



“Chinese + Vocational Skills” Education in East Africa: Evolution of Pathways, Challenge Insights and Future Outlook

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Abstract

This study constructs a three-dimensional analytical framework of policy drivers-implementation pathways-effectiveness evaluation, employing literature analysis and case study methods to explore the developmental patterns of “Chinese + vocational skills” education in East Africa. The findings reveal that this model has undergone three distinct stages of evolution, forming four typical modes—addition, coordination, integration, and fusion—which represent a trajectory from simple coexistence to deep integration. Despite notable progress, the promotion of “Chinese + Vocational Skills” education in East Africa faces multiple challenges: (1) A structural shortage of qualified teachers, particularly of “dual-qualified” instructors; (2) The absence of unified curriculum standards and certification systems, undermining training quality; (3) Weak digital education infrastructure, limiting the development of innovative teaching models; (4) Insufficient depth of industry-education integration, resulting in a loose connection between talent cultivation and labor market demands. Nevertheless, strong policy support, expanding market demand, and continuously innovating cooperation models have provided robust momentum for the sustainable development of this educational approach. Looking ahead, East African countries should promote “Chinese + vocational skills” education from three key dimensions: (1) Accelerating digital transformation and intelligent upgrading by jointly building digital education platforms and strengthening digital skills training; (2) Deepening industry-education integration and standard construction through school-enterprise collaboration and the development of localized certification systems; (3) Establishing localized and sustainable development mechanisms by cultivating local teachers, integrating programs into national education systems, and diversifying investment channels.

Subject Areas

Language and Vocational Education

Keywords

East African Countries, “Chinese + Vocational Skills”, Development Trajectory, Future Development

1. Introduction

1.1. Research Background

Over the past decade, the mechanisms of the Forum on China-Africa Cooperation (FOCAC) and the expansion of the Belt and Road Initiative (BRI) have intensified educational, cultural and economic linkages between China and African countries. China and Africa emphasized vocational education and teacher capacity in a joint announcement in 2024 [1]. Simultaneously, many East African states are facing a dual challenge: a rapidly expanding youth labour-force seeking employable skills, and the increasing presence of Chinese investment, infrastructure, trade and cultural-language initiatives. To realize structural transformation and inclusive growth, these countries are elevating the role of vocational and technical education (TVET) and foreign-language capacities, including Chinese [2] [3]. For example, China has launched the initiative of Luban Workshop since 2019 across multiple African countries to train technical personnel with both vocational and Chinese-language competencies [4].

Against this backdrop, the hybrid model of “Chinese + vocational skills” education—*i.e.*, programmes that aim to combine Chinese-language instruction with vocational/technical skills training—has emerged as a pertinent strategy in East Africa. The rationale is that individuals who are both technically skilled and linguistically or culturally competent in Chinese language may be better positioned to engage in China-Africa supply-chains, Chinese-invested enterprises in Africa, cross-border trade, and bilingual workforce demands.

1.2. Problem Statement

Despite the growing interest in such hybrid education models, several critical gaps remain. First, there is limited systematic research on how “Chinese + vocational skills” education has evolved in East Africa—what the development phases are, how implementation has progressed, and what typologies of models exist. Second, while policy announcements and institutional collaborations are documented, the alignment between Chinese-language training, vocational skills training, and local labour-market demands remains under-examined, particularly with respect to East African countries. Third, in spite of the promise of this education model, challenges such as teachers’ capacity, curriculum standardization, digital infrastructure and industry-education linkages threaten to constrain meaningful out-

comes. If these gaps are not addressed, the potential of hybrid bilingual-vocational training to contribute to human-capital development, youth employment, and sustainable China-Africa cooperation may be compromised.

Therefore, this paper asks questions as follows: How has “Chinese + vocational skills” education developed in East African countries? What are the key implementation patterns and typologies? What challenges and constraints affect its effectiveness? And what future pathways and policy strategies can strengthen this model in the East African context?

1.3. Theoretical Framework

This study draws primarily on two theoretical lenses: human-capital theory and educational synergy theory.

Rooted in the seminal work of Schultz (1961) and Becker (1964), human-capital theory posits that investment in education and skill training enhances the capabilities of individuals, thereby increasing productivity and contributing to economic growth [5] [6]. In contexts of developing country, vocational education and technical training is widely regarded as a key vehicle for enhancing workforce readiness, employment opportunities and industrialization [7]. In the hybrid model of this study, the incorporation of Chinese-language proficiency with vocational and technical training constitutes a dual investment in human capital: one in technical skills, the other in language or communication skills and cultural-linguistic competence with potential relevance for China-Africa cooperation.

Educational synergy theory emphasizes that the effectiveness of education systems often depends on the coordinated interaction among multiple stakeholders, such as, governments, educational institutions, vocational training providers, enterprises, industry, and civil society [8]. In international cooperation contexts (such as China-Africa education partnerships), synergy theory underscores the need for alignment between policy design, institutional capacity, curriculum, teacher training, industry linkages and monitoring mechanisms. Within the “Chinese + vocational skills” model, the synergy lens draws attention to how Chinese-language education and vocational skills training are integrated, coordinated and sustained across policy, institutional and practical dimensions.

Based on these theories, this paper constructs a three-dimensional analytical framework: (1) Policy-driven dimension, focusing on national or regional policy initiatives, bilateral frameworks and institutional design; (2) Implementation-path dimension, tracing the implementation of the model (curriculum, teacher training, stakeholder linkages); (3) Outcome-evaluation dimension, assessing effectiveness in terms of talent output, employability, language proficiency, alignment with industry demand and human-capital impact.

2. Literature Review

2.1. Chinese-Language Education in Africa

The expansion of Chinese-language education across Africa has been a prominent

feature of China-Africa cooperation in recent decades. Multiple studies note that the rise of Mandarin fever reflects not only cultural diplomacy but practical labour-market and trade dynamics as well [9] [10]. As of 2022, approximately 16 African countries had integrated Chinese into their national education systems, while more than 30 universities had established Chinese-language programs or Confucius Institutes [11].

Early experiments in East Africa date back to the 2000s, when Egerton University in Kenya began offering Chinese-language courses through bilateral exchanges and Confucius Institute collaboration [12]. Since then, Chinese-language teaching has expanded rapidly in Africa, particularly in countries like Kenya, Tanzania, and Ethiopia. The Ministry of Education of China (2024) announced new initiatives to build Chinese Language and Vocational Skills Development Centers across Africa to support integrated language-and-skills education [13].

Scholarly research on Chinese-language education in Africa can be grouped into three main streams. First, institutional expansion, which focuses on the proliferation of Confucius Institutes and university-level Chinese programs and their governance structures [14] [15]. Second, localization and adaptation, addressing issues such as culturally relevant pedagogy, teacher shortages, and the contextualization of teaching materials [16] [17]. Third, linkages to employability, where a growing body of literature explores how Chinese-language competence affects African graduates' participation in Chinese-invested enterprises and trade networks [18].

2.2. China-Africa Vocational and Technical Education Cooperation

Vocational and technical education and training (TVET) is widely recognized as a cornerstone for youth employment and industrial transformation in Africa. UNESCO (2016) highlighted structural weaknesses in African TVET systems, such as limited infrastructure, outdated curricula, and weak industry alignment [7].

China's cooperation in this field has expanded substantially under the BRI and the FOCAC. Recent analyses indicate that China's approach to Africa's TVET combines capacity building, infrastructure aid, and human-capital investment [9] [19]. The establishment of China's Luban Workshops—jointly run vocational training centers providing technical and Chinese-language instruction—represents a milestone. These workshops aim to train technicians who can operate Chinese machinery, communicate in Mandarin, and bridge linguistic barriers in Chinese-invested industries [20].

Policy documents also indicate that China's educational cooperation has evolved from aid-based training to partnership-based system building. For example, China has assisted Tanzania in revising its national occupational standards—the first large-scale export of Chinese vocational standards to Africa [21]. Similar bilateral TVET partnerships exist in Ethiopia and Kenya, covering teacher exchanges, curriculum co-development, and enterprise-linked apprenticeships.

Academic literature has approached this cooperation from several angles: (1)

Soft-power and brand, analyzing how China's aid in education projects helps shape its global image [22]; (2) Governance and cooperation mechanisms, examining the coordination among Chinese and African educational institutions, enterprises, and ministries [23]; (3) Effectiveness assessing, evaluating the employment impact, skills transfer, and sustainability of vocational education projects [24].

2.3. Focus on East Africa: The Emerging “Chinese + Vocational Skills” Education Model

East Africa offers a dynamic testing ground for educational cooperation of China-Africa. Countries such as Kenya, Ethiopia, and Tanzania have actively engaged in educational partnerships that blend language and technical training.

In Kenya, the Ministry of Education and the Chinese Embassy launched joint TVET collaborations aligning technical colleges with Chinese enterprises, enabling students to acquire both practical technical skills and Chinese-language competencies [25]. In Ethiopia, Chin-Africa Vocational Education Alliance has supported curriculum development, TVET teacher training, and localization of educational content [26]. In Tanzania, China's involvement in revising occupational standards has set the groundwork for integrated technical and linguistic training [21].

Emerging research identifies that cooperation between China and Africa has evolved from programs-driven towards policy-driven system building. Some programs simultaneously teach Chinese and technical modules, linking language learning to specific professional contexts such as engineering, hospitality, or logistics. However, Chinese language education is often treated as an auxiliary subject rather than a medium of technical instruction; curricula and certification remain unstandardized; and localization efforts vary widely across countries.

In short, while China-Africa cooperation in language and vocational training has achieved notable milestones, empirical and comparative research on the East African “Chinese + vocational skills” education model remains limited. There is a clear need for deeper analysis of development stages, integration typologies, and human-capital outcomes, which this paper aims to address in subsequent sections.

3. Development Stages and Models

Grounded in documentary evidence and reported program statistics, the trajectory is divided into three phases: (I) emergence & exploration (2005-2017); (II) expansion & institutionalization (2018-2024); (III) deepening & fusion (2025-present). Across the evolution, four typical implementation modes of “Chinese + vocational-skills” education in East Africa can be identified addition, coordination, integration, and fusion.

As in the addition mode, Chinese language instruction and vocational skills training are offered in parallel, but largely separately. While in the coordination mode, Chinese language teaching and vocational training are still distinct but in-

tentionally coordinated. In the integration mode, Chinese language learning and vocational training are blended in the curriculum, which means vocational modules include Chinese-language content that are relevant to the technical field, or Chinese language is used in technical instruction segments, and assessments reflect both skill and language competence. The fusion mode marks the deepest alignment, during which Chinese language becomes the medium of instruction for the vocational skills training, and vocational or technical content is delivered via Chinese or bilingually.

3.1. Phase I: Emergence & Exploration (2005-2017)

As the earliest, formative phase, it is characterized by pilot projects, scattered institutional experiments, and the initial placement of Chinese language provision alongside TVET offerings in Africa. Two essential developments marked this period: the establishment of Chinese language teaching platforms in African universities and the first China-Africa vocational training initiatives.

Confucius Institutes and early Chinese language teaching in East Africa is one key empirical marker. The University of Nairobi hosted one of the first Confucius Institute-style collaborations in East Africa in the mid-2000s; the emergence of Confucius Institutes across African higher-education institutions after 2005 provided the primary institutional channel for Mandarin instruction that would later be linked to vocational training pilots [27].

Early vocational cooperation pilots are the other key empirical marker. China's early vocational cooperation in Africa was project-based—short courses, teacher exchanges and training workshops often run through embassies, provincial technical colleges and enterprise CSR initiatives. These efforts laid the groundwork for later and a lot more systematic programmes [28].

This phase largely produced an additive mode. Chinese language teaching and vocational training co-existed but were mostly separate—language classes were often elective or adjunct to TVET modules, and bilingual vocational curricula were rare.

3.2. Phase II: Expansion & Institutionalization (2018-2024)

From roughly 2018 onward, driven by higher-level policy coordination (FOCAC engagement, provincial partnerships) and the BRI's expanded education agenda, China-Africa vocational cooperation scaled and institutionalized. This phase is marked by larger, networked initiatives (e.g., Luban Workshops), explicit commitments which are made at FOCAC meetings, and growing efforts to align vocational curricula and institutional linkages.

First, FOCAC frameworks and follow-up action plans during this period consistently elevated vocational cooperation as a priority. The 2024 Beijing Action Plan (FOCAC) and related Chinese MFA releases pledged scaled vocational cooperation and “Chinese + vocational skills” initiatives as part of their people-to-people and talent development pledges [29].

Second, the Luban Workshop programme, which is China's branded vocational training centers, was deployed internationally and expanded in Africa during and after 2019. Multiple institutional summaries and reviews report that by the early 2020s China had established multiple Luban Workshops across Africa (24 workshops in 15 African countries and additional facilities and partner schools)¹, providing training in industrial automation, electrical engineering and related disciplines. Statistics show that these workshops became a core mechanism for China's hands-on TVET cooperation in Africa. The following are the country-level tables which list concrete programmes, year established, number of trainees of Luban Workshops and their achievements (see **Table 1**).

Table 1. Country-level statistics table (selected East African cases)².

Country	Program/Institution (selected)	Year established	Reported trainees/capacity
Kenya	Luban Workshop in Machakos University (partnership with Tianjin City Vocational College)	2019	Workshop capacity ~100; runs two concurrent classes; ongoing expansion agreements. [30]
Ethiopia	Luban Workshop in Federal TVET/Technical & Vocational Training Institute (partnership with Tianjin Univ. of Technology & Education)	2019 (agreement); inauguration 2021	Program reports: trained "over 300" students in some early accounts; larger program claims across Luban network cite thousands trained across Africa; one source reports 1673 local teachers trained via Ethiopia activities. [31]
Tanzania	Luban Workshop in Ardhi University / National Institute of Transport (NIT) / other joint projects	2022-2023 (pilot/openings)	Early cohorts cited ~39 students in an automotive/locomotive track at NIT; other program descriptions cite small pilot cohorts and ongoing scale-up. [32]
Rwanda	Luban Workshop in IPRC Musanze (Rwanda Polytechnic) in partnership with Jinhua Polytechnic (China) & Jinhua University of Vocational Technology	2023 (inaugurated Nov 2023)	Institutional report: recruited 210 students and the broader Luban network claims nearly 10,000 people trained across some Luban activities in Rwanda. [33] [34]
Uganda	Luban Workshop (eastern Uganda; local host institutions vary)	2020-2021 (launch events)	Launch reports (2020-2021) describe program start-up; specific trainee counts in public media are limited. [35]

Third, official Chinese reports and China-affiliated outlets document substantial outputs: for example, Luban Workshop and related vocational programmes reported providing tens of thousands of training opportunities globally [29]. The 2024 FOCAC Action Plan documents multi-year training objectives (e.g., commitments to provide tens of thousands of training opportunities across Africa as part of vocational and technical cooperation).

During this phase, more coordinative and integrative modes emerge. The com-

¹The authors compiled the data from multiple official sources, including Chinese and African governmental, institutional, and industrial websites.

²The table presents only the first Luban Workshop established in each country. According to the author's tally, there are currently 13 Luban Workshops in East Africa, with a distribution of four in Kenya, three in Tanzania, three in Uganda, and one each in Rwanda, Djibouti, and Ethiopia.

bined mode is characterized by deliberate coordination between Chinese language units and TVET colleges—language modules tailored to specific occupations were added to technical programmes. For example, national level pilot projects in countries like Ethiopia and Tanzania illustrate progression from project experiments to more sustained institutional partnerships [36] [37]. The integrative mode is characterized by pilot instances where vocational modules were partially delivered in Chinese or where assessment combined technical and language competence.

3.3. Phase III: Deepening & Fusion (2025-present)

Building on the policy and programme infrastructure established in Phase II, the current phase is distinguished by efforts to fuse Chinese language and vocational skills more deeply—toward bilingual vocational instruction, digitalized blended delivery, local teacher capacity building, and formal recognition of hybrid qualifications.

The 2024 Beijing Summit and subsequent FOCAC documentation set out action plans for 2025-2027 that include explicit measures to deepen vocational cooperation, scale Luban Workshops, upgrade schools of engineering technology, and offer large numbers of targeted training chances (e.g., statements of 60,000+ vocational training opportunities and commitments to set up or upgrade Luban Workshops and partner schools) [29]. These commitments signal a transition to systematic, large-scale, and sustained programming.

More recent reportage and institutional accounts claim substantial aggregate outputs from Luban Workshop and allied programmes (global tallies reported include tens of thousands trained in skills courses and thousands of local teachers upskilled). For instance, some authoritative Chinese outlets report that Luban Workshops globally have delivered thousands to tens of thousands of training slots and developed hundreds of local teaching staff and new standards or resources—figures that indicate scaling suitable for moving beyond pilot projects into institutional embedding [38].

What's more, policy documents and continental strategies (including African digital education initiatives) and institutional pilots indicate a push for blended and digital vocational training—allowing bilingual modules (Chinese + local languages or English) to be delivered remotely or through hybrid classrooms, which facilitates broader reach in East Africa and supports the fusion model [39].

The defining orientation of this phase is the fused model. Chinese language functions as the medium of instruction for certain vocational programmes (fully bilingual or Chinese-dominant technical courses), digital platforms are used to scale instruction, and national systems start to recognize hybrid credentials (or at least move toward formalization). The fused model represents the deepest form of articulation between language and vocational training.

4. Challenges and Constraints

Although the “Chinese + vocational-skills” model carries clear potential to

strengthen employability and to bridge China-Africa labour-market linkages, its implementation across East Africa is constrained by the following four interlocking bottlenecks.

4.1. Teacher-Capacity Shortages

Teacher development remains the foremost challenge in promoting “Chinese + vocational skills” education. Most East African countries face a shortage of “dual-qualified teachers” who possess both professional Chinese language teaching credentials and technical expertise. Existing teaching staff are mainly composed of Chinese instructors dispatched by Confucius Institutes and local university graduates majoring in Chinese, most of whom lack experience in vocational education pedagogy [40]. Conversely, teachers in vocational colleges often possess solid technical skills but have limited knowledge of Chinese language and culture, making it difficult to achieve effective integration between linguistic and technical course components [41].

Furthermore, the absence of a systematic teacher training framework constrains teachers’ professional development. Taking Kenya as an example, although Confucius Institutes and vocational education institutions have begun to establish local teacher training programs, these initiatives remain small in scale and lack standardized curricula and certification mechanisms. Such a “discontinuous” teacher supply model undermines the long-term sustainability of “Chinese + vocational skills” education initiatives. Research synthesis also flags trainer shortages as a primary barrier to scaling new TVET modalities, including bilingual or digitally mediated programmes [42].

The roots of the dual-qualified-teacher shortage are both structural and institutional. First, there is an absence of specialized training pathways that combine Chinese language pedagogy with vocational technical instruction, resulting in a fragmented talent-development system. Second, the incentive mechanism for attracting technically skilled professionals into teaching remains weak. Third, insufficient collaboration among education ministries, vocational authorities, and Chinese partner institutions has prevented the establishment of a coordinated teacher-development pipeline.

From the perspective of educational-synergy theory, these issues illustrate a coordination failure among the multiple actors responsible for human-resource development. The lack of institutional linkages between language and vocational sectors leads to fragmented teacher preparation, limited resource sharing, and inefficiencies in professional growth. Strengthening this collaborative ecosystem is therefore essential to achieving the long-term sustainability of the “Chinese + vocational-skills” education model.

4.2. Curriculum, and Certification Issues

The misalignment between curriculum design and qualification certification constitutes another significant constraint. At present, “Chinese + vocational skills”

programs in East African countries are largely dominated by Chinese partner institutions. The curricula often prioritize language acquisition while neglecting alignment with vocational skills and industry standards [43]. Some programs are characterized by an “input-oriented but skill-deficient” structure, leading to a mismatch between training outcomes and labor market demands.

In terms of certification, there is still no unified qualification standard or mutual recognition mechanism between China and African countries [44]. Although China’s Ministry of Education has signed educational cooperation memoranda with several African states, a systematic certification framework for “language + skills” qualifications has yet to be established. As a result, students who complete such programs may find their credentials unrecognized by local industries.

Additionally, the development of specialized teaching materials remains inadequate. Most of the current “Chinese + vocational skills” education projects still rely on general Chinese textbooks, lacking customized materials tailored to specific vocational fields such as tourism, mechanics, or information technology [41]. This not only diminishes instructional effectiveness but also weakens the practical and career-oriented aspects of student learning. Theoretically, the misalignment between curricula, certification, and materials signals a lack of horizontal synergy among educational stakeholders and vertical synergy between policy design and implementation—key dimensions emphasized in educational synergy theory.

4.3. Digital Infrastructure Weaknesses and Digital Skills Gaps

Against the backdrop of rapid digitalization and the rise of intelligent education, the development of “Chinese + vocational skills” programs in East African countries has been severely constrained by inadequate digital infrastructure. Although some countries in the region—such as Kenya and Rwanda—have made progress in promoting ICT-based education, significant disparities persist between urban and rural areas as well as among institutions [45]. Limited internet connectivity, insufficient technological equipment, and low levels of digital literacy among teachers have collectively hindered the widespread adoption of online and blended teaching models [46].

During the COVID-19 pandemic, the widespread shift to remote teaching further exposed these structural deficiencies. Many vocational institutions were forced to suspend classes or resort to inefficient teaching via social media platforms due to the absence of dedicated online learning systems and digital resources [47]. In addition, the scarcity of Chinese-language digital teaching resources—such as virtual simulation training systems, digital textbooks, and intelligent assessment tools—has made it difficult for teachers and students to effectively leverage new technologies for pedagogical innovation [48].

Although China and East African countries have launched the smart education cooperation initiative, overall digital infrastructure construction remains at an early stage. The persistent digital divide not only restricts educational equity but also undermines the long-term sustainability of the “Chinese + vocational skills”

education model. In terms of educational synergy, the digital divide reveals the disconnection between infrastructure development, digital pedagogy training, and content innovation, indicating systemic fragmentation rather than coordinated reform.

4.4. Weak Industry-Education Linkages

The primary objective of “Chinese + vocational skills” education is to cultivate interdisciplinary talents who possess both linguistic proficiency and practical vocational skills. The success of this model depends critically on strong alignment between educational systems and industrial demands. However, current mechanisms for industry-education collaboration in East African countries remain weak. Many vocational programs are disconnected from local industrial value chains, resulting in mismatches between students’ learning content and the skills demanded by enterprises [40] [43].

On the one hand, the rapid expansion of Chinese enterprises across Africa has created potential employment opportunities for local students, yet communication channels concerning curriculum design, internship arrangements, and competency standards remain underdeveloped [49]. For instance, in Kenya and Ethiopia, some “Chinese + engineering technology” classes jointly established by vocational colleges and Chinese enterprises lack sustained corporate engagement, leading to short-term and largely symbolic internship programs [19]. On the other hand, East African governments have yet to establish comprehensive policy frameworks to promote deep industry-education integration, and effective incentive mechanisms are still absent [50]. Such weak industry-education linkages epitomize inter-sectoral coordination failures: enterprises, governments, and educational institutions operate in silos with ineffective collaborative governance mechanisms to ensure alignment of objectives and resources.

5. Future Directions and Policy Recommendations

To secure the sustainable expansion of the “Chinese + vocational skills” education model in East Africa, this paper proposes three strategic pathways with concrete policy and programme recommendations.

5.1. Accelerate Digital Transformation & Smart-Upgrading

Digitalisation is no longer optional—it is central to scaling bilingual vocational training programmes. A landmark initiative by UNESCO-UNEVOC, the Pan African Initiative for the Digital Transformation of TVET and Skills Development Systems, identifies five key components, including national networks for digital transformation, regional centers of excellence and digital-skills training for practitioners [51]. Another report World Bank found that in African countries like Kenya, Tanzania, Ethiopia digital tools and digital-skills remain uneven in TVET systems, limiting access and employability [52].

To promote the development of “Chinese + vocational skills” education in East Africa, it is crucial to establish a bilingual digital learning platform (Chinese +

English or Swahili) that incorporates MOOCs, micro-credentials, virtual laboratories, and AI-assisted tutoring. Such a platform can provide flexible, context-sensitive learning opportunities, supporting both students and instructors while aligning skill development with regional industrial demands and Chinese partner enterprises [53].

Simultaneously, substantial investment in digital infrastructure is required. Enhancing broadband connectivity, ensuring stable electricity, and expanding access to devices and learning-management systems (LMS) are fundamental, as only approximately 28% of the population in Africa has internet coverage, and mobile-broadband penetration remains around 34% [53].

Additionally, professional development programs for TVET instructors should focus on digital pedagogy, bilingual content delivery, and blended-learning strategies, addressing documented weaknesses in teacher digital competence [54].

Finally, pilot smart skill laboratories, such as mechatronics, automation, and IoT labs, should be embedded in TVET colleges with bilingual curricula and industry linkages, equipping students with practical skills aligned with emerging bilingual labor-market demands [53] [54].

5.2. Deepen Localization, Accreditation & Standardization

For the “Chinese + vocational skills” credential to be meaningful for learners, employers, and regional labor markets, it must be locally relevant, accredited, and standardized, with Chinese language competence fully integrated into occupational outcomes [55].

To achieve this, bilingual vocational curricula should be co-designed by Chinese-partner institutions, East African TVET providers, and relevant industry associations, embedding Chinese-language outcomes within vocational competences. For instance, under China-Africa cooperation, a project in Tanzania developed 54 vocational standards in collaboration with 43 Chinese vocational colleges [21].

Regional TVET qualifications frameworks, such as those under the East African Community (EAC), should be adopted or adapted to allow cross-border recognition and mobility of bilingual vocational credentials. Mutual recognition agreements for these credentials are essential, alongside standardized assessment rubrics to ensure comparability and quality. Importantly, Chinese language modules should be embedded as formal qualification descriptors rather than optional additions, enhancing the labor-market signaling value and practical applicability of the “Chinese + vocational” credential.

5.3. Build Sustainable Institutional & Stakeholder Mechanisms

The sustainability of the bilingual vocational education model in East Africa requires a robust institutional architecture and comprehensive stakeholder engagement, involving governments, TVET providers, Chinese partner institutions, enterprises, and local communities [56].

First, a practical approach is to establish a China-Africa Vocational Education Hub in the region to coordinate teacher-training pipelines, oversee bilingual curriculum updates, facilitate industry-linkage programmes, ensure quality assurance, track alumni, and manage bilingual credential databases. A comparable precedent can be found in the World Bank-supported “Africa Centers of Excellence (ACE)” initiative, launched in 2014, which successfully established more than 50 regional excellence hubs across 20 African countries. The ACE model demonstrates that regional hubs can enhance the quality and relevance of higher and technical education while promoting sustainable partnerships among governments, institutions, and also industry stakeholders. Drawing on this experience, the proposed China-Africa Vocational Education Hub could adopt a similar multi-actor governance mechanism and performance-based funding model to ensure accountability and long-term impact.

Second, to embed bilingual vocational skills effectively, “Chinese + vocational” tracks should be fully integrated into national TVET systems, rather than treated as peripheral projects, guaranteeing alignment with national strategies, accreditation standards, and funding mechanisms. At the same time, multi-stakeholder governance bodies, comprising government representatives, TVET providers, industry partners, and Chinese institutions, should be formed to conduct regular performance reviews, monitor key indicators, such as bilingual graduate employment rates, employer satisfaction, and practical use of Chinese language, and maintain continuous feedback loops for improvement.

Third, graduate tracer studies and bilingual alumni networks should be implemented to assess employment outcomes, Chinese-language utilization, and employer feedback, generating data to inform evidence-based policy decisions and strengthen stakeholder buy-in.

Finally, Chinese and East African enterprises should be encouraged to co-fund bilingual vocational training, offer internships and placements, and adopt bilingual hiring criteria, thereby creating sustainable, real-world labor-market pathways for graduates of the “Chinese + vocational” programme.

6. Conclusions

The integration of Chinese language proficiency with vocational and technical skills represents a significant advancement in China-Africa human-resource collaboration. By producing bilingual professionals who are technically competent and culturally literate, the “Chinese + vocational skills” model enhances employability in emerging sectors such as automation, mechatronics, and logistics, while facilitating engagement with Chinese enterprises and cross-border value chains. This approach supports workforce development that is simultaneously responsive to local labor-market needs and aligned with Chinese industry standards.

Moreover, the model promotes institutional capacity building and knowledge transfer. Chinese partner institutions contribute curriculum design, pedagogical expertise, and industry-aligned standards, while African TVET colleges contextu-

alize content for local relevance. The collaboration strengthens teacher digital and bilingual competencies, encourages standardization of vocational qualifications, and fosters sustainable regional skill ecosystems. Beyond employment benefits, the initiative exemplifies South-South cooperation, demonstrating how collaborative educational programs can address structural skills gaps in developing regions, support industrial upgrading, and also create sustainable bilateral engagement without reliance on traditional North-South aid models. Overall, the “Chinese + vocational skills” initiative fosters a skilled, bilingual workforce capable of driving regional economic development and reinforcing China-Africa cooperation.

Despite its potential, the “Chinese + vocational skills” model requires further empirical evaluation. Longitudinal studies are needed to assess graduate employment outcomes, income trajectories, and Chinese-language utilization in the labor market. Comparative research across East African countries can identify contextual factors influencing program effectiveness and scalability. Additionally, studies on pedagogical innovations, including AI-assisted tutoring, digital learning platforms, and blended vocational instruction, can provide insights into skill acquisition and language proficiency. Research on governance and stakeholder engagement, like accreditation frameworks, public-private partnerships, and multi-stakeholder boards, is necessary to identify institutional arrangements that enhance program sustainability. Finally, the social and cultural dimensions of Chinese-language integration, including learner motivation, community acceptance, and employer perceptions, should be investigated to ensure that bilingual vocational credentials are meaningful, recognized, and aligned with regional development needs.

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Conflicts of Interest

The authors declare no conflicts of interest.

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