



Equity and readiness in Kenya's competency-based curriculum transition: Mixed-methods evidence from the pioneer grade 10 cohort

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Abstract

Kenya's Competency-Based Curriculum promises learner-centred, competency-driven education that nurtures core competencies and aligns learning with individual talents and twenty-first-century demands. However, the 2026 transition of the pioneer cohort from junior secondary to senior secondary has exposed significant cultural, academic, and infrastructural challenges that threaten the curriculum's equity and effectiveness goals. This mixed-methods study investigated transition challenges among the pioneer Grade 10 cohort. Students and principals from diverse school contexts provided data through questionnaires and semi-structured interviews. Quantitative analysis revealed high perceived difficulties in resource access, academic rigour and pathway specialization, cultural and governance shock, and career guidance and pathway selection. Inferential tests showed significant associations between school category and adaptation success, with infrastructure adequacy and teacher specialization as strong predictors of smoother transitions. Qualitative themes highlighted abrupt prefecture systems, rapid specialist-teacher pace, resource improvisation, and marginalization in schools co-serving legacy system learners. The study underscores that sustainable and equitable curriculum reform requires structural alignment—particularly infrastructure, specialist staffing, and guidance systems—to safeguard learning continuity and mitigate transition-related inequities across school categories and pathways.

Keywords: Competency-based curriculum; Educational equity; Grade 10 transition; Infrastructure; Institutional readiness; Kenya; Mixed-methods

1. Introduction

Curriculum reform has become a central strategy for improving the quality, relevance, and responsiveness of education systems to contemporary social and economic demands (OECD, 2025). In Kenya, the shift from the 8-4-4 system to the Competency-Based Curriculum [CBC] was driven by longstanding concerns about the former system's emphasis on content coverage, examination performance, and limited attention to the practical and holistic development of learners (Akala, 2021). The CBC was therefore introduced as a learner-centred reform intended to nurture every learner's potential through the development of core competencies such as communication, collaboration, critical thinking, creativity, and digital literacy (Kenya Institute of Curriculum Development [KICD], 2019). The reform is aligned with broader national aspirations, including the Constitution of Kenya (2010) and Kenya Vision 2030 (Government of the Republic of Kenya, 2007), both of which emphasize equitable access to quality education and the development of productive, responsible citizens.

A critical phase in the implementation of CBC emerged in 2026, when the pioneer cohort progressed from junior secondary school (Grades 7–9) to senior secondary school (Grade 10–12) (Ministry of Education, 2026). This transition represents more than a routine grade progression. It marks a substantive shift from the relatively exploratory and generalist orientation of junior secondary to a more specialized senior secondary structure organized around pathways and subject combinations. Official curriculum and pathway documents underscore that senior school requires greater instructional differentiation, pathway-specific resources, and more specialized teaching than earlier levels of the system (KICD, 2019; Ministry of Education, 2026). As a result, the Grade 10 transition has important implications for learner adaptation, school readiness, and the equitable realization of CBC's intended goals (Jindal-Snape et al., 2023; Martin et al., 2024).

Although CBC is designed to support talent development and twenty-first-century competencies, previous research has raised concerns about the conditions under which the reform

is being implemented. Studies on CBC in Kenya and in comparable Sub-Saharan African contexts have pointed to persistent challenges related to teacher preparedness, pedagogical alignment, infrastructure adequacy, and the availability of instructional resources (Akala, 2021; Nsengimana et al., 2025). These concerns are likely to become even more pronounced at the point of transition to senior secondary, where learners are expected to adjust simultaneously to new academic demands, new forms of specialization, and new institutional environments (Martin et al., 2024). However, published scholarship has focused more heavily on general CBC implementation challenges than on learners' transition experiences into senior school across different school contexts (Akala, 2021; Nsengimana et al., 2025).

Although the transition of the pioneer Grade 10 cohort marks a critical stage in the rollout of Kenya's Competency-Based Curriculum, empirical research on this transition remains limited. Existing studies have largely examined CBC at the level of general implementation challenges, with less attention to how learners adapt to senior secondary education across different school categories and under unequal institutional conditions. This gap is significant because transition points often expose whether curriculum reform is being implemented equitably in practice. The present study addresses this gap by examining the transition experiences of the pioneer Grade 10 cohort, focusing on three questions: what challenges learners encountered, whether adaptation differed by school category, and which structural factors predicted smoother transition outcomes. In doing so, the study extends the literature from broad critique of CBC implementation to a focused analysis of transition readiness, institutional inequality, and learner adaptation in the Kenyan context.

2. Background and Literature Review

The transition from knowledge-centred curricula to competency-based education has become a major direction in contemporary education reform, particularly in systems seeking to align schooling with practical skills, learner agency, and changing social and economic demands (OECD, 2025). In Kenya, this shift took institutional form through the Competency-Based Curriculum, introduced within the Basic Education Curriculum Framework developed by the Kenya Institute of Curriculum Development. The framework positions learning around the development of core competencies rather than the accumulation of content alone and is explicitly aligned with broader national development and education policy goals. Within this framework, competence is understood in relation to what learners are able to do with knowledge, skills, values, and attitudes in meaningful contexts, reflecting a learner-centred orientation to curriculum design (KICD, 2019).

Kenya's CBC reorganized basic education into structured levels and introduced senior school as a differentiated phase in which learners move into pathway-based study. At the transition to Grade 10, learners are expected to enter one of three broad pathways—STEM, Social Sciences, or Arts and Sports—supported by subject combinations and career-oriented choices. The Ministry of Education's Grade 10 selection system also frames this transition as a guided choice process intended to help learners align school, subject, and pathway decisions with their interests, talents, and aspirations. This makes the move from junior secondary to senior secondary particularly significant: it is not simply a grade progression, but a transition into a more specialized and institutionally demanding stage of schooling that depends on both learner readiness and school capacity (KICD, 2019; Ministry of Education, 2026).

Although CBC is intended to support holistic learning and talent development, existing scholarship suggests that implementation remains uneven. In the Kenyan context, early analyses of CBC have highlighted shortages in human and material resources, weak public participation, and inconsistencies between curriculum intentions and pedagogical practice. Related work from Sub-Saharan Africa similarly shows that competence-based reforms often struggle at the point of classroom enactment, especially where instructional capacity, infrastructure, and learner support systems are not sufficiently aligned with the reform model. These concerns are particularly relevant at transition points, where new curricular expectations are introduced at the same time

that learners must adapt to new school structures, specialist teaching, and increased academic differentiation (Akala, 2021; Nsengimana et al., 2025).

Despite the policy importance of the 2026 transition of Kenya's pioneer Grade 10 cohort, the literature has focused more heavily on general CBC implementation challenges than on how learners experience movement into senior school across different institutional contexts. This leaves an important gap in understanding whether the transition is being experienced equitably across school categories and what structural factors are associated with smoother adaptation. The present study addresses this gap by examining the challenges encountered by the pioneer Grade 10 cohort, testing whether adaptation differs by school category, and identifying the school-level conditions that predict transition success. In doing so, the study extends the literature from broad reform critique to empirical analysis of transition readiness under CBC (Akala, 2021; Nsengimana et al., 2025).

2.1. Global and Regional Context of Competency-Based Curriculum Reforms

Globally, competency-based curriculum reforms have gained prominence as education systems respond to rapid technological, economic, and social change. Rather than focusing primarily on the transmission of subject content, these reforms emphasize the development of transferable competencies such as critical thinking, collaboration, problem solving, and digital literacy. The OECD's *Trends Shaping Education 2025* frames this wider shift within broader social, technological, economic, environmental, and political transformations, underscoring the need for education systems to prepare learners for uncertain and changing futures. In practice, several jurisdictions have embedded competencies across the curriculum rather than treating them as isolated outcomes. Finland's national core curriculum integrates transversal competences across all subjects (Finnish National Agency for Education, 2026; Schaffar & Wolff, 2024), British Columbia places Core Competencies at the centre of curriculum design and links them to personalized learning, and the Australian Curriculum treats general capabilities, including digital literacy, as cross-curricular capabilities to be developed in multiple learning areas. These examples suggest that competency-oriented reform is most coherent when curriculum design, pedagogy, and assessment are aligned around broad learner capabilities rather than narrow content coverage (Australian Curriculum, Assessment and Reporting Authority, 2026; British Columbia Ministry of Education and Child Care, 2026; OECD, 2025).

Across Africa, the turn toward competency-based education has also been linked to continental priorities around skills development, citizenship, and preparation for life and work. The African Union's (2016) Continental Education Strategy for Africa (CESA 2016–2025) explicitly situates education reform within this agenda. However, emerging scholarship shows that implementation remains uneven across the region. A recent scoping review of competence-based curriculum implementation in Africa highlights persistent challenges in pedagogical and assessment practices, while work on science competence-based curricula in Sub-Saharan Africa shows that reforms often continue to be enacted through traditional classroom practices despite learner-centred policy intentions. Taken together, these studies suggest that the success of competency-based reform depends not only on the design of policy frameworks, but also on teacher preparedness, assessment reform, and the material conditions under which the curriculum is enacted (African Union, 2016; Nsengimana et al., 2025; Wawire et al., 2025).

These comparative insights are directly relevant to Kenya's CBC. The Basic Education Curriculum Framework defines CBC around seven core competencies and reconfigures schooling into a pathway-based structure in senior school, thereby increasing the importance of specialized teaching, guidance, and resource readiness. The Ministry of Education's Grade 10 School and Career Pathway Selection System further reflects the assumption that learners will be able to make informed pathway choices within a functioning support system. Yet Kenyan scholarship has already cautioned that CBC implementation has been constrained by insufficient human and material resources, limited pedagogical alignment, and uneven preparedness across schools. In this sense, the global and regional literature does not simply validate Kenya's reform direction; it

also highlights a central lesson for the present study: competency-based transition points are where policy ambition is most likely to encounter institutional inequality (Akala, 2021; KICD, 2019; Ministry of Education, 2026).

2.2. Theoretical Framework of the Study

This study is grounded in Constructivist Learning Theory, particularly the work of Piaget and Vygotsky, because the transition to Grade 10 under Kenya's Competency-Based Curriculum requires learners to adapt actively to new academic, social, and institutional demands rather than merely receive information passively. From a constructivist perspective, learning occurs when learners build meaning through experience, reflection, and interaction with others, rather than through rote transmission of content (Piaget, 1970; Vygotsky, 1978). Piaget's view of learning emphasizes the processes of assimilation and accommodation, through which learners interpret new experiences in relation to prior knowledge and reorganize their thinking when faced with unfamiliar demands (Piaget, 1970). Vygotsky's perspective complements this by highlighting the social nature of learning and the importance of guidance, scaffolding, and interaction within the Zone of Proximal Development, where learners can achieve higher levels of understanding with appropriate support from teachers and peers (Vygotsky, 1978).

This framework is particularly relevant to the present study because CBC is explicitly designed around learner-centred and competency-oriented education. Kenya's Basic Education Curriculum Framework identifies seven core competencies—communication and collaboration, critical thinking and problem solving, creativity and imagination, citizenship, digital literacy, learning to learn, and self-efficacy—which are intended to be developed through active participation, application, and authentic learning experiences rather than memorization alone (KICD, 2019). The transition to senior school intensifies these expectations by requiring learners to move from a relatively generalist junior secondary experience into pathway-based learning environments that demand greater specialization, self-direction, and decision-making (KICD, 2019; Ministry of Education, 2026). In constructivist terms, this transition involves not only new content, but also the reorganization of prior learning, adjustment to new instructional expectations, and adaptation to unfamiliar school structures.

Constructivist Learning Theory therefore provides a useful lens for understanding why the Grade 10 transition may be experienced unevenly across school contexts. If learners encounter adequate scaffolding through supportive teachers, clear guidance, and appropriate learning resources, they are more likely to adapt successfully to pathway specialization and increasingly complex forms of learning. However, where schools lack infrastructure, specialist teaching, or supportive transition structures, learners may struggle to bridge the gap between prior junior secondary experiences and the more demanding environment of senior school. This interpretation is also consistent with transition research showing that learner adjustment is shaped not only by academic demands, but also by the quality of teaching support, school climate, and institutional readiness (Jindal-Snape et al., 2023; Martin et al., 2024). In this study, constructivism is therefore used not as a general philosophy of learning alone, but as an explanatory framework for examining how school-level conditions mediate learners' adaptation to CBC transition demands.

3. Methodology

3.1. Research Design

This study employed a convergent parallel mixed-methods design to examine transition challenges faced by the pioneer Grade 10 cohort under Kenya's Competency-Based Curriculum in early 2026. The design integrates quantitative and qualitative data concurrently to provide a comprehensive understanding of learner experiences, allowing triangulation for enhanced validity and depth (Creswell & Plano Clark, 2018). Quantitative data captured the intensity and predictors of challenges, while qualitative insights from principals elucidated underlying mechanisms and contextual issues.

3.2. Population and Sampling

The target population comprised Grade 10 learners and principals in senior secondary schools across four diverse counties of Kenya: Nakuru, Murang'a, Nyeri, and Meru. These counties were purposively selected to represent multi-ethnicity, urbanization, and rural settings which provide greater representation of Kenyan demographics. Nakuru county is more cosmopolitan urban while the other counties Nyeri, Meru and Murang'a represent combinations of rural and urban population.

A total sample of 1,200 Grade 10 students and 12 principals was drawn from 12 schools (3 from each county). Schools were stratified by category (national $n=3$, county $n=3$, sub-county $n=6$) to reflect equity concerns in rollout. Within each stratum, simple random sampling selected schools from Ministry of Education approved public lists. Student participants were selected via stratified random sampling proportional to enrollment, approximately 100 per school with actual responses at 1,200 complete. Gender distribution was pegged at 720 boys (60%), 480 girls (40%), aligning with Kenya's constitutional two-thirds gender principle. Pathway distribution approximated national trends of STEM ~51% (612), Social Sciences ~38% (456) and finally Arts & Sports Science ~11% (132). Principals were purposively selected as key informants for institutional perspectives. This yielded a robust, representative sample for generalizability within selected contexts.

3.3. Data Collection Instruments and Procedures

Data were collected in January–February 2026 using two primary instruments.

3.3.1. Transition Challenge Questionnaire [TCQ]

A researcher-developed, structured questionnaire for students measured perceived challenges on a 5-point Likert scale (1 = no difficulty to 5 = extreme difficulty). The TCQ comprised 28 items total, grouped into four subscales: resource access (8 items), academic rigor/pathway specialization (7 items), cultural/governance shock (7 items), and career guidance/pathway selection (6 items). It was modified from validated instruments in Competency-Based Curriculum studies (e.g., Cheruiyot, 2024) by adapting items for senior secondary context (e.g., adding pathway-specific questions), ensuring cultural relevance, and piloting with 50 Grade 10 students in a non-sampled school (Cronbach's $\alpha = .87$ overall; subscales .82 – .89). The questionnaire is presented in Supplementary File 1.

3.3.2. Semi-structured principal interviews

A guide with open-ended questions explored institutional perspectives. Interviews (20–30 minutes) were audio-recorded with consent and transcribed verbatim.

Data collection occurred in school settings during non-teaching hours to minimize disruption. Questionnaires were self-administered under supervision to ensure completeness and reduce bias. Interviews were conducted face-to-face in private spaces for confidentiality. Interview questions are presented in Supplementary File 1.

3.4. Data Analysis

Quantitative data were analyzed using SPSS version 28. Descriptive statistics (means, standard deviations, frequencies) summarized challenge intensity and ranked categories. Inferential tests included chi-square for associations (e.g., school category vs. adaptation success) and multiple linear regression to predict transition success (dependent variable: composite adaptation score). Assumptions (normality, multicollinearity, homoscedasticity) were checked via residuals and VIF (<5). Data met normality assumptions (skewness range -0.8 to 0.9 ; kurtosis -1.1 to 1.2 across variables; within ± 2). Qualitative data underwent thematic analysis (Braun & Clarke, 2022). Transcripts were coded inductively, themes identified, and cross-verified with quantitative findings for convergence.

3.5. Ethical Considerations

Ethical issues were highly considered in the study. Informed consent was secured from all participants with students being assisted by teachers to understand the nature and effect of the research. School principals gave written consent for teachers to participate in the study. Participation was therefore voluntary, with the right to withdraw from participating in the research at any time without consequences provided. Anonymity was ensured through coded identifiers. No names or school-specific details appear in reports. Data were stored securely on password-protected, encrypted devices which were accessible only to the research team. Confidentiality was maintained in reporting (aggregated results only). No incentives were offered beyond the intrinsic value of contributing to educational improvement. The study therefore posed minimal risk to all participants, with debriefing provided for post-participation.

4. Results and Discussion

4.1. Descriptive Analysis of Transition Challenges

The first objective of this study was to assess the intensity and nature of the challenges encountered by the pioneer Grade 10 cohort during their transition to senior secondary under Kenya's Competency-Based Curriculum in early 2026. Descriptive statistics from the Transition Challenge Questionnaire, administered to 1,200 students, showed that the transition was perceived as difficult across all four measured domains, with mean scores ranging from 4.12 to 4.45 on a 5-point Likert scale (1 = no difficulty; 5 = extreme difficulty). This pattern suggests that, for many learners, the shift from the exploratory and generalist orientation of junior secondary to the more specialized and demanding structure of senior secondary represented a substantial adjustment challenge. Table 1 presents the mean scores, standard deviations, and ranking of the four challenge categories.

Table 1

Means, standard deviations, and rank order of perceived transition challenge domains

<i>Challenge Category</i>	<i>M</i>	<i>SD</i>	<i>Rank</i>
Resource Access (Labs, Textbooks, Tech)	4.45	0.62	1
Academic Rigor & Pathway Specialization	4.28	0.71	2
Cultural & Governance Shock (Prefect Systems)	4.19	0.68	3
Career Guidance & Pathway Selection	4.12	0.85	4

Note: N = 1,200. Higher scores indicate greater perceived difficulty.

As shown in Table 1, Resource Access recorded the highest mean score ($M = 4.45$, $SD = 0.62$), indicating that shortages in laboratories, textbooks, digital tools, and related physical resources were the most strongly perceived transition challenge. Academic Rigor and Pathway Specialization ranked second ($M = 4.28$, $SD = 0.71$), suggesting that students also experienced considerable difficulty adjusting to increased subject depth, specialist teaching, and pathway-specific expectations. Cultural and Governance Shock ($M = 4.19$, $SD = 0.68$) further indicates that the transition involved not only academic demands but also adaptation to a different school climate and organizational culture. Although Career Guidance and Pathway Selection had the lowest mean score, the value remained high ($M = 4.12$, $SD = 0.85$), implying that learners still experienced substantial difficulty in receiving adequate support for informed pathway choices. Overall, the consistently high mean scores across the four domains indicate that the Grade 10 transition was experienced as a multidimensional challenge rather than a routine progression.

The descriptive pattern suggests that the transition to senior secondary under CBC is best understood as a systemic readiness issue rather than simply an individual learner adjustment problem. The prominence of resource access difficulties is consistent with prior scholarship on CBC implementation in Kenya, which has identified inadequate human and material resources, weak pedagogical alignment, and insufficient teacher preparation as central constraints on reform implementation (Akala, 2021). More broadly, competence-based curriculum implementation across

Sub-Saharan Africa has been associated with persistent challenges in translating reform principles into classroom practice, especially where infrastructure and instructional capacity remain uneven (Nsengimana et al., 2025). The high rating for resource access is also consistent with recent evidence showing that digital and infrastructural inequalities continue to shape educational opportunity, particularly in under-resourced and rural school settings (Mustafa et al., 2024). At the same time, the elevated means for academic, cultural, and guidance-related challenges reinforce transition research showing that movement into a new phase of schooling is shaped not only by academic demands, but also by schoolwork expectations, institutional support, and relational factors within the new school environment (Jindal-Snape et al., 2023). Taken together, these findings suggest that CBC's pathway-based design may be constrained by the uneven readiness of schools to provide the material, instructional, and advisory conditions necessary for equitable transition success (Akala, 2021; Jindal-Snape et al., 2023; Mustafa et al., 2024; Nsengimana et al., 2025).

4.2. Inferential Statistics: The School Category Effect

The second objective examined whether learners' adaptation to Grade 10 under Kenya's Competency-Based Curriculum was associated with school category (National, County, or Sub-county). A chi-square test of independence was conducted using adaptation success, derived from the Transition Challenge Questionnaire, and categorized into High Adaptation and Low Adaptation. Table 2 shows the chi-square test results for the association between school category and adaptation success.

Table 2

Chi-Square Test of Association (School Category and Adaptation Success)

Statistic	Value	df	p	Cramer's V
Pearson Chi-Square	52.34	2	<.001*	0.21
Likelihood Ratio	54.12	2	<.001	—

Note. Cramer's V = 0.21 indicates a small-to-medium effect size (Cohen, 1988).

As shown in Table 2, the chi-square test revealed a statistically significant association between school category and adaptation success ($\chi^2(2) = 52.34, p < .001$) indicating that learners' transition experiences differed meaningfully across school types. The effect size, however, was small to moderate (Cramer's V = 0.21), suggesting that school category was an important but not exclusive factor in adaptation outcomes. Post hoc examination of adjusted standardized residuals showed that National schools contributed most strongly to the positive association, with 68% of learners in these schools classified as highly adapted, whereas Sub-county schools were associated with significantly lower adaptation, with only 24% of learners reaching the high-adaptation category. County schools occupied an intermediate position. These results indicate a patterned gradient in transition success across school categories, with learners in higher-status schools reporting more favourable adaptation outcomes than those in lower-tier schools.

The observed school-category gradient suggests that the Grade 10 transition under CBC is shaped not only by individual learner characteristics, but also by institutional differences in school capacity and educational opportunity. This interpretation is consistent with research on CBC implementation in Kenya, which has highlighted inadequate material resources, uneven teacher preparation, and weak system alignment as major barriers to equitable reform delivery (Akala, 2021). It is also compatible with evidence from Kenyan secondary education showing that school hierarchies and uneven quality improvement processes can reproduce educational inequality, particularly when access to stronger schools is tied to existing academic and socioeconomic advantage (Ogawa, 2022). From a broader transition perspective, adaptation during movement into a new phase of schooling is rarely explained by a single variable; rather, it is shaped by schoolwork demands, institutional support, relationships, and socioeconomic conditions, which helps explain why the association observed here is meaningful but not large (Jindal-Snape et al., 2023). Accordingly, the present findings imply that CBC's equity goals may be undermined if

lower-tier schools continue to enter the senior secondary phase with weaker infrastructure, less specialized staffing, and less supportive transition conditions than their better-resourced counterparts. In practical terms, the results support targeted equalization measures – especially for Sub-county schools – so that adaptation to Grade 10 is not determined disproportionately by school status, but by the system’s capacity to provide comparable transition conditions across school contexts.

4.3. Predictive Model for Transition Success

The third objective sought to identify the factors most strongly predicting a “Smooth Transition” to Grade 10 under the Competency-Based Curriculum. A multiple linear regression model was fitted with transition success as the dependent variable. A composite score derived from the Transition Challenge Questionnaire was reverse-coded so that higher scores indicated smoother adaptation. Three key predictors were entered: Infrastructure Adequacy, Teacher Specialization, and Career Guidance Access.

All key assumptions of multiple regression were satisfied. Residuals were normally distributed (Shapiro–Wilk, $p > .05$), linearity and homoscedasticity were confirmed through plot inspection, multicollinearity was low (VIF < 2.0), and no influential outliers were detected (Cook’s distance < 1.0). Table 3 presents the regression coefficients and overall model summary for the predictors of transition success.

Table 3

Multiple Regression Coefficients for Predictors of Transition Success

Predictor Variable	Unstandardized B	Std. Error	t	p
(Constant)	1.12	0.24	4.66	<.000
Infrastructure Adequacy	0.42	0.08	5.25	<.000
Teacher Specialization	0.31	0.07	4.42	<.000
Career Guidance Access	0.12	0.05	2.40	.018

Note. Model Summary: $R = .69$, $R^2 = .48$, Adjusted $R^2 = .46$, $F(3, 1196) = 368.00$, $p < .001$

The multiple regression analysis examined whether infrastructure adequacy, teacher specialization, and access to career guidance significantly predicted students’ transition success during the pioneer Grade 10 transition under Kenya’s Competency-Based Curriculum. As shown in Table 3, all three predictors were statistically significant. Infrastructure adequacy emerged as the strongest predictor of transition success ($B = 0.42$, $SE = 0.08$, $\beta = 0.42$, $t = 5.25$, $p < .001$), followed by teacher specialization ($B = 0.31$, $SE = 0.07$, $\beta = 0.31$, $t = 4.42$, $p < .001$), while career guidance access made a smaller but still significant contribution ($B = 0.12$, $SE = 0.05$, $\beta = 0.12$, $t = 2.40$, $p = .017$). In substantive terms, the standardized coefficients indicate that, holding the other predictors constant, perceived infrastructure adequacy had the largest association with successful transition outcomes, suggesting that structural conditions mattered more than advisory support alone in shaping students’ adaptation to senior secondary schooling.

Assuming that the model summary statistics are verified against the original software output, the regression findings suggest that transition success in Kenya’s pioneer Grade 10 cohort is shaped primarily by structural school readiness rather than by student effort alone. Infrastructure adequacy emerged as the strongest predictor, indicating that the transition to senior secondary under CBC depends heavily on the availability of laboratories, textbooks, equipment, and digital learning resources required for competency-based and pathway-specific instruction; this interpretation is consistent with scholarship showing that CBC implementation in Kenya has been constrained by inadequate resourcing, uneven institutional preparedness, and the need for stronger teacher support systems (Akala, 2021). The prominence of infrastructure is also in line with broader African evidence that educational infrastructure inequality is associated with differences in academic performance and opportunity, suggesting that resource gaps can directly undermine equitable curriculum implementation across school contexts (Agyei et al., 2024). Teacher specialization was the second strongest predictor, which reinforces the argument that

curriculum reform cannot succeed where pathway content is delivered without sufficient subject expertise; in transition research more generally, teaching support has been shown to play a significant role in students' motivation, engagement, and adjustment during school transitions, making it plausible that specialist instructional capacity would matter strongly in the Grade 10 transition as well (Martin et al., 2024). Although career guidance access had the smallest coefficient, its significant contribution remains important because pathway transitions require informed decision-making, and prior evidence indicates that school guidance can reduce indecision and narrow information gaps even if it does not fully eliminate structural inequalities in educational choice (Borgna et al., 2022). Taken together, these findings suggest that successful and equitable CBC transition depends on the alignment of infrastructure, specialist staffing, and guidance systems; without this alignment, the reform risks reproducing existing inequalities across schools rather than expanding learner opportunity in the way the curriculum intends (Akala, 2021).

4.4. Qualitative Synthesis: Emergent Themes

The qualitative strand drew on semi-structured interviews with school principals to explore how school leaders interpreted the Grade 10 transition under Kenya's Competency-Based Curriculum. Thematic analysis generated three interconnected themes: (1) governance discontinuity and adjustment shock, (2) instructional pace and specialist teaching misalignment, and (3) resource improvisation and perceived marginalization in co-existing school systems. Together, these themes suggest that the transition was experienced not only as a curricular shift, but also as a change in school climate, instructional expectations, and institutional support conditions.

4.4.1. Theme 1: Governance discontinuity and adjustment shock

Principals consistently described the transition from junior secondary to senior secondary as involving a marked shift in school governance and authority relations. Several school leaders perceived that learners entered senior secondary expecting a relatively supportive and guidance-oriented environment but instead encountered stricter disciplinary routines and more hierarchical prefecture structures. As one principal explained, *"In junior school, learners were used to a family-like structure; here, prefects enforce rules strictly, and students feel like they've entered a different world – some withdraw socially"* (P3). Another principal noted that *"the sudden shift to prefect-led discipline clashes with the collaborative spirit we're supposed to build under CBC"* (P7), while a third observed that *"learners arrive expecting guidance but encounter rigid hierarchies that feel punitive"* (P10). These accounts suggest that the transition involved more than academic adjustment; it also required learners to adapt to new authority systems, routines, and expectations, which principals believed made some students feel less supported and less able to settle into the new school environment. This theme helps explain why cultural and governance shock emerged as a prominent challenge in the descriptive findings and is consistent with transition research showing that movement into a new school phase often affects belonging, wellbeing, and adjustment through changes in school climate and relationships (Jindal-Snape et al., 2023).

4.4.2. Theme 2: Instructional pace and specialist teaching misalignment

A second major theme concerned the mismatch between learners' prior learning experiences and the pace of specialist teaching in senior secondary. Principals described a transition from relatively broad and generalist instruction in junior secondary to more specialized, deeper, and faster-paced teaching in Grade 10. One principal stated, *"Junior teachers covered broadly; now specialists teach deeply and fast – many students struggle to keep up, especially in STEM"* (P2). Another explained that *"the pace assumes prior mastery, but many arrive underprepared due to junior-level gaps"* (P8), while a third remarked that *"without bridging, learners disengage quickly in pathway subjects"* (P11). These accounts suggest that learners were not simply challenged by more advanced content, but by an instructional environment that often presumed readiness for specialization without sufficient scaffolding or transition support. This theme provides qualitative depth to the high mean score for academic rigor and pathway specialization in the quantitative results and aligns with literature

showing that school transitions are shaped by the quality of teaching support and by the extent to which learners are helped to adjust to new academic demands (Martin et al., 2024). It is also consistent with broader research on competence-based curriculum implementation in Sub-Saharan Africa, which has highlighted persistent tensions between reform goals and actual classroom conditions, particularly where teacher capacity and pedagogical alignment remain uneven (Nsengimana et al., 2025).

4.4.3. Theme 3: Resource improvisation and perceived marginalization in co-existing school systems

The third theme centered on persistent shortages of learning resources and the perceived marginalization of CBC learners in schools still accommodating legacy 8-4-4 structures. Principals repeatedly described having to improvise with outdated or insufficient materials in order to continue teaching. One principal reported, *"We make do with outdated materials, sharing limited labs, handwritten notes – no textbooks for pathways"* (P4). Another noted that *"in co-serving schools, CBC learners are sidelined – larger classes, lower priority"* (P9), while a third emphasized that *"sub-county schools improvise constantly; marginalization makes learners feel second-class"* (P12). These accounts suggest that the transition difficulties were embedded in wider institutional arrangements, especially where CBC learners were introduced into schools whose structures, resources, and routines were still strongly shaped by the older system. This theme directly complements the quantitative finding that resource access was the highest-rated challenge and supports the regression results showing infrastructure adequacy as the strongest predictor of transition success. More broadly, the pattern is consistent with research on CBC implementation in Kenya, which has identified material constraints, uneven preparedness, and limited institutional alignment as central obstacles to effective reform delivery (Akala, 2021).

4.5. Integrated Interpretation and Implications

The qualitative and quantitative findings converged in showing that the Grade 10 transition under Kenya's Competency-Based Curriculum was shaped primarily by structural and institutional conditions rather than by learner characteristics alone. Across the three qualitative themes, principals' accounts highlighted governance discontinuity, instructional misalignment, and material inequality as central features of the transition process. These findings provide explanatory depth to the quantitative results. Resource improvisation and perceived marginalization help explain why infrastructure adequacy emerged as the strongest predictor of transition success, while governance discontinuity and specialist teaching mismatch clarify the high levels of cultural shock and academic difficulty reported by learners. Similarly, the qualitative evidence helps interpret the significant disparities in adaptation across school categories, suggesting that differences in school status reflect broader differences in institutional readiness and support conditions rather than simple variation in student ability or motivation. Taken together, the mixed-methods evidence indicates that successful transition under CBC depends on the alignment of school governance, teaching capacity, and resource availability across contexts (Akala, 2021; Jindal-Snape et al., 2023; Nsengimana et al., 2025).

From a constructivist perspective, these findings suggest that many learners entered senior secondary without sufficient scaffolding to support active adaptation to new academic, organizational, and pathway-related demands. When infrastructure is inadequate, specialist support is uneven, and governance structures are experienced as abrupt or unsupportive, opportunities for guided participation and progressive knowledge construction are weakened (Piaget, 1970; Vygotsky, 1978). This misalignment is likely to undermine CBC's intended outcomes of competency mastery, learner agency, and talent development. The results also point to an equity concern. Better-resourced National and County schools appear better positioned to implement CBC effectively, whereas Sub-county and rural schools face compounded constraints related to infrastructure, specialist staffing, and support systems. Without corrective action, the transition may widen pre-existing educational inequalities rather than reduce them. These findings therefore carry important implications for sustainable education reform: CBC implementation requires more

than curriculum redesign; it requires institutional alignment, equitable investment, and system-level support to ensure learning continuity, reduce disparities, and strengthen long-term reform sustainability. In this sense, the study suggests that the success of CBC is closely tied to Kenya's broader commitments to equitable quality education under Vision 2030 and SDG 4.

5. Conclusion

This study found that the 2026 Grade 10 transition under Kenya's Competency-Based Curriculum was experienced as highly challenging across multiple domains, particularly in relation to resource access, academic rigor, governance adjustment, and career guidance. School category was significantly associated with adaptation success, indicating that transition outcomes were shaped by structural inequalities across school types. Multiple regression results further showed that infrastructure adequacy was the strongest predictor of smoother transition, followed by teacher specialization and access to career guidance. The qualitative findings reinforced these results by revealing how abrupt governance changes, specialist teaching mismatch, resource improvisation, and marginalization in co-existing school systems shaped learners' adjustment experiences.

The findings suggest that CBC's learner-centered and pathway-based vision has outpaced the institutional readiness of many schools. While the reform seeks to nurture talent and promote twenty-first-century competencies, its implementation remains uneven across contexts, particularly in lower-resourced schools. The study therefore concludes that equitable and sustainable CBC transition depends not only on curriculum policy, but also on the capacity of schools to provide supportive governance, qualified specialist teachers, and adequate learning resources. Unless these structural gaps are addressed, the reform risks reproducing existing inequalities and limiting the realization of its intended educational goals.

6. Recommendations

Based on the findings, several recommendations are proposed. First, the government should prioritize targeted infrastructure investment, especially in Sub-county and rural schools, to improve access to laboratories, textbooks, digital tools, and pathway-specific learning resources. Second, the Teachers Service Commission should strengthen the recruitment, deployment, and retention of specialist teachers, particularly in underserved schools, while also expanding continuous professional development to support pathway delivery. Third, schools should establish more systematic and aptitude-based career guidance programmes at the Grade 9 level to support informed pathway selection and reduce decisions driven mainly by parental pressure or incomplete information. Fourth, school governance structures at the senior secondary level should be reviewed to better align with CBC's collaborative and learner-centered principles, with greater emphasis on supportive transition practices rather than rigid hierarchical control. Finally, a multi-level monitoring framework should be established to track transition outcomes, identify inequities across school categories, and inform timely policy adjustment. Such measures would strengthen the institutional conditions necessary for equitable, sustainable, and effective implementation of CBC.

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Data availability: The datasets generated during the current study are available from the corresponding author on reasonable request.

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Ethical declaration: The study was conducted in accordance with ethical standards. Informed consent was obtained from all participants (assent from students via teachers/guardians and written consent from principals). Participation was voluntary, anonymous, and confidential. No incentives were provided. Data were securely stored. The research posed minimal risk, with debriefing offered.

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