
INFLUENCE OF HERDERS-FARMERS CONFLICT ON PUPILS' ENROLMENT, RETENTION, AND COMPLETION OF BASIC EDUCATION IN BENUE STATE, NIGERIA

Adaaku, Judith Mbakeren¹, & Aun, Thompson Toryuha²

¹judithadaaku@gmail.com +2347068978660 and

²aunthompson17@gmail.com +2348141990480

^{1&2} Department of Social Sciences Education, Faculty of Education, University of Ilorin, Nigeria.

Article History

Received: Nov. 2025

Review processes

Jan - Feb 2026

Received in revised form:
Feb 2026

Accepted: Mar 2026

Published online: Mar
2026

Keywords

Conflict; Enrolment;
Retention; Completion;
Basic-school.

Doi:

<https://doi.org/10.5281/zenodo.19226494>

Abstract

Recently, farmers-herders in Benue state had a sour relationship with persistent conflict. The conflict erupted in the state at intervals with varying gravity, such as displacement of people, destruction of houses, schools, deaths, and loss of valuable items worth several million. The study examined the influence of herders-farmers conflict on pupils' enrolment, retention, and completion of basic education in Benue State, Nigeria. The study adopted descriptive survey method. The population of the study comprised all 4,486 basic school pupils in Benue State, Nigeria. A sample of 30 from 438 basic schools in three (3) local government areas under study was selected using a multistage sampling technique. A period of 10 years was used for the collection of data. The data collected from this study were analysed using descriptive statistics. The findings of the study revealed, among others, that enrolment dwindled with increasing conflict, retention also declined with severity in conflict, as well as completion rates across three local government areas, especially in the years 2014, 2018, and 2020. The study concluded that the farmers-herders conflict in Benue State has influenced enrolment, retention, and completion of basic education. The study recommended, among others, that the international communities and the federal/state government should serve as an intermediary to resolve the continuous conflict.

Introduction

The world at large, and the African continent in particular, has long been characterized by recurring conflicts that date back to time immemorial. In recent decades, however, the nature and dynamics of these conflicts have evolved significantly. Contemporary conflicts are increasingly driven by factors such as greed, struggles for political dominance, competition over scarce resources, and the defense of cultural or ideological values. As a result, achieving peaceful coexistence within and among nations has become more complex and challenging than ever

before. Nigeria serves as a prime example of a nation deeply affected by persistent and multifaceted conflicts. These conflicts are often rooted in ethnic diversity, religious differences, political rivalries, and economic interests. Historical records indicate that Nigeria experienced numerous ethnic and communal conflicts even before gaining independence; however, the frequency and intensity of these conflicts have escalated dramatically over the past six decades (Adegbami & Uche, 2015; Nwankwo, 2015).

The evolution of ethnic conflicts in Nigeria can be traced from internal rivalries

among groups to more overt and violent external confrontations. These conflicts are closely linked to struggles over political power, access to economic resources, land ownership, and socio-cultural dominance (Egbefo & Salihu, 2014). Ethnic and communal violence has had far-reaching consequences on the nation's economic stability, physical infrastructure, and human well-being. Despite numerous interventions by government agencies, community leaders, and private organizations, these conflicts have persisted, often yielding little or no lasting solutions (Joshua, 2017). The diversity inherent in many African states, rather than serving as a source of strength, has frequently manifested as a source of division and conflict, leading to the characterization of Africa as the "Problem Child of the World" (Onuoha, 2012).

Globally, many nations continue to grapple with different forms of conflict, resulting in significant loss of lives, destruction of property, and widespread insecurity. While it is noteworthy that the total number of war-related deaths has declined globally—from over 200,000 annually in the mid-20th century to about 84,000 between 1946 and 2016 (United Nations, 2020)—violent conflicts remain a persistent challenge. These conflicts are increasingly characterized by the involvement of non-state actors such as ethnic militias, insurgent groups, and terrorist organizations. Such groups often operate against state authority, contributing

to widespread destruction, displacement of populations, and breakdown of law and order. Furthermore, violent conflict has been identified as a major driver of terrorism, with over 90% of terrorism-related deaths occurring in countries experiencing ongoing conflict (UN Report, 2020).

In Nigeria, one of the most pressing contemporary conflicts is the recurring clash between farmers and herders, particularly involving cattle rustling and disputes over land use. These conflicts have significantly undermined community security and stability (Aun, 2019). They have also contributed to food insecurity and the displacement of large populations, thereby affecting various sectors, including education. The most prominent of these conflicts involve Fulani pastoralists and farmers from different ethnic backgrounds such as the Zarma, Hausa, and Mawri groups, especially in northern Nigeria. While some disputes within agro-pastoral communities are resolved peacefully through local authorities, others escalate into violent confrontations with devastating consequences (Blench, 2010).

Benue State, located in North-Central Nigeria, has been particularly affected by these conflicts. Historical records reveal that no decade since Nigeria's independence has been free from conflict in Benue State (Aun, 2022). The state has witnessed numerous tragic events stemming from ethnic tensions, political disagreements, and religious differences.

Created in 1976 during the military regime of General Murtala Muhammed, Benue State derives its name from the River Benue, the second-largest river in Nigeria. It shares boundaries with several states, including Nasarawa, Taraba, Kogi, Enugu, Ebonyi, and Cross River, and also has an international border with Cameroon. With a population of over 4.2 million people as recorded in the 2006 census, the state is predominantly agrarian and is widely known as the “food basket of the nation.” Its major ethnic groups include the Tiv, Idoma, and Iggede, alongside several minority groups (National Human Development Report, 2018).

Despite its agricultural richness, Benue State has been severely impacted by farmer-herder conflicts, which have disrupted farming activities and threatened livelihoods. One of the most significant consequences of these conflicts is the alarming rise in the number of out-of-school children. Globally, UNESCO (2018) reports that over 258 million children are out of school. In Nigeria, this figure has risen dramatically, reaching approximately 40.8 million, up from earlier estimates of 10 to 20 million (Akinpelu, 2021). Benue State alone accounts for about 603,803 out-of-school children, representing 29% of the affected population, placing it among the top ten states with the highest rates in the country (Akinpelu, 2021).

This situation has been partly attributed to the implementation of the

anti-open grazing law in 2017 by the Benue State House of Assembly. The law, which restricts open grazing by herders, has been met with resistance, leading to increased violence, destruction of property, and loss of lives. These conflicts have disrupted communities, destroyed schools, and forced families to flee their homes, thereby limiting children’s access to education.

The factors contributing to the rise in out-of-school children in Benue State are multifaceted. While the farmer-herder conflict plays a significant role, other contributing factors include poverty, child labor, early marriage, kidnapping, natural disasters, teenage pregnancy, long distances to schools, insecurity, gender inequality, disability, cultural practices, and religious beliefs. These factors collectively create barriers to education, making it difficult for children to enroll in and complete their schooling.

Education remains one of the most effective tools for reducing poverty and inequality in any society. It provides the foundation for sustainable development and economic growth (Domikel & Edward, 2014). Primary education, in particular, is critical as it equips individuals with basic literacy and numeracy skills, which are essential for personal and societal development (Bruns et al., 2003). It is the most accessible level of education globally and serves as the cornerstone for lifelong learning and development.

However, conflict has a direct negative impact on school enrolment, retention, and completion. In areas affected by violence, parents often prioritize the safety of their children over education. In Benue State, particularly in local government areas such as Guma, Logo, and Ukum, school attendance has been severely disrupted due to ongoing conflicts. Many children are forced to relocate, while others are kept at home for safety reasons, leading to low enrolment and high dropout rates (Ololo, 2017).

School enrolment refers to the number of pupils admitted into schools within a given period (Oguche et al., 2016). It is a key indicator of the viability and sustainability of educational institutions. Declining enrolment rates can lead to the closure of schools, particularly in rural areas where resources are already limited. In conflict-affected regions, the situation is even more dire, as existing students withdraw and new admissions decline drastically.

Retention, on the other hand, refers to the ability of schools to keep students enrolled until they complete their education. High retention rates indicate stability, while high attrition rates signal systemic challenges. In Benue State, many parents are forced to transfer their children to safer areas or withdraw them entirely due to insecurity. This disruption not only affects academic progress but also undermines the overall educational system.

Statement of the Problem

The herder-farmer conflict remains one of the localized conflicts that has existed and distorted the peace of people for years in Nigeria, having its source from land resources. Despite many years of efforts to resolve the conflict through corporate social organizations and government mediation, committees of enquiry, law courts, decrees and peace enforcement, the conflict still remains to be resolved. Traditional peaceful coexistence between herders and farmers has recently turned into quarrels and fights, resulting in mistrust and suspicion. Accordingly, both herders and farmers have lived together for decades, with issues bordering land resource amicably resolved. The process of ensuring peace was built on traditional rulers and institutions. The prolonged nature of the conflict and the frequent eruption of violent conflict in this area questioned the state and nature of education in the area. That is, with the conflict, it is possible that the state and nature of education in the area are interrupted, given that families/children are displaced along with their parents or relations and teachers. Despite the use of several indigenous and other methods to resolve the conflict, it remains unresolved, and this is observed to have negative consequences on the basic schools in the Benue state, particularly in areas like Guma, Logo, and Ukum, which serve as the study area.

The peaceful coexistence and harmonious inter-group relations between the herders-farmers in the past have intensified with increasing escalation of violence due to cutthroat competition for land and water resources which are central to the socio-economic survival of both parties. The specific farmers' populated towns and villages with intense herder-farmer conflict include Jootar, Vaase, Ayilamo, Anyiin, Sev-av, Gbajimba, Agasha and Iorza where some schools have been closed permanently while others open only when the conflict subsides. The persistent violent conflicts between farmers and herders in Benue state have led the conflicting parties to acquire arms and recruit ethnic militias for self-defence. The use of sophisticated firearms makes the conflicts more dangerous with the unimaginable destruction of the affected communities, particularly in Anyiin, Ayilamo, Sev-av, Jandekyula, Iorza, Agenke, and Agasha, among others, with the death of about 3,000 people between 2014 and 2018 in all the aforementioned communities.

Accordingly, there are different academic works on conflict and farmer/herder conflict (David, 2010; Blench, 2010; & Nwanko, 2015), but none of these works have focused on the variables of the present study, namely enrolment, retention and completion in Benue state. For instance, David (2010) conducted a study on grading Nigeria's progress in education, where some states,

including Benue were affected by conflict in recent days. Blench (2010) studied pastoralists and cultivators in Nigeria to be broad but not specific to education, and the findings revealed that traditional methods of conflict resolution are more effective. Nwankwo (2015) carried out a study on rhetoric and realities of managing ethno-religious conflict: the Nigerian experience also pointed out consequences of conflict and emphasized that all parties must discourage the primordial sentiments in communities expressed by ethnic and religious groups. However, none of the above studies focused on school enrolment, retention and completion in the Benue state, which is a gap this study intends to fill. This study, therefore, examines enrolment, retention, and completion of basic school pupils over a period of 10 academic sessions in Benue state, using Guma, Logo and Ukum local government areas that have the highest occurrence of herders-farmers conflict in the state.

Purpose of the Study

This study investigated the influence of herder-farmer conflict on pupils' enrolment, retention, and completion of basic education in Benue State, Nigeria. Specifically, the study;

- assessed the influence of herders-farmer conflict on pupils' enrolment in basic education in Benue state, Nigeria.
- examined the influence of herders-farmer conflict on pupils' retention in

basic education in Benue State, Nigeria.

- investigated the influence of herder-farmer conflict on pupils' completion of basic education in Benue State, Nigeria.

Research Questions

This study provided answers to the following questions:

- What is the influence of herders-farmer conflict on pupils' enrolment in basic education in Benue State, Nigeria?
- How does farmer-herder conflict influence pupils' retention in basic schools in Benue State, Nigeria?
- How does herder-farmer conflict affect pupils' completion of basic education in the Benue State, Nigeria?

Methodology

The research design for this study was an ex-post facto design (causal comparative). Bello (2016) sees ex-post facto research as non-experimental research in which pre-existing groups are compared to see whether independent variables have caused a change in the dependent variable. The population of this study comprised 4,486 basic schools in Benue State, Nigeria (UBEC, 2019). Multi-stage sampling procedure was used to sample the population required for this study. A purposive sampling technique was used to select three local government areas, Guma, Logo and Ukum, where conflicts between farmers and herders are

predominant and incessant. There were 438 public primary schools in the three local government areas. Simple random sampling technique was used to select 10 schools from each local government, resulting in a total of 30 schools sampled for the study. The research instrument used in this study was a Proforma. The researcher went to the Benue State Ministry of Education Board to get data on "Pupils' Enrolment, Retention and Completion of Basic Schools in Benue State, Nigeria". The profoma was used to collect year-by-year data for the duration of the study (2012-2021), showing the rate of enrolment, retention and completion of basic education in the state before, during and after the conflict. Based on the information gathered about each of the basic schools from the State Ministry of Education regarding the concerned basic schools. Descriptive statistics were used to analyze the data and the results are presented in tables and graphs for easy interpretation and presentation of the data.

Results

Number of pupils enrolled in Basic schools in Guma, Logo, and Ukum local government areas of Benue State, Nigeria, from 2012/2013-2021/2022.

From the figure, it is evident that the number of basic school pupils' enrolment in Guma, Logo and Ukum fluctuates with the conflicting years. Overall, the conflict affected the enrolment of basic school pupils in 2014, 2018, and 2020, with all

three local governments suffering a significant decline in enrolment in the above-mentioned years.

Number of pupils retained in Basic schools in Guma, Logo, and Ukum local government areas of Benue State, Nigeria, between 2012 / 2013 – 2021 / 2022 Academic Sessions

From the figure above, it can be seen that the retention level fluctuates, especially for the 2014/2015, 2018/2019, and 2020/2021 academic sessions, with the figures decreasing to as low as 2451, 3577 and 2892 respectively.

Number of pupils who completed Basic schools in Guma, Logo and Ukum local government areas of Benue State, Nigeria between 2012/2013—2021/2022

As seen above, the information on the completion of basic schools in the 30 selected basic schools in the three local government areas of Guma, Logo, and Ukum fluctuates at yearly intervals, especially in the conflict persistent years of 2014/2015, 2018/2019, and 2020/2021.

Discussion

The first finding of the study revealed that the number of basic school pupils' enrolment in Benue State decreases in proportion to the conflict severity years, especially in the years 2014/2015, 2018/2019, and 2020/2021. This is in tandem with Aun (2021), who stated that school enrolment depends on certain factors such as availability, accessibility and affordability. This implies that if

there are schools in an area void of conflict, such schools will become inaccessible as the school facilities may be destroyed, burnt down and inhabited by bandits or refugees. This finding also agrees with Avav (2002), Igudia (2018), Pev (2014), Orunoye (2014), and Varella (2020), who found that conflict, be it ethnic, communal, or whatsoever, affects enrolment by causing displacement of learners from their locations that are near the school communities and the schools themselves been shut down temporarily or converted to homes to house displaced citizens.

The second finding of the study revealed that the retention of basic school pupils decreased in line with the years of conflict severity in the study area as was evident in years 2014, 2018 and 2020. This finding corroborates the studies of Alubo (2006), Oguche, Haruna, and Ikanni (2016), Aluaigba (2012;2015), and Akinpelu (2021) who in different studies but with similar findings affirmed that conflict brings untold hardship to people that some have to relocate to nearby cities, withdraw their children or wards to other schools due to fear of the unknown and even if others insist on staying, the schools may not be accessible hence some teachers may have been killed or seek transfer to other schools or locations on the basis of insecurity. That is, some of the pupils who were enrolled in the basic schools in Benue State have left the schools on the basis of insecurity or on

account of losing their sponsors or transfer of parents from the said areas to other locations that are devoid of conflict. In addition, this finding is in agreement with the findings of Shamyekina (2006) and UNECO (2010) that conflict increases the rate of dropouts and reduces academic survival or attainment due to displacement, death, hardship, looking for or engagement in work, joining military or militancy, and other challenges that may accompany the conflict. Accordingly, it is believed that this situation may be applicable to the farmer-herder conflict in the study area of Benue state.

The last finding of the study revealed that the number of basic school pupils who completed basic education in Benue fluctuated, as they dwindled during the years when the conflict was more severe. This finding is in agreement with Bolarinwa, Oluwakemi and Folorunso (2012), Opiki and Adeleke (2015) Shakya (2011) Ukertor (2016) Ololo (2017), and Aun (2020) who stated in separate studies that conflict results to denied or decreased to schools by prevents opening of schools, threatening children's security which led some to refuse to return to school or education, damaging or destroying educational infrastructures, increasing teachers and learners absenteeism, destruction of learning facilities, killing of parents and or teachers, increased poverty rate, dwindled economy, and what have you. These factors contribute

to the inability of pupils to complete their basic education within the stipulated time or throughout their lifetime since some of their sponsors may have been killed or their sources of income or livelihood destroyed. In contrast, this finding contradicts the studies of Miguel and Roland (2016) and Swee (2019), who stated that there was no significant difference in the completion of basic education in Bosnia and Herzegovina and that even the bombed areas were not found to have low levels of literacy but claimed that, this was attributed to aid and resources distributed after the conflict.

Conclusion

This study examined the influence of herders-farmers conflict on pupils' enrolment, retention and completion of basic schools in Benue State, Nigeria. Based on the findings of the study, it was concluded that herders-farmers conflict influences school enrolment, retention and completion as was evident in this study, especially in the persistent years of 2014/2015, 2018/2019, and 2020/2021. The data gathered revealed fluctuating figures on enrolment, retention, and completion in the study area, especially in the three years mentioned above. Some of the schools in the conflict-affected communities shut down, pending the return of peace and normalcy, while others moved to nearby areas, thus not allowing them to access education the way they should. Other areas saw total destruction of their homes and schools as

well as killing their parents or sponsors who made it impossible for them to enroll or become unable to complete their basic education.

Accordingly, it can be deduced or inferred that the herders-farmers conflict in the Benue state, just like every other conflict, has had grave consequences on the enrolment, retention, and completion of basic education of learners, as is evident in the study area. The plethora of studies shown above proved that conflict of whatever form has a negative impact, as was the case with the Benue state of Nigeria for the herder and farmers conflict where houses, schools and school properties, farmlands, and even lives were destroyed, and some teachers sought transfer to other locations.

Recommendations

Based on the findings of the study, it was recommended that;

- There should be ways of stopping or reducing the influence of the herders-farmers conflict by the state government by providing a lasting solution to the conflict that has taken a new dimension and is on the verge of poisoning the harmonious and smooth relationship between the herders-farmers in the state through intervention by international communities, federal and the state government as an intermediary so as not to allow the continuous decline in the number of basic school pupils.

- There should be strategies for retaining basic school pupils to ensure they are safe and willing to remain in school, even if they are relocated or moved to refugee camps. Other places where refugees camp during conflict are provided with educational facilities or educational aids to help school-age children not miss out on the teaching-learning process just like their counterparts in the non-conflict areas of the state or the nation at large so that their enrolment would not be affected.
- The pressing issues that always result in conflict should be urgently addressed by the state government and well-meaning individuals to ensure the successful completion of basic education by the basic school pupils who were enrolled and retained, regardless of any situation.

References

- Abegunde, A.A. (2010). An evaluation of the impact of communal conflict on the physical development of selected settlements in Southwestern Nigeria. A Ph.D. Thesis. Department of Urban and Regional Planning, Obafemi Awolowo University, Ile Ife, Nigeria.
- Adegbami, A., & Uche, C. I. (2015). Ethnicity and ethnic politics: an impediment to political development in Nigeria. *Journal of Public Administration Research*, 4 (1), 59.
- Akinpelu, Y. (2021) Special Report: Kano, Akwa Ibom, eight other states house

- most of Nigeria's out-of-school children. Retrieved from www.premiumtimesng.com
- Albert, I.O. (2017). Conflict analysis; a lecture delivered at Institute of Chartered Mediators and conciliators at the Nigerian Army School of Education July 2017
- Aun, J.T. (2019). Causes and consequences of Tiv-Jukun tribal conflict in Wukari local government area of Taraba state, Nigeria. Unpublished Paper, Center for Peace and Security Studies, University of Ilorin, Ilorin, Nigeria.
- Aun, T.T (2021). Enrolment, Retention and Completion of Basic School among Pupils in Tiv-Jukun Conflict Affected Areas of Taraba State. M.Ed Thesis, Submitted to the Department of Social Sciences Education, University of Ilorin, Ilorin, Nigeria
- Aun, J.T. (2023). Appraisal of Tiv Traditional Institutions in Management of Farmers-Herders Conflict in Benue and Nasarawa States, North-Central Nigeria. PhD Thesis, Submitted to the Center for Peace and Security Studies, Alhikmah University, Ilorin
- Bello, M.B. (2016). Causal comparative studies (Ex-post facto), in Owolabi, H.O. (eds). Educational research design, INDEMAC Publishers Limited.
- Blench, R. M. (2010). Conflict between Pastoralists and Cultivators in Nigeria: Kay Williamson Educational Foundation Cambridge. Retrieved from www.rogerbtench.infor/RBO.htm 9th August, 2020
- David, A. (2018). Factsheet: Grading Nigeria's progress in education. Retrieved from www.africacheck.org
- Domikel, G. C. & Edward O. O. (2014). "An evaluation of the major implementation problems of primary school curriculum in Cross River State, Nigeria." American Journal of Educational Research, 2(6).
- Egbefu, D.O. & Salihu, H.A. (2014). Internal security crisis in Nigeria: causes, types, effects and solutions. AFREV IJAH: An international journal of arts and humanities, 3 (4)
- Gambo, N.S. (2019). An assessment of possible international crimes committed by suspected Fulani herdsmen in Benue state, Nigeria and the place of international criminal court. Unpublished Master's thesis, institute for peace and strategic studies, University of Ibadan, Nigeria.
- Ibanez, A. M. (2016). Understanding the effect of conflict on people and households. Journal of Social Sciences in Humanitarian Action Platform (SSHAP), 23.4.
- Idowu, A.O. (2017). Urban violence dimension in Nigeria: farmers and herders on-sought

- Idrissu, A.M. (2014). The effect of poverty, household structure and child work on School Enrolment. *Journal of Education and Practice*, 31.3.
- Idrissu, A.M., Danquah, M. & Quartey, P. (2016). Analysis of School Enrollment in Ghana: A Sequential Approach. *Review of Development Approach*
- Igudia, H.I. (2018). Analysis of school and non-school factors affecting children's access to basic education in rural areas of southern-western Nigeria. Unpublished PhD thesis. Department of Social Sciences Education, Faculty of Education, University of Ilorin, Nigeria.
- Joshua, Y.R. (2017) Tiv – Jukun ethnic conflict in Wukari District of Taraba State Northeast Nigeria: Horizontal Inequalities Approach. *Political Science*. Retrieved from www.semantic.org.paper/Tiv-Jukun-conflict
- Nigerian Educational Indicator (NEI) Report 2016. Datasets openAFRICA. Retrieved from www.africaopendata.org/database
- Odoh, S. & Chigozie, C. (2012). Climate Change and Conflict in Nigeria: A Theoretical and Empirical examination of the Worsening Incidence of Conflict between Fulani Herdsmen and Farmers in Northern Nigeria. *Arabian Journal of Business and Management Review*. Vol. 2(1) pp. 110-124
- Oguche, D.M., Haruna, J.E., & Ikani A.M. (2016). Effect of the Fulani Herdsmen crises on Schools in Nigeria: The perspective of declining School Enrolment in Omala Local Government, Nigeria. *International Journal of Economics, Commerce and Management United Kingdom*, 4(9), 671. Retrieved from <http://ijecm.co.uk> ISSN 2348
- Ololo, K. O. (2017). The effects of inter communal conflicts in Nigeria, The case of Takum local government area Taraba State. *Journal of Education Research and Behavioral Sciences*, 6(4), 59-65. Retrieved from <http://www.apexjournal.org>
- Onuoha, F.C. (2012). The audacity of the Boko Haram: background, analysis and emerging trend. *Security Journal*, 25(2), 134–151
- Prohibition & Ranches Establishment Law on Farmer-Herder Relations in the Middle Belt of Nigeria. Retrieved from <https://globalsentinelng.com/2018/02/09/global-sentinel-ffarn-publishes-policy-brief-solution-herders>
- Tade, O. and Yikwabs, Y.P. (2020), Conflict triggers between farming and pastoral communities in Nasarawa State, Nigeria. *Journal of Aggression, Conflict and Peace Research*, 12(3), 101-114

Tion, W. A., & Terwase, M. J. (2013). Annual research review: Resilience and mental health in children and adolescents living in areas of armed conflict - a systematic review of findings in low - and middle -income countries. *Journal of Child Psychology and Psychiatry, and allied disciplines*, 54(4), 445-460. doi: 10.1111/jcpp.12053

UNESCO (2010a). The quantitative impact of conflict on Education, Think piece prepared for the Education for All Global Monitoring Report 2011. The Hidden Crisis: Armed Conflict and Education

UNESCO (2010b). Education under attack 2010, Paris: UNESCO.

UNESCO Institution for Statistics by UNICEF (2015). Fixing the Broken Promise of Education for All. Findings from the global Initiative on out-of-school children. Montreal: UIS Retrieved from <http://www.unicef.org/education/files/allinschool.org>

Universal Basic Education Commission UBEC (2010). Basic education profile: national and regional statistics. UBEC 2010 Annual Report. Retrieved from www.education.gov.ng/ubecdata

REIMAGINING AFRICAN HIGHER EDUCATION FOR FINTECH INNOVATION

Yahaya Isa Bunkure, FNIP, STAN, MNAE

Department of Science Education, Bayero University Kano.
bunkure63@gmail.com

Article History

Received: Nov. 2025

Review processes

Jan - Feb 2026

Received in revised form:

Feb 2026

Accepted: Mar 2026

Published online: Mar 2026

Keywords

Fintech education; digital competence; curriculum reform; African higher education; experiential learning; industry-academia partnerships; DigComp; digital equity; gender-responsive policy

Doi:

<https://doi.org/10.5281/zenodo.19319940>

Abstract

The rapid growth of the financial technology (fintech) sector has exposed a significant skills gap that African higher education institutions must urgently address. As financial services transition into digital models, there is increasing demand for graduates equipped with both technical expertise and entrepreneurial agility. This article introduces a pedagogical framework grounded in three pillars: integrating digital competence across all disciplines; cultivating an entrepreneurial mindset through experiential and project-based learning; and establishing sustained partnerships among academia, industry, and government. The framework is theoretically anchored in the European Digital Competence Framework (DigComp), Kolb's experiential learning cycle, and effectuation theory from entrepreneurship education. Drawing on a secondary analysis of peer-reviewed mixed-methods research, the article synthesises qualitative and quantitative evidence to assess the current positioning of African higher education institutions and propose concrete directions for repositioning. A central component of this framework is a commitment to digital equity, with particular attention to gender disparities and the structural barriers facing students from under-resourced backgrounds. The article argues that, by prioritising innovation-focused pedagogy over traditional knowledge transmission, African universities can play a pivotal role in enhancing economic resilience across the continent. Limitations of the secondary analysis approach are acknowledged, and directions for future primary research are identified.

Introduction

The intersection of technology and finance represents a critical locus of economic transformation in the twenty-first century, positioning African higher education institutions at the forefront of this disruption. While traditional curricula have left many institutions inadequately prepared, there remains significant potential for responsive reform (Woldegiorgis & Chiramba, 2025). The rapid development of financial technology—encompassing mobile banking, blockchain-based payment

systems, AI-driven credit assessment, and digital insurance platforms—has fundamentally altered the competencies required of graduates in the financial sector. For the purposes of this article, the term "fintech" denotes this constellation of digital financial services, while acknowledging that the taxonomy is contested in the scholarly literature and represents an evolving and partial account of a rapidly developing sector. The traditional separation between finance education and information technology is

increasingly untenable; universities are now required to produce professionals proficient in both domains.

Addressing this challenge requires more than minor curriculum changes. African universities must fundamentally shift from knowledge transmission to fostering analytical flexibility, innovative problem-solving, and an entrepreneurial mindset suited to the fintech sector (Nyongesa & Van Der Westhuizen, 2025; Vorster & Botha, 2025). The continent's young population and widespread use of mobile technology offer a unique opportunity to bypass outdated financial infrastructure and provide a skilled workforce ready to seize the opportunities this transition presents.

This article does not advocate the uncritical adoption of Western pedagogical models. Applying imported frameworks without considering African contexts, resource constraints, and cultural realities is both limiting and ineffective (Arek-Bawa & Reddy, 2024). Balancing local relevance with global competitiveness is essential. Closing the digital skills gap also requires strong industry engagement to ensure that classroom instruction matches and anticipates employer needs (Domingo et al., 2024). Without this alignment, even well-designed curricula may produce graduates who are technically skilled but not professionally prepared.

Crucially, the gender dimension of digital skills gaps in African higher education warrants attention from the

outset. The underrepresentation of women in technology-related programmes—documented across Sub-Saharan Africa (Woldegiorgis & Chiramba, 2025; Domingo et al., 2024)—means that any fintech education framework not explicitly designed with gender equity in mind risks replicating structural exclusions in digital form. Gender-responsive policies must therefore be treated as an architectural feature of reform, not an addendum.

This article is structured as follows: a literature review situates the argument within current academic debates; the methodology section clarifies the secondary analysis approach employed; findings are presented and analysed; and the article concludes with a proposed framework for institutional reform, an acknowledgement of the study's limitations, and specific directions for future research.

Literature Review

The scholarly conversation on reforming African higher education for the digital economy is rich and growing, though unevenly distributed across disciplines and geographic contexts. A notable limitation of the existing evidence base—which this article inherits—is a geographic concentration on South African institutions (Woldegiorgis & Chiramba, 2025; Arek-Bawa & Reddy, 2024; Maimela & Mbonde, 2025; Xulu, 2024). South Africa's institutional context—including its comparatively

developed higher education infrastructure, its distinct post-apartheid equity frameworks, and its regulatory environment—differs substantially from much of West, East, and Central Africa. Where South African evidence is cited in what follows, readers should exercise caution about generalising findings to the broader continental picture; the applicability of these studies to other African contexts remains an open empirical question. The review organises existing scholarship around four key themes: digital competence, experiential learning, industry-academia partnerships, and inclusive access.

Digital Competence as a Cross-Disciplinary Imperative

Scholars have increasingly argued that digital competencies should not be treated as peripheral skills confined to information technology departments, but rather embedded as core instructional outcomes across all disciplines (Arek-Bawa & Reddy, 2024; Domingo et al., 2024). This position reflects a broader recognition that the boundaries between professional domains are dissolving: an accountant who cannot interpret algorithmic credit models, or a marketing professional who lacks data analytics fluency, is increasingly at a disadvantage in contemporary labour markets. Akberdina and Vlasov (2024), in their comparative study of digital education indices across African cities, found considerable disparities in digital

readiness that correlated strongly with institutional investment in technology infrastructure and faculty development—a finding with direct implications for curriculum policy. These findings resonate with the European Digital Competence Framework (DigComp), which provides a principled taxonomy of the digital competences required for full participation in digital societies and which several scholars have proposed as a contextually adaptable reference point for curriculum reform in developing-world university settings (Domingo et al., 2024).

Experiential Learning and Pedagogical Transformation

The pedagogical literature has given considerable attention to experiential learning as a mechanism for bridging the gap between theoretical knowledge and the practical demands of fintech environments. Nyongesa and Van Der Westhuizen (2025) demonstrated that digital teaching tools, when mindfully integrated into higher education curricula, lead to measurable improvements in student participation and educational outcomes. Project-based learning, collaborative digital platforms, and industry-embedded internships have been identified as distinctly effective modalities for fintech education because they replicate the iterative, team-based problem-solving that characterises actual fintech work environments (Vorster & Botha, 2025).

These findings align with Kolb's (1984) experiential learning cycle, in which learning is understood as an iterative process moving through concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Fintech education, with its emphasis on live project environments and industry-embedded internships, maps closely onto the Kolbian model: students encounter real financial technology problems (concrete experience), reflect on what they observe, develop theoretical models, and test them in subsequent project cycles. Curriculum designers wishing to deploy this framework should attend not only to the provision of experiential activities but also to the reflective scaffolding—mentorship, structured debriefing, and formative assessment—that transforms experience into durable learning.

Industry-Academia Partnerships

The role of industry-academia partnerships is well-documented. Liu, Chan, and Chimhundu (2024), in a systematic mapping of fintech research across 518 articles, identified academic institutions' partnerships with fintech firms as one of the most viable avenues for ensuring that educational content remains current and employer-relevant. Croitoru et al. (2025), analysing the linkages between financial literacy and higher education through bibliometric methods, similarly found that partnerships with financial technology

providers enhanced both learner participation and the functional applicability of financial learning programmes. These findings align with Xulu's (2024) argument that digitalisation in African universities cannot be achieved through institutional effort alone—it requires sustained external collaboration.

Qian, Yunus, and Rafiq (2024), in a systematic review of digital innovations in higher education, concluded that meaningful digitalisation requires not only curriculum redesign but also institutional culture change—faculty professional development, leadership commitment, and structural support for interdisciplinary collaboration. This finding aligns with Maimela and Mbonde's (2025) work on artificial intelligence in South African universities, which cautioned that technology adoption without accompanying pedagogical transformation risks becoming superficial. As Liu et al. (2024) note, fintech is not a passing trend, but a structural reorganisation of global financial services; universities that fail to prepare graduates for this reality will leave them unable to participate in the sector's most dynamic opportunities.

Inclusive Access and Digital Equity

On the question of inclusive access, the literature is both clear and urgent. Domingo et al. (2024), in a geopolitical analysis of digital skills cooperation with Africa, found that donor-driven digital skills initiatives too often bypass the most

marginalised communities, reinforcing rather than reducing prevalent inequalities. Woldegiorgis and Chiramba (2025) similarly documented how socioeconomic and communicative barriers continue to limit access to higher education for historically disadvantaged students in South Africa—a pattern broadly indicative of institutional disparities across the continent, though the specific mechanisms differ significantly between national contexts.

The gender dimension of digital exclusion is particularly pronounced. Across Sub-Saharan Africa, women are systematically underrepresented in science, technology, engineering, and mathematics (STEM) programmes and in the technology sector more broadly (Domingo et al., 2024). These structural inequalities are not self-correcting: without deliberate recruitment strategies, mentoring programmes, and financial support mechanisms targeting women, fintech education reform will disproportionately benefit those already advantaged. The implication for the framework proposed in this article is unambiguous: gender-responsive design is not optional.

Critical Assessment of the Literature

While the literature reviewed above provides substantial support for the framework developed in this article, several limitations warrant acknowledgement. First, much of the evidence on student outcomes and

programme effectiveness is drawn from South African settings with specific institutional characteristics that may not obtain elsewhere on the continent. Second, the quantitative studies cited frequently report aggregate findings without disaggregating by gender, socioeconomic status, or geographic context—a methodological limitation that obscures important variation. Third, several studies rely on self-reported outcome measures (e.g., student perceptions of digital competence), which are susceptible to social desirability bias and may not accurately reflect actual capability. Future research should address these gaps through multi-country, longitudinal designs with objective outcome measures.

Methodology

This article is a secondary analysis—also termed an integrative literature review—drawing on peer-reviewed mixed-methods research reports, systematic reviews, and bibliometric analyses published in the core area of fintech education and digital curriculum reform in African higher education. This methodological approach is appropriate to the article's primary aim, which is to synthesise existing evidence in order to propose a theoretically grounded and practically oriented framework for institutional reform, rather than to generate new primary data. Secondary analysis of this kind is a well-established mode of scholarly contribution, particularly where

the aim is to develop generalisable frameworks from a body of primary studies (Pregoner, 2024; Zhang & Browne, 2026).

The principal sources informing this analysis are mixed-methods research reports that integrate qualitative and quantitative approaches to assess how African higher education institutions are currently positioned—and how they might be repositioned—to produce fintech-ready graduates (Pregoner, 2024; Zhang & Browne, 2026). The choice of mixed-methods sources is deliberate: fintech education reform involves both measurable outcomes (enrolment figures, employability rates) and interpretive dimensions (faculty perceptions of pedagogical change, students' lived experiences of digital learning). Neither quantitative nor qualitative methods alone can adequately capture this complexity (Vebrianto et al., 2020).

The qualitative data drawn upon in the reviewed studies was generated through semi-structured interviews and focus group discussions with three categories of participants: academic staff and institutional administrators responsible for curriculum design; students enrolled in business, finance, and technology-related programmes; and representatives of fintech firms and industry associations operating across West and Southern Africa. In the primary studies, these conversations were designed to surface the strengths and weaknesses of existing programmes, to understand how different stakeholders conceptualise the relationship between

education and industry, and to identify the structural and cultural barriers that impede meaningful reform. Interview data were subjected to thematic analysis in accordance with established procedures for qualitative research in educational contexts.

The quantitative data drawn upon was generated through structured survey instruments administered to students across purposively selected samples of African universities with documented commitments to digital education initiatives. Surveys measured self-assessed digital competency, readiness for fintech employment, attitudes toward entrepreneurship, and perceptions of the sufficiency of current curricula. Purposive sampling in the primary studies ensured that samples represented the diversity of African higher education contexts—including institutions in Anglophone and Francophone Africa, public and private universities, and institutions with varying levels of technological infrastructure.

Documentary analysis of university curriculum frameworks, institutional strategic plans, and technology investment policies provided a third layer of evidence in the reviewed studies, enabling assessment of the extent to which institutional commitments to digital transformation were reflected in formal planning documents.

As a secondary analysis, this article is subject to certain methodological constraints that must be acknowledged. Specific quantitative claims reported in the Findings section—including the 75 percent

confidence figure and the 30 percent enrolment increase—derive from findings reported in secondary sources rather than from data collected by this author; they are cited and attributed accordingly. Readers seeking to assess the reliability of these findings are encouraged to consult the primary sources cited. This article does not claim to have conducted independent empirical research; its original contribution lies in the theoretical synthesis, the construction of the three-pillar framework, and the integration of equity and gender considerations into a coherent model for institutional reform.

Results and Findings

The findings drawn from the reviewed literature indicate substantial progress alongside persistent challenges in the reform of African higher education for fintech readiness. The evidence is organised here around three dimensions: pedagogical outcomes, institutional enrolment patterns, digital equity, and the gap between strategic commitment and implementation.

Pedagogical Outcomes

Survey data reported by Arek-Bawa and Reddy (2024), drawn from digitally transformed teacher education programmes in South Africa, indicate that over 75 percent of students enrolled in programmes that integrate theoretical instruction with practical digital applications reported increased confidence in their digital skills. While

this figure is drawn from a South African teacher education context rather than from fintech programmes per se, the finding is consistent with broader evidence from project-based learning research and is cited here as indicative rather than definitive. Students who participated in project-based learning activities using fintech tools to address real-world financial problems demonstrated stronger analytical abilities and higher levels of professional self-efficacy than peers in conventionally instructed courses (Nyongesa & Van Der Westhuizen, 2025; Vorster & Botha, 2025). Faculty members engaged in structured professional development programmes also reported greater confidence in delivering digitally enriched instruction, underscoring that investment in human capital—rather than technology infrastructure alone—is the primary driver of effective change.

Enrolment Patterns

Croitoru et al. (2025), in their bibliometric study of fintech-related higher education, report evidence of a 30 percent increase in enrolment in fintech and digital financial services programmes over recent years at institutions with formal fintech partnerships. While increased enrolment does not guarantee quality outcomes, it reflects a real shift in student demand that institutions are beginning to address. The largest enrolment gains occurred at institutions with formal partnerships with fintech companies, offering students

internships, co-designed curriculum modules, and access to live project environments (Liu et al., 2024; Croitoru et al., 2025). It should be noted that these data were not disaggregated by gender or socioeconomic background in the primary sources; this represents a gap that future research should address.

Digital Equity

Findings on digital equity are concerning. Focus group data from Woldegiorgis and Chiramba (2025) and Domingo et al. (2024) reveal ongoing disparities in access to digital learning tools across geography, gender, and socioeconomic status. Students from rural or under-resourced backgrounds faced consistent challenges with internet connectivity, hardware availability, and technological familiarity. Women students reported specific barriers to participation in technology-intensive programmes, including lack of role models, hostile pedagogical environments, and financial constraints. These findings support Domingo et al.'s (2024) warning that digital skills initiatives may reinforce existing inequalities and emphasise the need to integrate equity—including gender equity—into fintech education reform from the outset rather than treating it as an afterthought.

The Strategy-Implementation Gap

Analysis of institutional strategic plans (Qian et al., 2024; Maimela & Mbonde, 2025) revealed a significant gap

between stated commitments and actual implementation. Although most institutions identified digital transformation as a strategic priority, fewer than half had established dedicated funding streams for technology infrastructure, faculty development, or industry partnerships. This disconnect between commitment and resourcing constitutes a major structural barrier to sustained reform.

Discussion

The findings sustain a set of interrelated arguments about the conditions under which African higher education can successfully re-engineer itself for the fintech era. The discussion organises these arguments around three analytical themes—pedagogy and curriculum, institutional architecture, and systemic equity—before presenting the three-pillar framework that integrates them.

Pedagogy and Curriculum

The evidence is unambiguous on one point: technology adoption without pedagogical transformation is insufficient. Installing digital technologies in classrooms does not produce digitally capable graduates. What produces such graduates is a systematic reconceptualisation of how learning is organised—a move from passive reception of information toward active problem-solving, iterative design, and coordinated inquiry. This is precisely what Kolb's

(1984) experiential learning cycle prescribes, and it is what project-based learning and experiential internship programmes operationalise. These are not merely a pedagogical fashion; they are, as Nyongesa and Van Der Westhuizen (2025) demonstrate, the mechanisms through which fintech competencies are developed.

This has consequences for curriculum design that extend well beyond adding a digital skills module to existing programmes. It requires rethinking the sequencing of learning, the role of assessment, and the relationship between academic knowledge and professional practice. Digital competence must be embedded across all disciplines—not concentrated in a single department, but integrated in finance, economics, law, management, and even the arts and humanities, all of which are touched by the digital transformation of financial services. Akberdina and Vlasov (2024) found that institutions adopting this cross-disciplinary approach produced graduates who were more adaptable and more readily absorbed into fintech work environments than those from narrowly specialist programmes. The DigComp framework provides a practically useful reference for specifying what these cross-disciplinary digital competences should comprise, adapted to specific disciplinary contexts.

Institutional Architecture and Industry Partnerships

Industry-academia partnerships are not supplementary to fintech education; they are

constitutive of it. Without sustained engagement with fintech firms, curriculum designers are reduced to approximating industry requirements, often with a lag of several years. With such engagement, programmes can be designed in genuine consultation with employers, updated in real time as the sector evolves, and supplemented by the live project experience that no classroom simulation can fully replicate (Liu et al., 2024).

Croitoru et al. (2025) demonstrate that the institutions producing the most fintech-ready graduates are those with formal, sustained partnership frameworks—not ad hoc relationships dependent on the enthusiasm of individual faculty members, but institutionally embedded collaborations with clear governance structures, joint objectives, and mutual accountability. Reproducing these structures across African universities will require institutional leadership, policy support, and, in many cases, regulatory reform to enable universities to enter into the contractual arrangements with industry that such partnerships demand.

Systemic Equity and Inclusive Access

A framework that produces fintech-ready graduates from well-resourced urban institutions, while leaving students in under-resourced rural universities without access to the tools or training they need, does not constitute reform—it constitutes the reproduction of privilege in digital form. Woldegiorgis and Chiramba (2025) have documented the depth of these

inequalities in the South African context, and—with due caution about direct extrapolation—the patterns they describe share structural characteristics with institutional disparities documented in West Africa (Domingo et al., 2024) and East Africa (Akberdina & Vlasov, 2024).

The gender dimension deserves particular emphasis. Women's underrepresentation in African STEM and technology fields is not incidental but reflects deeply embedded structural barriers: the absence of female role models in leadership positions, pedagogical environments that marginalise women's participation, and financial constraints that disproportionately affect women students. Addressing these barriers requires gender-responsive policies that actively recruit and support women in fintech-related programmes; targeted mentoring and networking initiatives; and financial aid mechanisms designed to reach students from low-income backgrounds. These are not exclusively educational interventions—they require policy engagement well beyond the limits of individual universities. But universities can and should advocate for such investment, recognising that their own capacity to deliver equitable fintech education depends on the broader ecosystem within which they operate.

The Three-Pillar Framework with a Digital Equity Foundation

Drawing the preceding analysis together, this article proposes a framework for fintech-oriented

curriculum reform in African higher education organised around three interdependent pillars, each grounded in established educational theory, and all built upon a foundational commitment to digital equity.

The first pillar—digital competence integration—draws theoretically on the DigComp framework and holds that digital literacy must be embedded as a core instructional outcome across all disciplines, not confined to technology departments. The second pillar—entrepreneurial mindset cultivation—is anchored in Kolb's experiential learning cycle and effectuation theory (Sarasvathy, 2001), operationalised through project-based learning, hackathons, and industry-embedded internships that replicate the iterative problem-solving of fintech work environments. The third pillar—industry-academia partnership—draws on the systematic evidence of Liu et al. (2024) and Croitoru et al. (2025) and insists on formalised, institutionally embedded partnerships rather than ad hoc collaboration.

Underlying these three pillars is the fourth condition: a non-negotiable commitment to digital equity that refuses to design programmes for those already advantaged while excluding others. This condition is not a fourth pillar in the sense of an optional addition; it is the foundation upon which the entire framework rests. A framework that neglects equity will reproduce inequality at scale, regardless of how well it

performs along the other three dimensions. Gender equity, in particular, must be built into each pillar: digital competence curricula should include content on gender and technology; experiential learning programmes should include structured support for women participants; and industry-academia partnerships should set explicit targets for women's representation.

Conclusion

This article has argued that closing the skills gap between African higher education graduates and the competencies the fintech sector demands requires neither the wholesale adoption of imported models nor the piecemeal addition of digital modules to unchanged curricula. It requires a coherent, integrated framework: digital competencies embedded across all disciplines in accordance with the DigComp framework; experiential learning anchored in Kolb's cycle that connects the classroom to the workplace; and sustained industry-academia partnerships formalised at the institutional level. These three pillars, resting on a non-negotiable foundation of digital equity and explicit attention to gender, constitute the framework this article proposes.

The article's original contribution lies in the theoretical synthesis of this framework, the explicit integration of gender-responsive design as an architectural feature rather than an addendum, and the critical interrogation of the existing evidence base—including its

geographic concentration on South African institutions and its reliance on self-reported outcome measures.

Several limitations of this article must be acknowledged. As a secondary analysis, it is constrained by the scope and quality of the primary studies on which it draws. The evidence base is geographically skewed toward South Africa, and the generalisability of findings to West, East, and Central African contexts remains uncertain. The specific quantitative claims reported in the findings section derive from cited primary sources and should not be read as independent empirical results. Furthermore, the framework proposed is, by design, generalisable; its adaptation to any specific institutional context will require contextual analysis that lies beyond the scope of this article.

The following directions for future research are proposed. First, multi-country, longitudinal studies using objective outcome measures (rather than self-report) are needed to assess the long-term employability and career trajectories of graduates from fintech-integrated programmes. Second, gender-disaggregated analyses of enrolment, completion, and employment outcomes are needed to understand whether equity-focused interventions are achieving their intended effects. Third, comparative studies of institutions that have successfully implemented formal industry-academia partnerships are needed to identify the governance mechanisms and policy conditions that enable such structures to

sustain themselves. Fourth, research on the transferability of South African evidence to Francophone African and East African higher education contexts is a significant gap that deserves dedicated scholarly attention.

The global fintech sector is advancing rapidly. Each graduating cohort lacking digital and entrepreneurial skills represents not only missed individual opportunities but a macroeconomic loss for countries needing a digitally skilled workforce to drive growth and reduce poverty. Closing that gap will require institutional leaders to commit not just in strategic plans but in funding, governance reform, and partnership-building; it will require policymakers to invest in digital infrastructure and equity mechanisms; and it will require industry partners to move from ad hoc engagement to formalised, mutually accountable collaboration. The framework proposed here is a principled starting point for that work—not a finished product, but a scaffold for the sustained institutional effort that genuine reform demands.

References

- Akberdina, V., & Vlasov, M. V. (2024). Digital education index in cities of Africa. *R-Economy*. Vol.10(3),272-290. <https://r-economy.com/article/view/8145>
- Arek-Bawa, O., & Reddy, S. (2024). Conceptualising a framework for digitally transforming teacher education in the South African context. *Journal of Education*, Issue 97. <https://doi.org/10.17159/2520-9868/i97a0>
- Croitoru, I. M., Dragan, P., Ignat, N. D., & Jumanca, R. (2025). Exploring financial literacy in higher education with the help of fintech: A bibliometric analysis of linkages to access, behavior, and well-being through digital innovation. *FinTech*, 4(1), 4. <https://doi.org/10.3390/fintech4010004>
- Domingo, E., Muscat, S., Arnold, S., Salzinger, M., & Chetty, P. (2024). The geopolitics of digital literacy and skills cooperation with Africa (ECDPM Discussion Paper No. 369). European Centre for Development Policy Management. <https://ecdpm.org/application/files/8717/1921/9245/The-geopolitics-digital-literacy-skills-cooperation-with-Africa-ECDPM-Discussion-Paper-369-2024.pdf>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Liu, Q., Chan, K. C., & Chimhundu, R. (2024). Fintech research: Systematic mapping, classification, and future directions. *Financial Innovation*, 10(1), Article 24. <https://doi.org/10.1186/s40854-023-00524-z>
- Maimela, C., & Mbonde, P. (2025). Artificial intelligence in South African universities: Curriculum

- transformation and decolonisation—aid or obstacle? *Frontiers in Sociology*, 10. <https://doi.org/10.3389/fsoc.2025.1543471>
- Nyongesa, W. J., & Van Der Westhuizen, J. V. (2025). The impact of digital teaching tools on student engagement and learning outcomes in higher education in Africa. *International Journal of Innovative Research and Scientific Studies*. Vol.8(4).
- Pregoner, J. D. (2024). Research Approaches in Education: A Comparison of Quantitative, Qualitative, and Mixed Methods. *IMCC Journal of Science*, 4(2), 12-17.
- Qian, Y., Yunus, M. M., & Rafiq, K. R. M. (2024). Digital innovations in higher education: A systematic review. *International Journal of Academic Research in Business and Social Sciences*, 14(2), 1330–1344.
- Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243–263.
- Vebrianto, R., Thahir, M., Putriani, Z., Mahartika, I., Ilhami, A., & Diniya. (2020). Mixed methods research: Trends and issues in research methodology. *Bedelau: Journal of Education and Learning*, 1(2), 63–73.
- Vorster, H., & Botha, A. (2025). A systematic literature review: The impact of the Fourth Industrial Revolution on the development of the soft skills of students in higher education institutions of South Africa. *Management and Economics Research Journal*. 11(1), 1-15. doi.org/10.18639/merj.2025.9900106
- Woldegioris, E. T., & Chiramba, O. (2025). Access and success in higher education: Fostering resilience in historically disadvantaged students in South Africa. *Journal of Applied Research in Higher Education*, 17(2), 759–771.
- Xulu, Z. C. (2024). Integrating technology in teaching African languages in South African universities: A call for digitalisation. *Journal of the Digital Humanities Association of Southern Africa (DHASA)*, 5(1), 1–14.
- Zhang, J., & Browne, W. J. (2026). Assessment development and validation using mixed methods methodology: An example from assessing scientific argumentation competence. *Journal of Mixed Methods Research*, 20(2), 114–139.

