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Strengthening Textile Education in Africa: A Review of Hands on Learning Methods for Industry Skills

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Abstract

Experiential learning, often called hands on learning, is now considered a key approach in textile education. Skills and creativity in this field are best developed through direct work with real materials and processes rather than theory alone. This review explores how experiential learning is used in textile and fashion education with a particular focus on Africa. First, it looks at global practices such as project-based learning, industry collaborations and workshops, and how these can strengthen African textile programs. It also highlights the gap that still exists between classroom theory and practical training in many local institutions. Second, it analyzes evidence showing that practical methods improve students' technical skills in weaving, dyeing and garment construction. These methods also encourage creativity, problem solving and job readiness more than traditional lectures. They enable students to design with local resources, solve real world production challenges and adapt more easily to employment. The review also points to barriers that limit experiential learning such as a lack of resources, rigid curricula and limited teacher training. To address these challenges, the review suggests stronger school-industry links, more internships and apprenticeship programs, curriculum updates and increased teacher capacity. It also calls for tools to measure the long-term impact of experiential learning on graduate success. By linking theory to practice, African textile programs can better prepare students for the world of work while supporting innovation, sustainability and global competitiveness.

Keywords: Experiential learning, Textile education, Fashion design, Practical skills development, Creativity, Industry partnerships

Methodology

The study is descriptive in nature and only secondary data has been used in it, which consists of various research papers, articles and journals.

Introduction

Textile and fashion education is important for preparing students with the skills they need to succeed in today's global industry. In Africa, this sector faces two main challenges mainly keeping traditional knowledge alive while also meeting international standards of training and innovation. Classroom teaching on its own often does not give students the creativity, technical ability or job readiness demanded by the textile and fashion industries. For this reason, experiential learning, which is learning by doing has become a more effective approach. It allows students to work directly with materials, processes and real tasks. Through workshops, projects, internships and collaboration with industry, students gain practical skills in weaving, dyeing and garment construction. They also develop problem solving, adaptability and design thinking, which are essential for employment. However, African textile education still struggle with challenges such as limited resources, rigid programs and lack of teacher training. This review looks at how experiential learning can strengthen textile education in Africa. It discusses its importance, its effect on student skills and job readiness, the barriers to its success and strategies for improvement through partnerships, training and curriculum change.

To explore the importance of experiential learning and how it is used in textile education

Experiential learning is the process of learning by doing. It actively engages students, helping them connect classroom knowledge with real world applications (Rani and Tyagi, 2022). Alabi, (2024) explains that experiential learning, which has its origins from the theories of Dewey, Lewin and Kolb, emphasizes direct experience, reflection and active participation. It is a student centered approach whereby students acquire knowledge and skills through participation in meaningful activities.

In textile education, experiential learning is especially valuable due to its practical nature. Sarma, (2024) argues that design students develop their skills by working on real life projects and skill building workshops. Active participation deepens their understanding of design concepts, methods and processes. Collaboration is also critical as students improve their communication skills and build professional networks by working with peers and industry experts. Experiential methods also enhance learning retention. Roland, (2017) notes that going through the different stages of the learning cycle help students internalize concepts while reflecting on their growth. This process fosters professionalism and self awareness, as students identify areas for improvement.

In Ghana, textile education is part of the Home Economics curriculum within Technical and Vocational Education and Training (TVET). It aims to provide students with practical knowledge, employability skills and positive attitudes to reduce unemployment (Quarcoo, 2024). Studies show that various teaching strategies such as projects, group work, discussions, demonstrations and lectures improve outcomes. A good example is project based learning in Ghana which enhances creativity and practical skills (Mensah, 2017). In Zimbabwe, teachers use feedback, modeling and motivation to support students from diverse academic backgrounds (Chimbindi, 2017).

Clothing and textile production units also reinforce STEM principles, linking theory to real life problem solving (Satiya and Chiweshe, 2017). International collaborations further strengthen textile education in Africa as foreign professionals and experts provide training and mentoring (Yan et al., 2023). A growing focus in textile education

is sustainability. Projects in India encourage students to make sustainable choices and develop environmentally responsible solutions (Sood and Sharma, 2023). In Pakistan, project management is used to help students gain independence and personal expression (Hameed et al., 2021). Globally, the integration of sustainability into curricula ensures that students graduate with skills that meet industry needs (Lim, 2020).

Digital technology is another important trend. Tools such as 3D prototyping, body scanning and virtual fittings optimize product development and reduce waste (Blaga et al., 2022). In Africa, the use of ICTs, videos and simulations make instruction more practical, although resource scarcity remains a challenge (Nyamekye et al., 2024). Visual learning support textile education as demonstrations, graphics, samples and portfolios make concepts clearer and easier to memorize (Shabiralyani et al., 2015). Likewise, Piaget's cognitive theory complements Kolb's experiential learning model by showing how interaction with objects and environments deepens understanding (Chimbindi, 2017).

In Nigeria, students benefit from practical training through workshops, lectures and mentoring, which prepares them for self employment (Nkwodimmah, 2019). However, Africa still faces systematic challenges such as large class sizes which limit individual attention, many schools lacking essential resources in the form of sewing machines, computers and internet access (Mugesh, 2024). As a result, students often receive more theory than practice, leaving them less prepared for the demands of the modern textile industry.

Evaluate how experiential learning enhances students' practical skills, creativity, problem-solving and job readiness.

Experiential learning has become critical in textile and fashion education because it provides students with the practical skills essential for the industry (Beard and Wilson, 2018). By working directly with fabrics and tools, students improve technical skills such as weaving, dyeing and sewing (Rissanen et al., 2016). Practical tasks also encourage the use of local materials which stimulates creativity and the development of innovative designs (Adebayo et al., 2023). Real-life tasks develop problem-solving skills, while practical work and learning connect classroom knowledge with workplace expectations which help students adapt seamlessly to the world of work (Anuthara et al., 2025).

Experiential learning cycle in practice

Kolb's four-stage model (Passarelli and Kolb, 2023), which include concrete experience, reflective observation, abstract conceptualization and active experimentation provides a framework for skill development in the textile industry (Rayavaram et al., 2024). For example, students can dye fabrics (experiment), reflect on the results, connect them to theory and finally test new designs. This cycle develops both technical proficiency and creativity while preparing students for professional settings such as fashion shows, exhibitions or internships (Todeschini et al., 2017).

Hands on projects demonstrate measurable results. In Wyoming for example, students who dyed bacterial cellulose improved their test scores from 36–82% to 73–91%, demonstrating that laboratory practices improve understanding more than lectures alone (Harmon, 2020). Harmon, (2024) further reiterates that both online and in-person students found experiential assignments more engaging and useful than traditional methods. Similarly, Smith, (2020) applied the Kolb cycle during a sustainability project where students organized a Fashion Revolution Week where they formed teams, developed event management and critical thinking skills which are valuable for careers in sustainable fashion.

Technical skills and career readiness

Hands-on activities such as dyeing and sewing help students understand textile processes that are difficult to master through lectures alone (Hoa, 2025), whereas, factory internships and mentoring programs strengthen work readiness and sustainability awareness (Babu et al., 2020). Getting involved in programs abroad also provides exposure to textile management and production which significantly improve student achievement (Jones et al., 2021). Cooperative projects using surplus fabrics or recycled materials further strengthen technical and professional skills, aligning with sustainability goals (Agarwal, 2021). Students also learn to showcase their work through portfolios, which improves employability and confidence.

Boosting creativity

Experiential learning fosters creativity by encouraging students to test ideas using modern and traditional methods, for example, workshops and group projects stimulate brainstorming, teamwork and innovation (Hur and Beverley, 2023). In the same way, working with local artisans or surplus fabrics allows students to create unique, market ready products that combine sustainability with originality (Agarwal, 2021). These approaches push the boundaries of creativity while addressing real world industry needs.

Strengthening problem solving

Experiential learning help students address real world textile production problems through initiatives and adaptability (Sudarsono et al., 2023). A good example is found in Ethiopia where vocational students work in teams to solve production challenges (Adula et al., 2023), while others develop natural dyeing methods to reduce chemical waste (Bwegyeme and Munene, 2021). These experiences build confidence, critical thinking and flexibility to address industry challenges.

To identify challenges and key factors that affect how well experiential learning works in textile education

Textile education is fundamental to the training of skilled professionals in Africa's growing textile and fashion industry. At the moment, increased attention is being paid to practical training to help students acquire practical skills. However, implementing this type of learning in African countries is not easy. This section analyzes the main challenges affecting practical learning in textile education. These problems include lack of school facilities and resources, difficulties in academic programs as well as cultural and social barriers that limit practical learning.

1. Institutional and resource challenges

One of the biggest problems facing textile schools in Africa is the lack of adequate buildings, machinery and tools for training. Many training centers lack sufficient funding and use outdated equipment that no longer meets the industry's current needs (Mupfumira and Nyaruwata, 2021). Fashionomics Africa (2022) also points out that many technical and vocational schools in Africa operate with outdated tools. This makes it difficult for students to acquire the modern skills that employers seek.

Another challenge is the weak connection between schools and the textile industry. Many schools lack strong partnerships with companies resulting in students missing out on internships and job training. Africa

Development and Resources Research Institute, (2019) explain that in Ghana, many students graduate without ever having worked in a real textile factory because schools and companies do not collaborate. This limits students' opportunities to acquire practical skills and secure employment after graduation.

Furthermore, schools often lack the funds to build important structures such as laboratories, innovation centers or student-led workshops (UNESCO-UNEVOC, 2024). These are essential for practical learning. Without them, students primarily receive lectures with very little opportunity for practice (WAAW Foundation, 2023).

2. Academic challenges: curriculum and staffing

Outdated and rigid curricula also hinder practical training. In many African countries, national education systems control teaching and are often slow to update programs to adapt to industry needs (Education + Training, 2020). As a result, students spend more time learning theory and less time acquiring practical skills.

Another problem is the lack of qualified and experienced teachers. Adula et al., (2023) show that many textile instructors in East Africa have little or no work experience in the industry. This makes it difficult for them to effectively deliver practical classes. Furthermore, many teachers do not receive training on new machines or teaching methods further limiting practical learning.

Large class sizes and strict academic schedules worsen the situation. According to Revista Textil (2022), there is insufficient time for students to work on projects or receive individualized help from instructors. Without changes to the curriculum and teacher training, practical learning in textile education will not improve.

3. Cultural and social factors

Cultural beliefs also influence perceptions of practical education. In some African communities, vocational training is considered an exclusive option for students with low academic performance (Bristol University Press, 2020). This negative view can lower students' self-confidence and reduce their interest in practical learning.

Gender roles compound the challenge as well. While many women work in the textile industry, some cultures do not support females learning technical skills such as machine operation or industrial design. Nyamekye et al., (2024) note that this limits women's access to comprehensive training and creates a skills gap between male and female students.

Poverty also affects student participation. Many textile students come from low-income families and may be required to work while studying. This makes it difficult for them to attend full-time practical classes (Nyamekye et al., 2024). Without financial support or more flexible learning options, these students struggle to benefit from experiential education.

Enhance experiential learning in textile programs through collaborations, training and curriculum changes

Experiential learning is essential to preparing textile and fashion design students with the skills demanded by the industry. Strengthening practical training through collaborations, internships, curriculum reform and faculty development helps bridge the gap between education and professional practice (de Wet and Smal, 2023).

Building strong links between school and industry

Textile schools should establish close collaborations with the industry. Advisory boards, composed of industry leaders can help identify skills gaps and guide curriculum development. Structured internships, supervised by both educators and industry professionals should be mandatory as they allow students to apply theory in real-world work settings (Pastore et al., 2021). Guest lectures, workshops and the development of professional portfolios further connect students with employers and mentors.

Governments can also support experiential learning by offering scholarships that reward innovation and technical skills, for example, the Rwanda Vocational Education and Training Board expanded scholarships from 14 to 50 technical schools, benefiting an additional 1,500 students in the 2024/2025 academic year (Rwanda Technical and Vocational Education and Training Board, 2024/2025).

Internships, Fieldwork and Apprenticeships

Work based learning (PBL) strengthens employability by improving technical, problem solving and soft skills such as teamwork, communication and leadership (Thapa, 2024). Collaborations with textile factories and design studios can provide students with access to current market operations and trends. Cooperative education programs that combine face-to-face study with paid industry internships are particularly effective (Jones et al., 2021) while mentoring initiatives offer students with career guidance at the same time building networks for future employment (Ma, 2022).

Curriculum update for hands-on learning

Curriculum reform should emphasize project-based learning, real life case studies and interdisciplinary collaboration. Students should engage in research, design, prototyping and problem solving activities that reflect industry scenarios (Swai and Otieno, 2024). Courses should include textile machinery operation, sustainable fabric development, dyeing and printing and digital tools such as CAD and virtual prototyping (International Labor Organization, 2025), while extended study and laboratory time with modern equipment ensures deeper hands-on experience (Teslim, 2024).

Collaboration and Faculty training

Partnerships between institutions, both local and international can lead to exchange programs and joint workshops. Faculty should also work in textile companies to update their industry knowledge (Wood et al., 2022). Professional development workshops on practical pedagogy, project management and assessment methods will improve teaching effectiveness (Samundeeswari, 2024). Additionally, ongoing training in sustainable practices and new textile technologies keeps curricula aligned with changes in the industry.

Tracking long-term impact

To measure the effectiveness of experiential learning, institutions should track graduates' employment outcomes, salary levels and career paths (Guo et al., 2020). Pre and post assessments serve as valuable tools for evaluating the development of technical and critical thinking skills, while employer feedback provides essential insights to inform and refine curriculum revisions (International Labor Organization, 2025).

Encouraging students to publish or present their project results also strengthens their professional preparation.

Conclusion

Experiential and project based learning are essential for preparing students in the textile and fashion industries to meet changing global demands. By linking theory to real world practice through internships, projects, collaborations and STEM integrated assignments, students develop creativity, problem solving skills, technical competence and adaptability. These approaches not only enhance career readiness but also foster innovation and sustainability awareness, qualities which are critical to the needs of modern industry. In Africa, implementing experiential learning requires systemic reforms such as improving infrastructure, updating curricula, overcoming cultural and gender barriers and equipping educators with the skills necessary to deliver practical teaching. Strengthening industry partnerships, monitoring graduate outcomes and integrating practical projects ensure that graduates are resilient, forward thinking and globally competitive. Overall, experiential learning in textile education is no longer optional but a vital driver for creating a skilled, inclusive and future ready workforce.

Recommendations for the use of experiential learning in textile education

In light of the above review, a conceptual framework, as shown in Figure 1 below has been developed as a recommendation on how experiential learning can effectively be applied in textile education.

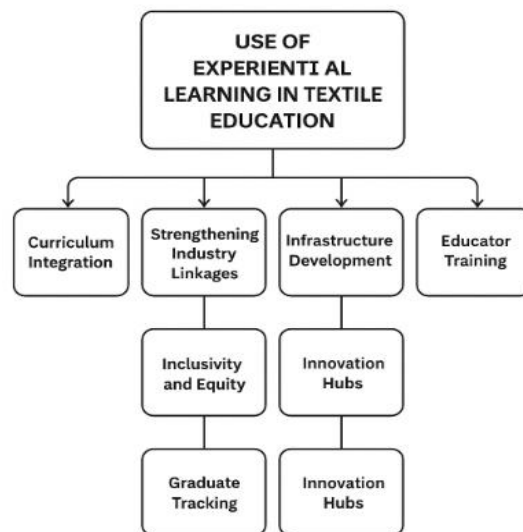


Figure 1: Conceptual Framework for strengthening experiential learning

The framework proposes integrating industry aligned, project based assignments into the curriculum to address real-world challenges with a focus on sustainability and innovation. Strengthening formal partnerships with textile and fashion companies is essential to provide students with internships, mentorship opportunities and collaborative projects. Investment in modern workshops, laboratories and digital tools is

needed to support hands on learning, while continuous professional development should be offered to the faculty in areas such as new technologies, sustainable practices and experiential pedagogy. Programs must also be designed to promote inclusion and equity by encouraging participation from marginalized groups, challenging gender stereotypes and fostering diversity. Furthermore, establishing mechanisms for graduate tracking will help monitor professional outcomes and ensure alignment with labor market needs. Finally, the creation of on campus innovation centers such as design laboratories or incubators will enable students to experiment with textiles, technologies and creative ideas which encourage a culture of innovation and entrepreneurship.

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