# The Role of Transformative Education for Sustainable Social and Economic Development of Africa

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Edited by

Michael T. Ndemanu,
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# INTRODUCTION

# FRAMING TRANSFORMATIVE EDUCATION FOR SOCIAL AND ECONOMIC CHANGE IN AFRICA

MICHAEL T. NDEMANU,
SERAFÍN M. CORONEL-MOLINA,
TOM J. MCCONNELL,
ERNEST KOFI DAVIS
AND JUDAH M. NDIKU

The continent of Africa is blessed with some of the most talented and hardworking people. A plurality of African students takes their academic work seriously despite all the odds hampering effective learning. African governments invest considerably and variably in the education sector across the continent. Yet, social and economic development stagnate. This book, *The Future of Africa and the Role of Transformative Education for Sustainable Social and Economic Development*, offers a framework for educators, policymakers, and all other stakeholders in the education sector in Africa to have an in-depth reflection on the quality of education the students are receiving so as to rethink ways to accelerate the transformative potential that quality transformative education offers any given country. The fundamental questions the book seeks to address are: why is schooling not translating into the social and economic advancement of the continent? What needs to change for learning to be most worthwhile for the students and their respective countries? As pedagogues and andragogues, the editors and contributors of this book seek to engineer new consciousness with a transformative education theory which is predicated on what students should be able to do with what they have learned (Mezirow 1997). For too long, education in Africa has focused on cognitive and affective domains with little emphasis on the transferability and applicability of the concepts learned in the classroom in real-life contexts to address societal problems

and needs. This book calls for a paradigm shift which entails making knowledge transfer the epitome of educational practice at all levels of education such that education can help to unleash talents and foster transformative outcomes in the learning process. To transform the continent into an epicenter of an economic buoyancy, schools must transform. School management, curricular, and pedagogic practices must also be transformed. The authors and editors of this book view transformative education as a springboard for innovation and 21st century development skills for a robust knowledge economy.

We stand for an education that:

- helps students discover their purpose and maximizes their potential to meet the demands of the 21st century world;
- offers extended learning opportunities in the communities, enterprises, philanthropic organizations, and government offices to help students develop skills in blending theory and practice, a vision that is highly reminiscent of the history behind the establishment of Massachusetts Institute of Technology (MIT) (Angulo, 2009).

Our work on transformative education in Africa began in 2018 when we organized the first World Conference on Transformative Education at Masinde Muliro University of Science and Technology in Kakamega, Kenya, under the theme, "Rethinking Curriculum, Pedagogy, and Research in Africa." Due to the COVID-19 outbreak, there was a 5-year hiatus. The University of Cape Coast, Ghana, hosted the second conference on transformative education in 2023 under the theme, "The Future of Africa and the Role of Transformative Education." The various chapters of this book were first presented at the conference prior to being submitted and peer-reviewed for this edited volume. The contributors of this book bring in a myriad of multidisciplinary perspectives given that they are educators of different disciplines in different educational strata in Africa and North America.

Over five decades ago, Schumacher, an economist, philosopher, and the author of *Small is Beautiful* (1973) declared that:

> *"The volume of education continues to increase, yet so do poll and exhaustion of resources and the dangers of ecological capacity. If still more education is to save us, it will have to be an education of a different kind, an education that takes us to the depth of things."*

This statement encapsulates the editors' views. Therefore, the book is a prelude to the paradigm shift in how curriculum, pedagogy, and educational leadership and management should be rethought in order to provide the kind of education that works effectively for the entire continent of Africa in terms of the extent to which it prepares students to address societal needs and problems. As Moore (2005) intimated, climate change represents one of the urgent societal problems in Africa that requires an infusion of sustainability-related themes across the curriculum from pre-K through higher education.

The definition of transformative learning theory that most closely aligns with the mission of this book is that of O'Sullivan (2003):

> *Transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and irreversibly alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-locations; our relationships with other humans and with the natural world; our understanding of relations of power in interlocking structures of class, race and gender; our body awarenesses, our visions of alternative approaches to living; and our sense of possibilities for social justice and peace and personal joy (O'Sullivan 2003, 327).*

We define transformative education as an educational theory that fosters meaning-making in the learning process in ways that facilitate knowledge transfer and application in real-life contexts while critically interrogating the status quo and demonstrating along the line new palatable ways of thinking, doing, and living.

## Scope of the Book

This book contains a collection of twelve chapters chosen from an array of submissions after a rigorous peer-reviewed process. The chapters are organized thematically as follows: *(1) Curriculum and pedagogy; (2) Science Technology, Engineering, and Mathematics (STEM); (3) Communication Competencies;* and *(4) Preparing for Professional Competency.* Within these thematic units, the chapters are organized according to related topics.

The first thematic unit *Curriculum and pedagogy* is comprised of four chapters that together cover a wide range of perspectives on transformative education in Africa. The first chapter of this section, entitled "Education for Socio-economic and Political Transformation of African Economies: Rethinking Curriculum and Instruction," is written by Michael T. Ndemanu. This chapter applies transformative learning theory to assess the quality of

education across Africa. It delves into the challenges facing the education sector from early childhood through higher education and proposes strategies for transforming schools and, in turn, African economies, with the goal of reducing poverty and enhancing quality of life. Drawing on primary, secondary, and experiential sources, this conceptual essay highlights the disconnect between educational outcomes and their impact on the socioeconomic conditions of Africans. It also suggests curricular and pedagogical reforms to better align education with real-world needs. A paradigm shift in educational practices across African nations is essential to enable citizens to fully realize their socioeconomic potential.

Chapter Two, "Re-imagining Teaching and Learning with a De/Anti-Colonial Gaze on African Education: Important Lessons from African Elders Critical Teachings *(ElderCrits*)," by George Dei & Paul Banahene Adjei, introduces *'Elders* Critical Teachings' (*ElderCrit*), a decolonized framework promoting liberatory pedagogy for sustainable development in Africa. *ElderCrits* is rooted in the collective wisdom of African Indigenous Elders, shaped by deep connections to Land, culture, and nature. Through cultural expressions like folklore, proverbs, and storytelling, Indigenous Elders serve as key knowledge bearers. *ElderCrits* challenges colonial narratives and fosters reconnection with African values and worldviews, empowering learners to resist external ideologies. It aims to create transformative educational spaces where African learners are grounded in their ancestral knowledge and cultural metaphors for authentic learning.

In Chapter Three, "Revitalizing Collaborative Learning: Strategy Towards Transformative Higher Education" by George Areba Ngwacho, the author discusses how teaching methods have evolved, with the traditional lecture style giving way to more student-centred active engagement, especially under the Competency-Based Curriculum. Collaborative Learning (CL) has emerged as a key approach to fostering participation, gaining prominence in Western countries since the 1980s but receiving less attention in Sub-Saharan Africa. This chapter defines CL, explores its principles, and draws on secondary data to show that CL enhances academic performance, social development, and overall effectiveness. Supportive factors include student readiness and group dynamics, while institutional constraints and cultural factors may pose challenges. The study recommends that instructors act as facilitators to maximize CL's potential.

Chapter Four, "Teacher Perceptions of Incorporating Core Values in their Pedagogical Practices in the Competency-Based Curriculum" by Wilfridah M. Mucherah, Joab Namai, Elizabeth Owino, and Hannah Bowles, examines Kenyan primary school teachers' perceptions of integrating core values into their instruction under the Competency-Based Curriculum

(CBC). A total of 223 teachers (146 female, 162 CBC-trained) participated in the study. Teachers overwhelmingly recognized the importance of core values, with *Respect* rated highest. Those trained in CBC rated values like *Love, Respect,* and *Unity* higher and found them easier to integrate. Female teachers placed more emphasis on *Unity, Patriotism, Social Justice,* and *Integrity* more. The study highlights the need for ongoing curriculum reviews and in-service training to improve value integration. It recommends exploring gender differences, parental perspectives, and considering core values as assessable academic subjects.

The second thematic unit of the book, *Science Technology, Engineering, and Mathematics (STEM),* is composed of four chapters that cover a spectrum of issues in this area. Chapter Five in this section, entitled "Making the Teaching of Mathematics Transformative Through the Use of a Three-Tier Model," by Ernest Kofi Davis & Daniel Gbormittah. The contribution explores mathematics achievement in sub-Saharan Africa, with a focus on Ghana. It examines a culturally responsive, transformative pedagogy using a three-tier model that connects mathematical concepts to students' cultural backgrounds. The model progresses from everyday experiences to school-level concepts and international standards, making mathematics more relatable. Two studies demonstrate its effectiveness: one with 44 first-grade students learning fractions, and another with 860 first graders in a quasi-experimental design. The findings show that this model enhances mathematical proficiency in contextually relevant ways. The chapter discusses the implications for teacher education and curriculum development, advocating for culturally responsive methods in mathematics instruction.

Chapter Six, "Leveraging Technology for Educational and Social Transformation in Africa: A Naturalistic Roadmap for Societal Progress" by Charles Hutchison, discusses Africa's potential to harness technology for educational reform, much like global systems adapting to rapid changes. Hutchison compares technology to the amplifying power of machines, enabling tasks beyond human capabilities. He highlights how the digital divide has historically hindered widespread education in resource-poor regions, but noting that the availability of free, valuable information online has created new avenues for innovation. Hutchison emphasizes that the key to educational transformation lies in educators' ability to adapt and innovate, suggesting that Africa's educators can now leverage artificial intelligence and other technologies to improve education and enhance the quality of life across the continent.

Chapter Seven, "Transforming Education Using Google Classroom in Teaching Mathematics for Economics," by Ramon Adisa Jolaosho, explores how integrating Google Classroom in teaching can revolutionize education

in Africa and improve student performance. As education in Africa embraces innovation, tools like Google Classroom offer a platform to enhance instruction and learning outcomes, particularly in Mathematics for Economics. By using this tool, teachers can deliver lectures more effectively and diversify their teaching methods. With just an internet connection, educators can create virtual classrooms and invite students. The chapter synthesizes research demonstrating Google Classroom's effectiveness in higher education, emphasizing its potential to transform teaching and learning across Africa. Jolaosho encourages African educators to adopt Google Classroom to make education more accessible and impactful.

Chapter Eight, "Technical and Vocational Education as a Driving Force Towards Knowledge Societies for 'the Africa we want,'" by Berka Delphine Tah, explores the role of Technical and Vocational Education and Training (TVET) in building knowledge-based societies in Africa. The chapter examines challenges and opportunities within TVET, highlighting its potential to address Africa's growing demand for skilled labor. Through a qualitative study, the author identifies gaps in the TVET sector and emphasizes its importance in bridging the skills gap, fostering sustainable development, and promoting economic growth. Despite challenges like inadequate funding, it is argued that TVET can empower individuals, improve employability, and drive socio-economic progress. The chapter calls for prioritizing TVET to achieve Africa's developmental goals and create a knowledge-driven society.

The third thematic unit, *Communication Competencies*, includes two chapters. Chapter Nine, entitled "The Role of Traditional Ewe Riddles in Enhancing Critical Thinking Abilities of Early Childhood Learners in Ghana: A Transformative Educational Approach" by Innocent Yao Vinyo and Calvin Mawuli Attricki, investigates how incorporating traditional Ewe riddles into early childhood education fosters critical thinking. Using a qualitative approach, the study focused on 20 participants from the Ewe population in Ketu South Municipality. Through interviews, observations, and focus group discussions, the research explored how Ewe riddles enhance learners' critical thinking and their potential to transform education. The findings show that riddles help learners connect lessons to real-life experiences, fostering analysis and logical thinking. The study recommends integrating local riddles into teaching to promote critical thinking, creativity, and cultural preservation.

Chapter Ten, "A Review of Communicative Language Teaching as a Tool for Transformative Education in Africa," by Samuel Bruce Kpeglo, discusses the role of English as a Second Language (ESL) teachers in enhancing learner competence through Communicative Language Teaching

(CLT). The chapter aims to shift language education from a form-focused approach to one centered on real-world communication. By reviewing literature on CLT across diverse cultural contexts, the study examines how teachers adapt CLT to meet learners' needs. While CLT is gaining acceptance in ESL/EFL classrooms, the research reveals a gap between teachers' beliefs and their actual classroom practices. The paper advocates for a transition from traditional, form-focused methods to communicative approaches in both teacher training and primary education, emphasizing the need for functional language use over grammar-based instruction.

The fourth and final thematic unit, titled *Preparing for Professional Competency*, is composed of two chapters. Chapter Eleven, "The Importance of Becoming Content Creators: The Role of Local Publication in Supporting a Sustainable Transformative Educational System," by Tom J. McConnell, covers the need for reducing reliance on European and North American publishers for educational materials, a recurring theme from the World Conferences on Transformative Education. To drive school transformation, it's crucial to develop new resources that support innovative pedagogies, learning objectives, and culturally relevant contexts. The chapter argues that a broader group of African educational reformists should take on the role of "content creators" to facilitate systemic change. It also examines Print-on-Demand (POD) services, which allow groups to bypass traditional publishing and produce custom print and digital books. The article highlights a successful collaborative model for book creation and discusses how content creators can significantly impact educational reform.

Chapter Twelve, "Professional Development Needs Assessment for Non-Teaching Staff in the Management of Schools," by Judah Ndiku, Jason Nganyi, Pamela Buhere, Teresa Okoth, Stephen Odebero, Eunice Majanga, and Rose Opiyo, probes the professional development needs of non-teaching staff in Kenyan secondary schools. While much research has focused on higher education, this chapter fills the gap in secondary schools. Using a descriptive survey design, the study involved 355 respondents, including 43 principals and 312 non-teaching staff, selected from national, extra-county, county, and sub-county schools. A mix of nine boarding schools for girls, 10 for boys, 11 mixed boarding schools, and 13 day-schools were included. Data collection was done through questionnaires and analyzed with descriptive and inferential statistics, including ANOVA. Findings highlight the importance of professional development for non-teaching staff in improving school management, although the participation rate was low due to financial constraints. The study recommends increased funding to boost the efficiency and performance of non-teaching staff in managing schools effectively.

In recent years, transformative education has emerged as a thriving area of academic inquiry. The contributors of this book represent various disciplines across Africa and North America, offering a rich array of perspectives, underscoring the multidisciplinary and interdisciplinary nature of transformative education. We hope this volume adds valuable insights to the local and global discourse on how transformative education can drive sustainable social and economic development in Africa and around the world.

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# PART 1:

# CURRICULUM AND PEDAGOGY

# CHAPTER 1

# EDUCATION FOR SOCIO-ECONOMIC AND POLITICAL TRANSFORMATION OF AFRICAN ECONOMIES: RETHINKING CURRICULUM AND INSTRUCTION

MICHAEL T. NDEMANU

## Abstract

This chapter employs transformative learning theory to examine the quality of education in the broader continent of Africa. It explores the problems plaguing the educational sector from pre-kindergarten to tertiary level and makes recommendations on ways to transform schools and, consequently, African economies to alleviate poverty and improve quality of life. The chapter is a conceptual piece that draws from primary, secondary, and experiential sources to inform readers and educational practitioners about the values of educational outcomes translating into the socioeconomic lives of Africans; and offers curricular and pedagogical solutions that bridge the disconnect between schooling and real life. It recommends a paradigm shift in how education is currently practiced in countries across Africa so that their citizens can benefit from high-quality education to harness their full economic potential.

## Introduction

More P-12 schools and universities across the continent of Africa have been established since the 1990s to meet growing educational demands. Therefore, far more students are completing secondary and tertiary education today than in previous decades. Unfortunately, youth unemployment has been rising steadily despite the remarkable gains in literacy and numeracy rates across the continent because private sector growth has been stagnating. The

fundamental questions that this chapter seeks to address are as follows: Why is education in Africa not contributing significantly to a sustained economic growth? How can education become a catalyst for the sustainable social and economic growth of a country? Education, in general, is designed to uplift learners and consequently society by preparing citizens to be literate, numerate, emancipatory, technologically savvy, innovative, altruistic, communicative, problem-solvers, professionally competent, intellectually sophisticated, and skillful in building healthy and economically prosperous communities. Education is also designed to inculcate the values of curiosity and inquiry so as to promote scientific and technological discoveries to transform communities, countries, and the world to which they all belong. The extent to which education systems in the Global South have focused on these outcomes is limited. As a result, economies are sagging, political systems are unstable, and life expectancy is considerably lower. This chapter explores the problems plaguing the educational sector from pre-kindergarten to tertiary level and makes recommendations on ways to transform schools and propel African economies into a bonanza web of sustainable economic growth undergirded by technological innovation.

There is a new economic revolution based on knowledge, which is now called the knowledge economy. It is a system of production and consumption based on intellectual capital and involves capitalizing on scientific discoveries and applied research. If an education system does not foster robust skills in scientific discoveries, students will not be prepared to integrate the knowledge economy. Since 1990s, the demand for skills has undergone a profound transformation due to technological advancements, globalization, and changing labor market dynamics. Traditional economies rely heavily on manual labor and basic literacy skills, whereas the knowledge economy requires sophisticated skills that include digital literacy, adaptability, and creativity (Powell & Snellman 2004). As the nature of work evolves dramatically, there is a growing emphasis on higher-order cognitive skills and socio-emotional competencies, reflecting a shift from routine tasks to complex problem-solving and innovation (Van Laar et al. 2017).

In response to these shifting demands, P-12 schools worldwide are redesigning their curricula and instructional practices to foster transformative learning outcomes and 21st-century skills among students. According to Drake and Reid (2020), integrated curriculum approaches, which bridge disciplinary content with interdisciplinary skills, hold promise in promoting holistic development. For instance, educational initiatives that emphasize computational thinking, problem-solving, and collaboration as foundational skills contribute immensely to economic success in society (Yadav et al.

2016). Effective implementation of 21st-century skills requires a well-prepared teaching force capable of accelerating student learning toward transformative learning outcomes by employing innovative, instructional, and curricular strategies in schools and colleges. Studies have stressed the importance of continuous professional development programs for equipping educators with the necessary pedagogical strategies and resources (Haug and Mork 2021). Ongoing support and reflective practices across African countries are essential for nurturing teachers' proficiency in fostering 21st-century skills among students (Haug and Mork 2021). Furthermore, there is a need to address equity issues related to disparities in resource provision and access to continuous professional development opportunities in underserved communities (Stehle and Peters-Burton 2019).

## Theoretical Framework

Transformative learning is complex and encompasses different strands that revolve around the change that comes with knowledge acquisition. Considering the limited scope of this chapter, we focus on four strands of the theory: transformation as consciousness-raising (Freire 1970), transformation as critical reflection (Mezirow 1991), transformation as development (Daloz 1986), and transformation as individuation (Boyd 1991). Regarding Freire's view of transformation as consciousness-raising, he coined the word *"conscientization"* from his work on adult literacy education with working-class people in Brazil to refer to fostering deeper learning in literacy that goes beyond reading the word to reading the world. His works promote transforming the mind through introspection, which leads to a critical consciousness that causes people to acquire emancipatory knowledge in ways that are more liberating and fulfilling. Thus, teachers employ dialogic and problem-solving skills to teach in ways that lead learners to develop awareness of structural barriers in society that may hinder economic opportunities and social freedom (Dirkx 1998). Freire's works on transformative pedagogy within the literacy realm have had a profound impact on communities worldwide, including the Lindeman Center in Chicago, Illinois, and the Highlander Center in New Market, Tennessee.

The second strand, transformation as critical reflection propounded by Mezirow (1991), is about making meaning out of experiences through critical reflection, which he refers to as *perspective transformation*. These perspectives represent a renewed prism through which we view ourselves and the world after critical reflections from experiences. It is worth noting that critical reflection is a continuum that leads to the reformulation of

assumptions and enhanced transformation of perspectives. He defines transformative learning as "the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mindsets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove true or justified to guide action" (Mezirow 2000, 7).

The third strand of transformative learning theory, transformation as individuation, is less well-known but was developed by Robert Boyd (1991) and Boyd and Myers (1988). Boyd is one of the few transformative theorists who specifically employed transformative education terminology to describe an individualized developmental commitment to personal transformation stemming from an emotional-spiritual realm of learning experiences. This involves making the unconscious conscious, recognizing, naming, and explaining this new awareness.

The fourth strand examines transformation as development. Initially theorized by Larry Daloz (1986), this study examines how human beings make sense of their lives with respect to the developmental movement of their lives. He argued that people make meaning of experiences according to their developmental stages; the meaning people make of certain experiences in their twenties may not be the same if they are confronted with the same situation decades later.

Boström et al. (2018) drew from the above theorists on transformative learning to apply the theory to sustainable development. They advocate the recognition and reassessment of assumptions and expectations that comprise cognitive, social, moral, and affective dimensions. They argue that "profound change toward sustainable development involves not only technical challenges but also social challenges that require knowledge *transformation*, and not only the accumulation of more scientific knowledge but also targeting basic frames of references." (p. 2). This chapter draws from these various strands of learner transformation through different learning experiences to create desired social changes. The author of this chapter argues that the lack of quality education that promotes various forms of transformation contributes to the economic and social stagnation of economies. He defines transformative education as an educational theory that fosters meaning-making in the learning process in ways that facilitate knowledge transfer and application in real-life contexts. The theory is undergirded by two fundamental questions: How do learners acquire transferable knowledge? How do they apply the transferable knowledge in real-life contexts to solve problems?

## Exploring Challenges in Quality Education in Africa

Education in Africa is facing a myriad of challenges that hinder its ability to foster socioeconomic and political transformation. These challenges are multifaceted; and they include: decontextualized curriculum, large class sizes, contextualized pedagogy, shortage of highly skilled teaching forces, absenteeism among students and teachers, inadequate infrastructure, unskilled school leadership, and a shortage of educational resources. Large class sizes pose significant obstacles to effective learning in schools. They have been classified by researchers and policymakers as a major hurdle to quality education (Yusuf 2023), particularly in rural areas where resources are scarce. For example, in Nigeria, Ghana, Kenya, and in most of the continent, it is not uncommon to find classrooms with a 100 to 1 student teacher ratio, making it difficult for teachers to apply transformative instructional approaches to teaching that encompass individualized attention to learners. This overcrowding not only affects the quality of teaching but also intensifies issues related to school discipline and safety (Bishop 2023).

Moreover, the shortage of highly-skilled teachers exacerbates the problem of quality education. Africa's significant teacher shortage is particularly severe in the Central African Republic, Chad, Mali, and Niger (Yusuf 2023). UNESCO called on these countries to recruit millions of teachers by 2030 to close the student-teacher ratio. This teacher shortage leads to overcrowded classrooms, which inhibits learner-centered pedagogic strategies and quality educational experiences for students' self-advancement and economic growth from being practiced. In some cases, unqualified or underqualified individuals are hired as teachers due to the scarcity of effectively trained teachers. This undermines the quality of instruction provided to students (Bourdon et al. 2010).

Absenteeism among students and teachers also erodes the effectiveness of an education system. According to Agbor (2012), the disparity in educational outcomes between rural and urban areas across Africa stemming from truancy and teachers' absenteeism remains considerably high. The marginalized populations in these countries are the hardest hit given their likelihood of assisting their parents on their farms or family businesses. In Malawi and Zambia, many students, especially girls, miss school because of household chores, long distances to school on foot, or early marriage.

Klapper and Panchamia (2023) spotlight the high cost of education in Sub-Saharan Africa, with over half of the adults in the region worrying about paying school fees. Although most K-12 public schools across the continent are tuition-free, associated fees, like the PTA fees, make

education unaffordable to many children from economically marginalized communities. Klapper and Panchamia (2023) proposed practical solutions such as digitalizing fee payments and promoting formal savings and credit options to alleviate financial barriers to education, particularly for low-income families. Education is a critical pillar of economic development; however, the opportunity gap between males and females persists across the African continent is wide (Bishop 2023). There is persistent gender inequality in education that fueled by societal norms favoring boys' education.

Furthermore, the lack of quality infrastructure, including basic facilities such as classrooms, chairs, and desks, textbooks, technology, electricity, and sanitary facilities, poses another significant challenge. In many rural areas across Africa, schools lack electricity, clean water, and proper sanitation facilities, creating an environment that is not conducive for learning. Lack of instructional resources and ineffective school leadership crises also contribute to the challenges facing education in Africa. Van Zyl et al. (2021) examined disparities in instructional resources such as textbooks, laboratory equipment, and other didactic materials in South African high schools. Without effective leadership and governance at the school level, initiatives to address educational challenges may fail. In some countries, corruption, nepotism, and mismanagement plague the school system. The anecdotes of school administrators diverting funds away from essential programes are commonplace and tend to erode public trust in the education system. Some principals ask for kickbacks to admit students to public schools. While the prosecution of such unethical conduct is frequent, paying individuals living wages could be the most sustainable solution to the problem. Bourdon et al. (2010) discuss the impact of contract teacher reforms in Niger, Togo, and Mali, revealing their varying effectiveness across countries and emphasizing the importance of community involvement in teacher recruitment and monitoring.

## Educating Students for Socioeconomic Development

Preparing students for the current socioeconomic needs of their communities and countries begins by infusing 21st-century skills into K-16 education systems to address the demands of knowledge economies. In the past few decades, the global landscape of education has witnessed a significant shift toward integrating 21st-century skills into K-12 schools and colleges in most advanced economies. These skills, among many others, include critical thinking, interpersonal understanding, collaboration, creativity, complex communication, global awareness, literacies, and problem-

solving. They are essential for students to thrive in the knowledge economy of the modern era.

At the tertiary level, integrating 21st-century skills is crucial for preparing students for success in the knowledge economy. Engineering curricula, for example, are evolving to incorporate not only technical expertise but also skills such as problem-solving, teamwork, and communication (Schefer-Wenzl and Miladinovic 2020). Similarly, initiatives like character education underscore the importance of holistic development, emphasizing attributes such as resilience, empathy, and ethical reasoning (Njui 2017). However, there is a need for more explicit instruction and intentional pedagogy to deepen students' engagement with higher-level skills (Stehle and Peters-Burton 2019). In essence, the integration of 21st-century skills into K-12 schools and higher education represents a paradigm shift in response to the current demands of 21st-century economies. While progress has been made in curriculum redesign and instructional innovation in some African countries, challenges persist in ensuring equitable access to quality education and professional development opportunities. Concerted efforts are needed to address these challenges and empower students with the skills and competencies necessary to succeed in the 21st-century economy.

The transition to a knowledge-based economy is increasingly recognized as vital for driving sustainable economic development in Africa, with scholars emphasizing the imperative of building knowledge economies tailored to the continent’s unique challenges and opportunities (Asongu and Kuada 2020). Although this transition is not without its hurdles, as previously stated (Jena 2023), countries like, South Africa, Morrocco, and Egypt are making notable progress in building knowledge economies through strategic investments in education, research, digital infrastructure, innovation, and entrepreneurship (Ndikumasabo 2021).

In addition to addressing educational challenges, there is a growing recognition of the importance of employing transformative and learning theories to integrate 21st-century skills into education systems to prepare African populations for the demands of modern economies. Cheru (2009) advocated fostering critical thinking, problem-solving, and collaboration among students to address multifaceted challenges. Haug and Mork (2021) underlined the impact of professional development programs on primary school teachers' acquisition of 21st-century skills, emphasizing the importance of equipping educators with practical teaching resources to facilitate inquiry-based learning practices. Moreover, efforts to integrate 21st-century skills extend to higher education, with a focus on engineering curricula. Schefer-Wenzl and Miladinovic (2020) analyzed various approaches to

integrating these skills, ranging from isolated courses to interdisciplinary projects, and emphasized the importance of starting with module-based courses to enhance student acceptance. However, challenges remain in resource-constrained environments and the prioritization of standardized testing (Schefer-Wenzl and Miladinovic 2020).

The transition to a knowledge-based economy has immense potential to drive sustainable economic development in Africa. Addressing the multifaceted challenges facing education systems and integrating 21st-century skills into curricula are essential steps toward realizing this potential. Efforts to improve access to education, enhance teacher recruitment and training, and foster innovation and entrepreneurship are critical for building knowledge economies that can propel Africa's socioeconomic transformation in the 21st century. While the problems facing education in Africa are multifaceted and interconnected, burdensome issues such as large class sizes, teacher shortages, absenteeism, inadequate infrastructure, school leadership crises, and scarcity of educational resources need to be addressed. Concurrently, the integration of 21st-century skills into P-12 schools and higher education represents a significant paradigm shift in global educational practices. This shift is driven by the evolving demands of the knowledge economy, which requires different skill sets for individuals to thrive in the modern era. However, bridging the gap between the current state of education in Africa and the demands of the knowledge economy requires concerted efforts to address systemic issues while simultaneously fostering the development of 21st-century skills.

Overall, the problems in education, the integration of 21st-century skills, and the transition to a knowledge economy are deeply interconnected. Solving the problems facing education in Africa is a springboard to lay the groundwork for building a robust knowledge economy that will generate more revenue for reinvestment in the education sector. Moreover, integrating 21st-century skills into education systems is essential for equipping Africa with the competencies necessary to thrive in the knowledge economy. Skills such as critical thinking, problem-solving, collaboration, and digital literacy are not only essential for individual advancement but also for driving innovation, economic growth, and sustainable development at the national and international levels. Therefore, efforts to improve education in Africa must go hand-in-hand with initiatives to foster 21st-century skills, as they are both integral components of the broader socioeconomic transformation agenda for the continent. By investing in education, promoting innovation and entrepreneurship, and nurturing 21st-century skills among its population, countries can unlock their full potential and position themselves as global players in the knowledge economy of the 21st century.

## Transformative Learning and Teaching Theories for Maximizing Learners' Competencies

Drawing from the transformative learning theory elucidated above, this section explains how school infrastructure, curriculum, and pedagogy, intentionally designed to attain transformative outcomes, can drive socioeconomic transformation in Africa.

### *School Infrastructure*

Infrastructure plays an important role in supporting transformative education. It provides the necessary foundation for effective teaching and learning experiences. As Brooks (2021) affirmed, well-equipped facilities and infrastructure are essential components of an educational environment conducive to student growth and cognitive development. Basic amenities such as sanitation facilities, electricity, and internet connectivity are fundamental requirements for creating a comfortable and conducive learning environment. These amenities not only ensure the physical well-being of students but also support their academic endeavors by removing potential distractions and barriers to learning. With the increasingly-changing climate in most African countries, there is a need for climate-controlled classrooms to maximize students' attention to academic tasks. Dapi et al, (2020) found that in Cameroon classrooms with an average temperature of 80.6 to 86 degrees Fahrenheit (27-30 degrees Celsius), students' reading comprehension, computational skills, and reading speeds drop significantly.

Furthermore, the significance of ICT (Information and Communication Technology) infrastructure in education cannot be overstated. The availability of ICT infrastructure enables institutions to quickly adapt to changing circumstances and maintain continuity in education delivery (Garwe 2022). Through online platforms and digital tools, students can access learning materials, engage in interactive sessions, and participate in assessments from the safety of their homes.

Moreover, ICT infrastructure enhances the flexibility and versatility of educational delivery methods, allowing institutions to cater to diverse learning needs and lifelong learning needs of workers who want to acquire additional educational credentials. For example, virtual classrooms and online learning platforms provide students with the flexibility to engage in self-paced learning activities and participate in asynchronous collaborative projects. Additionally, digital resources and multimedia tools enrich learning experiences by offering interactive simulations, multimedia presentations, and immersive learning experiences. These resources not

only enhance students' understanding of complex concepts and foster creativity, critical thinking, and problem-solving skills, they serve as the backbone of transformative education initiatives. By providing a supportive and accessible learning environment with movable desks and chairs that can be adapted for different forms of collaborative learning, institutions can empower students to thrive academically and individually, regardless of external challenges or constraints. Moreover, investments in infrastructure demonstrate a state's commitment to educational excellence and equity, ensuring that all students have the resources and opportunities they need to succeed in their educational journey.

In addition to basic amenities, the design of learning spaces plays a crucial role in enhancing educational experiences. Sosibo (2019) outlines the importance of climate-controlled learning spaces, as well as the presence of comfortable, movable class furniture for promoting interactive learning and student engagement. Climate-controlled environments ensure that students and educators are comfortable throughout the learning process, which can positively impact attention, focus, and overall well-being (Brooks 2021). Researchers argue that temperature and air quality significantly influence cognitive function and academic performance, thereby underscoring the importance of maintaining optimal learning conditions (Filippakou and Tapper, 2008).

The arrangement and design of classroom furniture can also affect teaching and learning dynamics. Flexible seating arrangements, such as movable chairs and tables, allow for easy adaptation to different instructional activities and group configurations, promoting collaboration, communication, and student-centered learning (Jensen and Bennett 2015). For example, collaborative learning spaces equipped with modular furniture enable students to work together in small groups or engage in whole-class discussions, fostering peer interaction and knowledge sharing (Jensen and Bennett 2015). Additionally, the integration of technology into learning spaces is essential for supporting digital learning initiatives and facilitating access to educational resources (Garwe 2022). Modern classrooms are equipped with multimedia tools, interactive displays, and audio-visual systems that enhance instructional delivery and engage students in immersive learning experiences (Garwe 2022; Ndemanu and Davis 2019). For instance, interactive Whiteboards and digital projectors enable educators to deliver multimedia-rich presentations, incorporate visual aids, and facilitate interactive learning activities (Garwe 2022). Moreover, the provision of reliable internet access and ICT infrastructure ensures that students can leverage online resources to participate in virtual discussions, and collaborate on digital projects (Brooks 2021).

Security measures are essential for ensuring the safety and well-being of students and staff in places where security poses a challenge in creating a conducive learning environment. Comprehensive security protocols, including surveillance systems, access controls, and emergency response procedures help mitigate risks and maintain a secure campus environment (Zuhairi, Raymundo, and Mir 2020). By prioritizing safety and security, educational institutions demonstrate a commitment to creating an environment where students feel safe, valued, and supported in their learning journey (Zuhairi, Raymundo, and Mir 2020).

Investments in infrastructure like climate-controlled learning spaces, flexible furniture arrangements, and integrated technology, are vital for creating inclusive, accessible, and appealing learning environments that support transformative education initiatives. By optimizing learning spaces and prioritizing safety and security, educational institutions can create conducive environments that foster student engagement, collaboration, and maximize learning outcomes.

## *Curriculum*

The curriculum serves as the foundation of transformative education, guiding teaching and learning activities to achieve desired learning outcomes. The works of Nicholson (2011) and Ndemanu (2022) highlight the values of backward syllabus design, in which learning objectives are aligned with competencies to enhance student learning outcomes. This approach ensures that curriculum development is driven by the desired learning outcomes, thereby promoting coherence and alignment in educational programs. Brooks (2021) emphasized the significance of aligning curriculum objectives with standards and accountability measures in initial teacher education programs. He intimates that by clearly defining learning objectives and competencies, educators can design curriculum frameworks that effectively prepare students for the demands of their profession, ensuring that graduates possess the necessary knowledge, skills, and dispositions to succeed professionally, and consequently propel their economy to higher heights. By aligning curriculum development with accreditation standards, institutions can ensure that their programs meet established criteria for quality and effectiveness, and that they foster confidence among stakeholders, and promote international recognition of their credentials (Mulenga 2020).

It is also vital to incorporate multiple sources perspectives into the curriculum to provide students with comprehensive education. By drawing on diverse resources such as books, articles, case studies, and multimedia

materials, educators can enrich learning experiences and expose students to a wide range of ideas, perspectives, and methodologies (Omeihe and Omeihe 2019). This approach promotes critical thinking, creativity, and intellectual curiosity. Thus, it enables students to engage with complex issues and develop informed opinions. Moreover, the availability of learning and instructional resources, such as libraries and laboratories, plays a crucial role in supporting curriculum delivery and enhancing student learning outcomes. Access to comprehensive library collections, state-of-the-art laboratories, and cutting-edge technologies enables students to explore new concepts, conduct research, and apply theoretical knowledge in practical settings, thereby fostering deep learning and skill development that contribute to economic and social development (Omeihe and Omeihe 2019).

Finally, the availability of diverse learning resources is essential for enriching the curriculum and providing students with opportunities for knowledge exploration and discovery. Access to libraries, laboratories, and other learning resources is critical for promoting active learning and inquiry-based approaches to education. These resources provide students with opportunities for hands-on learning experiences, research projects, and collaborative activities to enhance their critical thinking and problem-solving skills (Filippakou and Tapper 2008).

## *Pedagogy*

Pedagogy plays a central role in transformative education by imbuing 21st century skills (Vivekanandan 2019) and shaping teaching and learning practices to promote active engagement, critical thinking, and personal development. Transformative pedagogy assesses learning based on the application of knowledge and less on the regurgitation of facts. The Clemente Australia program, a transformative curricular model, offers humanities-based education within community agency settings, underscoring learner-centered approaches and collaborative learning experiences to foster self-confidence, agency, and hope among disadvantaged populations (Howard et al. 2010). Jensen and Bennett (2015) theorize a partnership model in which students act as teaching and learning consultants, providing feedback to academic staff to enhance teaching practices. This collaborative approach promotes dialogue between students and staff, fostering mutual respect and understanding in the learning environment. There is a need to stress the importance of disciplinary literacy practices in engineering education. They advocate for pedagogies that go beyond teaching genre features to engage students in authentic engineering tasks aligned with

equity-oriented objectives (Wilson-Lopez et al. 2022). By integrating engineering education with a transformative approach that addresses real-world challenges and promotes social responsibility, educators can prepare students to contribute tremendously to the socioeconomic transformation of society. Transformative pedagogies that incorporate mentorship and practical learning activities to develop entrepreneurial skills among students and modernize feedback mechanisms, including 360-degree evaluation, to foster teaching effectiveness and student engagement are critical. Overall, pedagogical approaches that prioritize active learning, collaboration, and critical reflection are essential for promoting transformative education and empowering students to become active agents of change in society.

The benefits of these pedagogic approaches are multi-faceted and far-reaching. For example, the Clemente Australia program's focus on learner-centered instructional approaches and collaborative learning experiences has been shown to improve academic outcomes and enhance participants' self-confidence and sense of agency. By providing opportunities for students to actively engage with course materials and collaborate with their peers, educators can create an inclusive and supportive environment where all students feel valued and empowered to succeed (Howard et al. 2010). Similarly, the partnership model presented by Jensen and Bennett (2015) has been found to promote dialogue and mutual respect between students and staff, leading to more meaningful interactive learning experiences and improved teaching practices. Involving students in the feedback process can enable educators to gain valuable insights into their teaching effectiveness and easily notice the areas requiring improvement, ultimately enhancing the quality of education delivery for the economy and country.

Integrating transformative pedagogies in engineering and other sectors of education has been shown to better prepare students for the complex challenges they face not only in their careers, but in their communities, too. By engaging students in authentic engineering tasks that address real-world problems and promote social responsibility, educators can cultivate the skills and competencies necessary for success in the field (Wilson-Lopez et al. 2022). When educators give students opportunities to apply theoretical knowledge in real-world settings and receive direct feedback from mentors and peers, they help students develop the confidence and expertise they need to thrive in their chosen fields. In essence, pedagogical approaches that prioritize active learning, collaboration, and critical reflection have been shown to be highly effective in promoting transformative education and empowering students to become active agents of change in society.

## Discussions

Applying transformative education theory requires students to be predisposed to transfer knowledge to real-life contexts. Thus, community outreach and fieldwork provide invaluable opportunities for practical application and experiential learning to enrich educational experiences, and foster deeper understanding of real-world issues. By collaborating with external stakeholders, educational institutions can provide students with opportunities for community engagement, service learning, and civic participation, thereby promoting social responsibility and active citizenship (Rowan 2003). Engaging in internships, clinical placements, and fieldwork experiences allows students to bridge the gap between theory and practice, gain hands-on experience in their respective fields, and develop essential professional skills and competencies.

Community partnerships should be infused in curriculum development and implementation. Local communities should be included in the educational planning to ensure that academic programs are relevant and responsive to the unique needs and priorities of local communities (Mulenga, 2020). Through community partnerships, students gain exposure to diverse perspectives and real-world challenges, enhancing their understanding of complex social issues and fostering empathy and social responsibility. By participating in collaborative initiatives with community stakeholders, students not only contribute meaningfully to addressing local needs and problems but also develop essential skills such as communication, inquiry, collaboration, civic engagement, and problem solving. To sum up, community outreach and fieldwork experiences are integral components of transformative education, providing students with opportunities for personal growth, professional development, and civic engagement for the benefit of the larger society.

In conclusion, investments in infrastructure are essential for creating learning environments that support teaching and learning activities across all academic disciplines. Curriculum development should be guided by backward design principles and aligned with desired learning outcomes that are predicated on addressing society's problems to enhance coherence, relevance, and effective knowledge transfer. Pedagogical approaches that foster socioeconomic transformation must prioritize active learning, collaboration, inquiry, critical reflection, individuation, and critical consciousness to maximize learning outcomes. There is no gainsaying that the problems confronting education in Africa are multifaceted and require a synergy among scholars, policymakers, civil society, community leaders, and heads of government to be comprehensively addressed. Teacher education

programs and teachers' professional associations can begin to take incremental steps to embrace the transformative education paradigm to transform schools, curricula, pedagogies, and their teaching philosophies to embrace this vision.

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