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Alignment or Failure? Pedagogy-Assessment Coherence in Zambia's 2023 Competence-Based Curriculum Through the Lens of Significant Learning: A Systematic Review

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Abstract

This systematic review examines the alignment between pedagogy and assessment in the implementation of Zambia's 2023 competence-based education (CBE) curriculum. Grounded in the theory of significant learning (Fink, 2003) ^[1] and constructive alignment (Biggs, 1996) ^[1], the study employs a PRISMA-guided systematic review design to ensure methodological rigor and transparency. A comprehensive search of policy documents, peer-reviewed studies, and institutional reports published between 2019 and 2025 yielded 15 studies for inclusion, which were analyzed using thematic synthesis. The findings reveal persistent misalignment between curriculum intentions and classroom practices, particularly in assessment design, teacher preparedness, instructional resources, and equitable access. Systemic factors, including limited assessment literacy, weak instructional mediation, and inconsistent

implementation across contexts, drive these challenges. Comparative evidence from Rwanda, Kenya, and South Africa further underscores the systemic nature of these challenges, highlighting the importance of coherence between curriculum, pedagogy, and assessment systems. While initiatives such as School-Based Assessment and digital platforms offer potential pathways for reform, their impact remains constrained by gaps in integration and capacity. The review concludes that alignment is a structural requirement for achieving competence-based outcomes and recommends strengthening assessment frameworks, teacher professional development grounded in integrated design, and the strategic use of digital technologies to support authentic, performance-based learning in Zambia and similar contexts.

Keywords: Competence-Based Education, Curriculum Alignment, Pedagogy-Assessment Coherence, Zambia, Systematic Review, Significant Learning

1. Introduction

The global shift toward competence-based education (CBE) reflects a growing recognition that education systems must move beyond the transmission of content knowledge to develop learners' ability to apply knowledge, skills, and values in real-world contexts. Across sub-Saharan Africa, curriculum reforms have increasingly emphasized competences such as critical thinking, problem solving, collaboration, and innovation as essential for sustainable development and participation in knowledge economies (Bwembya *et al.*, 2025). In Zambia, this shift is formalized through the 2023 Zambia Education Curriculum Framework (ZECF), which redefines learning as competence demonstration: it "*puts emphasis on what learners are expected to do as opposed to what they are expected to know,*" and expects progression "*as their competences are proven*" (Ministry of Education, Zambia, 2023).

This reorientation toward "doing over knowing" represents a fundamental transformation in both pedagogy and assessment. The ZECF highlights three non-negotiable principles: (i) doing over knowing, (ii) progression by demonstrated competence, and (iii) the development of twelve general competences. These competences—Analytical Thinking, Citizenship, Collaboration, Communication, Creativity and Innovation, Critical Thinking, Digital Literacy, Emotional Intelligence, Entrepreneurship, Environmental Sustainability, Financial Literacy, and Problem Solving—function not merely as curricular aspirations but as implicit **assessment claims**, requiring valid evidence of performance in authentic contexts (Ministry of Education, Zambia, 2023). As such, the curriculum establishes a clear expectation that learning outcomes must be observable,

measurable, and demonstrated through practice.

This review paper advances a single, evidence-based thesis: Zambia's 2023 CBE can only be implemented successfully if pedagogy and assessment are deliberately aligned. Competence-based aims cannot be achieved through recall-heavy assessments or lecture-dominant teaching, and assessment practices exert a powerful "washback effect" that largely determines what teachers teach and what learners do (Biggs, 1996^[1]; Bwembya *et al.*, 2025; 2026^[7]). Consequently, Zambia's 2023 CBE will not effectively "land" in classrooms unless both pedagogy and assessment are aligned to the intended competences and to significant learning outcomes. This is not a theoretical preference; it is a structural requirement implied by ZECF's own definition of CBE as demonstration and progression based on proven competence.

In a competence-based system, the curriculum promise is realized only when two conditions are simultaneously met. First, pedagogy must provide learners with regular opportunities to practice and refine competences through authentic tasks, active learning, reflection, and collaboration. Second, assessment must credibly measure those competences using performance tasks, moderated School-Based Assessment (SBA), rubrics, and learner portfolios, while generating feedback that shapes ongoing learning. Where either condition is absent—or where pedagogy and assessment contradict one another—teachers and learners rationally default to what is tested and what is feasible, thereby undermining the principle of "doing over knowing."

This perspective aligns with established theoretical foundations. Constructive alignment theory (Biggs, 1996)^[1] and Fink's theory of significant learning emphasize that meaningful learning emerges only when learning goals, teaching and learning activities, and assessment practices are coherently integrated (Fink, 2003)^[11]. When such alignment is absent, learning becomes fragmented, resulting in what Fink describes as a "disconnected course" in which intended competences are not meaningfully developed. In competence-based systems, this misalignment is particularly consequential because it directly undermines the central goal of competence demonstration.

In the Zambian context, emerging evidence suggests that such misalignment poses a significant risk to the successful implementation of the CBE curriculum. Policy analyses indicate that assessment systems have not yet been fully aligned with curriculum expectations, and there is limited evidence that existing instruments effectively measure competences (Global Partnership for Education, 2024)^[12]. Empirical studies further highlight persistent challenges related to teacher preparedness, assessment literacy, resource constraints, and limited access to instructional materials, all of which hinder the implementation of learner-centered pedagogies (Bwembya *et al.*, 2025; Sakala & Banda, 2025^[27]). Additionally, while digital initiatives such as the Learning Passport Zambia have expanded access to learning resources, their impact remains uneven due to infrastructural disparities and limited integration into pedagogical and assessment practices (UNICEF Zambia, 2023)^[28].

Comparative evidence from other African education systems further underscores the systemic nature of this challenge. In Rwanda, competence-based reforms have been accompanied by improvements in teacher training and instructional

guidance, yet classroom practices remain constrained by teacher-centered approaches. In Kenya, the development of competency-based assessment frameworks has strengthened policy alignment, although implementation continues to depend heavily on teacher capacity and system coherence. South Africa, through the Curriculum and Assessment Policy Statement (CAPS), demonstrates a more integrated approach where curriculum and assessment are explicitly aligned within subject-specific guidelines. Collectively, these cases highlight that the success of competence-based education depends not only on curriculum design but on the coherence of pedagogy, assessment, teacher preparation, and system-level support.

At the level of classroom practice, research from Zambia provides both evidence of potential and indications of systemic limitations. Inquiry-based and project-based learning approaches have demonstrated strong potential for fostering authentic competence development and learner engagement; however, these approaches often reveal persistent gaps in assessment alignment, scalability, and institutional support (Phiri, 2025^[22]; 2026a). These findings reinforce the argument that competence-based education cannot be realized through isolated pedagogical innovations but require coordinated alignment across all components of the education system.

Despite the growing body of research on CBE implementation, a critical gap remains: the absence of a comprehensive synthesis that integrates policy analysis, empirical evidence, and theoretical perspectives to examine pedagogy–assessment alignment as the central mechanism of reform. Existing studies tend to address these elements in isolation, with limited attention to how their interaction shapes learning outcomes. This study addresses this gap by conducting a systematic review of literature on Zambia's 2023 CBE implementation, guided by the PRISMA framework and employing thematic synthesis to identify patterns of alignment and misalignment.

Accordingly, this paper seeks to answer the following research question: **To what extent are pedagogy and assessment aligned in Zambia's 2023 competence-based curriculum implementation, and what are the implications for teacher education and sustainable learning outcomes?**

By synthesizing evidence from policy documents, empirical studies, and practice-based research, this review paper advances the argument that alignment between pedagogy and assessment is not merely a pedagogical consideration but a structural and systemic condition for achieving meaningful and sustainable learning outcomes in competence-based education.

2. Theoretical Framework and Conceptual Framework

2.1 Theoretical Framework

This study is anchored in the theory of significant learning proposed by L. Dee Fink, which conceptualizes meaningful learning as lasting change that extends beyond the acquisition of content knowledge to include transformation in how learners think, act, and relate to others (Fink, 2003)^[11]. Unlike traditional models that prioritize cognitive outcomes alone, Fink's framework presents learning as a multidimensional construct comprising six interrelated dimensions: foundational knowledge, application, integration, the human dimension, caring, and learning how to learn. Foundational knowledge refers to the

understanding of key concepts and principles; application involves the ability to use knowledge in practical contexts; integration emphasizes connections across disciplines and real-life situations; the human dimension relates to self-awareness and interpersonal development; caring reflects the formation of values, interests, and motivation; and learning how to learn focuses on metacognitive awareness and self-directed learning (Fink, 2003) ^[11]. Together, these dimensions provide a comprehensive conception of learning that aligns closely with the goals of competence-based education (CBE), particularly in fostering transferable and context-responsive competences.

Central to Fink's framework is the principle of integrated course design, which emphasizes the deliberate alignment of three core components: learning goals, teaching and learning activities, and assessment and feedback. This principle resonates strongly with the concept of constructive alignment advanced by John Biggs, which similarly argues that effective learning occurs when intended learning outcomes, instructional processes, and assessment practices are coherently structured to reinforce one another (Biggs, 1996) ^[1]. Within such aligned systems, learning activities are intentionally designed to enable learners to achieve specified outcomes, while assessment strategies generate valid evidence of those outcomes and provide feedback for continuous improvement. Conversely, when misalignment occurs—such as when assessments emphasize recall while learning goals prioritize higher-order competences—learning becomes fragmented. This results in what Fink describes as a “disconnected course,” where intended competences are not meaningfully developed despite being articulated in curriculum frameworks.

While these theories provide a strong design-oriented perspective on alignment, recent Zambian-based scholarship in competence-based education emphasizes that alignment is not achieved solely at the level of curriculum planning. Rather, it is enacted through the professional practices of teachers, who serve as central mediators between curriculum intentions and classroom realities (Mulenga & Kabombwe, 2019a; Bwembya *et al.*, 2024 ^[5]; Phiri & Jumbwe, 2019 ^[21]). Teachers interpret curriculum goals, design instructional experiences, and construct assessment tasks that shape how competences are developed and demonstrated. As such, alignment must also be understood as a function of teacher agency, assessment literacy, and professional capacity (Bwembya *et al.*, 2025). Where teachers lack conceptual clarity or institutional support, alignment is likely to break down, regardless of how well curriculum frameworks are designed (Global Partnership for Education, 2024 ^[12]; Ministry of Education Zambia, 2023). This perspective extends Fink's model from a focus on course design to a broader systems view of alignment that incorporates human and institutional dimensions of implementation (Mulenga *et al.*, 2025).

This theoretical perspective is particularly relevant to competence-based education (CBE), which, by definition, requires learners to demonstrate the ability to apply knowledge and skills in authentic and contextually meaningful situations. In the case of Zambia's 2023 Zambia Education Curriculum Framework (ZECF, 2023), the emphasis on “doing over knowing” and progression based on demonstrated competences necessitates a high degree of coherence between pedagogy and assessment (Ministry of Education Zambia, 2023). Each of the twelve general

competences outlined in the ZECF—such as critical thinking, collaboration, creativity, and problem solving—implicitly demands instructional strategies that promote active engagement and assessment approaches capable of capturing performance, growth, and transfer of learning. Applying Fink's framework, in conjunction with constructive alignment theory, provides a robust analytical lens for examining the coherence of Zambia's CBE implementation. It enables the evaluation of whether classroom practices create opportunities for higher-order learning (application, integration), whether assessment systems validly measure competence demonstration, and whether feedback mechanisms support continuous and self-directed learning. Importantly, it also allows for the examination of alignment across multiple levels of the education system, including curriculum design, teacher professional development, instructional materials, and national assessment structures.

Accordingly, this study conceptualizes alignment not merely as a pedagogical strategy but as a systemic and structural condition for effective competence-based education. By integrating insights from significant learning theory, constructive alignment, and competence-based education literature, the framework positions pedagogy–assessment coherence as central to achieving meaningful, equitable, and sustainable learning outcomes. This integrated theoretical perspective underpins the present review and guides the analysis of how alignment—or its absence—shapes the implementation of Zambia's 2023 competence-based curriculum.

2.2 Conceptual Framework

This study conceptualizes pedagogy–assessment alignment in competence-based education (CBE) as a **dynamic, multi-level system** in which curriculum intentions are translated into meaningful learning outcomes through the interaction of instructional design, assessment practices, teacher agency, and system-level support structures. Figure 1 is a Conceptual framework illustrating pedagogy–assessment alignment in competence-based education, adapted from L. Dee Fink's significant learning theory and John Biggs's constructive alignment model. The framework highlights the central role of teacher agency and system-level factors in mediating alignment between learning goals, pedagogy, and assessment.

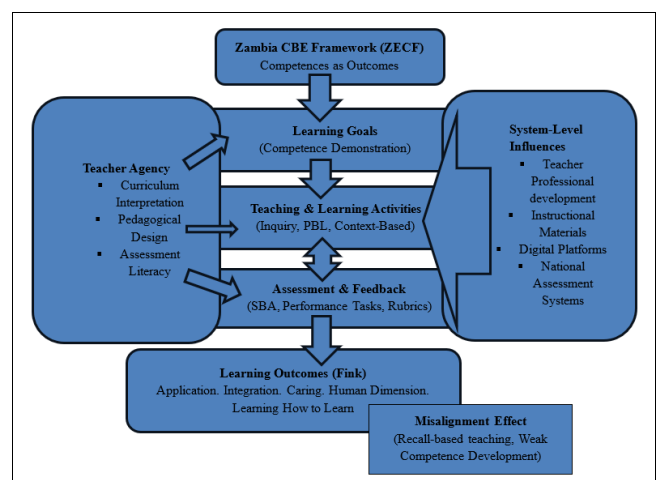


Fig 1: Conceptual Framework

As illustrated in Figure 1, the conceptual framework guiding this study, grounded in the theories of L. Dee Fink and John Biggs, positions pedagogy–assessment alignment as a dynamic process linking curriculum intentions to meaningful learning outcomes within Zambia’s competence-based education (CBE) system. At its core, the Zambia Education Curriculum Framework (ZECF, 2023) defines competences as the intended learning outcomes, which are operationalized through learning goals focused on performance and progression. These goals are enacted through teaching and learning activities such as inquiry-based and project-based learning and are evaluated through assessment and feedback mechanisms including School-Based Assessment (SBA) and performance tasks.

The framework highlights **teacher agency** as the central mediating factor, emphasizing the role of teachers in interpreting curriculum, designing instruction, and implementing assessment. Surrounding this process are **system-level influences**, including teacher professional development, instructional materials, digital platforms, and national assessment systems, which shape the conditions for alignment. A feedback loop underscores the continuous interaction between assessment and instruction. The framework further recognizes that misalignment leads to fragmented learning and limited competence development, reinforcing the need for coherent integration across all components of the education system.

3. Methodology

3.1 Research Design

This study adopted a **systematic review design** to examine the alignment between pedagogy and assessment in the implementation of Zambia’s 2023 competence-based education (CBE) curriculum. The review was guided by the PRISMA framework to ensure methodological rigor, transparency, and reproducibility (Page *et al.*, 2021). PRISMA provides a structured protocol for identifying, screening, assessing, and synthesizing relevant literature, thereby minimizing selection bias and enhancing the reliability and credibility of findings.

In addition to PRISMA, the review employed a theory-informed synthesis approach, drawing on L. Dee Fink’s significant learning framework and John Biggs’s constructive alignment model to guide analysis and interpretation.

3.2 Search Strategy and Data Sources

A comprehensive and systematic search strategy was employed to identify relevant literature published between 2019 and 2025, capturing both pre- and post-implementation phases of the Zambia Education Curriculum Framework (ZECF).

3.2.1 Databases Searched

A comprehensive and systematic search was conducted across multiple academic databases to ensure broad coverage of relevant literature. The primary databases searched included Scopus, Web of Science, ERIC, and Google Scholar. To enhance contextual relevance, particularly within the Zambian and broader African

education landscape, additional sources were consulted. These included policy documents from the Ministry of Education Zambia, reports from the Examinations Council of Zambia, and publications from key development partners such as JICA, UNICEF, World Bank, and Global Partnership for Education. University repositories, including the University of Zambia (UNZA) DSpace, were also searched to capture theses and locally produced research that may not be indexed in international databases. In addition, conference proceedings and practitioner research were reviewed to incorporate emerging and practice-based evidence. To ensure comprehensive coverage, manual snowballing techniques were employed by examining the reference lists of key studies and identifying additional relevant sources.

3.2.2 Search Strings and Boolean Expressions

Structured Boolean search strings were employed to enhance the precision, consistency, and reproducibility of the literature search process. The primary search expression combined key concepts related to competence-based education, alignment, pedagogy, and assessment, and was formulated as follows: (“competence-based education” OR “competency-based education” OR “CBE”) AND (“curriculum alignment” OR “constructive alignment” OR “pedagogy assessment alignment”) AND (“assessment” OR “evaluation” OR “school-based assessment”) AND (“pedagogy” OR “teaching methods” OR “instructional practices”) AND (“Zambia” OR “sub-Saharan Africa”). This core search string was complemented by additional variations to capture studies focusing on implementation and teacher-related factors, including: (“competence-based curriculum” OR “CBC implementation”) AND (“teacher preparedness” OR “teacher capacity”) AND (“formative assessment” OR “summative assessment”) AND (“STEM education” OR “secondary education”). To ensure relevance and manageability of results, search limits were applied, restricting the literature to publications in the English language, within the timeframe of 2019 to 2025, and including peer-reviewed journal articles, policy reports, academic theses, and conference proceedings.

3.3 PRISMA Screening Process

The study selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. During the identification stage, a total of 45 records were retrieved through database searches, institutional repositories, and manual search procedures. In the screening stage, duplicates and clearly irrelevant titles were removed, resulting in 40 records that were assessed based on their titles and abstracts for relevance to pedagogy, assessment, and competence-based education implementation. At the eligibility stage, full-text reviews were conducted on 25 studies using predefined inclusion criteria to determine their suitability for the review. Following this process, a final sample of 15 studies met all criteria and was included in the synthesis.

The entire selection process is summarized in Figure II, which presents the PRISMA flow diagram outlining each stage and the reasons for exclusion.

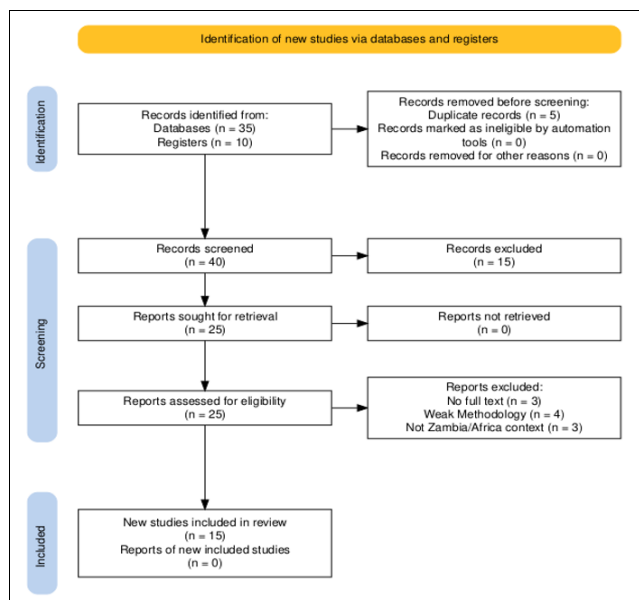


Fig 2: PRISMA 2019 flow diagram illustrating the study selection process, including identification, screening, eligibility, and inclusion stages with reasons for exclusions

3.4 Inclusion and Exclusion Criteria

The selection of studies for this review was guided by clearly defined inclusion and exclusion criteria to ensure relevance and methodological rigor. Studies were included if they addressed competence-based education or curriculum reform, with particular emphasis on pedagogy, assessment, or the alignment between these components. Only publications produced between 2019 and 2025 were considered to capture contemporary developments surrounding the implementation of Zambia's 2023 curriculum framework. Additionally, studies were required to be contextually relevant to Zambia or to comparable sub-Saharan African education systems, allowing for both direct and comparative insights.

Conversely, studies were excluded if they were unrelated to education reform or did not address curriculum implementation issues. Purely theoretical papers that lacked practical, empirical, or policy relevance to pedagogy–assessment alignment were also excluded. Furthermore, studies that did not provide sufficient methodological detail or transparency were omitted to maintain the credibility and reliability of the review findings.

3.5 Quality Appraisal of Included Studies

To enhance the rigor and credibility of the review, all included studies were subjected to a systematic quality appraisal process using criteria adapted from the CASP framework. Each study was evaluated against key indicators, including the clarity of research objectives, methodological appropriateness, validity and reliability of findings, relevance to pedagogy–assessment alignment, and overall contribution to knowledge. Based on this assessment, studies were categorized into three levels: high quality, indicating strong methodological rigor and direct relevance; moderate quality, reflecting adequate methodological soundness with minor limitations; and low quality, indicating limited rigor or insufficient transparency. Only studies classified as high or moderate quality were

included in the final synthesis, while low-quality studies were excluded. The outcomes of the quality appraisal process also informed the weighting of evidence during analysis, ensuring that more robust studies contributed proportionately to the study's conclusions.

3.6 Data Extraction and Analysis

Data from the selected studies were systematically extracted and organized into a structured matrix to ensure consistency and transparency in analysis. The matrix captured key study characteristics, including author(s), year of publication, context, and methodological approach, as well as the main findings and their relevance to pedagogy–assessment alignment. A thematic synthesis approach was then employed to analyze the extracted data. This involved an initial coding process in which findings related to pedagogy, assessment, and implementation challenges were identified and categorized. These codes were subsequently grouped into broader themes, including assessment–curriculum alignment, teacher preparedness, instructional materials, and digital learning.

To deepen the analysis, the identified themes were mapped onto the theoretical framework of L. Dee Fink to evaluate the coherence between learning goals, teaching activities, and assessment practices. This theoretical mapping enabled a structured examination of alignment across the core components of competence-based education. The combined use of thematic synthesis and theory-driven analysis facilitated both descriptive and interpretive insights, allowing for the identification of recurring patterns of alignment and misalignment across the reviewed literature.

3.7 Ensuring Rigor and Trustworthiness

Rigor and trustworthiness in this study were ensured through the application of multiple complementary strategies. Transparency was maintained through explicit documentation of the search strategy, inclusion criteria, and study selection process, allowing for reproducibility and verification. Triangulation was achieved by integrating diverse sources of evidence, including policy documents, empirical studies, and practitioner research, thereby strengthening the validity of the findings. The analysis was further reinforced through strong theoretical grounding, drawing on the frameworks of L. Dee Fink and John Biggs to guide interpretation and ensure conceptual coherence. In addition, a systematic quality appraisal of included studies was conducted to assess methodological rigor and inform the weighting of evidence. Finally, contextual sensitivity was ensured by prioritizing Zambia-specific and regionally relevant studies, enabling the findings to be both locally grounded and applicable to comparable African education contexts.

Table 1 summarizes the empirical studies and policy documents included in the review, highlighting their methodological approaches, focus areas, and key findings.

Table 2 presents the theoretical and methodological frameworks that underpin the analytical approach adopted in this study.

Table 3 presents comparative evidence from selected African countries, highlighting key trends and implications for competence-based education implementation in Zambia.

Table 1: Characteristics of empirical studies and policy documents informing pedagogy–assessment alignment in Zambia’s competence-based education (2019-2025)

Author(s) & Year	Country/Context	Source Type	Study Design	Focus Area	Key Findings (Analytical)	Quality Rating
Bwembya <i>et al.</i> (2025)	Zambia	Journal article	Conceptual /policy	Curriculum reform	Identifies systemic misalignment between curriculum intentions and classroom practice; highlights need for policy–practice coherence	High
Bwembya <i>et al.</i> (2025)	Africa/Zambia	Journal article	Conceptual /empirical	Teacher professionalism	Positions teacher agency and professionalism as central mediators of alignment; links capacity to implementation outcomes	High
Bwembya (2024) [4]	Zambia	Master’s thesis	Qualitative	School-Based Assessment (SBA)	Reveals implementation gaps due to limited teacher assessment literacy and systemic constraints	High
Bwembya <i>et al.</i> (2024) [5]	Zambia	Journal article	Descriptive /qualitative	Assessment practices	Identifies weaknesses in assessment validity and reliability; highlights accountability challenges	Moderate
Bwembya <i>et al.</i> (2025)	Zambia	Journal article	Conceptual /empirical	SBA & Project-Based Learning	Demonstrates need for integration of formative and performance-based assessment within CBE	High
Bwembya <i>et al.</i> (2026) [7]	Zambia	Journal article	Empirical	Assessment frameworks	Highlights issues of equity, reliability, and adaptability in assessment systems under CBC reforms	High
Examinations Council of Zambia (2022) [10]	Zambia	Policy guideline	Institutional framework	Assessment (SBA)	Institutionalizes SBA but reveals gaps in implementation consistency and integration into final certification	High
Global Partnership for Education (2024) [12]	Zambia	Policy report	System analysis	System alignment	Identifies weak coherence across curriculum, pedagogy, and assessment systems at national level	High
JICA & Ministry of Education, Zambia (2023) [14]	Zambia	Program study report	Qualitative /process analysis	Teacher capacity development	Demonstrates that school-based CPD and Lesson Study strengthen teacher competence but require sustained systemic support	High
Ministry of Education Zambia (2023)	Zambia	Policy framework	Curriculum design	Competence-Based Curriculum (ZECF)	Establishes competence-based paradigm emphasizing demonstration of skills; requires alignment across system components	High
Mulenga & Kabombwe (2019a)	Zambia	Journal article	Mixed methods	Curriculum reform	Highlights conceptual foundations of CBE and challenges in contextual adaptation	High
Mulenga & Kabombwe (2019b)	Zambia	Journal article	Conceptual	Curriculum understanding	Identifies limited teacher understanding of CBE principles as a barrier to implementation	High
Phiri & Jumbe (2019) [21]	Zambia	Journal article	Case study	Student engagement	Demonstrates improved learner engagement through contextual pedagogy; limited linkage to assessment systems	Moderate
Phiri (2025) [22]	Zambia	Journal article	Qualitative	Project-Based Learning	Shows strong competence development through PBL; reveals weak formal assessment alignment	High
Phiri (2026a)	Zambia	Journal article	Qualitative case study	Scientific inquiry learning	Demonstrate deep competence development through authentic inquiry and iterative learning processes	High
Phiri (2026b)	Zambia	Journal article	Qualitative case study	Authentic learning environments	Highlights effectiveness of real-world contexts in developing competences; assessment systems remain underdeveloped	High
Phiri <i>et al.</i> (2023)	Zambia	Journal article	Mixed methods	Environmental education	Shows contextualized learning enhances competence development and learner engagement	High
Sakala & Banda (2025) [27]	Zambia	Journal article	Qualitative	SBA implementation	Identifies teacher workload, resistance, and lack of integration of SBA into grading as key barriers to alignment	High
UNICEF Zambia (2023) [28]	Zambia	Evaluation report	Program evaluation	Digital learning	Improves access to learning resources but highlights persistent inequities and limited pedagogical integration	Moderate
World Bank (2025) [29]	Zambia	Implementation report	System analysis	Education reform	Identifies persistent gaps between policy and classroom practice due to systemic and capacity constraints	High

Table 2: Theoretical and methodological frameworks underpinning the analysis of pedagogy–assessment alignment

Author(s) & Year	Context	Source Type	Focus Area	Key Contribution	Role in Study
L. Dee Fink (2003) [11]	Global	Book	Significant learning	Multidimensional learning (6 domains)	Analytical lens for alignment
John Biggs (1996) [1]	Global	Journal article	Constructive alignment	Aligns goals, teaching, and assessment	Supports alignment analysis
PRISMA (2021)	Global	Framework	Systematic review	Ensure transparency and rigor	Guides methodology
CASP (2018)	Global	Framework	Quality appraisal	Evaluates study rigor	Supports evidence weighting

Table 3: Comparative evidence on competence-based education implementation across selected African countries

Source & Year	Country	Source Type	Focus Area	Key Insight	Implication for Zambia
Rwanda Education Board (2015) ^[26]	Rwanda	Policy framework	CBC implementation	Strong design; weak classroom transformation	Policy alone insufficient
Ministry of Education Rwanda (2019) ^[17]	Rwanda	Policy report	Teacher development	Teacher-centered practices persist	Need for pedagogical reform
Kenya Institute of Curriculum Development (2017) ^[15]	Kenya	Curriculum framework	CBC design	Strong curriculum–assessment linkage	Importance of system coherence
Kenya National Examinations Council (2021) ^[16]	Kenya	Assessment framework	CBA	Formalizes competency assessment	Role of assessment systems
Department of Basic Education South Africa (2011) ^[8]	South Africa	Policy document	CAPS	Integrated curriculum and assessment	Operational clarity matters
Department of Basic Education South Africa (2019) ^[9]	South Africa	Implementation guideline	Practice	Challenges in consistency	Implementation gaps persist

4. Findings and Discussion

The findings of this systematic review, when interpreted through theoretical and systems-level lenses, reveal that the implementation of Zambia's 2023 competence-based education (CBE) curriculum is fundamentally shaped by the degree of alignment between pedagogy and assessment. Rather than representing isolated challenges, the identified issues constitute an interconnected system of constraints that collectively determine whether competence-based intentions are realized in classroom practice.

4.1 Curriculum Intent and Structural Demand for Alignment

Analysis of the Zambia Education Curriculum Framework (ZECF) confirms a clear paradigm shift toward defining learning as the demonstration of competences rather than the acquisition of knowledge alone (Ministry of Education Zambia, 2023). This shift aligns with global competence-based education principles but introduces a critical systemic requirement: the deliberate alignment of pedagogy, assessment, and instructional resources. The expectation that learners must demonstrate competences presupposes the existence of teaching strategies that enable such demonstration and assessment systems capable of validly capturing it.

However, the findings indicate that the primary limitation is not the curriculum itself, but the translation of its intentions into classroom practice. This creates a structural tension between policy ambition and implementation capacity, establishing the conditions under which misalignment emerges. Consistent with constructive alignment theory (Biggs, 1996) ^[1] and Fink's integrated course design, the absence of coherence between learning goals, teaching activities, and assessment practices results in fragmented learning experiences (Fink, 2003) ^[11].

4.2 Systemic Misalignment Themes

4.2.1 Assessment as the Dominant Control Mechanism

A central finding is the persistent misalignment between competence-oriented curriculum goals and assessment practices, which remain largely focused on recall and procedural knowledge. This misalignment is driven by historical reliance on examination-oriented systems, limited teacher assessment literacy, absence of validated competence-based tools, and weak moderation mechanisms (Examinations Council of Zambia, 2022; Bwembya *et al.*, 2024) ^[10, 5].

The consequences are profound: assessment practices exert a strong “washback effect,” reinforcing teacher-centered pedagogy and encouraging superficial learning strategies

centered on memorization (Bwembya *et al.*, 2025). Higher-order competences such as problem solving, integration, and critical thinking are inadequately captured, thereby undermining the fundamental goals of CBE.

From a theoretical perspective, this finding confirms that assessment functions as the dominant regulating mechanism within the education system. When misaligned, it overrides curriculum intentions and shapes both teaching and learning behaviors, limiting the development of Fink's higher-order dimensions of learning, particularly application, integration, and learning how to learn (Fink, 2003) ^[11].

4.2.2 Teacher Preparedness as the Central Mediating Factor

Teacher capacity emerges as the most critical determinant of alignment. The review identifies insufficient professional development, limited exposure to inquiry-based pedagogies, and structural constraints such as large class sizes and inadequate infrastructure as key barriers (Mulenga & Kabombwe, 2019b; Sakala & Banda, 2025) ^[27].

These constraints lead to predictable outcomes: teachers revert to lecture-based instruction, opportunities for learner engagement are reduced, and implementation of CBE becomes inconsistent across contexts. Importantly, teacher preparedness is directly linked to assessment misalignment, as teachers design assessment tasks based on their understanding and practical constraints.

When interpreted through Fink's framework, this limitation restricts the development of all six dimensions of significant learning. Teachers who are not equipped to design authentic learning experiences are unlikely to facilitate application, integration, or metacognitive learning. Thus, teacher preparedness represents the primary leverage point for achieving systemic alignment.

4.2.3 Instructional Materials as a Distorting Translation Layer

Instructional materials are found to be insufficiently aligned with competence-based expectations, often reflecting legacy knowledge-based curricula. Slow curriculum-material development cycles and lack of teacher guides that model competence-based pedagogy contribute to this misalignment (Global Partnership for Education, 2024) ^[12].

As a result, teachers rely heavily on textbooks that emphasize content coverage rather than competence development, reinforcing traditional instructional practices. This not only weakens pedagogical alignment but also contributes to assessment misalignment, as assessment tasks are often derived directly from these materials.

This finding highlights the role of instructional materials as a critical translation layer between policy and practice.

When misaligned, they distort curriculum intentions and constrain the realization of competence-based learning outcomes.

4.2.4 Digital Learning as an Underutilized Opportunity

Digital platforms such as the Learning Passport Zambia offer significant potential for supporting competence-based learning but remain underutilized. Challenges include unequal access to technology, limited teacher capacity for pedagogical integration, and weak alignment between digital content and assessment practices (UNICEF Zambia, 2023; World Bank, 2025) ^[28, 29].

Consequently, digital tools function primarily as repositories of content rather than as environments for active learning and competence development. This reinforces passive learning approaches and exacerbates inequities between well-resourced and under-resourced schools.

This finding underscores a critical insight: technology is not inherently transformative. Its impact depends on its alignment with pedagogical and assessment systems.

4.3 Emerging System-Level Signals of Alignment

Despite these challenges, the review identifies emerging system-level efforts that signal progress toward alignment. Initiatives such as School-Based Assessment (SBA), teacher professional development programs, and digital learning investments reflect growing recognition of the need for systemic reform (Examinations Council of Zambia, 2022; JICA & Ministry of Education, Zambia, 2023) ^[10, 14].

These initiatives have the potential to:

1. Shift assessment toward competence-based approaches
2. Strengthen teacher capacity
3. Expand opportunities for continuous and formative assessment

However, their effectiveness depends on integration within a coherent system. When implemented in isolation, they risk reinforcing fragmentation rather than achieving alignment.

4.4 System-Level Interpretation through Fink's Framework

Applying Fink's theory of significant learning reveals that misalignment is systemic rather than isolated. The findings demonstrate that while foundational knowledge remains dominant, higher-order dimensions—application, integration, the human dimension, caring, and learning how to learn—are insufficiently developed (Fink, 2003 ^[11]; Phiri, 2025 ^[22]; 2026a).

This imbalance results in:

1. Fragmented learning experiences
2. Limited development of transferable competences
3. Reduced effectiveness of curriculum reform

From a systems perspective, all identified themes converge within this framework. Teacher preparedness influences all dimensions, assessment misalignment disrupts the system, and instructional and digital resources mediate implementation.

4.5 Alignment as a Structural and Sustainability Imperative

The synthesis of findings confirms that alignment between pedagogy and assessment is not a peripheral consideration but a structural requirement for the successful implementation of CBE. Misalignment leads to inefficient use of resources, limits the development of higher-order competences, and exacerbates inequities in learning

opportunities (UNICEF Zambia, 2023; World Bank, 2025) ^[28, 29].

From a sustainability perspective, aligned systems enable the development of all six dimensions of significant learning, supporting deep, authentic, and transferable learning outcomes. Conversely, persistent misalignment reduces CBE to a policy aspiration rather than a lived educational reality.

Comparative evidence from Rwanda, Kenya, and South Africa reinforces this conclusion, demonstrating that curriculum reform alone is insufficient without coherence across pedagogy, assessment, teacher preparation, and system-level support.

5. Conclusion

This systematic review establishes that the successful implementation of Zambia's 2023 competence-based education (CBE) reform is fundamentally contingent upon the achievement of coherent, system-wide alignment between pedagogy, assessment, teacher capacity, instructional materials, and enabling infrastructure. While the Zambia Education Curriculum Framework (ZECF) provides a progressive and conceptually robust foundation centered on competence demonstration, the evidence synthesized in this study reveals persistent and interdependent implementation gaps that constrain its realization in practice (Ministry of Education Zambia, 2023; Global Partnership for Education, 2024 ^[12]). These gaps—particularly in assessment practices, teacher preparedness, instructional resources, and equity of access—are not isolated deficiencies but structurally interconnected factors that collectively shape classroom realities.

Interpreted through the lens of L. Dee Fink's theory of significant learning, the findings point to a systemic imbalance in learning outcomes. Classroom practices remain disproportionately oriented toward foundational knowledge, largely driven by assessment systems that prioritize recall and procedural performance. In contrast, higher-order dimensions—application, integration, the human dimension, caring, and learning how to learn—are insufficiently developed (Fink, 2003 ^[11]; Phiri, 2025 ^[22]; 2026a). This imbalance reflects deeper structural misalignment, where assessment practices regulate pedagogy, teacher capacity constrains instructional innovation, and resource limitations restrict the enactment of competence-based approaches. Consequently, the transformative intent of CBE is frequently reduced to procedural compliance rather than meaningful pedagogical transformation.

A critical contribution of this review is the reconceptualization of alignment as a **systemic condition rather than a technical adjustment**. The persistence of the "washback effect," whereby assessment practices shape both teaching and learning behaviors, underscores the centrality of assessment reform as a driver of system-wide change (Bwembya *et al.*, 2025; Sakala & Banda, 2025 ^[27]). At the same time, teacher preparedness emerges as the primary mediating variable that determines whether alignment is realized or disrupted in practice. This dual dynamic confirms that effective CBE implementation depends on the coherence and interdependence of all system components, rather than improvements in any single element.

The review further identifies emerging system-level initiatives—such as the strengthening of School-Based Assessment, the expansion of digital learning platforms, and

targeted professional development programs including the Knowledge Co-Creation Programs—as critical entry points for advancing alignment (Examinations Council of Zambia, 2022; UNICEF Zambia, 2023; Japan International Cooperation Agency [JICA] & Ministry of Education, Zambia, 2023) ^[10, 28, 14]. However, their transformative potential will remain limited unless they are deliberately integrated into a unified system that aligns curriculum, pedagogy, assessment, and resource provision. Without such integration, these initiatives risk functioning as fragmented interventions rather than catalysts of systemic reform.

From a sustainability and equity perspective, alignment provides a practical and evidence-based pathway for achieving meaningful and inclusive educational outcomes. Aligned systems enable learners to engage in deep, authentic learning experiences that foster transferable competences, while also ensuring equitable opportunities for all learners to demonstrate their abilities. Conversely, persistent misalignment not only constrains competence development but also exacerbates existing inequalities, particularly in resource-constrained contexts.

Ultimately, this study concludes that the realization of competence-based education in Zambia depends on repositioning alignment as the central organizing principle of the education system. Embedding alignment across curriculum implementation, teacher education, assessment reform, and resource development is essential for transforming policy into practice. Only through such systemic coherence can the education system move beyond aspirational reform toward sustained, transformative learning—enabling learners to develop the full range of competences required for lifelong learning, active citizenship, and sustainable development.

6. Recommendations

Drawing on the findings of this review, effective implementation of Zambia's competence-based education (CBE) requires a **coherent, system-wide strategy that positions alignment between pedagogy and assessment as the central organizing principle**. The following recommendations synthesize the key reform priorities into integrated, high-leverage actions.

6.1 Establish a National Competence-Based Assessment System

A comprehensive national assessment framework should be developed to operationalize the assessment of the twelve general competences. This framework must define performance standards, competence indicators, and standardized rubrics, while ensuring coherence between formative (School-Based Assessment) and summative systems (Ministry of Education, Zambia, 2023; Sakala & Banda, 2025 ^[27]).

Strategic Effect: Reorients the system from knowledge recall to performance-based assessment, addressing the root cause of pedagogical misalignment.

6.2 Strengthen School-Based Assessment through Moderation and Quality Assurance

School-Based Assessment should be reinforced through structured moderation at school, district, and national levels, including inter-rater reliability processes, standardized exemplars, and targeted training in assessment design and feedback (Examinations Council of Zambia, 2022) ^[10].

Strategic effect: Enhances the credibility, validity, and consistency of competence-based assessment across the system.

6.3 Reorient Teacher Professional Development Toward Integrated Design

Teacher education and continuous professional development should be redesigned around **constructive alignment and integrated course design principles**, enabling teachers to coherently link learning outcomes, pedagogy, and assessment (Biggs, 1996; Fink, 2003) ^[1, 11]. Scaling models such as Lesson Study and Knowledge Co-Creation Programs will be critical (JICA & Ministry of Education, Zambia, 2023) ^[14].

Strategic effect: Positions teacher capacity as the primary driver of alignment and competence development.

6.4 Institutionalize Authentic Assessment through Learner Portfolios

Learner portfolios should be formally integrated into the assessment system to capture longitudinal competence development through performance tasks, projects, and reflective evidence.

Strategic Effect: Expands assessment beyond single-point testing, enabling valid measurement of higher-order competences such as integration, reflection, and learning how to learn.

6.5 Align Digital Learning Platforms with Pedagogy and Assessment

Digital platforms should be redesigned to support competence-based learning by integrating interactive tasks, formative feedback systems, and digital portfolios, rather than functioning solely as content repositories (UNICEF Zambia, 2023; World Bank, 2025) ^[28, 29].

Strategic Effect: Transforms digital tools into active learning environments that reinforce aligned pedagogy and assessment.

6.6 Address Equity through Access-Focused System Design

Targeted investments in infrastructure, connectivity, and low-bandwidth solutions are essential to ensure equitable access to competence-based learning opportunities across contexts.

Strategic Effect: Prevents the widening of learning inequalities and ensures inclusive participation in CBE.

6.7 Strengthen System-Level Coherence and Monitoring

An integrated monitoring framework should be established to track alignment across curriculum, pedagogy, assessment, and resources. This includes developing alignment indicators, using assessment data for instructional improvement, and ensuring policy–practice coherence.

Strategic Effect: Enables continuous system improvement and ensures that reforms translate into sustained classroom change.

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