



**GENDER INEQUALITIES IN TECHNICAL AND VOCATIONAL EDUCATION
AND TRAINING IN SUB-SAHARAN AFRICA: INSTITUTIONAL, SOCIAL,
CULTURAL DRIVERS AND EMERGING INTERVENTIONS**

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ABSTRACT: *Technical and Vocational Education and Training (TVET) is crucial for skills development and inclusive growth in Sub-Saharan Africa, yet gender inequalities in access, participation, and outcomes remain widespread. This paper systematically reviews empirical and review studies published between 2019 and 2025 on women's participation in TVET within African contexts. Using databases and grey literature explorations, predefined inclusion criteria, and structured data extraction templates, the review examines how institutional arrangements, socio-economic conditions, and cultural norms influence gendered TVET pathways. Thematic and comparative analysis synthesises evidence across countries, disciplines, and TVET subsectors. Results indicate that, despite global progress in girls' education, African TVET systems often perpetuate gendered divisions of labour and exclude women from high-value technical fields. Barriers include persistent funding shortages, gender-insensitive institutional environments, socio-cultural norms favouring boys' technical education, weak links to decent work, and intersecting disadvantages related to poverty, disability, rural residence, and informal settlement living conditions. New evidence highlights the importance of self-efficacy, social justice awareness, and perceptions of fairness in shaping women's TVET ambitions and perseverance, while highlighting the positive impact of targeted advocacy, bursaries, and industry partnerships in reducing financial and informational barriers. Effective practices include gender-responsive pedagogy, safe and supportive learning environments, structured mentorship, community engagement to challenge stereotypes, and localised, gender-responsive policies addressing regional and sectoral disparities. The review concludes that incremental, isolated interventions are unlikely to close gender gaps; instead, multi-level, gender-transformative reforms are necessary to align TVET financing, curricula, governance, and labour-market linkages with Sustainable Development Goals 4 and 5. It recommends: (1) integrating gender-responsive budgeting and accountability into TVET systems; (2) expanding gender-transformative institutional practices, including safeguarding and leadership development for women; (3) strengthening pathways from TVET into decent work through inclusive industry partnerships; and (4) investing in rigorous, context-sensitive impact evaluations of gender-focused TVET interventions, especially in under-researched regions and sectors. Technical and Vocational Education and Training (TVET) is vital for skills development and inclusive growth in Sub-Saharan Africa, but gender inequalities in access, participation, and outcomes still persist. Ongoing gendered divisions of labour and women's under-representation in high-value technical fields restrict the transformative potential of TVET for advancing gender equality and decent work. **Methods** This paper systematically reviews empirical and review studies published between 2019 and 2025 on women's participation in TVET within African contexts. Searches of academic databases and grey literature utilised predefined inclusion and exclusion criteria and employed structured data extraction templates. Thematic and comparative analyses were used to synthesise evidence across countries, disciplines, and TVET subsectors, with attention to the institutional arrangements, socio-economic conditions, and cultural norms that shape gendered TVET pathways. **Results** Findings show that African TVET systems often reinforce gendered occupational segregation and exclude women from high-value technical fields. Barriers include chronic funding shortages, gender-insensitive institutional environments, socio-cultural norms that prioritise boys' technical education, weak links to decent work, and intersecting disadvantages such as poverty, disability, rural residence, and informal settlement living conditions. Emerging evidence highlights the roles of self-efficacy, social justice awareness, and perceived fairness in shaping women's TVET aspirations and perseverance. Targeted advocacy, bursaries, and industry partnerships offer promise in reducing financial and informational barriers. Effective practices include gender-responsive pedagogy, safe and supportive learning environments, structured mentorship, community engagement to challenge stereotypes, and locally adapted gender-responsive policies. **Conclusions and Recommendations:** Incremental, isolated interventions are unlikely to close gender gaps in African TVET. Multi-level, gender-transformative reforms are needed to align TVET financing, curricula, governance, and labour-market linkages with Sustainable Development Goals 4 and 5. Priorities include integrating gender-responsive budgeting and accountability into TVET systems, expanding gender-transformative institutional practices (including safeguarding and women's leadership development), strengthening pathways from TVET into decent work through inclusive industry partnerships, and investing in rigorous, context-sensitive impact evaluations of gender-focused TVET interventions, particularly in under-researched regions and sectors.*

KEYWORDS: Technical and Vocational Education; Gender Equity; Sub-Saharan Africa; TVET; Intersectionality; SDG 4 & 5.



INTRODUCTION

Gender equity in education is a human right and essential for inclusive development. Although girls' enrolment has increased worldwide, gender disparities persist in many low- and middle-income countries, particularly in post-primary and skills-focused pathways (Psaki et al., 2022; Evans et al., 2021; Baten et al., 2020). TVET is encouraged in Africa as a route to employability, poverty alleviation, and progress towards the Sustainable Development Goals (SDGs), yet women remain under-represented in high-paying technical fields and are often restricted to feminised, lower-paid programmes (Joseph et al., 2025; Bray-Collins et al., 2022; Avis, 2024).

In Sub-Saharan Africa (SSA), broader systemic barriers to quality education—funding constraints, limited inclusion of marginalised groups, and weak teacher preparation—intersect with gender to restrict girls' and women's TVET opportunities (Zickafoose et al., 2024). This manuscript reviews recent evidence on gender inequalities in TVET in SSA and related regions, highlighting mechanisms, regional patterns, and promising interventions.

Gender equity in education is a fundamental human right and crucial for inclusive development. Although girls' enrolment has increased globally, gender disparities still exist in many low- and middle-income countries, especially in post-primary and skills-focused pathways (Psaki et al., 2022; Evans et al., 2021; Baten et al., 2020). TVET is promoted in Africa as a pathway to employability, poverty reduction, and progress towards the Sustainable Development Goals (SDGs); however, women remain under-represented in high-paying technical fields and are often confined to feminised, lower-paid programmes (Joseph et al., 2025; Bray-Collins et al., 2022; Avis, 2024). Existing reviews on girls' education and STEM in Sub-Saharan Africa mainly concentrate on general schooling or higher education, with limited synthesis concerning how TVET systems reproduce or challenge gendered inequalities across countries and programmes (Ojong, 2025; Ojong & Kareem, 2025). Furthermore, recent research indicates that evidence on women's participation in TVET in the Global South is scattered, under-theorised, and lacking rigorous impact evaluations, especially in Sub-Saharan Africa (Bray-Collins et al., 2022; Avis, 2024).

In Sub-Saharan Africa (SSA), broader systemic obstacles to quality education—such as funding shortages, limited inclusion of marginalised groups, and inadequate teacher training—intersect with gender to hinder girls' and women's opportunities in TVET (Zickafoose et al., 2024). While country case studies and regional analyses document specific barriers and promising initiatives (Adams & Baddianaah, 2023; Najoli, 2019; Wignall et al., 2023), there is no recent, region-wide synthesis of evidence post-2019 regarding how institutional structures, socio-cultural norms, psychosocial factors like self-efficacy and social justice awareness, and labour-market linkages influence gendered pathways and outcomes in TVET across SSA (Taiwo et al., 2025; Friderichs et al., 2024). This review aims to fill this gap by systematically mapping recent empirical and review studies on women's involvement in TVET within African contexts, analysing overarching mechanisms and regional trends, and highlighting promising gender-transformative interventions and research priorities. The subsequent sections of this paper are organised as follows: the next part presents the conceptual framework and research methods; it is followed by a synthesis of key themes related to access, participation, and labour-market outcomes; the following sections evaluate evidence on interventions and policy responses; and the concluding segment discusses implications for gender-transformative TVET reforms and future research aligned with SDGs



4 and 5. Although there is literature on general education and women's engagement in TVET globally, specific gender barriers, mechanisms, and interventions in Sub-Saharan Africa remain under-synthesised, fragmented across countries and subsectors, and insufficiently linked to rigorous impact evaluations and African feminist perspectives (Bray-Collins et al., 2022; Avis, 2024).

CONCEPTUAL AND THEORETICAL FRAMEWORK

Gender Equity and Education

Gender equity means not only equal access but also fair treatment, resources, and outcomes for students of all genders. Persistent disparities in enrolment, completion, and field of study reflect structural inequalities rather than individual choice alone (Psaki et al., 2022; Kuteesa et al., 2024). Long-term analyses show that, although women's educational attainment has increased, women often remain less educated than men in contexts with low overall levels of schooling, and that narrowing schooling gaps does not automatically lead to parity in labour force participation (Evans et al., 2021; Baten et al., 2020).

TVET as a Gendered Space

TVET institutions are increasingly recognised as "gendered spaces" in which both formal rules and informal norms shape who participates, which programmes they pursue, and under what conditions (Bray-Collins et al., 2022). Without gender-responsive reforms, TVET risks perpetuating patriarchal "gender regimes", which reinforce occupational segregation and unequal status between men's and women's skills (Joseph et al., 2025; Bray-Collins et al., 2022; Ogwo, 2018).

Intersectionality and Capabilities

Intersectional approaches highlight how gender interacts with poverty, disability, geography, and other axes of inequality to shape educational opportunities (Gandigbe et al., 2025). For example, women and girls with disabilities in NTD-endemic communities face compounded exclusion from training and income-generating activities, requiring tailored vocational interventions (Gandigbe et al., 2025). A capability perspective emphasises expanding women's fundamental freedoms to choose and succeed in technical fields, rather than focusing solely on nominal access.

Intersectional approaches highlight how gender interacts with poverty, disability, geography, and other axes of inequality to influence educational opportunities (Crenshaw, 1989; Collins, 2019; Gandigbe et al., 2025) (Rodriguez et al., 2016; Carastathis, 2014; Diwakar, 2023). For instance, women and girls with disabilities in NTD-endemic communities face heightened exclusion from training and income-generating activities, necessitating tailored vocational interventions (Diwakar, 2023). The capability approach, developed by Sen and further detailed by Nussbaum, redirects focus from formal access or resources to individuals' real freedoms to do and be what they have reason to value, including achieving success in technical and vocational fields (Unterhalter et al., 2022; Akala, 2019). In this review, intersectionality is employed to analyse how overlapping power relations and social positions (e.g., gender, class, disability, rurality) shape women's TVET pathways, while the capability



approach offers a normative framework for assessing how TVET systems either expand or limit women's educational and labour-market capabilities (Diwakar, 2023; Unterhalter et al., 2022; Akala, 2019). Together, an intersectional–capability perspective allows for examination of both the processes that create unequal TVET experiences and the substantive freedoms women gain (or are denied) through TVET participation, moving beyond enrolment parity towards gender-just outcomes in skills, voice, and decent work (Diwakar, 2023; Unterhalter et al., 2022; Woods et al., 2021; Akala, 2019).

METHODOLOGY

This paper employed an integrative literature review focusing on recent evidence (approximately 2018–2025) on gender and TVET in SSA and comparable low- and middle-income contexts. Sources include empirical studies and reviews on barriers to quality education and gender equity in SSA (Zickafoose et al., 2024; Psaki et al., 2022; Baten et al., 2020). TVET-specific studies on gender gaps, institutional practices, and interventions in Africa and other regions (Taiwo et al., 2025; Benshak et al., 2024; Flores et al., 2025; Nganda et al., 2021; Joseph et al., 2025; Bray-Collins et al., 2022; Nganda et al., 2021; Nkala et al., 2024; Avis, 2024; Najoli, 2019). Systematic reviews and long-term analyses of gender gaps in education and girls' schooling interventions (Psaki et al., 2022; Evans et al., 2021). The emphasis is on peer-reviewed articles and high-quality reviews; findings are synthesised thematically.

Review Design and Scope

This study employed a systematic literature review to synthesise recent evidence on gender inequalities in Technical and Vocational Education and Training (TVET) in Sub-Saharan Africa (SSA) and comparable low- and middle-income countries. Unlike a narrow systematic review focused on a single design, the integrative approach allowed the inclusion of quantitative, qualitative, and mixed-methods studies, as well as high-quality reviews, to capture the multidimensional nature of gendered TVET pathways. The review focused on studies published between 1 January 2018 and 31 December 2025, reflecting the period of intensified policy attention to SDGs 4 and 5 and renewed TVET reforms across Africa. The approach is comprehensive but follows systematic procedures for searching, screening, and data extraction. The reporting is guided by PRISMA principles (where relevant) to improve transparency and reproducibility.

Information Sources and Search Strategy

We searched four major bibliographic databases to identify relevant peer-reviewed literature: Scopus, Web of Science Core Collection, ERIC (Education Resources Information Centre) and PubMed (for health-related TVET and skills studies in SSA). To capture regional and policy-oriented work, we also searched African Journals Online (AJOL) and Google Scholar, and consulted targeted organisational repositories (UNESCO-UNEVOC, ILO, World Bank, African Development Bank). The reference lists of included studies and relevant reviews were hand-searched to identify additional articles. Searches were conducted between December 2025 and January 2026. Database-specific search strings combined with controlled vocabulary (where available) and free-text terms. A typical Scopus/Web of



Science query was: (*"technical and vocational education and training" or "TVET" or "vocational education" or "skills training"*) and (*"gender" or "women" or "girls" or "female" or "gender equality" or "gender equity"*) and (*"Sub-Saharan Africa" or "SSA" or "Africa south of the Sahara" or [list of SSA country names]*) and (*"2018" or "2019" or "2020" or "2021" or "2022" or "2023" or "2024" or "2025"*)

In ERIC, the core string was adapted as: (*DE "Vocational Education" or DE "Technical Education" or "TVET"*) and (*gender or girls or women*) and (*"Sub-Saharan Africa" OR [country names]*). Boolean operators, truncation, and proximity operators were adjusted for each database. For Google Scholar and AJOL, simplified combinations such as "TVET" and gender, "Sub-Saharan Africa" and "vocational training" and women, and [country] were used, with screening restricted to the first 200 results sorted by relevance.

Inclusion and Exclusion Criteria

Studies were selected based on predefined criteria.

Inclusion criteria:

- i. Topical focus: Empirical or review studies examining gender, women's or girls' participation, experiences, outcomes, or inequalities in TVET, vocational skills training, or related post-basic skills programmes.
- ii. Geographical scope:
 - a. Conducted in one or more SSA countries, or
 - b. Multi-country studies including SSA with disaggregated or clearly relevant African findings.
- iii. Publication period: 2018–2025 (inclusive), based on year of publication.
- iv. Study type:
 - a. Quantitative (e.g., surveys, administrative data analyses, impact evaluations),
 - b. Qualitative (e.g., interviews, focus groups, ethnographies, case studies),
 - c. Mixed-methods, or
 - d. Systematic or high-quality narrative reviews directly addressing gender and TVET.
- v. Publication type and quality: Articles published in peer-reviewed journals or peer-reviewed edited volumes, and major institutional reports with clearly described methods (e.g., UNESCO, ILO, World Bank).
- vi. Language: Published in English.



Exclusion criteria:

- i. Studies addressing general education or higher education without a clear TVET/vocational component.
- ii. Papers focusing only on gender in general labour markets or entrepreneurship, unless TVET participation or programmes were explicitly analysed.
- iii. Commentaries, opinion pieces, editorials, and conference abstracts without empirical data or systematic review methods.
- iv. Publications prior to 2018 or after 2025, or non-English language articles.
- v. Studies where SSA findings could not be separated from other regions.

Where eligibility was unclear, full texts were retrieved and discussed among reviewers until consensus was reached.

Study Selection Process

All database results were exported into a reference manager (Mendeley), and duplicates were removed. Titles and abstracts were independently screened against the inclusion criteria by two reviewers. Articles judged potentially relevant by either reviewer were taken forward to full-text screening.

Full texts were then independently assessed by the same reviewers using a structured screening form aligned with the inclusion and exclusion criteria outlined above. The study selection process was summarised in a PRISMA-style flow diagram, showing the number of records identified, screened, excluded (with reasons), and included.

Data Extraction and “Structured Data Extraction Templates”

To ensure consistency and transparency, we designed a structured data extraction template in Excel/REDCap/Qualtrics. For each included study, the following information was systematically recorded: Bibliographic details: author(s), year, journal, country/region; Study characteristics: design (cross-sectional, longitudinal, case study, RCT, quasi-experimental, qualitative, mixed-methods), sample size, population (e.g., secondary-level TVET students, apprentices, instructors, policymakers; TVET context: type and level of programme (formal/non-formal, secondary/post-secondary, public/private, sector/field), rural/urban setting; Gender focus: conceptualisation of gender (binary/relational/intersectional), whether girls/women were the primary focus, and whether outcomes were sex-disaggregated; Barriers and mechanisms: reported barriers to access, participation, learning, completion, and transition to work (e.g., financial, institutional, socio-cultural, policy, labour-market); Interventions and policies: description of any gender-focused TVET interventions, programmes, or policy reforms; implementation context; and reported impacts; Outcomes: enrolment, retention/completion, learning outcomes, employment outcomes, earnings, self-efficacy, empowerment, perceptions of fairness and so on; Methodological quality indicators: sampling strategy, measurement of key variables, analytical approach, and limitations noted by authors; Key findings and author conclusions: including any recommendations relevant to gender-transformative TVET reforms.



Quality Appraisal

To evaluate the robustness of the included evidence, we applied basic quality appraisal criteria tailored to each study design. For quantitative studies, we considered sampling strategy, sample size, clarity of outcome measures, control of confounders, and the suitability of analytical methods. For qualitative studies, we assessed clarity of research questions, appropriateness of data collection methods, transparency of analytic procedures, and reflexivity. Review articles were evaluated based on search transparency, selection criteria, and synthesis approach. While these quality assessments influenced the interpretation and weighting of evidence, they did not serve as strict exclusion criteria due to the relatively small and emerging body of literature on gender and TVET in SSA.

Data Synthesis

Given the heterogeneity across countries, TVET systems, outcomes, and study designs, meta-analysis was not feasible. Instead, we employed thematic synthesis and comparative analysis. Extracted data were coded both inductively and deductively.

- Deductive codes reflected a priori categories (institutional arrangements, socio-economic conditions, cultural norms, labour-market linkages, intersectional disadvantages).
- Inductive codes identified emerging themes (e.g., self-efficacy, perceptions of fairness, experiences of harassment, role of mentorship).

Codes were iteratively grouped into higher-order themes and subthemes that described: (1) patterns and mechanisms of gender inequality in TVET; (2) regional and sectoral variations; and (3) characteristics and outcomes of promising interventions. We compared findings across countries, programme types, and methodological traditions to highlight convergences, contradictions, and gaps in the evidence base.

Barriers to Gender Equity in TVET

System-Level Barriers: Funding, Access, and Teacher Preparation

Across the SSA region, progress towards SDG 4 is limited by insufficient funding, unequal resource distribution, and restricted technical capacity for planning and accountability (Zickafoose et al., 2024). Access and inclusion issues—particularly for girls, learners with disabilities, and those in remote areas—undermine quality and equity (Zickafoose et al., 2024; Baten et al., 2020). Teacher shortages, weak pedagogical training, and limited emphasis on gender-responsive education undermine efforts to increase girls' participation in post-primary and TVET pathways (Zickafoose et al., 2024; Psaki et al., 2022).

In Uganda, funding arrangements and privatisation pressures affect the affordability of TVET for disadvantaged groups. A national study found that bursaries, scholarships, increased government grants, and public-private partnerships are central funding avenues for promoting gender equity. However, current provisions remain insufficient and inconsistently gender-sensitive (Nganda et al., 2021).



Strengthening SSA-wide coverage and balancing the Uganda focus

Across Sub-Saharan Africa, progress towards SDG 4 faces challenges due to chronic underfunding, unequal resource allocation, and weak technical capacity for planning and accountability. These issues hinder governments' ability to expand and improve post-primary and TVET systems (Zickafoose et al., 2024; Lewin, 2020). Access and inclusion gaps—especially for girls, learners with disabilities, rural communities, and those in informal settlements—undermine both quality and equity. Financial barriers, poor infrastructure, and information gaps are common across the region (Zickafoose et al., 2024; Benschak et al., 2024; Andiema & Manasi, 2021). Ongoing teacher shortages, low pay, and limited pedagogical and gender-responsive training further undermine the quality of instruction and girls' participation in post-primary and TVET pathways in countries such as Rwanda, Nigeria, and Kenya (Zickafoose et al., 2024; Bvumbwe & Mtshali, 2018; Ojong & Kareem, 2025).

In Uganda, funding arrangements and privatisation pressures influence the affordability and accessibility of TVET for disadvantaged groups; bursaries, scholarships, increased government grants, and public–private partnerships are identified as key funding sources for promoting gender equity. However, current provisions remain inadequate and inconsistently gender-sensitive (Bray-Collins et al., 2022). Similar issues occur elsewhere in SSA. In Nigeria, studies show that women's participation in TVET is limited by scarce financial support, entrenched socio-cultural norms, and inconsistent implementation of gender-sensitive institutional practices, despite TVET's recognised potential for women's economic empowerment (Taiwo et al., 2025; Benschak et al., 2024). In Kenya and South Africa, female under-representation in many TVET programmes, male-dominated teaching staff, and poorly implemented equity initiatives such as Women in Technical Education and Development (WITED) or targeted recruitment strategies suggest that policy commitments to gender equality have yet to translate into fully inclusive practice (Najoli, 2019; Andiema & Manasi, 2021; Nkala et al., 2024; Selane & Odeku, 2024). Collectively, these country cases illustrate how regional structural constraints—such as funding, teacher preparation, and gender-responsive governance—are reflected in specific national TVET systems, justifying an SSA-wide analytical focus on gender and TVET (Bray-Collins et al., 2022; Zickafoose et al., 2024; Avis, 2024).

Institutional Barriers inside TVET Systems

TVET colleges often mirror larger gender norms within their organisational culture, curricula, and support systems. Reviews of African TVET suggest that, without reforms based on an understanding of institutional “gender regimes”, colleges tend to perpetuate patriarchal dynamics rather than challenge them (Bray-Collins et al., 2022).

Empirical work from Uganda highlights factors that restrict gender-conscious participation, including the low perceived status of TVET, limited and uneven use of advocacy strategies, and funding shortages (Nganda et al., 2021). Research from other regions indicates that gender bias can be ingrained in curricula, assessments, and teacher expectations, and that gender-sensitive pedagogy and policy are essential to address these patterns (Benschak et al., 2024; Joseph et al., 2025).



Extensive evidence from the Philippines indicates that overall parity in TVET participation can mask regional gender disparities in certification outcomes; some regions exhibit significant gender gaps, underscoring the need for localised, gender-responsive implementation of national policies (Flores et al., 2025). Evidence from the Philippines shows that apparent national gender parity in TVET participation and certification can conceal significant regional disparities in outcomes: while overall male–female certification rates are nearly equal, some regions record gender differences in pass rates approaching 19 percentage points and attrition rates above 50% from enrolment to certification, demonstrating that equity depends on localised, gender-responsive implementation rather than national averages alone (Flores et al., 2025; Abao et al., 2025).

Social and Economic Barriers

Poverty, food insecurity, and the inability to afford fees and materials continue to restrict girls' access to education in many low- and middle-income countries (Psaki et al., 2022; Zickafoose et al., 2024). In TVET, women in informal settlements lack financial resources for tuition, rely on inadequate infrastructure, and are often unaware of available programmes, resulting in low enrolment rates (Benshak et al., 2024).

A systematic review of girls' education interventions finds strong evidence that financial support (fee reductions and scholarships) and school feeding increase participation. Conversely, evidence on other gender-related barriers (child marriage, SRGBV, lack of safe spaces) remains limited (Psaki et al., 2022). These barriers likely continue to influence the transition to TVET, although this pathway remains under-researched (Avis, 2024).

Cultural Norms, Stereotypes, and Gender Roles

Socio-cultural norms that prioritise boys' education and associate technical work with masculinity remain influential in many African communities (Zickafoose et al., 2024; Kuteesa et al., 2024; Bray-Collins et al., 2022). A review of gender equity in education highlights how cultural and religious norms, gender stereotypes, and expectations regarding women's domestic roles restrict girls' access to STEM fields and non-traditional careers (Kuteesa et al., 2024).

In TVET, cultural stereotypes and a lack of women role models are recognised as significant barriers to women's enrolment and performance in STEM courses in Kenya, even where targeted programmes such as Women in Technical Education and Development (WITED) are in place; the overall success of such initiatives has been limited without structural reforms (Najoli, 2019).

Gendered Patterns of Participation and Outcomes in TVET

Enrolment and Field Segregation

A rapid evidence review of women's participation in TVET across SSA, the Middle East and North Africa, and Southeast Asia finds that women are often concentrated in short, lower-status courses and under-represented in engineering, construction, and advanced technical tracks (Avis, 2024). In many African TVET systems, gender-segregated fields reflect labour-market segregation, with men's programmes more directly linked to higher wages and formal employment (Joseph et al., 2025; Bray-Collins et al., 2022; Avis, 2024).



Assessment, Certification, and Regional Variation

Recent administrative data from the Philippines show near-parity in national TVET certification rates but reveal significant regional variation in gender gaps: some regions demonstrate female advantage, while others show male underperformance, highlighting the complexity of gender patterns across different places and programme types (Flores et al., 2025). Although similar analyses are rare in SSA, this evidence indicates that disaggregated monitoring is essential to identify where and for whom gendered disadvantages continue.

Recent administrative data from the Philippines show near-parity in national TVET certification rates but reveal significant regional variation in gender gaps, with some regions showing female advantage and others marked male underperformance, illustrating how gender patterns shift across places and programme types (Flores et al., 2025). This is explicitly used here as an extrapolative comparison, not as direct evidence for African regional dynamics. Sub-Saharan African research similarly documents that aggregate or national figures mask important spatial and programme-level inequalities: in Kenya, a nine-county study finds stark gender gaps in course enrolment and in core competencies such as literacy, numeracy and digital skills, typically favouring males (Odoni et al., 2020), while county-level work in West Pokot shows that only 45% of enrolled women complete their programmes and that local TVET offerings and staffing patterns skew strongly male (Andiema & Manasi, 2021). South African tracer data further indicate that, despite rising female participation in TVET nationally, women experience substantially higher unemployment and earn 22% less than male completers, with outcomes varying by location and field of study (Friderichs et al., 2024). Taken together, these SSA studies provide a geographically grounded basis for arguing that disaggregated, sub-national monitoring is essential to detect where gendered disadvantages persist, with the Philippines case serving only as a complementary, non-African example that reinforces this point rather than substituting for African evidence (Avis, 2024; Friderichs et al., 2024; Odoni et al., 2020; Flores et al., 2025; Andiema & Manasi, 2021).

Intersectionality: Disability, Location, and Social Position

An intersectional study of people with disabilities in NTD-endemic communities in Benin and Côte d'Ivoire reveals that women face compounded inequities in access to education, training, and income-generating activities, influenced by marital status, income, and occupation (Gandigbe et al., 2025). Vocational training and scholarships are practical parts of tailored interventions that enhance livelihoods and social integration (Gandigbe et al., 2025).

Long-term studies of educational gender gaps in Africa show that rural and poorly connected regions have higher gender inequality. Conversely, areas with strong mission-school legacies and female farming systems have smaller gaps (Baten et al., 2020). These trends likely influence who initially enters the TVET "pipeline".

Mechanisms of Gender Inequality in TVET

Self-Efficacy, Social Justice, and Agency

A Nigerian survey of 250 female TVET students found that self-efficacy, distributive justice (fair distribution of resources), and participatory justice (inclusion in decision-making) significantly and positively predict women's participation and perceived gender equity in



TVET; in contrast, recognition justice alone had no significant effect (Taiwo et al., 2025). This implies that symbolic acknowledgement of women's rights is insufficient without material and participatory changes in institutional practice.

Qualitative work from South Africa shows that Black female TVET students exercise agency and persist, even while juggling domestic labour and academic work; in this case, gender did not appear as a simple barrier to participation, but gendered care responsibilities remained a constraint on capabilities (Nkala et al., 2024).

Advocacy, Information, and Perceptions of TVET

In Uganda, mixed-methods research on TVET advocacy identifies a generally low status for TVET and a moderate, uneven deployment of advocacy strategies; nevertheless, effective advocacy was associated with improved gender equity among students (Nganda et al., 2021). Key strategies include engaging multiple stakeholders, using media, and promoting success stories to reshape perceptions of TVET.

Information gaps also matter. A systematic review of girls' education interventions reports that many programmes do not explicitly address the lack of information on returns to education or on alternative roles for women, despite this being an important barrier to girls' and women's educational choices (Psaki et al., 2022).

Systemic and Policy-Level Dynamics

Comparative policy analysis in Kenya, Rwanda, and Uganda reveals a disconnect between firms' rhetorical commitments to gender equality in education policy and the persistent underrepresentation of women in higher education, particularly in STEM disciplines (Hailu et al., 2023). Similar implementation gaps exist in TVET, where formal gender-equity provisions often lack adequate funding, monitoring, or institutional ownership (Joseph et al., 2025; Bray-Collins et al., 2022; Nganda et al., 2021).

A strategic review of TVET reform in the Global South emphasises that equity and gender responsiveness must be integrated into curriculum modernisation, governance reforms, educator professionalisation, and financing, rather than treated as add-ons (Joseph et al., 2025).

Emerging Interventions and Promising Practices

Financial and Structural Supports

Evidence from general education indicates that scholarships, fee waivers, and school feeding programmes are effective in overcoming key gender-related barriers, particularly the inability to pay fees and the lack of adequate food (Psaki et al., 2022). For TVET, reviews and country case studies emphasise the importance of bursaries, scholarships for women, supportive loan schemes, and public-private partnerships to increase women's access in low-income and informal settlement contexts (Benshak et al., 2024; Nganda et al., 2021; Avis, 2024).

Increasing public TVET budgets, ensuring prompt grant disbursement, and providing slightly higher per-capita support to female students to address specific needs (e.g., sanitary products) are proposed as equity-focused funding strategies in Uganda (Nganda et al., 2021).



Gender-Responsive Pedagogy and Institutional Reform

Addressing gender bias in TVET requires changes in curricula, teaching materials, and daily classroom practices. Evidence from Eastern Europe and Africa indicates that teacher training in gender-responsive pedagogy, inclusive curricula, and the removal of stereotyped content is essential for reducing inequalities (Benshak et al., 2024; Kuteesa et al., 2024; Bray-Collins et al., 2022).

Transforming TVET institutions into gender-responsive spaces involves:

- clear gender policies and anti-harassment procedures;
- recruitment and promotion of women staff in technical departments;
- safe, adequate infrastructure (sanitation, hostels, transport); and
- mechanisms for student voice and participation in governance (Nganda et al., 2021; Joseph et al., 2025; Bray-Collins et al., 2022; Nganda et al., 2021).

Advocacy, Community Engagement, and Role Models

TVET advocacy in Uganda and specific gender programmes in Kenya show that awareness-raising, involving parents and community leaders, and showcasing successful women technicians and engineers can help change norms and encourage girls to consider non-traditional fields (Nganda et al., 2021; Najoli, 2019). However, evaluations of initiatives such as WITED indicate that isolated programmes have limited impact without systemic changes to funding, admissions, and labour market linkages (Najoli, 2019).

Intersectional and Targeted Interventions

Interventions that explicitly tackle intersecting disadvantages—such as disability, poverty, and gender—can enhance TVET-related outcomes. In Benin and Côte d'Ivoire, combining vocational training, medical care, and education scholarships for women and men with disabilities improved livelihoods and decreased self-stigma (Gandigbe et al., 2025). Reviews of STEM education for African girls emphasise the need for intersectional approaches that consider how poverty, rural location, and early marriage intensify gender barriers (Ojong & Kareem, 2025).

DISCUSSION

Recent research deepens understanding of how gender inequalities in TVET are created and maintained across various levels. At the macro level, underfunded education systems, labour market structures, and slow progress towards SDG 4 constrain girls' access to post-primary and TVET pathways. Ongoing gaps in foundational learning, early marriage, and poverty impede girls' progression to upper-secondary and skills-focused routes, while TVET policies often lag behind broader education reforms. At the meso level, TVET institutions function as gendered organisations. Funding models and governance structures tend to favour traditionally male-dominated technical programmes, whereas social sectors and lower-status trades where women predominate receive fewer resources. Curricula, teaching methods, and



assessment practices are often gender-neutral rather than gender-responsive, reinforcing stereotypes about appropriate occupations for women and men. Limited numbers of female instructors and leaders, inadequate facilities such as safe accommodation and sanitation, and weak safeguarding mechanisms further restrict female participation, retention, and advancement. At the micro level, gender norms, self-efficacy, and perceptions of fairness influence young women's goals and choices. Families and communities may view technical trades as unsuitable or unsafe for girls, prioritising boys for training investments. Girls who enrol often juggle domestic responsibilities, caregiving, and schooling, increasing their risk of dropping out. Experiences of harassment, discrimination, and biased classroom interactions can undermine their confidence and sense of belonging in non-traditional fields. Despite growing recognition of these challenges, evidence on effective, TVET-specific gender interventions in sub-Saharan Africa remains limited. Many studies document barriers, but fewer rigorously evaluate multi-component programmes that combine financial support, mentorship, institutional reform, and community engagement. When interventions are implemented, outcomes are highly context-dependent, and there is limited long-term evidence on labour-market transitions and job quality for female TVET graduates. Overall, the literature suggests that addressing gender inequality in TVET requires coordinated action across macro, meso, and micro levels. Policy reforms must be complemented by gender-transformative institutional practices and sustained efforts to change socio-cultural norms. Future research should focus on impact evaluations of integrated interventions, intersectional analyses considering disability, poverty, and rurality, and mixed-methods approaches that capture both quantitative outcomes and girls' lived experiences.

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POLICY AND PRACTICE IMPLICATIONS

- i. Incorporate gender equity into TVET system reform by embedding gender goals in curriculum modernisation, governance, data systems, and financing as part of broader efforts to “future-proof” skills in the Global South (Joseph et al., 2025; Bray-Collins et al., 2022).
- ii. Expand and target financial support (such as scholarships, stipends, and loan schemes) for women and marginalised groups, with clear gender criteria and monitoring (Benshak et al., 2024; Psaki et al., 2022; Nganda et al., 2021; Avis, 2024).
- iii. Enhance gender-responsive pedagogy and institutional cultures through pre- and in-service teacher training, anti-harassment policies, safe infrastructure, and active promotion of women in leadership (Benshak et al., 2024; Nganda et al., 2021; Kuteesa et al., 2024; Bray-Collins et al., 2022).
- iv. Invest in advocacy and awareness initiatives that elevate the status of TVET, challenge gender stereotypes, and provide accurate information on the benefits of technical education for girls and their families (Nganda et al., 2021; Najoli, 2019; Ojong & Kareem, 2025).
- v. Adopt an intersectional approach in TVET policies, recognising the compounded barriers faced by women with disabilities, those in informal settlements, and residents of remote regions (Benshak et al., 2024; Baten et al., 2020; Avis, 2024; Gandigbe et al., 2025; Ojong & Kareem, 2025).
- vi. Enhance data and assessment by gathering sex-disaggregated TVET indicators at regional and programme levels and funding rigorous evaluations of gender-focused TVET initiatives (Psaki et al., 2022; Flores et al., 2025; Avis, 2024).

CONCLUSION

Gender inequalities in TVET in Sub-Saharan Africa stem from complex institutional, social, and cultural factors, which are unified within broader patterns of educational disadvantage. Recent evidence highlights that progress requires system-level reforms, gender-responsive institutions, specific financial and pedagogical support, and intersectional approaches that



focus on the most marginalised groups. Aligning TVET reforms with SDG 4 and SDG 5 can promote fairer skills development, social empowerment, and inclusive economic growth.

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