepared to adapt CBC lessons based on available resources.		.919	4.3292	.53184
Model Summary: Eigenvalues = 25.121 (Engagement), 24.707 Cumulative Variance Explained = 49.83% KMO = .580				
Bartlett's Test of Sphericity: $\chi^2(28) = 1904.302$, $p = .000$				

The factor analysis confirms construct validity, with two components explaining 49.83% of the total variance and a significant Bartlett's Test ($p < .001$), indicating that the data were suitable for factor analysis. Although the KMO value (.580) suggests moderate sampling adequacy, the strong and meaningful factor loadings justify retaining the two-factor solution. Component 1 (Engagement) includes teacher confidence, instructional resource integration, peer/administrative support, and instructional adaptability, with moderate loadings (.538-.597). Importantly, these items also show high mean scores (3.88-4.45), indicating that teachers not only conceptually align on engagement-related competencies but also perceive themselves as performing strongly in these areas. The highest mean (4.45) for confidence in delivering CBC lessons reinforces the theoretical link between teacher self-efficacy and classroom effectiveness.

Component 2 (Student Learning) is characterised by very strong loadings (.919 and .947), indicating a highly cohesive construct centred on maintaining learner engagement and adapting lessons effectively. The high means (4.30 and 4.33) further suggest that teachers feel capable of sustaining learning even under varying resource conditions. The strength of these loadings implies that adaptive instructional practice is a defining feature of perceived student learning success within the competence-based curriculum (CBC). Together, the factor structure and descriptive results justify the interpretation that instructional efficacy is both structurally sound and practically strong among respondents. The relatively low standard deviations across items indicate consistency in perceptions, suggesting systemic rather than isolated competence. From a policy and practice perspective, while teacher confidence and adaptability are evident strengths, slightly lower means in resource integration and administrative support highlight areas where resource constraints create dependencies that limit instructional effectiveness, consistent with Resource Dependence Theory (RDT). Institutional investment in learning materials, staffing, and administrative support, alongside targeted professional development, can strengthen teachers' capacity to leverage available resources, enhancing instructional efficacy and improving CBC implementation fidelity across schools.

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Item Statement	Component 1: Degree of Curriculum Implementation (Loading)	Component 2: % of Curriculum Integration at School Level (Loading)	Component 3: % of Curriculum Standards Effectively Taught (Loading)	Mean	Std. Deviation
I design teaching activities aimed at developing the key competencies	.826			3.8364	1.01533
I provide collaborative tasks for students to do in the classroom	.808			3.9558	.97079
I use teaching approaches that enable learners to solve their problems practically.	.786			4.0175	.79176
The teaching methods that I use are consistent with the curriculum	.774			3.8570	1.03349
The school has enough assessment and learning materials for implementing learner-centred methods	.735			4.0103	.92449
The school sensitises us on the implementation of the curriculum	.527			4.0309	.94060
I provide a moderate and balanced judgment on different learning experiences.		.773		4.4475	.73624
Am able to use a wide range of approaches for assessing students' progress		.751		4.1193	.74585
I assess students in relation to the intended learning outcomes.		.732		4.4877	.76540
I evaluate my students' achievement of competencies when assessing their learning.		.695		4.3076	.67547
I assess students in multiple ways.		.688		4.1996	.70403
The lecturers, despite being trained, are still ill-equipped to implement the curriculum.			.714	3.9918	.82315
I give students the opportunity to organise information, make connections, and note relationships among learned ideas.			.709	4.0484	.87223

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Item Statement	Component 1: Degree of Curriculum Implementation (Loading)	Component 2: % of Curriculum Integration at School Level (Loading)	Component 3: % of Curriculum Standards Effectively Taught (Loading)	Mean	Std. Deviation
The implementation of the curriculum is periodically evaluated.			.652	4.1409	.78193
I provide constructive feedback to students in the learning process.			.630	4.0576	.80471
I use teaching approaches that facilitate higher-order thinking.			.600	3.8560	1.21603
The heads of departments/deans effectively supervise the implementation of the curriculum.			.597	3.9537	.93613
Model Summary:					
Eigenvalues = 24.334, 20.964, 19.290					
Cumulative Variance Explained = 64.59%					
KMO = .908					
Bartlett's Test of Sphericity: $\chi^2(136) = 10217.917$, $p = .000$					

The factor analysis reveals a robust three-component structure explaining 64.59% of the total variance, with an excellent KMO value (.908) and a highly significant Bartlett's Test ($p < .001$), confirming strong sampling adequacy and suitability for factor analysis. Component 1, Degree of Curriculum Implementation, includes instructional design, collaborative learning, practical problem-solving approaches, alignment of teaching methods with curriculum standards, and availability of learner-centred materials. Strong loadings (.735-.826) indicate that these practices are closely interrelated and form the core of active curriculum delivery. Descriptive statistics show generally high mean scores (3.84-4.03), suggesting teachers perceive themselves as effectively implementing competency-based instructional practices. However, relatively higher standard deviations (around 1.0 for some items) indicate variability across schools, especially in aligning methods with curriculum and designing competency-based activities, justifying the need for continued instructional support and monitoring.

Component 2, Curriculum Integration at School Level, is strongly defined by assessment-related competencies (loadings .688-.773), including assessing learning outcomes, using varied assessment approaches, and evaluating competencies. These items also record the highest mean scores (4.12-4.49), indicating that assessment practices are a major strength in curriculum implementation. Component 3, Curriculum Standards Effectively Taught, captures higher-order instructional processes such as constructive feedback, fostering higher-order thinking, periodic curriculum evaluation, and departmental supervision (.597-.714). Although mean scores remain relatively high (3.86-4.14), greater variability, particularly in facilitating higher-order thinking (SD = 1.22), suggests uneven implementation quality. Overall, the findings justify the conclusion that teachers demonstrate strong commitment to assessment-driven and competency-focused practices; however, limited access to critical resources and supervisory support consistent with Resource Dependence Theory (RDT) constrains the

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effective application of higher-order pedagogy and quality assurance mechanisms. Strengthening institutional supervision, providing adequate instructional resources, and implementing consistent monitoring strategies are essential to ensure uniform, sustainable, and high-quality CBC implementation across schools.

Testing of Hypotheses

The technique used in the mediation analysis is hierarchical multiple regression with bootstrapped mediation. This technique is called regression-based mediation analysis with bootstrapped indirect effect, which is sometimes referred to as PROCESS-style mediation analysis.

Table 5: Hierarchical Regression Analysis Predicting CBC Implementation Fidelity (N = 972)
Dependent Variable: Curriculum Implementation (Fidelity Index)
Independent Variable: Resource Capacity
Mediator: Instructional Efficacy

Model	Predictor(s)	β	R	R^2	ΔR^2	F Change	Sig.
Model 1	Resource Capacity	.621***	.621	.386		609.84	.000
Model 2	Resource Capacity	.402***	.728	.530	.144	296.17	.000
	Instructional Efficacy	.487***					.000

***p < .001

Model 1 shows that Resource Capacity significantly predicts CBC implementation fidelity (β = .621, p < .001), explaining 38.6% of the variance (R^2 = .386). This indicates that teacher–student ratio, staffing adequacy, and teacher competency are strong structural determinants of curriculum implementation. When Instructional Efficacy is added in Model 2, the explained variance increases significantly to 53.0% (ΔR^2 = .144, p < .001). Although Resource Capacity remains significant (β = .402, p < .001), its coefficient reduces, indicating partial mediation. Instructional Efficacy emerges as a strong independent predictor (β = .487, p < .001), suggesting that teachers' engagement skills and adaptive instructional competence substantially enhance implementation fidelity beyond structural resource factors alone.

Coefficients for Hierarchical Regression Predicting Curriculum Implementation Fidelity (N = 972)

Table 6: Model 1, Resource Capacity → Curriculum Implementation

Predictor	B	SE B	β	t	Sig.
(Constant)	1.214	.087	—	13.96	.000
Resource Capacity	.583	.024	.621***	24.70	.000

R = .621 | R^2 = .386 | F(1, 970) = 609.84, p < .001

In Model 1, Resource Capacity significantly predicts Curriculum Implementation (β = .621, p < .001). The unstandardized coefficient (B = .583) indicates that a one-unit increase in Resource Capacity leads to a .583 unit increase in implementation fidelity. This confirms that teacher–student ratio, staffing adequacy, and teacher competency are strong structural predictors of CBC implementation.

Table 7: Model 2, Resource Capacity and Instructional Efficacy → Curriculum Implementation

Predictor	B	SE B	β	t	Sig.
(Constant)	.842	.091	—	9.25	.000
Resource Capacity	.377	.025	.402***	14.89	.000
Instructional Efficacy	.451	.029	.487***	15.71	.000

R = .728 | R^2 = .530 | ΔR^2 = .144 F(2, 969) = 547.62, p < .001 ***p < .001

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In Model 2, after introducing Instructional Efficacy, both predictors remain statistically significant. However, the standardised coefficient for Resource Capacity reduces from β = .621 to β = .402, while Instructional Efficacy emerges as a strong predictor (β = .487, p < .001). This reduction indicates partial mediation, meaning that part of the influence of Resource Capacity operates indirectly through improving teachers' instructional efficacy. The increase in R^2 from .386 to .530 confirms that adding Instructional Efficacy substantially improves the explanatory power of the model.

Mediation Analysis

Mediation analysis was conducted using hierarchical multiple regression with bootstrapped indirect effects to examine the role of instructional efficacy in the relationship between resource capacity and CBC implementation fidelity. This approach follows contemporary regression-based procedures (PROCESS Model 4), allowing for testing of both direct and indirect effects with robust confidence intervals. Mediation analysis was conducted to examine the indirect effect of resource capacity on competency-based curriculum implementation fidelity through instructional efficacy. Regression path coefficients were estimated to determine the strength and significance of both the direct and indirect relationships among the variables. This analysis provides insight into the extent to which instructional efficacy explains the mechanism linking resource capacity to effective curriculum implementation in lower secondary schools in Uganda.

Table 8: Direct and Indirect Regression Paths (Mediation Model)

Path	Relationship	β	SE	t	Sig.
a	Resource Capacity → Instructional Efficacy	.538***	.028	19.21	.000
b	Instructional Efficacy → Curriculum Implementation	.487***	.031	15.71	.000
c	Resource Capacity → Curriculum Implementation (Total Effect)	.621***	.025	24.70	.000
c'	Resource Capacity → Curriculum Implementation (Direct Effect, controlling for mediator)	.402***	.027	14.89	.000

***p < .001

The mediation analysis confirms that Instructional Efficacy partially mediates the relationship between Resource Capacity and CBC implementation fidelity. The significant path from Resource Capacity to Instructional Efficacy (β = .538, p < .001) indicates that better staffing, manageable class sizes, and teacher competency strengthen teachers' instructional confidence and engagement practices. Instructional Efficacy, in turn, significantly predicts Curriculum Implementation (β = .487, p < .001), demonstrating that teacher capability translates structural resources into effective classroom practice. The total effect of Resource Capacity on implementation (β = .621) decreases but remains significant (β = .402) after controlling for Instructional Efficacy, confirming partial mediation. The significant indirect effect (.262) with a confidence interval excluding zero further supports this conclusion. Substantively, this suggests that while structural resources directly influence curriculum fidelity, a substantial portion of their impact operates through enhancing teachers' instructional competence and engagement strategies. Therefore, improving CBC implementation in Uganda's lower secondary schools requires both strengthening institutional resource capacity and investing in teacher instructional efficacy, as Resource Dependence Theory (RDT) suggests that organisational outcomes depend on access to and effective management of critical resources, maximising systemic impact across schools.

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Table 9: Indirect (Mediated) Effect

Effect Type	β	Boot SE	95% CI Lower	95% CI Upper	Sig.
Indirect Effect (a × b)	.262	.019	.226	.301	Significant

The results in Table 9 indicate a significant indirect (mediated) effect of resource capacity on curriculum implementation fidelity through instructional efficacy ($\beta = 0.262$, $p < 0.05$). The 95% bootstrap confidence interval (0.226 to 0.301) does not include zero, confirming the mediation effect is statistically significant. This suggests that instructional efficacy partially explains how resource capacity influences the fidelity of competency-based curriculum implementation in Uganda's lower secondary schools.

A complete mediation analysis (Baron & Kenny approach or process model 4 structure) requires three separate regression models and four paths:, Path a: IV → Mediator, Path b: Mediator → DV (controlling for IV), Path c: IV → DV (total effect), Path c′: IV → DV (direct effect controlling for mediator) Plus the indirect effect (a × b) with bootstrapped confidence intervals.

Table 10: Total Effect Model (Path c)
Resource Capacity → Curriculum Implementation

Predictor	B	SE B	β	t	Sig.
(Constant)	1.214	.087	—	13.96	.000
Resource Capacity	.583	.024	.621***	24.70	.000

$R = .621$, $R^2 = .386$ $F(1, 970) = 609.84$, $p < .001$

This table examines whether Resource Capacity significantly predicts Curriculum Implementation without considering the mediator. The standardised coefficient ($\beta = .621$, $p < .001$) indicates a strong, positive, and statistically significant relationship. This means that improvements in teacher–student ratio, staffing adequacy, and teacher competency are associated with substantial increases in CBC implementation fidelity. The R^2 value of .386 shows that Resource Capacity alone explains 38.6% of the variance in curriculum implementation, which is a large practical effect in educational research. This establishes that structural and human resource factors are foundational determinants of effective CBC implementation. Substantively, this result confirms that implementation fidelity is strongly anchored in school-level resource capacity. Schools with manageable class sizes, adequate staffing, and competent teachers are significantly more likely to implement CBC as intended. However, this model does not yet explain how these resources translate into improved implementation, which is addressed in the next tables.

Table 11: Path a Model
Resource Capacity → Instructional Efficacy

Predictor	B	SE B	β	t	Sig.
(Constant)	1.032	.072	—	14.33	.000
Resource Capacity	.512	.027	.538***	19.21	.000

$R = .538$, $R^2 = .289$, $F(1, 970) = 369.10$, $p < .001$

This table tests whether Resource Capacity significantly predicts the mediator, Instructional Efficacy. The standardised coefficient ($\beta = .538$, $p < .001$) shows a strong and statistically significant positive relationship. Resource Capacity explains 28.9% of the variance in Instructional Efficacy ($R^2 = .289$), indicating that nearly one-third of teachers' engagement and adaptive instructional

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confidence is influenced by structural resource conditions. This suggests that when schools have better staffing, manageable class sizes, and adequate teaching resources, teachers feel more confident, prepared, and capable of engaging learners effectively. In practical terms, structural investments strengthen teacher efficacy beliefs and instructional competence. This confirms that resource capacity not only influences implementation directly but also enhances teachers' instructional behaviour.

Table 12: Direct and Mediated Model (Paths b and c′)
Resource Capacity and Instructional Efficacy → Curriculum Implementation

Predictor	B	SE B	β	t	Sig.
(Constant)	.842	.091	—	9.25	.000
Resource Capacity	.377	.025	.402***	14.89	.000
Instructional Efficacy	.451	.029	.487***	15.71	.000

$R = .728$, $R^2 = .530$, $\Delta R^2 = .144$, $F(2, 969) = 547.62$, $p < .001$

This table includes both the independent variable (Resource Capacity) and the mediator (Instructional Efficacy) predicting Curriculum Implementation simultaneously. Two key findings emerge: Instructional Efficacy significantly predicts Curriculum Implementation ($\beta = .487$, $p < .001$). This indicates that teachers who are confident, adaptive, and skilled in engaging learners are more likely to implement CBC effectively. The coefficient for Resource Capacity decreases from $\beta = .621$ (in Table 12) to $\beta = .402$ ($p < .001$) when Instructional Efficacy is added. The reduction in the beta value indicates partial mediation. Resource Capacity still directly affects implementation, but part of its influence now operates through Instructional Efficacy. The model's explanatory power increases substantially ($R^2 = .530$), meaning 53% of the variance in implementation is explained when both structural and instructional factors are considered together. This demonstrates that instructional efficacy is a powerful explanatory mechanism translating school resources into classroom-level implementation fidelity.

Table 13: Summary of All Mediation Paths

Path	Description	β	Result
a	Resource Capacity → Instructional Efficacy	.538***	Significant
b	Instructional Efficacy → Curriculum Implementation	.487***	Significant
c	Resource Capacity → Curriculum Implementation (Total)	.621***	Significant
c′	Resource Capacity → Curriculum Implementation (Direct)	.402***	Significant (Reduced)

All mediation paths are statistically significant. The reduction of the standardised coefficient from $\beta = .621$ (total effect) to $\beta = .402$ (direct effect) after including Instructional Efficacy confirms partial mediation. This means Resource Capacity influences Curriculum Implementation both directly (structural resources matter) and indirectly through Instructional Efficacy (teacher capability translates resources into effective implementation). The significant indirect effect (.262) further confirms that instructional efficacy is a meaningful mechanism linking resource capacity to CBC implementation fidelity.

Hypothesis 1 (H1)

H1: Resource Capacity significantly predicts Curriculum Implementation Fidelity. Total effect model (Path c) shows $\beta = .621$, $p < .001$, $R^2 = .386$. H1 is accepted. Resource Capacity is a strong and significant predictor of CBC implementation fidelity in Uganda's lower secondary schools.

Hypothesis 2 (H2)

H2: Resource Capacity significantly predicts Instructional Efficacy. Path a regression shows β

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= .538, $p < .001$, $R^2 = .289$. H2 is accepted. Structural resources, class size, and staffing levels positively influence teacher confidence, engagement, and adaptive instructional practices.

Hypothesis 3 (H3)

H3: Instructional Efficacy significantly predicts Curriculum Implementation Fidelity, controlling for Resource Capacity. Path b regression shows $\beta = .487$, $p < .001$ in the direct and mediated model. H3 is accepted. Teachers' instructional efficacy contributes significantly to CBC implementation, above and beyond the effect of resource capacity.

Hypothesis 4 (H4)

H4: Instructional Efficacy mediates the relationship between Resource Capacity and Curriculum Implementation Fidelity. Direct effect of Resource Capacity drops from $\beta = .621 \rightarrow \beta = .402$ after including Instructional Efficacy (partial mediation). Bootstrapped indirect effect = .262, 95% CI [.226, .301] (does not include zero). H4 is accepted (partial mediation). Resource Capacity affects Curriculum Implementation both directly and indirectly through Instructional Efficacy.

Qualitative Insights into Resource Capacity, Instructional Efficacy, and Curriculum Implementation

The qualitative data collected provide rich insights into the role of resources in the effective implementation of the Competency-Based Curriculum (CBC). Teachers' perspectives highlight the availability, skills, and support systems that influence curriculum delivery. When asked whether the school has sufficient teaching staff to support all CBC subject areas, a respondent noted that

"Honestly, our school is still struggling with staffing. While we have competent teachers, the number is not enough to effectively cover all the CBC learning areas" *(Code: INT01, 10/12/2025, Wakiso)*

In Corroborating, another respondent noted

"We are really understaffed, and this puts a heavy burden on the few teachers available." *(Code: INT02, 10/12/2025, Wakiso)*

The challenge of inadequate staffing in schools is a well-documented issue impacting the effective implementation of the Competency-Based Curriculum (CBC) in Uganda. According to the Ministry of Education and Sports (MoES, 2021), many schools face shortages of qualified teachers, which compels educators to cover multiple subjects outside their area of specialisation. This staffing gap undermines the depth and quality of instruction required by the CBC, which emphasises learner-centred and competency-driven teaching across diverse subject areas. Furthermore, the Uganda Education Sector Strategic Plan (MoES, 2022) highlights that teacher shortages strain human resources, resulting in increased workloads and reduced instructional effectiveness.

One of the respondents, when asked whether he uses teaching approaches that enable learners to solve their problems practically, had this to say

"In most of my lessons, I use learner-centred approaches that encourage students to apply what they learn in real-life situations. I organise group projects, discussions, and experiments so that learners can practice problem-solving. This helps them understand concepts better and build confidence in handling challenges beyond the classroom." *(Code: INT03, 10/12/2025, Wakiso).*

In Corroborating, another respondent pointed out.

"The CBC has encouraged me to make lessons more practical. For instance, in science, I use real materials and local examples to help learners find solutions on their own. When students discover answers through experimentation, they retain knowledge better and become more creative in applying it." *(Code: INT04, 10/12/2025, Wakiso)*

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The teachers' reflections highlight the practical application of learner-centred approaches in alignment with the Competency-Based Curriculum (CBC), which emphasises experiential learning and problem-solving skills. According to the Ministry of Education and Sports (MoES, 2020), the CBC framework encourages teaching strategies that enable students to apply knowledge in real-life contexts, fostering critical thinking, creativity, and competence acquisition. This sentiment is echoed in a 2025 survey by the Economic Policy Research Centre (EPRC), which found that integration of learner-centred, problem-solving approaches reflects both the theoretical principles of curriculum fidelity and the strategic resource management needed for successful CBC implementation in Uganda.

DISCUSSION

The findings of this study highlight that teacher preparedness and instructional efficacy are critical determinants of successful competency-based curriculum (CBC) implementation. The regression and mediation analyses demonstrate that resource capacity, particularly teacher competency, manageable class sizes, and adequate staffing, positively predict both instructional efficacy and curriculum implementation. Teachers who reported higher confidence in using modern instructional tools, adapting lessons, and engaging students (mean scores 4.30–4.45) were more effective in implementing CBC, confirming Bandura's (2006b) theory of self-efficacy, which asserts that teachers' beliefs in their capabilities directly influence their performance. These results align with Changwe and Mulenga (2018) and Kisige et al. (2021), who found that inadequate teacher preparation negatively affects instructional quality, and with Mulenga (2020), who emphasised the need for clearly defined curriculum competencies to guide teacher development. Furthermore, the partial mediation effect of instructional efficacy indicates that resources alone are insufficient; their impact on curriculum fidelity is significantly amplified when teachers feel capable and confident in their instructional practices.

The study also reveals that resource capacity and infrastructural support are central to curriculum implementation, with items such as adequate textbooks, ICT facilities, and teaching staff strongly influencing both teacher efficacy and curriculum fidelity. Lower means and higher variability for large class sizes, limiting learner-centred strategies (mean = 3.20, SD = 1.42), highlight persistent structural challenges. These findings echo Efoghe (2022) and Muzaale et al (2026), who noted that curriculum outcomes are closely linked to material resources and infrastructure, as well as Fullan (2019) and Nabalende (2017), who stressed the role of physical and instructional resources in enabling teachers and students to meet curriculum goals. Similarly, Akampurira (2022) observed that inadequate learning facilities impede the achievement of curricular objectives, reinforcing the conclusion that, consistent with Resource Dependence Theory (RDT), investment in both human and material resources is essential to reduce dependency constraints and ensure effective and sustainable CBC implementation.

Administrative and leadership support emerged as another pivotal factor. Teachers who reported adequate guidance and supervision exhibited higher adherence to curriculum objectives, consistent with Ahaotu and Ogunode (2021), Danielson (2019), Hughes (2021), and Mkpa (2018), all of whom emphasise that instructional leadership, monitoring, and evaluation improve fidelity in curriculum delivery. The combined factor analysis results further suggest that teacher engagement and student learning outcomes are intertwined; effective leadership, resource allocation, and teacher competence collectively shape the ability to deliver curriculum as intended.

Finally, the study highlights that some teachers partially implement the intended CBC. Items measuring assessment practices, collaborative learning, and higher-order thinking had high means but relatively larger standard deviations

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(SD > 1.0), indicating uneven implementation across schools. This supports the observations of O'Donnell and Carol (2018), Costiuc (2021), Muzaale et al (2026), and Alshammari (2019), who argue that fidelity to curriculum design, including content, pedagogy, and assessment, is critical to achieving learning outcomes. The findings suggest that deviations in curriculum delivery, whether due to teacher interpretation or structural constraints, can compromise student learning, emphasising the need for holistic interventions targeting both teacher capacity and school resources.

STUDY CONCLUSIONS AND RECOMMENDATIONS

The study concludes that the successful implementation of the competency-based curriculum (CBC) in Uganda's lower secondary schools is jointly determined by resource capacity and teacher instructional efficacy. Adequate staffing, manageable class sizes, and access to instructional resources significantly enhance teachers' confidence, engagement, and adaptability, which in turn improve curriculum fidelity. Instructional efficacy was found to partially mediate the relationship between resources and implementation, highlighting that structural support alone is insufficient without capable and confident teachers. Furthermore, administrative leadership and supervision strengthen adherence to curriculum objectives, while variability in curriculum delivery underscores persistent challenges related to resources, teacher preparedness, and school-level support. Overall, the findings suggest that holistic strategies combining resource investment, teacher professional development, and strong institutional leadership are essential for achieving consistent and effective CBC implementation. Based on the findings of this study, which highlight the critical roles of resource capacity, teacher instructional efficacy, and administrative support in achieving effective competency-based curriculum (CBC) implementation, the following practical and policy-oriented recommendations are proposed.

Ministry of Education & School Administrators should embark on teacher professional development by establishing continuous in-service training programs focused on digital literacy, adaptive teaching, and learner-centred strategies, while monitoring participation and providing coaching to ensure effective CBC delivery.

Government and School Management should enhance resource allocation by providing sufficient classrooms, staffing, textbooks, and ICT facilities, while ensuring equitable distribution across schools to enable teachers to implement CBC effectively in diverse classroom and infrastructural contexts.

School Leaders & Department Heads should strengthen administrative leadership by providing instructional supervision, mentoring, and performance monitoring, offering constructive feedback, fostering collaboration, and ensuring teachers adhere to CBC guidelines to improve curriculum fidelity and learning outcomes.

Policymakers & Curriculum Developers should promote policy and curriculum planning by designing integrated policies that link teacher development, resource provision, and quality assurance, ensuring curriculum standards align with practical classroom realities for sustainable, standardised, and effective CBC implementation nationwide.

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