Reimagining Critical Interdisciplinarity. Shifting from the Traditional to the Transformative Paradigm in Higher Education Research and Learning.

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Abstract

Critical University Studies (CUS) is an emerging interdisciplinary field that interrogates the structures, policies, and practices of higher education institutions. By challenging conventional academic paradigms, CUS provides a framework for shifting from traditional academic research to transformative research aimed at fostering critical practices and societal impact. This paper examines the ways in which CUS can facilitate this shift, focusing on three key areas: reimagining research agendas, fostering interdisciplinarity, and promoting engaged scholarship. The research question is how higher learning institutions become the pacesetters of contextualised and interdisciplinary transformative education in Africa? it adopted a qualitative approach with a descriptive design. It employed documentary analysis to identify key themes and utilizes content analysis with a deductive iterative technique for data classification. Key findings indicate that fostering critical thinking, adaptability, and digital skills is essential for students to engage with pressing global issues such as poverty, environmental degradation, and intercultural communication. Furthermore, the study reveals significant challenges confronting higher education stakeholders, including the need for curriculum reform that integrates global values of social justice and responsibility, while ensuring alignment with local cultural contexts. Additionally, the research underscores the importance of collaborative practices among educators and community partners, emphasizing that engaged scholarship can transform the researcher-community relationship into a reciprocal exchange that enriches educational outcomes. The findings suggest that through a robust framework of CUS, higher education can play a crucial role in nurturing future leaders capable of navigating complex societal challenges while promoting sustainable development.

Keywords: Interdisciplinarity, Policies, Higher Education, Transformation, Reimagining, Social Justice

1. Introduction

The traditional research paradigm in higher education has long emphasized disciplinary specialization and theoretical contributions, often at the expense of practical societal impact [1]. This approach has fostered intellectual silos, limiting interdisciplinary collaboration and the integration of diverse perspectives [2]. Hence, this paper explores how the traditional research orientation can be reoriented to embrace a transformative paradigm, enhancing the

relevance and impact of academic inquiry. It aims at ensuring that reflections to move from routine practices to transformational orientations are supported and projected.

In response, Critical University Studies (CUS) has emerged as a transformative framework, challenging conventional research practices and advocating for a shift towards research that prioritizes contextual paradigms, social justice, equity, and community well-being [3].

The methodology for this paper is based on information collected through a comprehensive desk review of available documents relevant to CUS and Interdisciplinary research paradigm. A qualitative research approach and its techniques have been used to identify the different themes of this study. The literature review has been gathered through secondary sources, including scholars' publications, seminar papers, journals, textbooks, and periodicals on migration and related documents.

The essay is structured to first explore the background to the study with questions to guide the reflections, followed by outlining the theoretical framework underpinning the study to provide a foundation for understanding the various dimensions of CUS, in addition to literature review organized around key themes and codes. The synthetization of the key findings from the literature review shall be connected to the established theoretical framework. The discussion explores the research implications and identifies potential gaps in knowledge, what to do and ultimately providing a comprehensive conclusion to the question raised by the study.

2. Background of the Study

The Society is interested in changing from traditional to progressive education systems [4]. In recent years, there has been a notable shift in the landscape of higher education research towards reimagining the role and purpose of academic inquiry [5]. Traditionally, research in academia has been confined within disciplinary boundaries, often prioritizing theoretical contributions over practical societal impact. This conventional approach, while valuable, has been criticized for perpetuating systemic inequities and failing to effectively address the complex challenges of contemporary society [1]. Individuals living in this age strongly need to acquire skills that are required to cope with the challenges of the 21st century [5].

The traditional research paradigm in higher education has long been centered on disciplinary specialization, shaping the beliefs and guidelines that influence what scholars in a particular field consider worthy of study, the methods they employ, and how they interpret their findings [6]. This paradigm establishes a framework that dictates a researcher's subjective philosophical orientation, deeply affecting every aspect of the research process, from the formulation of research questions to the selection of methodologies and the interpretation of results, void of interdisciplinarity [7]. Consequently, this approach not only guides the focus of academic inquiry but also reinforces specific academic norms and practices within each discipline (Ibid, p. 26). This approach has historically fostered the development of specialized knowledge within disciplines, advancing various academic fields. However, this emphasis on specialization has also led to the formation of intellectual silos that can hinder interdisciplinary

collaboration and the integration of diverse perspectives [3]. Furtherance to this, research reimagination that enhances critical interdisciplinarity from routine to transformation remains flabby, and unattended to it by the plethora of different studies.

Furthermore, the conventional research paradigm reinforces disciplinary boundaries, constraining opportunities for interdisciplinary collaboration and knowledge exchange. This siloed approach can impede innovation and the creation of comprehensive solutions to complex societal issues that necessitate interdisciplinary insights [2]. Despite the benefits of specialization, this traditional paradigm may inadvertently limit creativity and exploration of new ideas that could arise from interdisciplinary interactions [8].

Critical University Studies (CUS), has emerged as a response to these limitations, offering a transformative framework that challenges and expands the boundaries of academic research. rooted in critical theory [2]. CUS interrogates the structures, policies, and practices that underpin higher education institutions, advocating for a shift from traditional to transformative research paradigms [9]. Such a shift is not merely theoretical but a call to action, urging scholars to reorient their research agendas towards promoting social justice, equity, and community well-being, particularly for marginalized populations and providing concrete solutions to the numerous vestiges of colonialism [9]. Such challenges have been the bane of a majority of universities in Sub-Saharan Africa churning out University graduates with no precision of their skill levels, thereby fraught with unproductive graduate's dependent on white collar jobs for survival.

The Sub-Saharan African setting of higher institutions of learning are challenging and complex based on their creation and functioning. At the core of CUS is the recognition that higher education institutions are not neutral spaces; they are shaped by power dynamics, historical legacies, and social hierarchies that influence whose knowledge is valued and whose voices are heard [2]. The integration of critical thinking into educational processes becomes imperative, and there is a growing emphasis on its significance. Higher institutions of learning are questioning the presence of these skills, recognizing the importance of ensuring a grasp of its meaning, historical roots, and theoretical foundations of critical thinking in education Institutions are actively seeking to comprehend how critical thinking can be effectively implemented in higher learning establishments to change the orientation of lecture theatres to untainted reflections arena [10].

The Noticeable Gaps from Diverse Literature

By critically examining these dynamics, CUS engaged researchers to adopt a more holistic and reflexive approach to their work, one that is attuned to the needs and concerns of diverse communities. This approach not only enhances the relevance and impact of academic research but also aligns it more closely with the values of social responsibility and ethical scholarship [11]. Consequently, CUS firm resolve to promotes interdisciplinarity is a means of breaking down the silos that often characterize academic research. By fostering collaboration across disciplines, CUS is seeking the development of innovative and holistic solutions to complex societal problems (Ibid). This interdisciplinary ethos is particularly important in an increasingly interconnected world, where the challenges faced such as climate change, inequality, and global health crises cannot be effectively addressed within the confines of a single discipline.

Engaged scholarship, another key pillar of CUS, represents a paradigm shift in the relationship between researchers and the communities they study. Moving away from the traditional model of knowledge production, where researchers are seen as experts who generate knowledge for passive consumption, engaged scholarship emphasizes collaboration, reciprocity, and co-creation of knowledge [12]. This approach ensures that research is grounded in lived

experiences and practical concerns, leading to outcomes that are not only academically rigorous but also socially relevant and impactful. Such a process requires an education system that is contextualized and grounded on the needs of the concerned people, in this case, Sub-Saharan African setting. How far can we go with this? How decolonized is our mindsets and the need to fox out our own technology?

In light of these developments, this study aims to explore how CUS can facilitate a transition from traditional research paradigms to transformative ones within higher education in Africa. By examining the ways in which research agendas can be reimagined, interdisciplinarity can be fostered, and engaged scholarship can be promoted, this study aims to contribute to the growing body of literature that advocates for a more critical and socially responsive approach to academic research akin to the African context. From the foregoing body of empirical outlay, consisting of critical interdisciplinarity, traditional and transformative research, there is an information or knowledge gap requiring urgent attention at the abstract level. Second, the epistemic and ontological dispensation combined, needs profound reflexivity and shaking off individual subjective orientation to be able to navigate these gaps. The goal is to provide insights and recommendations that can guide policymakers, educators, and researchers in reorienting their practices toward a more transformative and impactful model of scholarship The following main question would guide the reflection of this paper 'How can higher learning institutions become the pacesetters of contextualised and interdisciplinary transformative education in Africa? It would be operationalized by the following sub questions;

1 What are the strategies and policies intended to oversee the successful implementation of these indicators of critical research?
2 What are the challenges confronting higher education stakeholders for its effective implementation?
3 How can CUS be adapted to address the unique challenges of higher education in Sub-Saharan Africa?

3. Theoretical Review

The This study explores how the traditional research orientation can be reverted to a transformational dispensation through the lens of critical theory. This framework provides a foundation for analysing the themes and findings from the study.

Critical theory, originating from the Frankfurt School in the early 20th century, is a foundational framework for examining and challenging societal structures and power dynamics. It was developed by scholars such as Max Horkheimer, Theodor Adorno, Herbert Marcuse, and Jürgen Habermas. The theory critiques traditional approaches that merely describe and explain societal phenomena without addressing underlying power imbalances and social injustices [13]. The primary goal of critical theory is not only to understand but also to transform society by revealing and confronting the structural inequalities inherent in social institutions [14]. The theory is built on the premise that knowledge and truth are deeply intertwined with power relations and ideologies. It emphasizes that societal structures ranging from economic systems to cultural norms play a significant role in perpetuating inequalities. By applying critical theory, this study seeks to critically analyze the traditional research paradigms in higher education that often reinforce disciplinary silos and fail to address pressing social issues [13]. This theoretical perspective aligns with the study's aim to explore how to transition from conventional research

methods to transformative approaches that emphasize social justice and community well-being [9].

Despite its significant contributions, critical theory has its limitations. One major critique is its abstract and theoretical nature, which can sometimes render it impractical for addressing concrete issues. The theory's focus on ideological critique might overshadow the development of actionable strategies for change [15]. Additionally, critical theory's complexity and academic nature may pose challenges for practitioners outside the academic sphere, potentially limiting its broader applicability and acceptance, thereby failing to stimulate abilities and ideas beyond cognitive potentials and outdriving the forward surge of society [16]. These shortcomings, however, do not diminish the theory's value for this study. Hence critical theory remains instrumental in understanding and challenging the traditional research paradigms in higher education. Its emphasis on power dynamics and social justice by providing critical insights into how academic practices can be reformed to be more inclusive and impactful. Moreover, it encourages researchers to engage in reflexivity, critically examining their own biases and the societal implications of their work [17]. Thus, despite its limitations, critical theory is a crucial component of the theoretical framework, offering essential perspectives for transitioning to more transformative and socially relevant research practices.

4. Literature Review

4.1 **Quality Education and Pedagogical Transformation for Promoting CUS**.

Quality education and pedagogical transformation are pivotal in promoting Critical University Studies (CUS), an interdisciplinary field that interrogates the structures and practices of higher education. Scholars emphasize critical thinking as a core competency for students, linking it to meaningful engagement with societal issues [18; 19]. However, while this view is widely accepted, critics argue that overemphasis on critical thinking can sometimes marginalize other equally important educational goals, such as emotional intelligence or vocational training. For instance, some argue that a singular focus on critical thinking may undermine the importance of practical skills necessary for immediate employability in rapidly evolving job markets [20].

Furthermore, quality education is often aligned with sustainable development goals, necessitating the active involvement of higher education institutions in teaching, knowledge production, and skill development [21]. This perspective aligns with the notion that universities must cultivate graduates who are agile and capable of addressing societal challenges [22; 23]. However, alternative paradigms suggest that the reliance on higher education as the primary driver of sustainable development may inadvertently exacerbate inequalities, as access to quality education remains uneven, particularly in marginalized regions [24]. Such critiques challenge universities to balance aspirations for sustainability with the practical realities of accessibility and equity.

Pedagogical transformation is equally vital for enhancing the quality of education. Traditional, hierarchical educational models often reduce students to passive recipients of knowledge. Scholars advocate for dynamic, student-centered approaches that emphasize active participation and critical engagement [25]. Paulo Freire's concept of problem-posing education exemplifies this shift, promoting an educational model that empowers students to question and transform their realities [25]. On the other hand, critics of Freirean pedagogy caution that its implementation in under-resourced institutions may face significant obstacles, including

resistance from faculty accustomed to traditional teaching methods and a lack of institutional support [24]. Moreover, while blended learning and digital tools are often heralded as transformative, their efficacy in underfunded Sub-Saharan African contexts is questionable, as infrastructural and technological disparities remain widespread [23].

In the context of CUS, quality education must transcend knowledge transmission to cultivate critical thinking and community engagement [2]. However, this idealized vision raises questions about the feasibility of implementing such changes in institutions that prioritize standardized testing and publication metrics over student-centered learning outcomes [26]. Critics argue that redefining measures of success is essential but complex, requiring a fundamental cultural shift within academia. For instance, while some scholars champion inclusive education as a cornerstone of quality education [27], others caution that superficial inclusion initiatives risk becoming performative if structural barriers to equitable access remain unaddressed.

4.2 Technological Integration and Digitalization

Technological integration and digitalization are often positioned as pivotal in transforming universities into modern educational institutions. Proponents argue that technology democratizes access to information, removing barriers related to geography, economics, and institutional gatekeeping [31]. Open access platforms like Coursera or edX are highlighted as examples of tools that make academic knowledge widely available [31; 32]. Yet, critics contend that the optimistic narrative surrounding digitalization often obscures significant disparities in access to technology, particularly in Sub-Saharan Africa, where many institutions struggle with inadequate infrastructure and high costs of internet connectivity [39].

Moreover, while digital education can enhance the efficiency and quality of educational delivery, critics argue that it risks commodifying education, prioritizing scalable online solutions over in-depth, personalized learning experiences [33]. The COVID-19 pandemic accelerated digital transformation, exposing both its potential and its limitations. While some institutions successfully integrated digital tools into their curricula, others revealed vulnerabilities, such as faculty and students lacking the necessary digital competencies [33; 35]. This disparity raises critical questions about the extent to which digitalization can truly level the educational playing field.

Critical University Studies emphasize the need for institutions to adopt technologies that not only enhance learning outcomes but also promote sustainability and inclusivity [34; 35]. However, alternative paradigms caution against uncritical adoption of digital tools, arguing that they often reinforce existing inequalities rather than addressing them. For instance, digital platforms designed for global audiences may lack cultural relevance or fail to accommodate local pedagogical needs, particularly in marginalized regions [36; 37].

4.3 Learners Defects in Higher Education on their High Cognitive Action.

Higher education in Sub-Saharan Africa faces significant challenges in fostering high cognitive engagement, such as critical thinking, problem-solving, and creativity. Inadequate infrastructure, overcrowded classrooms, and outdated curricula are commonly cited barriers [39; 40]. Despite this, scholars argue that framing these issues solely as institutional deficiencies risks oversimplifying the problem. Socio-economic and cultural factors, such as

poverty, gender norms, and familial expectations, also play a crucial role in shaping students' educational experiences and outcomes [44; 45].

While some scholars advocate for increased investment in infrastructure and faculty training as solutions [42], others caution that such interventions may not fully address the deeper, systemic issues underlying educational disparities. For example, traditional assessment methods, which prioritize memorization over critical thinking, reflect broader societal and institutional priorities that are resistant to change [43]. Yer from a critical lens one can argue that CUS focus on structural reform often overlooks the immediate, practical needs of students, such as employable skills and access to basic educational resources.

4.4 Critical Thinking and Students Disposition in Higher Institutions of Learning

The cultivation of critical thinking skills is a paramount objective of higher education globally [46]. In Sub-Saharan Africa, where rapid urbanization, economic development, and technological advancements are reshaping societies, critical thinking becomes even more imperative [47]. [48] postulates critical thinking as the ability to analyze, evaluate, and synthesize information to form reasoned judgments. It is a fundamental skill that equips individuals to navigate complex problems, make informed decisions, and contribute meaningfully to society. In the context of Sub-Saharan Africa, critical thinking is essential for addressing pressing issues such as poverty, inequality, climate change, and political instability. Despite its importance, the traditional education paradigm hinders educators to prioritize it [49; 50]. As such, CUS offer a promising approach to addressing these challenges and promoting critical thinking among students in Sub-Saharan Africa. This is because CUS offers theoretical and methodological framework that examines the role of universities in society and their contribution to knowledge production and social change [51]. It emphasizes the importance of critical reflection, questioning dominant narratives, and engaging with diverse perspectives [52]. By integrating CUS into higher education, institutions can create an environment that encourages students to develop critical thinking skills and apply them to real-world problems [53]. Moreover, CUS can facilitate curricular reforms that prioritize critical thinking and problem-solving, ensuring that students are better prepared to face the challenges of their societies [54]. This approach not only enhances students' cognitive abilities but also fosters a sense of agency and responsibility, empowering them to become active participants in their communities [55].

4.5 Interdisciplinarity Teaching-Learning in Higher Institutions of Learning

According to [45], interdisciplinary teaching and learning in higher institutions are emerging trend globally, as academic institutions strive to respond to the complexities of modern societies. Interdisciplinary teaching-learning involves integrating knowledge and perspectives from multiple disciplines to address complex problems. It fosters critical thinking, problem-solving, and creativity, enabling students to develop a holistic understanding of issues and develop innovative solutions [56]. Interdisciplinary approaches can also contribute to the development of new knowledge and methodologies, breaking down disciplinary silos and promoting collaboration among researchers.

Sub-Saharan Africa is no exception, with its institutions of higher learning facing unique challenges but also showing potential for innovation. The region is moving away from traditional discipline-specific education towards a more holistic, interdisciplinary approach that

integrates various fields of knowledge [57]. However, the pace of change varies significantly across countries, and the challenges associated with this shift are numerous. Many Sub-Saharan African universities, such as those in South Africa, Nigeria, Ghana, and Kenya, have started integrating interdisciplinary programs, particularly in areas like sustainable development, public health, and technology [58]. These initiatives aim to address the region's pressing socio-economic issues, including poverty, inequality, and environmental degradation.

To effectively foster interdisciplinary teaching and learning, higher education institutions must undergo a fundamental transformation in their teaching practices. A promising framework for this transformation is the TESCEA approach to transforming learning and teaching, which begins with profiling the ideal graduate. This step engages key academic staff, including heads of departments, deans, and quality assurance officers, who are involved in designing and delivering programs and courses [59]. By reflecting on the university's vision and mission, this process helps to identify strengths and gaps in current teaching practices, enabling institutions to align their educational offerings with the competencies they promise students upon graduation. This alignment ensures that any changes and interventions made are cohesive across the university and various programs, reinforcing transferable skills developed from the first year onward (Ibid). Following Program Alignment, the next crucial stage is Transformative Learning, which emphasizes developing critical reflective thinking among educators. In this phase, university staff reflect on and critically examine their teaching philosophies and practices. They are introduced to transformative learning theories and frameworks, creating opportunities to redefine their own pedagogical approaches based on new insights. This reflective practice is essential for encouraging a shift toward interdisciplinary collaboration, as it fosters enthusiasm for developing innovative educational methodologies. See figure 1 for the pictorial view of the redesigning journey proposed by the TESCEA.
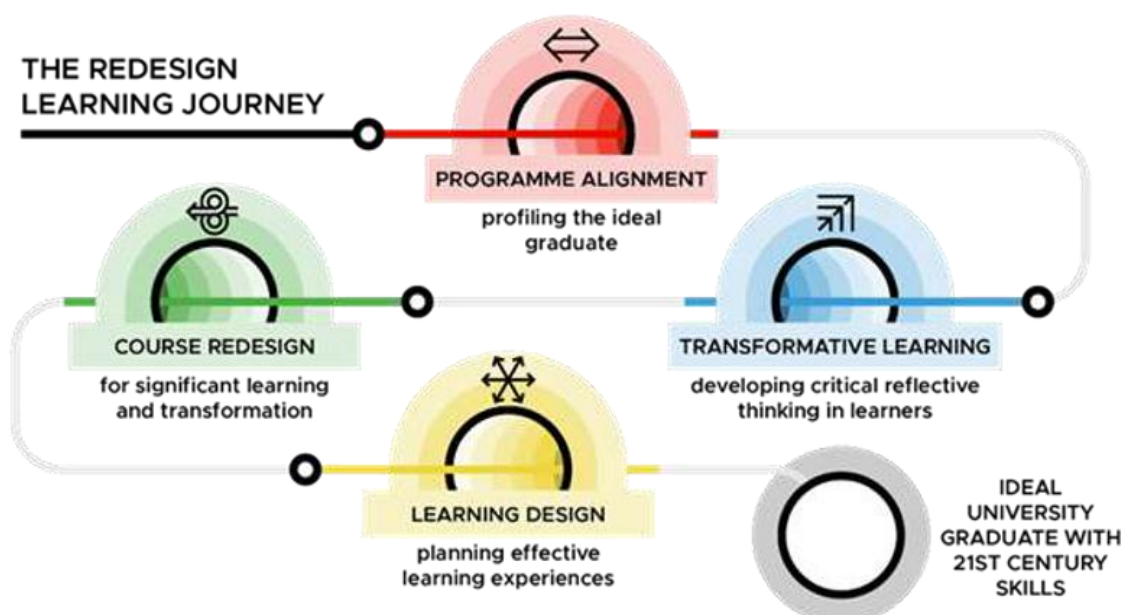
Source: Wild, (2023)

For instance, universities in South Africa have been at the forefront of interdisciplinary education, with institutions like the University of Cape Town and Stellenbosch University offering programs that merge fields such as engineering, environmental science, and social policy [60]. Nigeria and Ghana have also initiated interdisciplinary programs that bring together disciplines like economics, public policy, and information technology to address national development challenges [61]. Despite these advances, many universities across the region still adhere largely to traditional discipline-based structures. Faculties and departments often operate in silos, limiting opportunities for interdisciplinary collaboration [62]. As a result, the integration of interdisciplinary teaching remains uneven, and in many cases, it is still in its nascent stages [59].

Despite this, several challenges hinder the full implementation of interdisciplinary education in Sub-Saharan Africa. The most significant is the rigid academic structure within universities, which often does not facilitate cross-disciplinary collaboration [63]. Many institutions continue to emphasize traditional disciplinary boundaries, making it difficult for students to engage in interdisciplinary coursework or research [64]. Moreover, there are logistical and financial constraints. Developing interdisciplinary programs requires significant investment in resources, such as training faculty, revising curricula, and creating new learning spaces [65]. However, many universities in Sub-Saharan Africa face chronic underfunding and struggle with inadequate infrastructure, which makes it difficult to support innovative teaching and learning models [63]. Additionally, there is often a lack of faculty expertise in interdisciplinary teaching. Many educators were trained in traditional, discipline-specific methodologies and may not have the knowledge or skills required to teach across disciplines [66]. This gap in expertise limits the effectiveness of interdisciplinary initiatives. Another challenge is the lack of awareness and understanding among students and faculty about the value of interdisciplinary education. In many cases, students may be hesitant to pursue interdisciplinary programs due to uncertainty about the relevance of such education to their career prospects.

Even with these challenges, there have been notable successes in promoting interdisciplinary education in Sub-Saharan Africa. Institutions that have embraced the interdisciplinary approach are finding that it enhances students' problem-solving skills, creativity, and adaptability, all essential qualities for addressing the complex social, economic, and environmental challenges facing the continent [24]. For example, the African Leadership University (ALU), with campuses in Rwanda and Mauritius, has adopted a fully interdisciplinary curriculum focused on equipping students with skills to solve Africa's most pressing problems [67]. The university's model emphasizes project-based learning and collaboration across various fields of study, positioning its graduates to become innovative leaders capable of driving change. Furthermore, the rise of digital platforms and online education offers significant opportunities for interdisciplinary teaching in Sub-Saharan Africa. Universities can now access global knowledge networks, collaborate with international institutions, and provide students with a more diverse and comprehensive education [68] Institutions like the University of Nairobi in Kenya and the University of Pretoria in South Africa have begun leveraging these digital tools to facilitate interdisciplinary learning, particularly in the fields of environmental science, health, and technology.

To fully realize the potential of interdisciplinary education, higher institutions in Sub-Saharan Africa need to make strategic investments and reforms. This could include revising academic structures to promote cross-disciplinary collaboration, providing professional development for

faculty, and increasing funding for interdisciplinary research and program development [69]. This author further accentuate that, there must be an effort to raise awareness among students and educators about the benefits of interdisciplinary education and its relevance to solving real-world problems. Similarly, governments and educational stakeholders also have a role to play in supporting interdisciplinary initiatives. National policies that encourage innovation in education, as well as partnerships between universities, industry, and international institutions, can help facilitate the growth of interdisciplinary programs [70]. Collaboration across borders within Africa can also contribute to the exchange of ideas and resources, which would strengthen the region's higher education system overall [71].

4.6 Organizational Support and Shared Responsibility

As higher learning institutions in Africa grapple with the challenge of fostering critical interdisciplinarity and shifting from traditional to transformative paradigms, the role of organizational support and shared responsibility is imperative to consider. These institutions must go beyond conventional disciplinary frameworks and structures to embrace a more holistic approach that nurtures interdisciplinary education and research. Organizational support is crucial to fostering an environment where interdisciplinary education can thrive. For interdisciplinary research and teaching to succeed, universities must actively create policies, strategies, and administrative structures that encourage collaboration across departments and faculties. According to [45] universities that have successfully implemented interdisciplinary programs often have clear institutional policies that promote collaboration, provide funding for interdisciplinary research, and incentivize faculty to participate in interdisciplinary projects. Such institutional backing helps overcome the deeply ingrained disciplinary silos that often characterize traditional universities.

In the African context, the need for robust organizational support is even more critical due to existing challenges such as limited resources, outdated curricula, and structural legacies rooted in colonial education systems. Research by [72] highlights the importance of university governance in Africa prioritizing the creation of a conducive environment for interdisciplinary work. This includes revising outdated curricula, investing in faculty training for interdisciplinary teaching, and establishing cross-departmental research centers focused on Africa's pressing issues like climate change, public health, and sustainable development [73]. Moreover, the successful implementation of interdisciplinary programs requires the commitment of faculty, administrators, students, and external partners. In African universities, the notion of shared responsibility must extend beyond the faculty and administrative bodies to include partnerships with industry, government, and international organizations. [74] emphasizes that fostering partnerships with external stakeholders can provide critical support, including funding, expertise, and opportunities for practical application of interdisciplinary research For example, partnerships between universities and industries can help align interdisciplinary education with the needs of the labor market, ensuring that graduates possess the skills needed to solve complex problems in real-world settings.

Among the effective strategies to institutionalize organizational support is the establishment of interdisciplinary research centers or institutes within universities. These centers can serve as hubs for collaboration, bringing together faculty and students from diverse disciplines to address common research themes. Such centers have been shown to promote interdisciplinary work by providing dedicated spaces and resources for scholars to collaborate effectively [75].In

the context of African universities, these centers could focus on pressing regional issues such as food security, renewable energy, or infectious diseases, thereby aligning research efforts with the continent's development priorities. Also [76] indicates that targeted funding is a key enabler of interdisciplinary work, as it helps to overcome financial barriers that often hinder collaboration between departments. As funding for interdisciplinary research and education must be considered as a critical policy measure. Universities can allocate resources specifically for interdisciplinary projects, ensuring that scholars have the necessary financial support to pursue cross-disciplinary work. This funding could cover joint research projects, interdisciplinary conferences, and the development of interdisciplinary curricula. Also, [75] emphasized that policies that promote professional development for faculty in interdisciplinary teaching and research are essential and therefore higher learning institutions in Africa must invest in training programs that equip faculty with the skills needed to engage in interdisciplinary work, including workshops on interdisciplinary teaching methods and mentoring programs that connect less experienced scholars with seasoned interdisciplinary researchers. [77] further accentuate that interdisciplinary work should be incentivized through promotion and tenure criteria to further encourage faculty participation by ensuring that interdisciplinary contributions are valued and recognized within institutional evaluation processes. This includes revising tenure and promotion guidelines to consider interdisciplinary publications, teaching, and service contributions as equally important as traditional disciplinary work

4.7 Cultural Influence and Decolonizing Higher Education

The colonial legacy in African higher education has profoundly influenced the structure, curriculum, and pedagogical approaches in universities across the continent. African higher education systems, initially designed by colonial powers, often prioritize Western knowledge systems while marginalizing indigenous knowledge and cultural practices [78]. This model of higher education, inherited from colonial times, has resulted in curricula that are disconnected from local realities [79]. Consequently, the curriculum in many African higher learning institutions remains heavily Eurocentric, often neglecting the continent's rich history, philosophies, and epistemologies [80]. The persistence of colonial education structures has contributed to an intellectual dependency on Western knowledge systems, stifling the development of locally relevant, interdisciplinary, and transformative approaches to education [81]. [82] famously referred to this phenomenon as the "colonization of the mind," wherein African intellectuals were trained to view their own cultures and languages as inferior to Western models of knowledge [83]. This colonial legacy poses significant challenges to interdisciplinary education in Africa. An interdisciplinary approach requires the integration of diverse knowledge systems and the ability to draw from different cultural perspectives [84]. However, when African institutions prioritize Eurocentric knowledge systems, they limit their ability to engage with Africa's rich intellectual heritage, preventing the full realization of critical interdisciplinarity [85; 86].

Decolonizing higher education involves rethinking and reimagining the structures, practices, and knowledge systems that underpin universities in Africa. This process is not merely about revising the curriculum but about fundamentally transforming the ways in which knowledge is produced, validated, and disseminated within universities [87]. For African higher education institutions to become leaders in transformative and interdisciplinary education, they must engage in decolonizing processes that center African cultures, languages, and knowledge

systems [88]. A key element of decolonizing higher education is the integration of indigenous knowledge systems into the curriculum. Indigenous knowledge systems are critical for addressing local issues, as they are often deeply rooted in the social, cultural, and environmental contexts of African societies [89]. Historically, these knowledge systems have been excluded from formal education, yet they provide valuable insights into fields such as agriculture, health, governance, and conflict resolution [Ibid]. Incorporating indigenous knowledge into higher education curricula not only enriches interdisciplinary education but also fosters contextualized and culturally relevant learning that aligns with Africa's development needs.

For example, in South Africa, there has been a push toward incorporating indigenous knowledge into STEM (science, technology, engineering, and mathematics) education. This includes drawing from traditional ecological knowledge to inform sustainable environmental practices and promoting the study of indigenous languages and literatures alongside more conventional disciplines [90]. By integrating indigenous knowledge into interdisciplinary education, universities can foster a more holistic approach to addressing Africa's challenges, one that draws from both local and global knowledge systems [91]. The emphasis on indigenous knowledge systems reflects a broader movement towards recognizing the value of diverse epistemologies in shaping educational practices.

Similarly, cultural influence plays a central role in shaping how knowledge is produced, taught, and disseminated in higher education. In the context of Sub-Saharan African higher learning institutions, acknowledging and embracing cultural diversity is key to fostering interdisciplinary and transformative education [92]. Interdisciplinarity requires a shift away from rigid disciplinary boundaries and an openness to multiple perspectives, including those shaped by cultural differences [45]. As noted by [93] various scholars, African higher education institutions must actively create spaces where different cultural knowledge systems can coexist and inform one another, thereby promoting critical thinking and creativity.

One effective way to incorporate cultural influence into interdisciplinary education is through culturally responsive pedagogy. This approach recognizes the cultural backgrounds and experiences of students, integrating these into teaching and learning processes [94]. In the context of Africa this could mean drawing from local histories, languages, and cultural practices to inform research and teaching. For example, using case studies from African communities to explore issues of public health, governance, or conflict resolution can provide students with a more contextualized understanding of these issues and their potential solutions [95]. This author further argues that culturally responsive pedagogy enhances students' engagement with the material, making learning more meaningful and relevant to their lived experiences. Moreover, interdisciplinary education in Africa must embrace linguistic diversity. [96] explains that language is a critical carrier of culture and knowledge; however, many African universities continue to prioritize European languages (such as English, French, and Portuguese) as the primary languages of instruction this has led to the marginalization of African languages, which are often viewed as less suitable for academic discourse. [97] argues that promoting African languages in school is essential for decolonizing knowledge and fostering a more inclusive and culturally relevant education system as this will help enhance the educational offerings.

The need for decolonizing higher education in Africa is widely recognized, yet several challenges persist. For example, there still exists an entrenched nature of colonial education structures as well as the resistance to change from within institutions [98]. Many African universities continue to operate within frameworks established by their colonial predecessors, making it difficult to implement decolonization initiative. Another challenge is the lack of resources to support decolonization efforts. Without adequate funding, decolonization efforts may remain symbolic rather than transformative [99]. Additionally, African universities are often pressured to conform to international standards and rankings, which are based on Western models of higher education. This situation creates tensions between the desire to decolonize education and the need to compete in a globalized academic environment [100]. As such, African universities must navigate these tensions by finding ways to decolonize knowledge while also maintaining their competitiveness in the global academic arena

4.8 Pre-In Service Capacity Building of Teachers

Capacity building is the development of the ability of individuals and organizations to achieve effective success in various domains [101]. Teacher education has attracted attention in the last four decades for various reasons. These efforts have involved not only the state education structure and the people in it, but also many other organizations [102]. Teachers implement subjective content, in part because they lack basic teaching skills. At the other end of the spectrum, in crisis contexts, the situation is even more dire, as many teachers and para/volunteers have no prior training at all [103]. Navigating from traditional to critical transformative higher education processes in Africa requires restructuring the individual subjective decolonizing mind-sets of education stakeholders. Having this requires a curriculum of policies that are oriented towards 21st century educational processes that should become imperative.

Pre-teacher training varies widely from one context to another, yet components which appear in most initial training programmes are subject content; pedagogic content knowledge; and teaching practice [see 104]. Evidence suggests that teacher training 'must aim at developing class leadership competencies and pupil-centred practices, such as group work for example, feedback or the flipped classroom ([100; 2024]. The World Bank has focused on enhancing the curriculum, building the capacity of teacher trainers, and improving infrastructure. The literature emphasizes the importance of aligning the pre-service curriculum and methods of preparation with the curriculum to be taught in school [105]. Critically and transformed universities in Africa need to stand and be supportive of themselves by not allowing the educational processes to be perturbed by exogenous influences. The underlying structures that have reduced higher education impact to glorified high schools need to be streamlined, checked and corrected.

4.9 Global Values in Abstract Sociality

Transforming higher Institutions of learning in the 21st century into arenas of rationality and reflective postures, requires competences that are relevant and up to date in a globalized world [106]. Doing so and adequately, indicates a shift into two directions; Firstly, the requisite skills and competences to survive in the global space and lastly, values needed to navigate and remain in tune with education for sustainable development goals [107]. The shift in Higher education dynamics never before seen is conversant to a universal change in the theory of Higher education practices that has equally overhauled the learning process, thereby, making it to be

more learner centered [108]. Transforming education from the traditional rung in Sub-Saharan Africa is primordial in a fast-changing world. Transformational teaching require dynamic relationships between teachers, students, and a shared body of knowledge [106]. A global setting is akin to an epistemological reflection of the ontological orientation of humanity and mitigated by their individual subjectivity.

Evolving in a global world shows the ability to handle the multidimensional plethora of challenges such as poverty, violence, wealth creation, peace, intercultural communication, under development and environmental degradation [cf. 107; 109]. As Scheunpflug indicates, "the concept is normative and at the same time, empirical. Normatively, it denotes social justice, planetary integrity…rights of the minorities, human rights and peaceful co-existence" (2023, p. 72). Empirically, the conceptualization of the multifaceted competences to navigate the complexity and complications of interconnectedness remains primordial. With these values, the uncertainty emanates from social change, fragmentation, hybridisation and showing empathy for people they are unaware of 'the other'(Ibid). Global values in abstract sociality resonate purely on consciousness, responsibility for actions, respect of the other even unaware of who they are or whether they exist [110] Higher educational transformation, negating traditional and routine methods, enhances critical reforms that are fraught with hybridity, digital skills and policy rebranding. African Universities are humming down in these directions but to what extent, remains to be seen in an ever-complex world.

5. Methodology

Data Collection

The content of this study is based on a desk review of available documents relevant to interdisciplinary and transformative education in higher learning institutions, with particular emphasis on fostering critical interdisciplinarity. Given the nature of the topic, a qualitative research approach was adopted, utilizing its techniques to explore various themes aligned with the objectives of the study. The literature review was sourced from secondary materials such as scholarly publications, seminar papers, journals, textbooks, and periodicals related to interdisciplinary research, transformative education, and decolonization within African higher education. Documents were selected based on their relevance, credibility, and alignment with the study's focus outlined above. Specific attention was given to documents published within the last 10 years were prioritized to reflect contemporary challenges and advancements in higher education. However, seminal works, such as those by Paulo Freire and other foundational scholars, were included regardless of their publication date due to their enduring relevance.

To ensure the relevance, credibility and authenticity of the collected data, the verification of the document source was imperative. The credibility and reliability resonated around the consultation of documents from renown organisations like government policy papers, reputable institutions like UNESCO and verifying the experience of the different authors to be ascertain of their reputation. We crosscheck the factual accuracy such as citations and references utiltised by the document. Above all, besides other processes, we decided to check the baseline data of most of these documents and the rationale that explains why the documents were written to ensure that it aligned with the aims of our documents. These included reasons like using them to generate policy, advocacy and reporting for the creation of awareness.

6. Data Analysis

As a desk-based study, the research utilized a qualitative approach to critically engage with the existing literature on transformative education, interdisciplinary collaboration, and CUS.

Data analysis was conducted using deductive and iterative content verification techniques to synthesize insights and ensure a thorough understanding of the study's focal points. This approach also enabled crosschecking for any discrepancies or deviations in the interpretation of the literature. Through this content analysis, the study critically examined the strategies and policies intended to oversee the successful implementation of these indicators of interdisciplinary education in African universities that are transformative while also paying due diligent to the challenges that may hinders this process. The thematic analysis was then used to compare and contrast the strategies and policies aimed at promoting critical interdisciplinarity and the challenges higher education stakeholders face in effectively implementing these changes. By focusing on these themes, the study seeks to contribute to the broader discourse on reimagining higher education in Africa through the lens of decolonization and interdisciplinary scholarship. The goal of this analysis was to derive insights and recommendations that can inform policymakers, educators, and researchers on how to reorient higher education practices toward a more transformative and impactful model of scholarship in Africa.

The data analysis was guided by a coding framework developed from the major themes explored in the literature review. This coding framework helps in systematically categorizing and interpreting the data, allowing for a deeper understanding of the transformative potential within higher education institutions. The main research question which is, how can higher learning institutions become the pacesetters of contextualized and interdisciplinary transformative education in Africa supported the analysis. To operationalize this question, two sub-questions guide the reflection:

1. What are the strategies and policies intended to oversee the successful implementation of these indicators of critical research?

2. What are the challenges confronting higher education stakeholders for its effective implementation?

3. How can CUS be adapted to address the unique challenges of higher education in Sub Saharan Africa?

6.1 Coding Framework

The coding framework developed for this qualitative analysis is derived from the themes identified in the literature. This framework provided a systematic categorization of data into specific thematic areas, enabling a clear and coherent understanding of how these themes manifest in the current educational landscape. The framework uses a thematic coding strategy, which involves assigning codes to relevant data excerpts that correspond to pre-established themes.

Table 1: Coding Framework. Source Authors Conception

Themes	Sub-Categories/Codes
Quality Education and Pedagogical Transformation (QPT)	Critical Thinking as a Core Competency Educational Innovation and Sustainable Development Student-Centered Learning and Pedagogical Reforms Equity, Inclusivity, and Social Justice in Education Interdisciplinary Learning and Collaboration
Technological Integration and Digitalization (TID)	Digital Literacy and Critical Competencies Democratizing Access to Education through Technology Hybrid Pedagogies and Educational Models Managing Challenges and Risks in Digital Transformation
Learners' Hindrances in Higher Education Affecting High Cognitive Action (LHCA)	Infrastructural and Resource Challenges Curriculum and Instructional Barriers Socio-Economic Constraints Pedagogical and Institutional Limitations
Critical Thinking and Student Disposition (CTSD)	Cultivating critical analysis, problem-solving skills, Curricular Reforms to Promote Critical Thinking Challenges in Fostering Critical Thinking Institutional strategies
Interdisciplinary Teaching-Learning in Higher Institutions of learning	Curriculum Design and Program Integration Faculty Training and Pedagogical Development Institutional Support and Cross-Disciplinary Collaboration Interdisciplinary learning opportunities for students
Organizational Support and Shared Responsibility (OSSR)	Policy and Strategy Development Institutional Governance and Leadership Commitment Faculty Development and Engagement Student Participation and Involvement Funding and Resource Allocation
Cultural Influence and Decolonizing Higher Education (CDHE)	Colonial Legacy and Eurocentric Education, Marginalization of Indigenous Knowledge, Culturally Responsive Pedagogy, language as tool for decolonizing knowledge
Pre-Service and In-Service Capacity Building (PICB)	Pre-Service and In Service Capacity Building of Teachers Curriculum Alignment with Contextual Needs
Global Values and Abstract Sociality (GVAS)	Competencies and Skills for Global Integration Global Values and Responsibility in Education

In the subsequent section, a detailed analysis will be provided for each theme outlined in the coding framework, offering a comprehensive examination of how these thematic areas address the research inquiries posed in this study. These are intended to provide answers to the research questions and as well as to derive actionable insights and recommendations for policymakers, educators, and researchers to effectively reorient higher education toward a more impactful and transformative model that addresses the unique challenges and opportunities within the African context

6.2.1 Ensuring Quality Education and Promotion of Active Learning

In promoting Critical University Studies (CUS), the transformation of educational quality and pedagogy emerges as essential for empowering students to critically engage with societal issues and advance sustainable development goals. [18] emphasize that embedding critical thinking within curricula is pivotal for fostering analytical skills that enable students to question established structures and participate meaningfully in social change, thereby taking responsibility for their learning. Thus, stakeholders must implement strategies that prioritize critical thinking as a core competency, moving beyond traditional knowledge acquisition to cultivate an environment of critical engagement [24]. This shift requires reformed curricula that align with Freire's problem-posing education model, where students actively interrogate their realities [25].

Moreover, innovation in education aligns with the objectives of sustainable development, which demands that higher education institutions adopt flexible and blended learning models, enhancing students' adaptability to global challenges [21]. However, barriers persist, especially in Sub-Saharan Africa, where traditional pedagogies often overshadow modern approaches [19]. Addressing these challenges entails policies tailored to local contexts and continuous professional development to equip educators with the necessary tools for these pedagogical transformations [22]. Furthermore, student-centered learning plays a crucial role in pedagogical reform under CUS, advocating for active, reflective, and collaborative learning environments where students are empowered to question and reshape dominant narratives [28].

In the CUS framework, social justice principles underscore the importance of inclusivity and equity, ensuring that higher education is accessible to all students, particularly those from marginalized backgrounds [111]. In regions where systemic inequalities and resource constraints disproportionately affect marginalized groups, such as in rural communities in Africa, strategies aimed at addressing absenteeism and inadequate facilities are crucial to promote equitable access to quality education [100]. These strategies align with the CUS's emphasis on community engagement and the dismantling of systemic barriers within education, thereby ensuring that all students can contribute to societal progress.

6.2.2 Hybridization in the Teaching-Learning Process

The integration of technology and digitalization in higher education institutions (HEIs) is instrumental in transforming educational practices and supporting critical research initiatives. Strategies intended to oversee successful implementation focus on democratizing access, fostering digital literacy, and developing hybrid pedagogical models. According to [31] digitalization, including platforms like open-access repositories and online journals, reduces geographical and economic barriers, thus broadening access to academic resources. This democratization aligns with the goals of Critical University Studies (CUS), which emphasize

accessibility, equity, and adaptability in education [35]. However, as [112 & 33], observe, implementing such strategies requires institutional investments to establish robust digital infrastructures and training programs for both students and faculty, a critical step towards overcoming the educational disparities in underfunded regions.

Moreover, promoting digital literacy emerges as a core policy focus within HEIs, as it enables students and faculty to navigate digital content critically, collaborate online, and engage with knowledge creation in a hybrid manner [34]. Also [35] suggests that developing digital competencies is essential in facilitating effective learning outcomes and fostering sustainability in educational practices. However, the COVID-19 pandemic highlighted challenges in this area, especially for institutions with limited resources. To address these gaps, policies promoting continuous professional development in digital literacy are necessary, enabling educators to keep pace with rapid technological advancements [33]. Such initiatives are crucial in ensuring that both faculty and students are equipped with skills that go beyond basic digital use, preparing them to critically engage with the complexities of modern education.

Furthermore, hybrid pedagogical models are becoming an effective strategy to meet diverse learning needs. Hybrid education combines in-person instruction with digital tools, facilitating more flexible and interactive learning environments [35]. This model is particularly advantageous for students facing socio-economic and geographic constraints, as it provides a blend of remote and traditional learning options [36]. However, implementing hybrid models requires restructuring traditional curriculum designs and reassessing teaching methodologies, especially in contexts where rigid, lecture-based teaching has historically dominated [23]. To operationalize hybrid models effectively, HEIs need policies that encourage flexible teaching practices, support technological infrastructure, and provide faculty incentives to explore innovative pedagogies that promote critical thinking and interdisciplinary learning.

Despite these strategies, several challenges hinder the effective implementation of digital technologies in higher education, particularly in Africa. One significant barrier is the digital divide, which exacerbates inequality in access to technology and resources, especially in rural and marginalized communities [37]. This gap highlights the need for HEIs to adopt policies that address infrastructural inequities and support digital inclusion. For instance, initiatives to expand internet access, offer digital literacy programs, and provide affordable digital devices are crucial to mitigating these disparities [38]. Furthermore, effective governance frameworks that involve marginalized communities in decision-making can ensure that digital transformation aligns with cultural and contextual needs, thereby enhancing the inclusivity of educational opportunities [37].

Finally, managing risks associated with digital transformation requires addressing issues such as digital exclusion, data privacy, and ethical use of technology. As [34] caution that rapid technological change can disproportionately impact students from low-income backgrounds who lack access to essential digital tools. Addressing these concerns necessitates policies that provide financial aid for digital resources, develop offline and low-bandwidth alternatives, and enforce data protection measures to safeguard student privacy [33]. Without these measures, digitalization risks reinforcing existing inequalities rather than alleviating them, highlighting the need for a critical and socially just approach to technological integration in higher education [40].

The integration of technology and digitalization within HEIs represents a transformative process aligned with the principles of CUS. By adopting inclusive and adaptive policies, institutions can harness the potential of digital technologies to democratize education, build critical competencies, and foster interdisciplinary approaches to learning and research.

6.2.3 Learners Challenges Regarding High Cognitive Activation.

The barriers impeding students' ability to engage in high cognitive action such as problem solving. This indicates significant challenges in Sub-Saharan Africa's higher education system. Addressing these obstacles is essential for fostering a transformative and interdisciplinary educational experience, as outlined in Critical University Studies (CUS). Various factors contribute to these challenges, including infrastructural, curricular, socio-economic, and pedagogical constraints, each of which requires targeted strategies to enhance student engagement and cognitive development.

A key issue is the lack of adequate infrastructure and resources, which severely limits students' access to technology and learning materials. As [41] emphasize, limited access to computers, internet connectivity, and digital resources impedes online learning opportunities, thus restricting students' engagement with high-order cognitive tasks. Furthermore, shortages of textbooks and laboratory equipment, coupled with overcrowded classrooms, create an environment that stifles hands-on learning and individualized support from instructors [42]. The insufficient alignment between curricula and the practical needs of society and the job market further exacerbates these issues, as students struggle to connect their academic knowledge with real-world applications [43].

Curricular limitations extend to the instructional methods commonly employed in Sub-Saharan African higher education institutions. Many curricula fail to emphasize critical thinking and creativity, focusing instead on memorization and recall [42]. This approach discourages students from engaging in deep learning and cognitive development, a concern. [43] also raises, advocating for curricula reforms that align with CUS principles, promote interdisciplinary studies, and emphasize competency-based outcomes. Shifting from traditional assessment models to those that evaluate problem-solving and analytical skills is essential in overcoming these pedagogical barriers. In addition, socio-economic factors further constrain high cognitive engagement. Poverty, as [44] discuss, impacts students' ability to concentrate and limits access to basic educational materials. Socio-cultural barriers, including gender biases and family expectations, place additional burdens on students, particularly women, and limit educational aspirations [45]. To address these socio-economic challenges, higher education institutions must implement financial support mechanisms, such as scholarships and grants, and foster a more inclusive environment that challenges harmful stereotypes and encourages all students to pursue higher education without societal limitations.

Pedagogical and institutional factors also play a role in shaping students' cognitive engagement. Traditional teacher-centered approaches and bureaucratic rigidity hinder educational innovation, preventing higher education institutions from embracing interdisciplinary and collaborative teaching models. As such, integrating active learning, promoting student-centered approaches, and fostering flexible institutional policies are essential for fostering environments that support high cognitive action [43]. CUS advocates for these pedagogical reforms, emphasizing the need to create learning spaces where students actively participate and engage critically with their studies. To address these barriers, institutions must adopt comprehensive

strategies that include investments in digital infrastructure and pedagogical innovations to support transformative learning. Additionally, reforms to curricula that emphasize critical thinking and align with job market demands are necessary for a more dynamic and applicable educational experience. Addressing socio-economic disparities through policy and financial support mechanisms will further promote inclusivity, empowering students to engage in high cognitive action and contributing to a more robust higher education system in Sub-Saharan Africa.

6.2.4 Critical and Rational Thinking

The findings reflect that fostering critical thinking is both a strategic goal and a response to evolving social demands in Sub-Saharan Africa. Firstly, the literature consistently emphasizes the role of curricular reforms and pedagogical innovation as central strategies for cultivating critical thinking among students. Institutions must actively embed inquiry-based learning and interdisciplinary frameworks into their programs, which allow students to draw on diverse fields and engage in real-world problem-solving (46; 47]. Such approaches encourage students not only to rationally analyze and evaluate information critically but also to apply these skills in meaningful ways, thereby aligning with the goals of Critical University Studies (CUS). Furthermore, CUS advocates for questioning dominant narratives and engaging with multiple perspectives, which can be facilitated by curricula that encourage critical analysis and social responsibility [48; 49].

In addition to curricular reforms, strategies aimed at creating partnerships with local communities and industries also emerge as pivotal in promoting contextually relevant critical thinking. These partnerships ensure that learning experiences reflect students' socio-economic environments, thus making critical thinking skills directly applicable to the contexts they will navigate [50]. Policies supporting these partnerships and incentivizing faculty to innovate pedagogically are therefore essential for making critical thinking a core outcome of the educational experience rather than a theoretical concept alone [51]. However, significant challenges confront stakeholders in their efforts to implement these strategies effectively. Socio-economic barriers, inadequate infrastructure, and resistance to pedagogical change remain persistent obstacles [52]. Institutions often struggle with limited resources that hinder the adoption of technology and learning tools necessary for fostering critical engagement. Additionally, socio-economic inequalities affect students' access to these resources, thereby limiting the equitable development of critical thinking skills. Addressing these challenges requires targeted policies that support marginalized students, perhaps through scholarships, mentorship programs, and accessible resources designed to foster inclusive engagement in critical thinking [53].

Moreover, resistance to change from traditional education paradigms represents another obstacle to embedding critical thinking within institutional frameworks. The literature notes that longstanding emphasis on rote learning and passive instruction methods prevents students from developing the analytical skills required for today's challenges [52]. For higher education to shift towards transformative learning, stakeholders must advocate for reforms that prioritize active learning and support faculty through professional development and incentives for innovative teaching practices. Ensuring that teaching staff are equipped and motivated to engage in these methods is crucial, as it directly impacts the effectiveness of critical thinking strategies within the classroom [54; 55].

6.2.5 Interdisciplinary Teaching-Learning

Interdisciplinary teaching and learning are increasingly critical for addressing the complex, multifaceted issues facing modern societies, particularly in Sub-Saharan Africa. As [45] noted, the global trend of integrating various academic disciplines within higher education to equip students with the skills necessary to solve real-world problems effectively. In Sub-Saharan Africa, the shift toward interdisciplinary approaches is evident in programs that merge fields such as sustainable development, technology, and public health to address pressing regional issues like poverty, inequality, and environmental sustainability [56; 57]. ; Furthermore, the TESCEA framework, which begins by profiling ideal graduates and involving faculty in reflective practices, serves as a strategic approach to curriculum alignment with industry-relevant competencies [59]. This framework has proven instrumental in fostering critical thinking and adaptability, skills essential for graduates facing the diverse challenges of contemporary Africa.

However, implementation is hindered by persistent challenges in academic structures. Many universities continue to operate within traditional discipline-based silos, limiting the extent of interdisciplinary collaboration [59]. Also [57], and [62] both highlight the structural rigidity that hinders cross-departmental initiatives, with curriculum development often focusing narrowly on individual disciplines rather than fostering the broader, integrative skills required in today's job market. Moreover, there is a substantial gap in faculty training, as many educators are primarily trained in single-discipline methodologies and lack the requisite skills for interdisciplinary teaching [62]. Institutional investments in professional development and the promotion of transformative learning theories are necessary to support faculty in embracing new pedagogical approaches [38]. Also, financial constraints further impede the development of interdisciplinary programs. Institutions must invest in resources like curriculum revision, faculty training, and updated infrastructure to support the new teaching models [63]. Universities such as the University of Cape Town and Stellenbosch University have made strides in South Africa by integrating environmental sciences with social policy, but such advancements are often constrained by limited funding, which poses a significant barrier in many other countries [64]. Additionally, interdisciplinary programs are frequently hindered by insufficient awareness among students about their career relevance, resulting in low engagement. As such, strategic communication on the value of these programs is crucial to ensuring their success and attracting student interest [65].

Despite these barriers, some institutions have managed to overcome these challenges through supportive policies, partnerships, and leveraging digital platforms. The African Leadership University (ALU) in Rwanda and Mauritius, for instance, offers a model of interdisciplinary education that emphasizes project-based learning across fields, preparing students for leadership roles that address Africa's challenges [113]. Furthermore, digital tools are providing new opportunities for interdisciplinary learning, enabling access to international knowledge networks and facilitating cross-border academic collaborations [67]. Initiatives like these indicate that with adequate institutional support and innovative strategies, interdisciplinary learning can be effectively promoted within Sub-Saharan Africa's higher education system.

6.2.6 Collaborative Leadership and Team Dynamics

In addressing the successful implementation of critical interdisciplinary research in African higher education, both robust collaborative leadership and a culture of team dynamics are

essential. Effective strategies and policies, however, hinge on institutional collaborative leadership to fostering cross-disciplinary collaboration, often hindered by challenges such as resource limitations and structural rigidity rooted in colonial educational legacies [68]. A key policy strategy is the establishment of clear, institution-wide frameworks that promote interdisciplinary initiatives. This may include dedicated funding and incentives to encourage faculty to engage in cross-departmental research. [45] emphasizes that clear institutional policies supporting collaboration and funding allocation for interdisciplinary projects are pivotal in breaking down disciplinary silos, a recurring barrier to transformative research.

Further, the literature suggests the creation of interdisciplinary research centers as an effective policy to foster collaboration [69]. Such centers provide structured spaces where faculty and students can converge on common research goals addressing Africa's pressing challenges like climate change and public health [69]. These spaces also serve as focal points for developing faculty skills through professional development programs, which are necessary for adopting interdisciplinary teaching methods. Training in these areas ensures that faculty can overcome traditional limitations, making interdisciplinarity more accessible and practicable [70]. Also, institutional leadership is equally crucial, as it must drive both policy development and the cultural shift toward shared responsibility. Leadership commitment is needed to revise outdated curricula and establish cross-functional governance structures that prioritize interdisciplinary work [68]. Moreover, incentivizing interdisciplinary contributions through revised tenure and promotion criteria reinforces the value of such work within academic evaluation processes [70].

External partnerships with industry and government present another strategic avenue, as such partnerships provide essential financial and practical support that supplements limited institutional resources. According to Munene (2016), these partnerships not only enhance funding but also ensure that interdisciplinary programs remain aligned with market needs, equipping students with skills relevant to real-world challenges. Nonetheless, challenges persist, particularly regarding limited funding and the deeply ingrained disciplinary silos. Bolger (2021) suggests that insufficient resources are a primary obstacle to cross-departmental initiatives, particularly in institutions facing structural legacies that favor traditional disciplines. Addressing these challenges will require higher education stakeholders to prioritize funding for interdisciplinary projects and to secure external support from government and industry partners, which can provide both funding and relevant expertise.

To engage students in the interdisciplinary paradigm, institutions must offer opportunities that foster collaboration across disciplines. Student-led initiatives that bridge theory with practice are essential to preparing graduates for complex societal issues, as noted by Tesema et al. (2021). By integrating interdisciplinary learning into the student experience, institutions foster a culture where both students and faculty participate actively, contributing to a holistic educational model.

6.2.7 Indigenous Perspectives and Academic Decolonization

The analysis of strategies and challenges in implementing critical research indicators in African higher education reveals the profound influence of colonial legacies, which perpetuate a Eurocentric educational model that largely marginalizes indigenous knowledge systems and African cultural perspectives. This colonial heritage persists as a structural and cultural barrier, shaping curricula, language, and pedagogical practices, often sidelining Africa's intellectual traditions and indigenous epistemologies [74; 75]. To transform higher education into a tool

for social and economic development, African universities must engage in decolonizing processes that prioritize local knowledge, cultural responsiveness, and interdisciplinary approaches. As such, the challenge involves creating policies that not only support these changes but also contend with institutional resistance and limited resources for full implementation [76].

One primary strategy toward decolonizing African higher education is to integrate indigenous knowledge into curricula, enabling the education system to better address the region's specific challenges. Furthermore, the move towards culturally relevant education encourages the application of indigenous knowledge across disciplines, which aligns with the continent's development priorities [88]. However, a continued reliance on Western paradigms poses challenges, especially when institutions are pressured to meet global academic standards that often ignore the local contexts of African students [100]. In response to this marginalization, adopting culturally responsive pedagogy is essential. This approach aims to engage students' lived experiences by incorporating African histories, languages, and cultural practices into teaching, thus fostering a learning environment that is both transformative and relevant [94].

The use of African languages as a medium of instruction also emerges as a crucial element in decolonizing knowledge. Language is central to cultural identity and knowledge transfer, yet African universities predominantly use European languages, which marginalizes local languages and constrains students' connection to their heritage [96; 97]. Prioritizing African languages in academia not only enhances accessibility but also strengthens the integration of indigenous knowledge into education, fostering a more inclusive environment.

6.2.8 Social Values in a Changing World.

The role of higher education in the 21st century has shifted fundamentally, requiring institutions to equip students with competencies aligned with global integration and ethical responsibilities. This transformation aligns closely with transformative education that promotes positive global values. As Slavich and Zimbardo (2012) highlight, the educational landscape must foster rationality and reflective thinking, pushing HEIs to emphasize competencies beyond traditional academic frameworks. These competencies (digital literacy, adaptability, and critical thinking) are crucial in enabling graduates to navigate both local and global challenges [108]

In the context of African higher education, institutions must undergo substantial reform to balance global competencies with local relevance. According to Scheunpflug and Asbrand (2006), African universities are faced with the challenge of integrating skills necessary for global competitiveness while addressing region-specific issues like underdevelopment and social justice. This dual responsibility compels HEIs to adopt educational strategies that embed both technical skills and ethical consciousness into their curriculums. Moreover, transformative education requires aligning with global education standards that stress intercultural communication, environmental stewardship, and sustainable development as foundational skills for students, thereby equipping them to address complex issues such as poverty, peacebuilding, and environmental degradation [107] Simultaneously, the global values of empathy, responsibility, and respect for "the other" underscore the need for a curriculum that promotes social justice and human rights as core tenets This author further asserts that these values are not only normative ideals but also empirical necessities in a globally interconnected society. Higher education must therefore impart a sense of ethical responsibility to act on behalf

of distant communities or marginalized groups, cultivating future leaders who view global issues through a humanitarian lens. Furthermore, the concept of abstract sociality emphasizes that students should recognize the ethical implications of their actions and engage in practices that reflect a commitment to global citizenship and moral accountability (Ibid).

This holistic approach to education presents distinct challenges, particularly for stakeholders in African higher education who grapple with limited resources, policy misalignment, and the complexities of hybridized learning systems. As such, implementing these competencies and values in higher education requires substantial policy support and innovative teaching strategies that address both practical and moral dimensions.

7. Discussion and Conclusion

Higher learning institutions in Africa can become pacesetters of contextualized and interdisciplinary transformative education and research. The study aimed to answer three primary research questions: (1) What are the strategies and policies intended to oversee the successful implementation of transformative educational practices? (2) What are the challenges confronting stakeholders in achieving this transformation? and (3) How can Critical University Studies (CUS) be adapted to address the unique challenges of higher education in Sub-Saharan Africa?

The findings indicate that several key strategies are crucial for African universities to become leaders in transformative education. For higher education institutions to foster transformative, interdisciplinary education, the first and foremost strategy must be improving infrastructure and resources. As highlighted by Bvumbwe and Mtshali (2018), access to essential technological resources such as computers, reliable internet, textbooks, and practical learning materials is crucial for students' engagement in high-level cognitive activities. The modernization of infrastructure not only enhances the learning environment but also facilitates innovative pedagogical approaches that promote critical thinking and problem-solving, which are necessary for high cognitive action.

Moreover, curricular reforms are essential to ensure that educational programs remain relevant and aligned with societal challenges. According to [42] many Sub-Saharan African institutions continue to implement traditional curricula that fail to prioritize competencies such as critical thinking, creativity, and interdisciplinary learning. To become pacesetters in transformative education, institutions must adopt curricula that are problem-solving-focused and reflective of contemporary societal issues, including job market demands. This can be achieved by introducing project-based and experiential learning, where students engage with real-world problems in collaboration with communities and industries. The reform should extend to assessment methods, moving beyond note memorization toward evaluative techniques that measure critical thinking and problem-solving skills. Such curricula, aligned with interdisciplinary frameworks like Critical University Studies (CUS), and will empower students to apply their theoretical knowledge across diverse disciplines, fostering a holistic approach to education. Also values such as social justice, empathy, and responsibility within their students should be integrated into the curriculum to prepare students for global challenges while retaining a strong connection to local cultural contexts.

Addressing the last research question, CUS provides a critical lens for addressing the unique challenges of higher education in Sub-Saharan Africa by emphasizing transformative,

interdisciplinary approaches to education that align with the region's socio-economic and cultural realities. Adapting CUS to this context involves prioritizing collaborative leadership and team dynamics to foster interdisciplinary initiatives. Institutional policies must create clear frameworks to encourage cross-disciplinary collaboration through funding, incentives, and revised tenure criteria that reward interdisciplinary contributions [45; 68]. Interdisciplinary research centers can serve as structured spaces for faculty and students to address pressing African challenges such as climate change, public health, and peacebuilding [69]. These centers can also provide professional development opportunities for faculty to enhance their interdisciplinary teaching methods, ensuring their ability to navigate traditional academic silos [70].

Another critical adaptation involves integrating indigenous knowledge systems and decolonizing higher education. Colonial legacies and Eurocentric models continue to marginalize African epistemologies and limit the relevance of education to local challenges. CUS must be adapted to promote the inclusion of African languages, histories, and cultural practices within curricula, fostering a culturally responsive and inclusive learning environment [74; 75]. Incorporating indigenous perspectives can bridge the gap between global educational standards and local needs, enabling institutions to address region-specific issues like poverty, social justice, and sustainable development while preparing students for global challenges. Therefore, for transformative education to thrive, institutions must actively incorporate local epistemologies and culturally responsive pedagogy into their curricula. However, resistance to change, coupled with resource constraints, remains a significant obstacle that needs to be considered enormously [98; 81].

In conclusion, this study demonstrated that higher learning institutions in Africa have the potential to become pacesetters of contextualized and interdisciplinary transformative education through prioritizing an education system that shift from the traditional education system. Hence the transformation of higher education is imperative for cultivating competencies that prepare students for a globalized world while fostering a commitment to social responsibility. Addressing the research questions reveals that strategic implementation of learner-centered educational practices, coupled with the integration of global values, is essential for overcoming the challenges faced by higher education stakeholders. The path forward requires a concerted effort to rebrand educational policies, invest in infrastructure, promote interdisciplinary collaboration, flexible curricula, innovative pedagogical practices and promote ethical frameworks that resonate with the complexities of today's interconnected world and particularly aligns to the need of the Africa context.

8. Recommendations

The study examines the recommendations in two dimensions; for practice and further research

8.1 Recommendations for Practitioners

1. Higher education institutions should undertake a comprehensive review of their curricula to integrate critical thinking, problem-solving, and interdisciplinary and culturally responsive education.

2. Practitioners must advocate for and implement pedagogical strategies that emphasize student engagement and active learning, moving away from rote memorization.

3. Continuous professional development programs for educators should focus on interdisciplinary teaching, culturally responsive pedagogy, and the integration of digital technologies

8.2 Recommendations for Future Researchers

1. Future researchers should assess faculty perspectives on experiences, and challenges related to interdisciplinary teaching and research

2. Researchers should explore effective models for curricular reform that emphasize interdisciplinary, culturally responsive education

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Conflict of Interest.

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