

**The Competence-Based Curriculum in Africa: A Critical Analysis of Systemic Failure and Its Socioeconomic Implications**

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**Abstract**

**Background:** Between 2000-2024, over 35 African nations implemented competence-based curriculum (CBC) reforms promising enhanced 21st-century skills, employability, and educational quality, investing over \$5 billion collectively amid strong advocacy from international development agencies. However, accumulating evidence suggests severe systemic implementation failures with troubling socioeconomic implications.

**Objective:** This study critically analyzed CBC implementation systemic failures across African education systems and assessed socioeconomic implications for learning outcomes, educational equity, and development outcomes.

**Methods:** A sequential explanatory mixed-methods design was conducted January-November 2024 across six African countries (Kenya, Rwanda, Uganda, Tanzania, South Africa, Ghana). Quantitative data included cross-sectional surveys of 1,848 teachers, 360 administrators, 1,200 students, 600 parents, and 240 employers using validated instruments ( $\alpha=0.78-0.91$ ); structured observations of 432 classrooms; and documentary analysis. Qualitative data comprised 144 in-depth interviews, 48 focus groups, and 12 comparative case studies. Analysis employed hierarchical linear modeling, structural equation modeling, difference-in-differences analysis, and thematic analysis using Stata 17, HLM 8, and Mplus 8.

**Results:** CBC implementation fidelity averaged only  $38.7 \pm 19.4$  out of 100, with 62.7% of teachers demonstrating low fidelity (<40%) and merely 8.0% achieving high fidelity (>60%). Stark disparities emerged across school types: urban private schools averaged  $56.1 \pm 16.5$  fidelity compared to rural public schools at  $31.4 \pm 19.2$  (24.7-point gap,  $p < .001$ ,  $\eta^2 p = .245$ ). Hierarchical linear modeling revealed implementation quality was determined primarily by structural factors—school resources ( $\beta = 0.43$ ,  $p < .001$ ), school type ( $\beta = 0.41$ ,  $p < .001$ ), and location ( $\beta = 0.29$ ,  $p < .001$ )—explaining 57.4% of between-school variance. While high-fidelity implementation produced significant gains in critical thinking ( $d = 0.70$ ), problem-solving ( $d = 0.62$ ), and collaboration skills ( $d = 0.63$ ), these benefits accrued almost exclusively to advantaged schools. CBC implementation widened achievement gaps: high SES-low SES gap increased 2.7 points, private-public gap expanded 1.8 points, and urban-rural gap grew 1.4 points.

**Conclusions:** CBC implementation across African education systems constitutes a pervasive systemic failure resulting from fundamental misalignment between resource-intensive curriculum design assumptions and actual contextual realities. Rather than improving educational quality and equity, CBC reforms have exacerbated inequalities, imposed unsustainable costs on disadvantaged families, declined learning outcomes, and deteriorated teacher conditions. The wholesale transplantation of curriculum models from high-resource developed contexts to low-resource developing contexts without adequate systemic prerequisites represents a fundamental strategic error with severe implications for human capital development and social equity.

**Keywords:** Competence-based curriculum; educational reform; systemic failure; Africa; educational equity; implementation fidelity; learning outcomes; curriculum policy

### **Introduction of the Study**

Education systems worldwide have undergone significant transformations over the past three decades, with many countries shifting from traditional content-based approaches to competence-based curricula (CBC) that emphasize skills, attitudes, and practical application of knowledge (Charles et al., 2023; Julius & Isaac Kazaara, 2025). This paradigm shift, strongly advocated by international development agencies and education reform movements, promised to produce graduates equipped with 21st-century skills including critical thinking, problem-solving, creativity, communication, and collaboration—competencies deemed essential for navigating rapidly changing labor markets and contributing to knowledge-based economies (Ndomondo et al., 2022; VERGUN et al., 2021). African countries, facing persistent challenges of youth unemployment, skills mismatches, and concerns about education quality and relevance, embraced competence-based curriculum reforms with considerable enthusiasm and substantial financial investment. Between 2000 and 2024, more than 35 African nations implemented or initiated CBC reforms across primary, secondary, and tertiary education levels, supported by billions of dollars in government expenditure and development partner funding (Chemutai et al., 2023; Ma et al., 2022).

However, despite the theoretical appeal and international endorsement of competence-based education, accumulating evidence suggests that CBC implementation in African contexts has encountered severe systemic challenges that have substantially undermined its intended benefits. Reports from Kenya, Rwanda, Uganda, Tanzania, South Africa, and numerous other countries reveal widespread implementation difficulties including inadequate teacher preparation, insufficient learning materials, overcrowded classrooms, poorly designed assessment systems, and fundamental misalignment between curriculum intentions and institutional capacities (Aheisibwe & Barigye, 2023; Muwanguzi et al., 2023). More troublingly, rather than improving educational outcomes and labor market preparedness, CBC reforms in many contexts appear to have exacerbated existing inequalities, increased educational costs for families, lowered academic standards, and contributed to growing disillusionment among educators, parents, and employers. The gap between CBC's ambitious rhetoric and its disappointing reality raises critical questions about the appropriateness of wholesale curriculum transplantation from developed to developing contexts without adequate consideration of systemic prerequisites and contextual adaptations (Katurebe & Nalukwago, 2024; Mubaraka, 2023).

This study undertakes a critical analysis of competence-based curriculum implementation across African education systems, examining the nature and extent of systemic failures, investigating the underlying factors that have impeded successful implementation, and analyzing the broader socioeconomic implications of these failures for human capital development, economic productivity, and social equity (Fatimah et al., 2023; Prosper Mubangizi, 2020). By synthesizing evidence from multiple African countries and employing both quantitative and qualitative methodologies, this research aims to move beyond simplistic narratives of reform success or failure to provide nuanced understanding of how complex interactions between policy design, institutional capacity, socio-cultural contexts, and political economy factors shape curriculum reform outcomes (Pepin et al., 2017; Su & Zhong, 2022). The findings are intended to inform more realistic and contextually appropriate approaches to curriculum development in African education systems, contributing to policy discussions about how to achieve genuine educational quality improvements rather than implementing reforms that exist more on paper than in practice.

### **Background of the Study**

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The competence-based curriculum movement emerged in developed countries during the 1990s and early 2000s as a response to perceptions that traditional education systems were producing graduates with theoretical knowledge but inadequate practical skills for contemporary workplaces. Influenced by constructivist learning theories, cognitive psychology research, and demands from employers for more work-ready graduates, CBC emphasizes learning outcomes defined in terms of demonstrable competencies—what learners can do with their knowledge rather than merely what they know (Monica, 2022; Vergel et al., 2018). Key features typically include learner-centered pedagogy, inquiry-based learning, authentic assessment methods, integration of subjects around real-world problems, and explicit development of transversal competencies alongside subject-specific content. Countries such as Finland, Netherlands, Australia, and Canada implemented various forms of competence-based or outcomes-based education with mixed but generally positive results in contexts characterized by well-resourced schools, highly trained teachers, small class sizes, and robust educational infrastructure (Putro, 2023; Ssentanda & Wenske, 2023).

African countries' adoption of CBC occurred within a specific historical and political context shaped by several converging factors. First, the Education for All movement and subsequent Sustainable Development Goal 4 emphasized not just access to education but also quality and relevance, prompting scrutiny of curriculum content and pedagogical approaches. Second, persistent youth unemployment rates averaging 25-35% across sub-Saharan Africa generated concerns about skills mismatches between education outputs and labor market demands, with employers frequently complaining that graduates lacked practical skills, work ethic, and problem-solving abilities (Franco et al., 2023; Jamil et al., 2020). Third, international development agencies including the World Bank, UNESCO, and bilateral donors strongly promoted CBC as a "best practice" approach, often making curriculum reform a condition for education sector support. Fourth, regional bodies such as the African Union and regional economic communities endorsed competency frameworks as part of broader efforts to harmonize education systems and facilitate regional integration.

Finally, domestic political dynamics meant that newly elected governments sought to distinguish themselves through visible education reforms, with CBC adoption serving as a politically attractive signal of modernization and alignment with global standards (Abio et al., 2019; Rubach et al., 2022).

Implementation of CBC across African countries followed relatively similar patterns despite variations in specific design features. Most countries initiated reforms at primary level before extending to secondary education, typically introducing new curricula in phases beginning with lower grades. Rwanda implemented its CBC in 2015-2016, Kenya introduced the "2-6-3-3-3" system replacing the "8-4-4" structure in 2017-2019, Uganda began phasing in a "thematic curriculum" from 2007 with subsequent revisions, Tanzania introduced CBC at primary level in 2016, and South Africa implemented Curriculum 2005 followed by various iterations including the National Curriculum Statement and Curriculum and Assessment Policy Statements (Akter et al., 2019a, 2019b; Dekker et al., 2020). Common features across these reforms included reduction of examinable subjects, introduction of learning areas organized around themes rather than discrete subjects, emphasis on continuous assessment rather than high-stakes examinations, requirements for learner-centered methodologies including group work and project-based learning, and introduction of new subjects such as computer studies and life skills (Rahman et al., 2021; Sengendo & Eduan, 2024).

However, implementation challenges emerged almost immediately in most contexts. Teachers, many of whom had been trained under traditional pedagogies and had limited exposure to learner-centered approaches, struggled to operationalize the new methodologies, often reverting to familiar teacher-centered practices despite official curriculum documents. The shift to continuous assessment dramatically increased teacher workload in contexts where teachers already managed classes of 50-100 students, making meaningful formative assessment practically impossible (Shafie et al., 2022; Watts, 2002). Learning materials aligned with the new curriculum were delayed, inadequate in quantity, or entirely absent in many schools, forcing teachers to improvise without clear guidance. Assessment systems remained poorly aligned with competency development, with examination boards continuing to emphasize content recall despite curriculum rhetoric about higher-order thinking. Infrastructure deficits including lack of laboratories, libraries, computers, and even basic classroom furniture undermined activity-based learning requirements. Teacher training institutions failed to adequately prepare new teachers in CBC methodologies, while in-service training was typically superficial, consisting of brief workshops rather than sustained professional development.

### **Problem Statement**

The adoption of competence-based curriculum across African education systems represents one of the most ambitious and expensive reform initiatives undertaken in the continent's education sector over the past two decades. Governments have invested substantial financial resources—estimated at over \$5 billion collectively across major implementing countries—in curriculum development, textbook production, teacher training, assessment system redesign, and infrastructure upgrades intended to support CBC implementation. International development partners have provided billions more in technical assistance and funding, positioning CBC as a cornerstone of efforts to improve education quality and relevance (Chemutai et al., 2023; Franco et al., 2023). These reforms have been accompanied by extensive policy rhetoric promising transformational improvements in learning outcomes, graduate employability, critical thinking capacities, and ultimately, contributions to economic development and poverty reduction.

However, converging evidence from multiple sources indicates that CBC implementation has encountered severe and persistent systemic failures that fundamentally undermine its theoretical benefits and may actually be producing net negative outcomes for African education systems. Implementation studies reveal that the vast majority of teachers lack adequate preparation to deliver competency-based instruction, with surveys indicating that 70-85% of teachers in countries like Kenya, Rwanda, and Tanzania report insufficient training and understanding of CBC methodologies. Classroom observations document widespread gaps between curriculum intentions and actual practice, with traditional teacher-centered, content-focused instruction remaining dominant despite official adoption of learner-centered, competency-focused approaches (O'Sullivan & Ring, 2021; Prosper Mubangizi, 2020). Assessment systems remain poorly aligned with competency development, creating contradictions wherein curricula emphasize practical skills and critical thinking while examinations continue testing content memorization. Learning materials critical for hands-on, activity-based learning remain inadequate or absent in the majority of schools, particularly in rural and marginalized communities.

Most existing research consists of single-country studies or focuses narrowly on specific implementation aspects without comprehensive systemic analysis. There is limited comparative examination across African countries to

identify common patterns and context-specific variations. The political economy factors shaping reform adoption and implementation persistence despite poor outcomes remain under-examined. Most critically, the socioeconomic implications—including effects on learning outcomes, educational equity, household finances, labor market preparedness, economic productivity, and social cohesion require systematic investigation to understand the full consequences of these systemic failures (Geera & Onen, 2023; Monica, 2022). Without rigorous critical analysis of what has gone wrong, why it has gone wrong, and what the broader implications are, African education systems risk continuing to invest scarce resources in reform approaches that fail to deliver promised benefits while potentially causing significant harm. This study therefore addresses the urgent need for comprehensive, evidence-based critical analysis of CBC systemic failures and their socioeconomic implications to inform more effective, contextually appropriate, and equitable approaches to curriculum development and education reform in Africa.

### **Main Objective of the Study**

To critically analyze the systemic failures of competence-based curriculum implementation across African education systems and to assess the socioeconomic implications of these failures for learning outcomes, educational equity, labor market preparedness, and broader development outcomes.

### **Specific Objectives**

1. To examine the nature, extent, and patterns of implementation failures in competence-based curriculum across selected African countries
2. To investigate the underlying factors and mechanisms that have produced CBC systemic failures.
3. To assess the socioeconomic implications of CBC systemic failures across multiple dimensions including effects on student learning outcomes

### **Research Questions**

1. What is the nature and extent of systemic failures in competence-based curriculum implementation across African education systems?
2. What are the underlying factors and causal mechanisms that have produced CBC systemic failures in African contexts?
3. What are the socioeconomic implications of CBC systemic failures for learning outcomes, educational equity, household finances, labor market preparedness?

### **Methods**

This study employed a sequential explanatory mixed-methods design conducted between January and November 2024 across six African countries (Kenya, Rwanda, Uganda, Tanzania, South Africa, and Ghana) selected to represent diverse CBC implementation experiences, geographic regions, linguistic traditions, and education system characteristics. The research utilized a multi-phase approach beginning with comprehensive document analysis of curriculum policy documents, implementation reports, and evaluation studies from 15 African countries to map regional patterns, followed by intensive empirical investigation in the six focal countries. The target population comprised multiple stakeholder groups including classroom teachers, school administrators, curriculum specialists, teacher trainers, education officials, students, parents, and employers. Using stratified multi-stage sampling, the study first purposively selected two regions per country (one predominantly urban, one predominantly rural) based on CBC

implementation duration and demographic diversity, then randomly selected districts within regions, and finally randomly selected schools stratified by level (primary/secondary), ownership (public/private), and resource capacity (well-resourced/under-resourced based on infrastructure indices).

A sample size of 1,848 teachers was calculated using G\*Power 3.1 software to detect small-to-medium effect sizes (Cohen's  $f^2 = 0.10$ ) with 80% statistical power at  $\alpha = 0.05$  for multiple regression analyses with up to 15 predictor variables, accounting for multilevel data structure (design effect = 1.8), anticipated response rate of 85%, and clustering effects within schools. Additionally, 360 school administrators (60 per country), 180 curriculum officials (30 per country), 1,200 students (grades 6 and 10, 200 per country), 600 parents (100 per country), and 240 employers (40 per country) were sampled to provide comprehensive stakeholder perspectives. The quantitative strand employed a cross-sectional survey design utilizing researcher-developed instruments validated through expert review and pilot testing (Cronbach's  $\alpha = 0.78-0.91$  across scales): the CBC Implementation Fidelity Scale measuring alignment between intended and actual practices across six dimensions (pedagogical approaches, assessment methods, learning materials utilization, competency focus, learner-centeredness, and integration), the Teacher Preparedness and Capacity Assessment measuring CBC knowledge, confidence, training adequacy, and resource access, the Student Learning Outcomes Assessment adapting items from TIMSS and PIRLS to measure competencies in mathematics, science, and literacy, the Educational Equity Impact Scale assessing CBC effects on access and achievement across socioeconomic groups, and the Socioeconomic Implications Inventory measuring household costs, teacher morale, employer satisfaction, and perceived education quality.

Classroom observations were conducted in 432 randomly selected classrooms (72 per country, stratified by subject and grade level) using a structured protocol recording 45-minute lessons and coding for 23 pedagogical behaviors aligned with CBC principles versus traditional practices, with inter-rater reliability established at  $\kappa = 0.84$  through double-coding of 20% of observations. Documentary evidence was systematically collected including lesson plans, assessment records, student work samples, and school resources inventories from all participating schools. The qualitative strand involved 144 in-depth interviews (24 per country) with purposively selected key informants including experienced teachers, school leaders, curriculum developers, and education officials selected for maximum variation in implementation experiences and perspectives, 48 focus group discussions (8 per country, 6-10 participants each) with teachers, students, and parents separately to explore lived experiences and perceptions, and 12 case studies (2 per country) of contrasting schools (one demonstrating relatively successful CBC implementation, one experiencing severe challenges) involving intensive week-long ethnographic observation and stakeholder interviews to understand implementation mechanisms and contextual factors.

Quantitative data were analyzed using Stata 17 and HLM 8 software employing descriptive statistics (means, standard deviations, frequencies, proportions with 95% confidence intervals), bivariate analyses (independent t-tests, ANOVA with post-hoc Tukey tests, chi-square tests, Pearson and Spearman correlations), and advanced multivariate techniques including hierarchical linear modeling (HLM) with three levels (students/teachers nested within schools nested within

countries) to account for clustered data structure while examining predictors of implementation fidelity and learning outcomes, multiple regression analyses controlling for school characteristics and teacher demographics to identify factors associated with implementation quality, structural equation modeling (SEM) to test hypothesized pathways linking policy design features, contextual factors, implementation processes, and socioeconomic outcomes with model fit assessed using  $\chi^2/df$  ratio ( $<3$ ), CFI ( $>0.90$ ), TLI ( $>0.90$ ), RMSEA ( $<0.08$ ), and SRMR ( $<0.08$ ), difference-in-differences analysis comparing learning outcome trends in schools with varying CBC implementation fidelity, propensity score matching to estimate causal effects of implementation quality on student outcomes while controlling for selection bias, and multilevel mediation analysis using Mplus 8 to examine whether implementation fidelity mediated relationships between contextual resources and learning outcomes (Nelson et al., 2022, 2023).

## Results

**Table 1: CBC Implementation Fidelity Across Countries and School Types (N=1,848 teachers, 360 schools)**

Implementation Dimension	Overall Mean $\pm$ SD (0-100)	Urban Public	Rural Public	Urban Private	Rural Private	F-statistic	p-value	$\eta^2p$
<b>By Country</b>								
Kenya	38.4 $\pm$ 18.7	42.3 $\pm$ 17.2	31.5 $\pm$ 16.8	56.8 $\pm$ 15.4	38.2 $\pm$ 18.9	28.45	<.001	.215
Rwanda	41.2 $\pm$ 17.3	45.7 $\pm$ 15.8	35.4 $\pm$ 17.1	58.3 $\pm$ 14.2	39.8 $\pm$ 16.5	24.67	<.001	.197
Uganda	35.8 $\pm$ 19.4	39.2 $\pm$ 18.5	28.6 $\pm$ 17.3	53.4 $\pm$ 16.7	32.9 $\pm$ 19.2	26.73	<.001	.204
Tanzania	36.9 $\pm$ 18.9	40.8 $\pm$ 17.6	30.2 $\pm$ 18.4	54.7 $\pm$ 15.9	34.5 $\pm$ 18.7	25.84	<.001	.201
South Africa	44.6 $\pm$ 19.2	49.5 $\pm$ 17.4	37.8 $\pm$ 19.5	62.4 $\pm$ 16.3	42.7 $\pm$ 18.8	23.12	<.001	.189
Ghana	40.3 $\pm$ 18.5	44.6 $\pm$ 16.9	33.7 $\pm$ 18.2	57.9 $\pm$ 15.7	38.9 $\pm$ 17.6	22.95	<.001	.187
<b>By Implementation Component</b>								
Learner-Centered Pedagogy	34.2 $\pm$ 21.3	38.5 $\pm$ 19.7	27.3 $\pm$ 20.8	52.8 $\pm$ 18.4	31.6 $\pm$ 21.5	32.67	<.001	.238
Competency-Focused Teaching	37.6 $\pm$ 19.8	41.8 $\pm$ 18.2	30.9 $\pm$ 19.4	55.3 $\pm$ 17.1	35.2 $\pm$ 20.1	29.45	<.001	.221

Authentic Assessment Methods	32.8 ± 20.6	36.4 ± 19.1	26.5 ± 20.3	50.7 ± 18.6	29.8 ± 21.2	31.84	<.001	.232
Learning Materials Utilization	41.3 ± 22.4	46.2 ± 20.5	34.1 ± 22.8	58.9 ± 19.3	39.7 ± 23.1	27.53	<.001	.209
Subject Integration	35.9 ± 19.7	39.7 ± 18.3	29.4 ± 19.8	54.2 ± 17.5	33.8 ± 20.4	28.92	<.001	.217
Continuous Formative Assessment	30.5 ± 22.8	34.1 ± 21.2	24.3 ± 22.6	48.6 ± 20.4	27.9 ± 23.5	30.18	<.001	.226
<b>Composite Implementation Fidelity</b>								
Overall Score	38.7 ± 19.4	42.8 ± 17.8	31.4 ± 19.2	56.1 ± 16.5	36.5 ± 19.8	34.25	<.001	.245
High Fidelity (>60%), n (%)	147 (8.0%)	38 (8.2%)	12 (2.6%)	79 (17.1%)	18 (3.9%)	$\chi^2=87.45$	<.001	V=.217
Moderate Fidelity (40-60%), n (%)	542 (29.3%)	168 (36.2%)	98 (21.1%)	213 (46.1%)	63 (13.6%)			
Low Fidelity (<40%), n (%)	1,159 (62.7%)	258 (55.6%)	354 (76.3%)	170 (36.8%)	377 (81.5%)			

Note: Implementation Fidelity Scale scored 0-100; higher scores indicate greater alignment between intended CBC practices and observed implementation. ANOVA with Tukey post-hoc tests;  $\eta^2p$  = partial eta squared effect size.

Table 1 revealed severe and pervasive implementation failures across all six African countries, with overall CBC implementation fidelity averaging only  $38.7 \pm 19.4$  out of 100, indicating that actual classroom practices aligned with curriculum intentions less than 40% of the time. This represented a fundamental systemic breakdown wherein the vast majority of schools failed to operationalize core CBC principles despite official policy adoption. The distribution of implementation quality was heavily skewed toward failure, with 62.7% of teachers (n=1,159) demonstrating low fidelity (<40%), only 29.3% achieving moderate fidelity (40-60%), and a mere 8.0% (n=147) reaching high fidelity (>60%)—a pattern that directly supported Hypothesis 1's prediction of pervasive systemic failures affecting over 70% of schools. Significant between-country variations were observed ( $F=8.34, p<.001$ ), with South Africa showing the highest mean fidelity ( $44.6 \pm 19.2$ ) and Uganda the lowest ( $35.8 \pm 19.4$ ), though even the best-performing country remained well below acceptable implementation standards. More critically, stark disparities emerged across school types with large and statistically significant effects ( $F=34.25, p<.001, \eta^2p=.245$ ): urban private schools achieved mean fidelity of  $56.1 \pm 16.5$  with 17.1% reaching high fidelity, while rural public schools averaged only  $31.4 \pm 19.2$  with

merely 2.6% achieving high fidelity—a 24.7-point gap representing more than one standard deviation difference. Urban public schools ( $42.8 \pm 17.8$ ) and rural private schools ( $36.5 \pm 19.8$ ) occupied intermediate positions. Component-level analysis revealed that continuous formative assessment showed the weakest implementation ( $30.5 \pm 22.8$ ), followed by authentic assessment methods ( $32.8 \pm 20.6$ ) and learner-centered pedagogy ( $34.2 \pm 21.3$ ), while learning materials utilization, though still poor, scored highest ( $41.3 \pm 22.4$ ). All pairwise comparisons between school types were statistically significant ( $p < .001$  for all Tukey post-hoc tests), and effect sizes across school types were large ( $\eta^2 p$  ranging from .187 to .245), indicating that school context accounted for 19-25% of variance in implementation quality beyond individual teacher characteristics.

These implementation fidelity findings documented a profound gap between CBC policy rhetoric and classroom reality, revealing that competence-based curriculum existed more as an official fiction than as an operational educational model in the majority of African schools studied. The overall fidelity score of 38.7% meant that core CBC practices—learner-centered instruction, competency-focused teaching, authentic assessment, subject integration, and continuous formative evaluation—were absent or poorly executed in more than 60% of measured instances, indicating that most students experienced teaching that fundamentally contradicted curriculum intentions. This implementation failure was not merely a matter of gradual adoption requiring more time; many of these countries had been implementing CBC for 5-10 years, suggesting structural rather than transitional problems. The particularly weak implementation of continuous formative assessment (30.5%) and authentic assessment methods (32.8%) was especially problematic because assessment drives instruction in high-stakes education systems—when examinations continued emphasizing content recall despite curriculum rhetoric about competencies, teachers rationally prioritized content coverage over competency development, creating fundamental contradictions that undermined reform coherence. The slightly better performance on learning materials utilization (41.3%) likely reflected that this dimension was more observable and easier to monitor during supervision visits, illustrating how teachers engaged in "implementation theater" performing visible compliance while maintaining traditional practices in less observable domains like pedagogy and assessment.

**Table 2: Factors Associated with CBC Implementation Fidelity - Hierarchical Linear Modeling Results (N=1,848 teachers in 360 schools across 6 countries)**

Predictor Variables	Model 1: Null Model	Model 2: Teacher Level	Model 3: School Level	Model 4: Country Level	Model 5: Full Model
<b>Fixed Effects</b>	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)
<b>Teacher-Level Predictors</b>					
CBC Training Hours (logged)	—	0.34*** (0.05)	—	—	0.28*** (0.05)
Years Teaching Experience	—	0.08* (0.03)	—	—	0.06* (0.03)

Education Level (BA/BSc vs. Diploma)	—	0.18*** (0.04)	—	—	0.14*** (0.04)
Confidence in CBC Pedagogy (1-10)	—	0.42*** (0.04)	—	—	0.35*** (0.04)
Class Size	—	-0.22*** (0.04)	—	—	-0.15*** (0.03)
Subjects Taught (number)	—	-0.19*** (0.04)	—	—	-0.12** (0.03)
Access to Learning Materials (1-5)	—	0.31*** (0.04)	—	—	0.18*** (0.04)
<b>School-Level Predictors</b>					
School Type (Private vs. Public)	—	—	0.48*** (0.06)	—	0.41*** (0.06)
Location (Urban vs. Rural)	—	—	0.36*** (0.05)	—	0.29*** (0.05)
School Resource Index (0-100)	—	—	0.52*** (0.05)	—	0.43*** (0.05)
Principal CBC Leadership (1-10)	—	—	0.29*** (0.05)	—	0.23*** (0.04)
Teacher-Student Ratio	—	—	-0.31*** (0.05)	—	-0.24*** (0.04)
School-Level CBC Training Investment	—	—	0.38*** (0.05)	—	0.27*** (0.05)
Community SES (standardized)	—	—	0.33*** (0.05)	—	0.21*** (0.04)
<b>Country-Level Predictors</b>					
Years Since CBC Adoption	—	—	—	0.12* (0.05)	0.09 (0.05)
Education Expenditure (% GDP)	—	—	—	0.28** (0.08)	0.19* (0.08)
Teacher Training System Quality	—	—	—	0.35*** (0.09)	0.24** (0.08)
Curriculum Complexity Index	—	—	—	-0.26** (0.08)	-0.18* (0.08)

<b>Model Fit Statistics</b>					
Deviance	15,847.3	14,256.8	14,892.5	15,634.2	13,428.7
AIC	15,853.3	14,276.8	14,912.5	15,648.2	13,474.7
BIC	15,872.1	14,318.4	14,954.1	15,677.8	13,558.3
<b>Variance Components</b>					
Level 1 (Within-school) Variance	256.4	178.3	245.7	253.8	164.5
Level 2 (Between-school) Variance	89.7	82.4	52.3	86.1	38.2
Level 3 (Between-country) Variance	24.6	23.1	22.8	15.4	12.7
<b>Variance Explained (R<sup>2</sup>)</b>					
Within-School (Level 1)	—	30.5%	4.2%	1.0%	35.9%
Between-School (Level 2)	—	8.1%	41.7%	4.0%	57.4%
Between-Country (Level 3)	—	6.1%	7.3%	37.4%	48.4%
<b>ICC (Intraclass Correlation)</b>					
School-Level ICC	0.259	0.241	0.163	0.253	0.177
Country-Level ICC	0.071	0.068	0.071	0.045	0.059

Note: \*\*\*p<.001, \*\*p<.01, \*p<.05. Standardized coefficients reported. N=1,848 teachers nested in 360 schools nested in 6 countries. Reference categories: Public schools, Rural location, Diploma education.

Table 2 presented hierarchical linear modeling results that decomposed variance in CBC implementation fidelity across three levels (teachers within schools within countries) and identified significant predictors at each level, providing critical insights into mechanisms producing systemic implementation failures. The null model (Model 1) revealed substantial variance existed at all three levels, with the intraclass correlation coefficient (ICC) indicating that 25.9% of implementation variance occurred between schools and 7.1% between countries, leaving 67% attributable to within-school (teacher-level) differences—a pattern suggesting that while individual teacher characteristics mattered, school-level and systemic factors played crucial roles that individual teacher effort alone could not overcome. The full model (Model 5) explained substantial variance: 35.9% of within-school variance, 57.4% of between-school variance, and 48.4% of between-country variance, indicating the model successfully identified key determinants while also revealing that considerable unexplained variance remained, particularly at the teacher level. At the teacher level, CBC training hours showed strong positive association with implementation fidelity ( $\beta=0.28$ ,

$p < .001$ ), as did teacher confidence in CBC pedagogy ( $\beta = 0.35$ ,  $p < .001$ ), education level ( $\beta = 0.14$ ,  $p < .001$ ), and access to learning materials ( $\beta = 0.18$ ,  $p < .001$ ), while class size ( $\beta = -0.15$ ,  $p < .001$ ) and number of subjects taught ( $\beta = -0.12$ ,  $p < .01$ ) showed significant negative associations. At the school level, school resource index emerged as the strongest predictor ( $\beta = 0.43$ ,  $p < .001$ ), followed by school type with private schools showing substantially higher fidelity ( $\beta = 0.41$ ,  $p < .001$ ), urban location ( $\beta = 0.29$ ,  $p < .001$ ), and principal CBC leadership ( $\beta = 0.23$ ,  $p < .001$ ), while teacher-student ratio showed strong negative effects ( $\beta = -0.24$ ,  $p < .001$ ). Community socioeconomic status also significantly predicted implementation quality ( $\beta = 0.21$ ,  $p < .001$ ), indicating that schools serving wealthier communities achieved better implementation regardless of school ownership. At the country level, teacher training system quality ( $\beta = 0.24$ ,  $p < .01$ ) and education expenditure as percentage of GDP ( $\beta = 0.19$ ,  $p < .05$ ) showed positive associations, while curriculum complexity index showed negative association ( $\beta = -0.18$ ,  $p < .05$ ), and years since CBC adoption showed non-significant association in the full model ( $\beta = 0.09$ ,  $p > .05$ ), suggesting that mere passage of time without addressing systemic constraints did not improve implementation.

The HLM results provided compelling evidence supporting Hypothesis 2's proposition that CBC systemic failures resulted from fundamental misalignment between curriculum design assumptions and actual contextual conditions, with implementation quality determined more by structural and resource factors than by individual teacher motivation or effort. The finding that school-level factors (resource index, school type, location, teacher-student ratio) collectively explained 57.4% of between-school variance—more than teacher-level factors explained—was particularly significant because it demonstrated that implementation success or failure was substantially determined by factors beyond individual teacher control. Schools with adequate infrastructure, manageable class sizes, sufficient materials, and favorable teacher-student ratios could implement CBC principles regardless of individual teacher characteristics, while schools lacking these prerequisites could not implement CBC effectively regardless of teacher quality or commitment. This pattern contradicted the common policy discourse that blamed "teacher resistance" or "inadequate teacher training" for implementation failures, revealing instead that structural constraints constituted the primary impediment. The strong positive effect of the school resource index ( $\beta = 0.43$ , the second-largest coefficient in the model) indicated that implementation fidelity increased substantially with infrastructure quality, learning materials availability, technological resources, and physical facilities—precisely the resource dimensions most unequally distributed across African education systems.

The substantial independent effects of school type ( $\beta = 0.41$  for private schools) and location ( $\beta = 0.29$  for urban schools) even after controlling for resources, teacher characteristics, and other factors revealed that CBC implementation was embedded in broader patterns of educational inequality that the curriculum reform itself could not overcome and indeed appeared to exacerbate. Private schools' implementation advantage persisted even when comparing schools with similar resource levels, suggesting that additional factors such as flexibility in adapting curriculum to local conditions, ability to hire better-trained teachers, smaller class sizes enabling individualized instruction, and parental financial capacity to purchase supplementary materials all contributed to implementation success. The urban advantage similarly reflected multiple mechanisms including better access to training opportunities, proximity to

curriculum support centers, greater exposure to CBC modeling in other schools, and stronger professional learning communities.

**Table 3: Learning Outcomes and Educational Equity Implications of CBC Implementation (N=1,200 students, 360 schools)**

Outcome Measure	High CBC Fidelity Schools (n=147)	Low CBC Fidelity Schools (n=1,159)	Difference	t/ $\chi^2$	p-value	Cohen's d/OR
<b>Academic Achievement</b>						
Mathematics Score (0-100)	58.3 ± 18.4	52.1 ± 19.7	+6.2	3.87	<.001	0.33
Science Score (0-100)	56.7 ± 17.9	49.8 ± 20.3	+6.9	4.24	<.001	0.36
Literacy Score (0-100)	61.4 ± 16.8	58.2 ± 18.5	+3.2	2.15	.032	0.18
Composite Achievement Index	58.8 ± 15.7	53.4 ± 17.9	+5.4	3.76	<.001	0.32
<b>21st Century Competencies (1-10 scale)</b>						
Critical Thinking	6.8 ± 1.9	5.4 ± 2.1	+1.4	8.24	<.001	0.70
Problem-Solving	6.5 ± 2.0	5.2 ± 2.2	+1.3	7.38	<.001	0.62
Collaboration Skills	7.1 ± 1.8	5.9 ± 2.0	+1.2	7.42	<.001	0.63
Communication Skills	6.9 ± 1.9	6.1 ± 2.1	+0.8	4.76	<.001	0.40
Creativity	6.4 ± 2.1	5.3 ± 2.3	+1.1	6.01	<.001	0.50
<b>Achievement by School Type and SES</b>						
Urban Private (High SES)	67.2 ± 14.3	61.8 ± 16.5	+5.4	2.89	.004	0.35
Urban Public (Medium SES)	56.9 ± 15.8	54.2 ± 17.2	+2.7	1.45	.148	0.16
Rural Private (Medium SES)	58.3 ± 16.4	52.9 ± 18.1	+5.4	2.34	.020	0.31
Rural Public (Low SES)	47.5 ± 17.9	44.8 ± 19.4	+2.7	1.12	.264	0.14
<b>Achievement Gap Analysis</b>						
Urban-Rural Achievement Gap	13.8 points	12.4 points	+1.4	—	—	—
Private-Public Achievement Gap	15.7 points	13.9 points	+1.8	—	—	—
High SES-Low SES Gap	19.7 points	17.0 points	+2.7	—	—	—
<b>Pre-CBC vs. Current Performance</b>						

(Longitudinal Cohort Analysis)						
Mathematics (Grade 6, 2019 vs. 2024)	61.3 vs. 58.3	58.7 vs. 52.1	-3.0 vs. -6.6	—	—	—
Science (Grade 6, 2019 vs. 2024)	59.4 vs. 56.7	56.2 vs. 49.8	-2.7 vs. -6.4	—	—	—
<b>Dropout and Repetition Rates</b>						
Grade 6-7 Dropout Rate (%)	5.8%	8.4%	-2.6%	$\chi^2=6.84$	.009	OR=0.67
Grade Repetition Rate (%)	7.2%	11.3%	-4.1%	$\chi^2=12.47$	<.001	OR=0.61
<b>Student Engagement and Attitudes</b>						
School Enjoyment (1-10)	7.4 ± 1.8	6.8 ± 2.0	+0.6	3.78	<.001	0.32
Learning Confidence (1-10)	7.1 ± 1.9	6.4 ± 2.1	+0.7	4.18	<.001	0.35
Future Educational Aspirations (%)	78.3%	68.7%	+9.6%	$\chi^2=8.92$	.003	OR=1.64

Note: High fidelity schools: Implementation score >60%; Low fidelity schools: <40%. Achievement scores standardized across countries. Longitudinal analysis based on Grade 6 cohort data from national assessments.

Table 3 presented learning outcomes data revealing complex and troubling patterns that partially supported but also substantially complicated Hypothesis 3's predictions about CBC's socioeconomic implications. Students in high CBC fidelity schools demonstrated significantly higher achievement on composite academic indices ( $58.8 \pm 15.7$  vs.  $53.4 \pm 17.9$ ,  $t=3.76$ ,  $p<.001$ ,  $d=0.32$ ), with moderate effect sizes for mathematics ( $d=0.33$ ) and science ( $d=0.36$ ) but smaller effects for literacy ( $d=0.18$ ). More substantially, high-fidelity schools showed large positive effects on 21st-century competencies including critical thinking ( $d=0.70$ ), problem-solving ( $d=0.62$ ), and collaboration skills ( $d=0.63$ )—the very outcomes CBC was designed to enhance—suggesting that when properly implemented, CBC could deliver on its promises. However, this apparently positive finding was fundamentally undermined by two critical patterns. First, achievement gap analysis revealed that CBC implementation, rather than reducing inequalities, appeared to widen them: the high SES-low SES achievement gap was 19.7 points in high-fidelity contexts compared to 17.0 points in low-fidelity contexts (a 2.7-point widening), the private-public gap increased from 13.9 to 15.7 points (1.8-point widening), and the urban-rural gap expanded from 12.4 to 13.8 points (1.4-point widening). Second, and more alarmingly, longitudinal cohort analysis comparing Grade 6 performance in 2019 (pre-CBC full implementation) versus 2024 showed significant declines in both high- and low-fidelity schools, with mathematics scores dropping 3.0 points in high-fidelity schools and 6.6 points in low-fidelity schools, and science scores declining 2.7 and 6.4 points respectively. The differential impact by school type was striking: high-fidelity CBC implementation produced significant achievement gains in urban private schools serving high-SES students ( $d=0.35$ ,  $p=.004$ ) and rural private

schools ( $d=0.31$ ,  $p=.020$ ), but showed non-significant effects in urban public schools ( $d=0.16$ ,  $p=.148$ ) and rural public schools ( $d=0.14$ ,  $p=.264$ ), indicating that CBC benefits accrued primarily to already-advantaged populations. Dropout rates were significantly lower in high-fidelity schools (5.8% vs. 8.4%,  $OR=0.67$ ,  $p=.009$ ), as were grade repetition rates (7.2% vs. 11.3%,  $OR=0.61$ ,  $p<.001$ ), suggesting engagement benefits, though even these positive outcomes must be interpreted within the context that only 8% of schools achieved high fidelity, meaning 92% of students attended schools experiencing the worse outcomes.

The learning outcomes data presented a deeply paradoxical and troubling picture that challenged simplistic narratives about CBC either as unqualified success or complete failure, revealing instead that the reform's effects depended critically on implementation quality and school context in ways that exacerbated rather than ameliorated educational inequalities. The finding that high-fidelity CBC implementation produced moderate gains in academic achievement and large gains in 21st-century competencies (effect sizes of  $d=0.62-0.70$  for critical thinking, problem-solving, and collaboration) demonstrated that CBC's theoretical promises were not inherently flawed—when schools possessed adequate resources, trained teachers, manageable class sizes, and supportive environments to genuinely implement learner-centered, competency-focused pedagogies, students did develop enhanced higher-order thinking skills alongside academic content mastery.

### **Conclusion**

This study critically analyzed competence-based curriculum implementation across six African countries (Kenya, Rwanda, Uganda, Tanzania, South Africa, and Ghana) to examine systemic failures and their socioeconomic implications. The findings revealed pervasive implementation failures, with overall CBC fidelity averaging only 38.7% and 62.7% of teachers demonstrating low implementation quality. The systemic failures resulted from fundamental misalignment between curriculum design assumptions and actual contextual realities, particularly inadequate resources, insufficient teacher preparation, overcrowded classrooms, and poorly designed assessment systems. Hierarchical linear modeling demonstrated that implementation quality was determined primarily by structural factors—school resources ( $\beta=0.43$ ), school type ( $\beta=0.41$ ), and location ( $\beta=0.29$ )—rather than individual teacher characteristics, confirming that systemic constraints rather than teacher resistance drove implementation failures. The socioeconomic implications proved deeply paradoxical: while high-fidelity CBC implementation produced significant gains in 21st-century competencies ( $d=0.62-0.70$  for critical thinking and problem-solving) and moderate academic achievement improvements, these benefits accrued almost exclusively to well-resourced urban private schools serving advantaged populations. Critically, CBC implementation widened achievement gaps across socioeconomic status (2.7 points), school type (1.8 points), and location (1.4 points), while longitudinal analysis revealed overall learning outcome declines of 3.0-6.6 points in mathematics and science since CBC adoption. The reform thus transformed into a mechanism deepening educational inequalities rather than enhancing quality or equity, with low-resourced rural public schools—serving the majority of African students—experiencing implementation failure rates exceeding 97% alongside declining academic performance, increased family financial burdens, and deteriorating teacher morale, demonstrating that wholesale transplantation of resource-intensive curriculum models

from developed to developing contexts without adequate systemic prerequisites constitutes a fundamental strategic failure with severe consequences for human capital development and social equity.

### Recommendations

**Adopt Context-Appropriate, Phased Implementation Approaches:** African governments should abandon wholesale CBC transplantation and instead develop contextualized curriculum frameworks that sequence reforms according to systemic capacity. Priority should focus on strengthening foundational content mastery in core subjects (mathematics, science, literacy) before introducing complex competency-based pedagogies, implementing CBC principles only in schools meeting minimum resource thresholds (adequate infrastructure, trained teachers, manageable class sizes below 40 students, sufficient learning materials), and establishing realistic timelines spanning 10-15 years with iterative adaptation based on rigorous monitoring rather than political pressures for rapid visible change.

**Address Structural Prerequisites Before Pedagogical Reforms:** Governments and development partners must prioritize systemic capacity-building investments before curriculum implementation, including reducing teacher-student ratios to enable individualized instruction, providing sustained professional development (minimum 120 hours over 2 years) with ongoing mentoring rather than brief workshops, ensuring adequate learning materials reach all schools before curriculum rollout, upgrading assessment systems to align examinations with competency development, and establishing differentiated support systems that provide intensive resources to disadvantaged schools rather than uniform implementation mandates that advantage already-privileged institutions.

**Implement Equity-Focused Reform Strategies with Rigorous Accountability:** Future curriculum reforms must explicitly incorporate equity safeguards through progressive resource allocation favoring rural and low-SES schools, capping family financial contributions to prevent cost barriers, establishing independent implementation monitoring with consequences for failure rather than performance theater, conducting rigorous impact evaluations disaggregated by socioeconomic status and school type before scaling reforms, and creating mechanisms for curriculum reversal or modification when evidence demonstrates harm, ensuring that education reforms genuinely serve the majority of African students rather than privileging elite minorities.

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