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Aligning Fashion Design Curricula with Industry Needs in Africa's Developing Countries: A Review of Best Practices

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Abstract
The rapid pace at which the fashion industry is changing globally is expected to transform the curricula in developing countries to cater to this need. Nevertheless, challenges such as outdated curricula, limited integration of digital technologies, weak industry collaborations, and high graduate unemployment continue to persist in many institutions. This paper aims to identify and synthesise the strategies that could modernise the fashion design educational curriculum and align it with industry needs. The study examines current educational practices, recent technological developments, and innovations that are context-specific, relevant to underdeveloped regions using a review-based analytical method. The findings indicate an urgent need for competence-based education models, incorporating digital tools in the design and production process, increasing institutional collaborations with industry stakeholders, and infusing sustainability and innovation within the curriculum. In line with this, the discussion emphasizes enabling factors like targeted teacher training, experiential and practice driven learning, and global market orientation, together with unique contextual development such as heritage-based education that integrates indigenous textiles and crafts, entrepreneurship modules promoting self-employment, and community engaged learning that links students with rural artisans for hands-on experience and cultural exchange. The review further highlights the need for a digital exchange programme for global exposure, sustainability labs for skills acquisition, and policy alignment to strengthen systematic responsiveness. This paper recommends improved collaboration among policymakers, educators, and industry leaders to establish flexible, inclusive, and future-oriented systems of fashion education that will be capable of producing creative, entrepreneurial, and globally competitive graduates who can contribute to the contribute to local industry and raise Africa's presence in the international fashion arena.

Introduction
Fashion design, taught within Technical and Vocational Education and Training (TVET), is a creative and technical discipline that equips learners with the skills required for employment in the garment and apparel sectors. It focuses on practical skills, textile knowledge, pattern-making, garment construction and the digital tools in design and production. The fashion industry plays a critical role in local economies and provides pathways for global participation; therefore, its inclusion in

vocational programmes is vital. Thus, curricula must evolve to align with industry needs to realise their potential and prepare graduates with the skills required to succeed in the workforce (International Labour Organisation, 2021). When such alignment exists, graduates are better positioned to drive innovation, maintain industry-academia linkages and improve long-term employment. Abir et al. (2024) also argued that alignment enhances entrepreneurship, practical capability, and responsiveness to technological and global fashion trends. Many countries in Africa, however, remain constrained by outdated teaching methods, weak industry linkages, and limited access to digital infrastructure. In addition, poor internet service and unreliable power supply hinder the integration of online learning into digital design (UNESCO, 2023). Other factors that further restrict the development of a globally competitive fashion workforce include poor instructor development and the lack of training in digital innovation and sustainability-oriented pedagogy, thereby constraining the potential to build a global fashion workforce (Dlamini & Mkhize, 2023).

Misalignment among education systems, industrial strategies, and cultural frameworks at the institutional and policy levels has limited the transformative potential of fashion education (UNESCO-UNEVOC, 2023). Although many African governments emphasise industrialisation and cultural preservation, the lack of coherent implementation policies and adequate resources has hindered efforts to address these issues. Current research highlights the need for more context-responsive reform efforts that adopt a whole-of-context approach. These include competency-based learning, project-based learning, integration of technology, and strong industry collaboration alongside newer models of education such as heritage-based education (Yeboah & Tetteh, 2024). Examples include integrating indigenous craftsmanship, textile traditions and cultural aesthetics into the modern curriculum, thereby promoting sustainability, identity, and creative reinterpretation (Shaheen, 2024). Other approaches include entrepreneurship and microenterprise development modules that foster self-employment, community-integrated learning that incorporates indigenous craftsmanship and textile traditions, and digital global exchange programmes that facilitate international collaboration (Abdelmeguid et al., 2024). With reference to past experiences, sustainability labs and circular design projects have enhanced practical, knowledge-based learning in areas like recycling, upcycling, and eco-material innovation. At the same time, policy-driven education reforms have aligned these efforts more closely with industrial and environmental priorities. Using teaching methods that include everyone, particularly with respect to gender, is essential for African fashion education to become a robust and long-term source of creativity and economic growth (McKinsey & Company & Business of Fashion, 2022).

Methodology

This review employed a qualitative PRISMA-informed synthesis to examine how fashion design curricula in TVET can be aligned with industry needs in developing African countries. It included peer-reviewed literature published between 2020 and 2025, organisational reports from the ILO, the World Bank, and UNESCO, institutional publications, and conference papers. The study included studies on curriculum reform, competency-based education, technology adoption, digital integration, sustainability, entrepreneurship, industry collaboration, and graduate employability, while excluding those outside the fashion/apparel field, TVET, or the time frame.

A systematic search was conducted across major academic databases, including JSTOR, Scopus, and Google Scholar, using Boolean combinations of keywords such as: "fashion design" or "apparel", "TVET" or "curriculum", "industry needs" or "employability" and "Africa" or "developing countries". The search yielded 100 records, which were gathered, duplicates removed and screened for relevance based on title and abstract. This resulted in 40 full-text articles to be assessed for inclusion. After applying the inclusion criteria focusing on African contexts, relevance to the curriculum,

employability, technology, sustainability, or entrepreneurship, and publication in English, 19 studies were retained for analysis. The selection process is documented using a modified PRISMA flow diagram.

Key information on challenges, strategies, supporting factors, and outcomes was gathered from each study. Using thematic analysis, the data were coded, organised into themes, and compared across regional and international contexts. The review identified five main themes: updating curricula, competency-based learning, digital integration, sustainability and heritage, and industry collaboration. Together, these provide practical guidance for aligning TVET fashion programmes with industry needs.

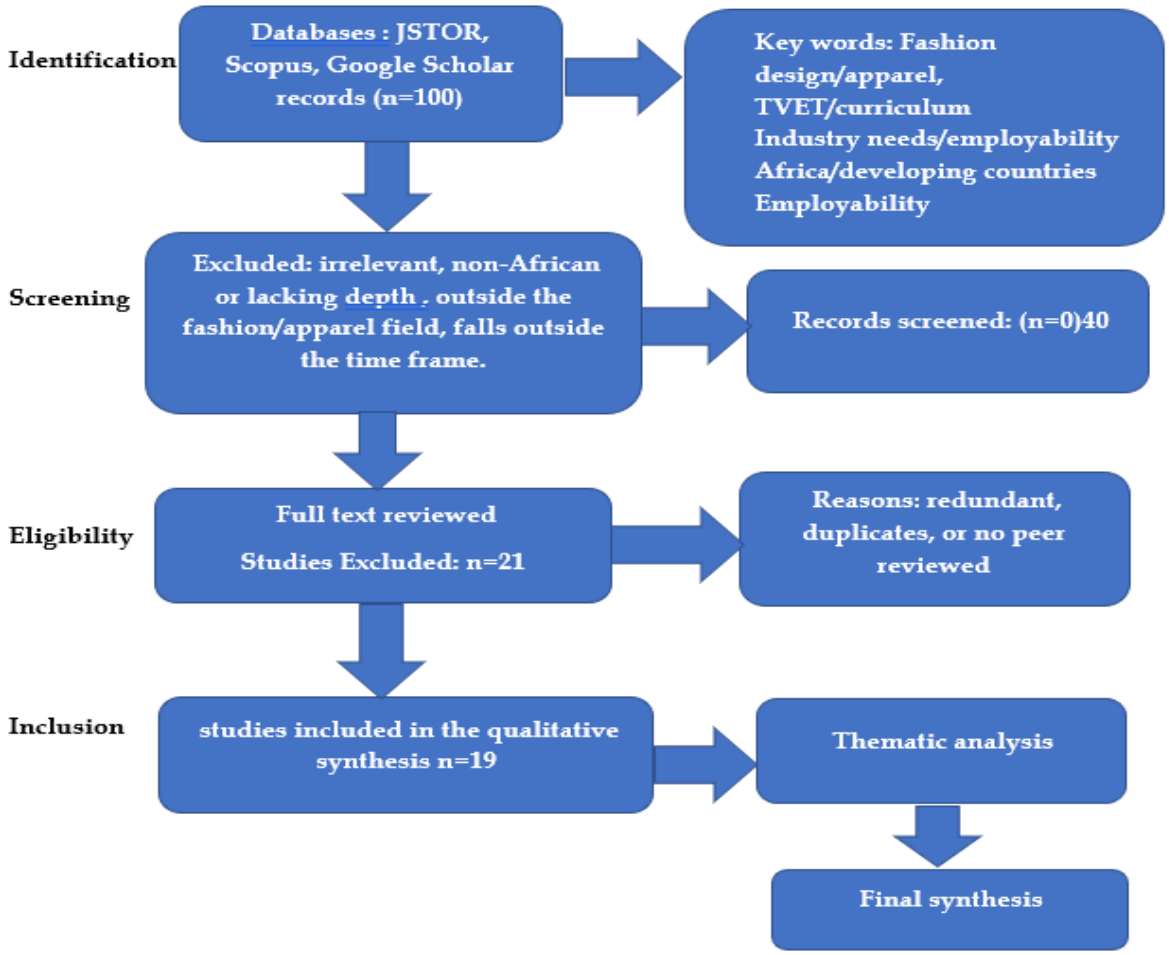

Figure 1: PRISMA Flowchart showing the identification, screening and selection of articles

Results and Discussion

Key Curriculum Trends in Fashion TVET Across Developing Countries

Fashion design education in Africa is deeply connected to traditional craftsmanship and community-based heritage, yet it faces significant challenges in aligning with modern industry demands (UNESCO, 2023). According to Shaheen (2024), outdated pedagogies, limited access to technology,

insufficient industry collaboration, and inadequate integration of entrepreneurship and digital competencies are key issues noted.

Despite facing challenges rooted in broad African curricula, African fashion systems also show key strengths, particularly in promoting sustainability and preserving indigenous garment-making practices. Traditional fashion education highlights the value of manual skills, creativity, and culturally grounded approaches. Graduate employability, however, is often limited by the persistent gap between theory and practice (Ndahiro & Uwase, 2023). Furthermore, many institutions usually lack resources such as digital design tools and industrial machines, limiting exposure to new production technologies.

Studies by Conlon and Gallery (2024) noted that recent reforms across Africa focus on modernisation through the integration of Computer-Aided Design (CAD), 3D visualisation, and sustainability principles. In terms of environmental responsibility, these innovations align with global practices (Chen et al., 2024). Moreover, the adoption of these digital tools has begun to reduce dependence on costly physical prototypes, enabling more efficient and resource-conscious design processes.

Entrepreneurship training has been essential in fashion schools, providing graduates with business acumen and self-employment skills both locally and internationally, while empowering small and medium enterprises to drive economic growth and encouraging a cultural shift toward proudly supporting and purchasing locally made goods (World Bank, 2023). South Africa, Kenya, Zimbabwe, Rwanda, and Ghana are also improving their TVET and higher education programmes to relate with local industries, support sustainable production, and creative enterprise (Yeboah & Tetteh, 2024). National initiatives such as "Made in Rwanda" aim to enhance the competitiveness of Rwandan products.

Overall, African fashion design is shifting from tradition-based training to an innovation-based curriculum that upholds heritage while equipping students with modern skills. Digital technology, sustainability and entrepreneurship must be integrated into the curriculum to produce locally empowered graduates and enhance the continent's position in the global fashion industry.

Strategies for Aligning Africa Fashion TVET Curricula with Industry Needs

A balanced fashion design programme in developing countries must combine technical proficiency with entrepreneurial skills to produce graduates who are both employable and entrepreneurial (Abir et al., 2024). Such a combination not only increases job opportunities but also promotes cultural creativity and economic success (Yeboah & Tetteh, 2024). Curriculum is effective when it involves close cross-collaboration with industry experts, entrepreneurs, textile producers, sustainability advocates, and alumni to ensure that content remains responsive to market and technical realities (UNESCO-UNEVOC, 2023). These can help develop competency-based, market-oriented modules that focus on practical skills, which can then be monitored and compared with other units (UNESCO, 2023).

Digital applications such as CAD, CLO 3D, and digital pattern-making systems in fashion education improve design accuracy, innovation, and sustainability (Conlon & Gallery, 2024). These tools provide students with industry-standard software training, foster digital literacy, and minimise wastage through virtual sampling and simulation (Chen et al., 2024). Also, they promote active and critical learning by bridging the theoretical knowledge to real design problems (Glogar et al., 2025). This multidisciplinary model, integrating fashion design with digital technology, business, sustainability, and cultural studies, equips students with skills to function effectively across professions and the global economy (D'Itria, 2024). This also contributes towards sustainability consciousness and cultural

literacy, prompting designers to produce work which is ethically responsible and contextually relevant (Abdelmeguid et al., 2024).

Curricula must remain flexible, modular, and competency-based, with an emphasis on the acquisition of practical skills relevant to the job (World Bank, 2023). Competency-Based Education (CBE) and modular course structures enable timely updates to keep pace with industry shifts. Incorporating soft skills such as communication, teamwork, problem-solving, and entrepreneurship is essential for graduate employability (McKinsey & Company & Business of Fashion, 2022).

Technology-enhanced learning as an answer to reduce digital divides in fashion education. Blended learning patterns and digital resources enhance access to resources, support self-paced learning, and improve classroom engagement (UNESCO, 2023). New technologies such as Virtual and Augmented Reality (VR/AR) have been shown to provide immersive, low-cost training for complex fashion production processes in other technical fields (Holuša et al., 2023; Javaid et al., 2024).

Best Practices That Improve Training Quality and Graduate Employability

The alignment of fashion design curricula with industry requirements in developing African countries is critical because it improves training quality and graduate employability. A mismatch between academic training and the demands of the fashion industry, outdated teaching methods, a lack of technology integration, and a lack of practical experience for students are among the current challenges. These issues can only be overcome by a multifaceted approach focused on collaboration and the requisite practical skills.

Embracing a Skill-Based and Entrepreneurial Curriculum

In Africa, as shown by Conlon and Gallery (2024), fashion education is primarily theoretical and focused on basic garment construction. Yet, the industry requires a broader range of skills. A revised curriculum should provide a balanced mix of creative, technical, and business skills.

The global fashion industry today requires students to develop beyond basic sewing skills. Training should include some specialisation in areas such as pattern-making, garment construction and quality control across various product types. Furthermore, entrepreneurial skills are essential for individuals seeking to start their own businesses. This means one has to be able to craft plans, sell products, create brands, set prices, and manage the supply chain (Abir et al., 2024).

Strengthen Industry Partnerships and Work-Integrated Learning

The gap between training and employment is attributable to limited exposure to how the real industry operates. Therefore, it is essential to build close ties with local and international fashion houses, designers and manufacturing companies. Practices involving work-integrated learning (WIL), such as projects, internships, and apprenticeships, bridge the gap between classroom knowledge and industry practice. These experiences enable students to put theory into practice, thereby encouraging creativity, critical thinking and business skills such as time management and client interaction skills (International Labour Organisation, 2021). This initiative can be further enhanced through partnerships with garment factories, design studios, and fashion-focused SMEs, enabling hands-on experience in areas such as production planning, quality control, merchandising, and e-commerce operations.

Structured internship programmes should include clearly defined aims, organised mentorship, and performance evaluations aligned with these objectives (Abir et al., 2024). To connect students' practical experiences with theoretical knowledge and personal skill development, regular feedback and reflective activities are essential. Apprenticeships, particularly in small businesses or artisan workshops, strengthen industry linkages, provide problem-solving experience, and improve employability by developing both technical and soft skills (Yeboah & Tetteh, 2024).

Integrate Digital Technologies

Digital tools improve the accuracy, creativity, and sustainability of the design. Virtual try-on systems reduce material waste by enhancing prototyping processes (Batool & Mou, 2023). VR/AR technologies offer cost-effective training environments, especially in low-resource settings (Holuša et al., 2023. In this way, such tools enable rapid iteration of design concepts, allowing designers to experiment with colours, textures, and patterns without production. Furthermore, digital simulations can predict fit and garment drape more accurately, thereby reducing the likelihood of costly trial-and-error. The integration of these technologies into fashion programmes could help students in their future work to meet industrial demands while promoting sustainability.

Focus on Sustainability and Local Heritage

Africa has a long textile history and remains a centre for sustainable fashion. When incorporated into the curriculum, these elements will give African designers a competitive advantage and promote ethical practices.

Studies by Abdelmeguid et al. (2024) highlight that fashion education should incorporate sustainable practices by teaching students about the environmental and societal impacts of the fashion industry, the importance of local and eco-friendly materials, and the use of circular fashion principles and ethical production methods. At the same time, D'Itria (2024) noted that the curriculum should also serve cultural conservation by fostering the incorporation of traditional textile techniques and handicrafts into modern design, enabling students to honour their heritage by producing unique, internationally relevant fashion items.

Supporting Institutions and Policy Alignment

Effective curriculum modernisation requires institutional strengthening, adequate funding, and policy alignment with industry and cultural priorities (UNESCO-UNEVOC, 2023). Essential to this transformation are digital policy changes, including expanding internet access, providing digital skills training for instructors, and integrating the latest design software to ensure students gain relevant technical skills (UNESCO, 2023). Moreover, establishing strong partnerships between educational bodies, local businesses, and cultural groups is crucial for keeping curricula market-relevant while actively preserving traditional craftsmanship. Implementing continuous monitoring and feedback loops is vital for refining programmes and ensuring that graduates possess the technical expertise and adaptability needed for a changing job market.

Conclusions and recommendations

Youth Demographics and Skills Development

The growing youth population in Africa presents an opportunity to develop a skilled and entrepreneurial workforce for the fashion industry. To reduce unemployment and stimulate local production, the fashion curriculum should integrate practical skills, entrepreneurship, business management, and innovation to enable graduates to start businesses (UNESCO, 2023).

Market Expansion and Curriculum Reform

African-inspired designs are increasing in demand, thereby creating employment opportunities for graduates (McKinsey & Company, 2022). Hence, by emphasising creativity, marketing, branding, export readiness, and entrepreneurship, the curriculum must be regularly updated to align with industry needs while preserving African identity.

Digital Transformation and Access to Technology.
Internet access and increased mobile use improve global market connectivity for students (Dlamini & Mkhize, 2023). Institutions need to train both instructors and students in the use of digital technologies such as CAD, 3D pattern design, and e-commerce. Affordable and scalable measures help bridge digital divides and support online fashion businesses.

Sustainability and Green Innovation
Sustainable practices, circular design, and eco-friendly production are emerging market differentiators Javaid et. al., 2024). Curricula should incorporate sustainability principles, such as zero-waste pattern cutting, upcycling, sustainable manufacturing practices, and socially responsible sourcing. To foster green innovations and prepare graduates for global sustainable fashion markets, partnerships with local producers are needed.

Integration of Indigenous Knowledge and Cultural Heritage
In the view of Murzyn-Kupisz, M., & Hołuj, D. (2021), traditional craft skills like weaving, dyeing, and embroidery are integrated into curricula to preserve cultural identity. Experiential learning and design projects that combine heritage techniques with modern styles foster cultural pride and global competitiveness.

Industry Collaboration and Partnerships
Partnerships with local industries, fashion houses, and international collaborators can expand the reach of internships, mentorships, and exchange schemes (ILO, 2021). Establishing innovation hubs and business incubators within institutions can foster entrepreneurship and industry-driven research.

Institutional Strengthening and Policy Alignment
Effective fashion education requires aligned policy support, consistent funding, quality assurance, and linkages with industrial, cultural, and trade policies. Regular policy updates, aligned with technological and market changes, ensure that TVET systems across Africa remain responsive and prepared for the future.

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