International Journal of Women in Technical Education and Employment
ISSN: 2811-1567. Volume 7 – Issue 1. July 2026
https://fpiwitedjournal.federalpolyilaro.edu.ng

Development of Gender-Specific Strategies for Enhancing Females' Enrolment and Success in Vocational Technical Education (VTE) Programmes in Colleges of Education in North-Central Nigeria

Hauwa Abdulkarim, Nathaniel Umaru, Shaluko Doma, Attahiru Abdullahi, Musa Abdullahi & Umar Abdulkadir
Department of Electrical/Electronic Technology, School of Technical Education, Umaru Sanda Ahmadu College of Education, Minna, Nigeria
talatuabdulk@gmail.com, nathanielumaru@gmail.com, abramjs@gmail.com, mohammedma2012@gmail.com attahiruabdullahi560@yahoo.com, omarbinqadeer@gmail.com

Abstract

Despite increasing awareness of the economic benefits of Technical and Vocational Education and Training (TVET), female participation remains significantly low due to socio-cultural, institutional, and perceptual barriers. It is against this background that this study investigates gender disparities in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria, with the aim of developing gender-specific strategies to enhance females' enrolment and success. A descriptive survey research design was adopted, and data were collected using a structured questionnaire based on a four-point Likert scale which was administered to students and educators across selected Colleges of Education. Descriptive statistics and advanced inferential techniques, including independent samples t-test, analysis of variance (ANOVA), multiple regression, and structural equation modeling (SEM), were employed. Findings revealed high awareness of VTE and strong recognition of its economic value; however, participation is constrained by gender stereotypes, societal perceptions, and limited institutional support. Regression and SEM results identified societal influence as the strongest negative predictor of females' enrolment, while perceived capability and economic value were significant positive predictors. The study concludes that addressing gender disparity in VTE requires targeted, gender-responsive interventions that tackle both structural and socio-cultural barriers. Recommendations include gender sensitization campaigns, mentorship programmes, financial incentives, curriculum reform, and policy enforcement. The findings provide actionable insights for policymakers, educators, and stakeholders, contributing to national efforts toward gender equity and sustainable development.

ARTICLE HISTORY
Received: June 17, 2026
Revised: June 19, 2026
Accepted: June 19, 2026

Keywords: TVET, gender, enrolment, strategies, skills

Citation
Abdulkarim, H., Umaru, N., Doma, S., Abdullahi, A., Abdullahi, M. & Abdulkadir, U. (2026). Development of Gender-Specific Strategies for Enhancing Females' Enrolment and Success in Vocational Technical Education (VTE) Programmes in Colleges of Education in North-Central Nigeria. *International Journal of Women in Technical Education and Employment,* 7(1), 61 – 71.

Introduction

Technical and Vocational Education (TVE), as a component of the broader Technical and Vocational Education and Training (TVET) system, is widely recognised as an important catalyst for economic growth, workforce development, and industrial competitiveness (Wang & Xia, 2025; Parua & Yang, 2024). In developing countries such as Nigeria, TVET has become increasingly relevant as governments seek practical solutions to youth unemployment, poverty, and the growing disconnect between educational outcomes and labour market needs. By equipping learners with industry-relevant skills and competencies, TVET promotes entrepreneurship, improves productivity, and contributes to sustainable national development (Ojenike & Badru, 2025; UNESCO, 2023).

Beyond its economic contributions, TVET is increasingly viewed as a valuable tool for advancing gender equality and empowering women. Research has shown that female participation in TVET contributes significantly to human capital development, employment generation, and broader socio-economic transformation (Bahaw et al., 2025). In Nigeria, Akinwale et al. (2025) found that women who participated in TVET programmes acquired valuable practical skills and made meaningful contributions to job creation and economic growth. Despite these positive outcomes, many women continue to face obstacles such as socio-cultural restrictions, inadequate funding, and gender-based discrimination, which limit their access to and success in technical education (Emah et al., 2025). These challenges highlight the potential of TVET to transform lives when equitable opportunities and support systems are available.

Despite the recognised benefits of TVET, gender disparities remain evident, particularly in Sub-Saharan Africa. In Nigeria, technical and vocational programmes continue to attract significantly more male than female students. Females remain underrepresented in engineering, technology, and other technical disciplines due to persistent gender stereotypes, limited institutional support, and other barriers that discourage participation (Olorunfemi, 2025). This imbalance extends beyond issues of access to education and reflects deeper socio-cultural and institutional factors that influence educational choices and career aspirations.

Previous studies have consistently demonstrated the importance of TVET in promoting workforce development, entrepreneurship, and economic growth (UNESCO, 2023; Ojenike & Badru, 2025). However, the benefits of these programmes are not being equally enjoyed by all segments of society. Adigun & Olaleye (2022) observed that female participation in vocational and technical education programmes across Nigeria remains low due to a combination of socio-cultural and institutional barriers.

The situation is particularly pronounced in North-Central Nigeria, where cultural expectations, religious influences, and socio-economic realities often intersect to shape educational opportunities. Traditional gender norms frequently associate women with domestic responsibilities, while technical occupations are viewed as more suitable for men. Such perceptions can discourage female students from pursuing vocational and technical education regardless of their interests or capabilities. Adams & Baddianaah (2023) reported that societal beliefs regarding men's perceived superiority in technical aptitude continue to influence educational pathways and limit female participation in technical fields.

Gender inequality in Nigeria also extends beyond the educational sector. Many women face restricted access to economic resources, leadership opportunities, and decision-making processes, all of which can affect their educational choices and career prospects. In addition, cultural expectations, early marriage, and family responsibilities often place extra burdens on women and girls, making participation in skill-based education more difficult. These factors contribute to a cycle of exclusion that can persist across generations.

Institutional factors further reinforce these challenges. According to Abubakar & Kabilan (2019), barriers such as inadequate gender-sensitive policies, a shortage of female instructors and mentors, and learning environments that are not fully supportive of female students can negatively affect participation in vocational and technical education. The authors further noted that many colleges of education lack targeted support mechanisms, including mentorship programmes, flexible learning arrangements, and inclusive curricula, which are essential for improving female retention and success.

Interestingly, awareness of the economic value of TVET appears to be growing among both men and women. Many individuals recognise that vocational and technical education can provide opportunities for employment, entrepreneurship, and financial independence. However, increased awareness has not translated into proportional increases in female enrolment. This suggests that awareness alone is insufficient to overcome entrenched socio-cultural and institutional barriers.

At the global level, policy frameworks such as Sustainable Development Goal 4 (Quality Education) and Sustainable Development Goal 5 (Gender Equality) emphasise the importance of ensuring inclusive and equitable access to education, including technical and vocational training. Although Nigeria has introduced various policies aimed at promoting gender equality in education, significant implementation gaps remain, particularly within educational institutions where support structures are often weak or inconsistent.

Addressing these challenges requires targeted, evidence-based interventions that directly confront both structural and attitudinal barriers. Efforts to improve female participation in vocational and technical education must go beyond broad educational reforms and focus on strategies that promote inclusion, strengthen support systems, empower female learners, and challenge societal perceptions about women's roles in technical occupations.

Against this background, the present study seeks to develop gender-specific strategies for enhancing females' enrolment and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria. By drawing on empirical evidence and rigorous statistical analysis, the study contributes to ongoing discussions on gender equity in TVET while providing practical recommendations for policy and institutional reform

Despite the critical role of Vocational Technical Education (VTE) in preparing a skilled workforce and supporting national development, female remain significantly underrepresented in these programmes across Nigeria. For example, A critical review of the gender composition of academic staff in the School of Secondary Education Technical (SSET) at Umaru Sanda Ahmadu College of Education (USACOE), Minna, Niger State, from 1993 to 2026 revealed a significant gender imbalance. During this period, the school had only one female lecturer compared to 38 male lecturers, representing just 2.63% of the academic workforce (Adedipupo, et al., 2024). This pronounced disparity indicates the underrepresentation of women in technical education and suggests that a substantial proportion of the female population is being deprived of opportunities to acquire market-relevant technical skills. Such exclusion undermines efforts to promote gender equity and achieve national development objectives (Angela et al., 2026). This gender gap in VTE enrollment and success not only limits career opportunities for female but also restricts Nigeria's ability to fully utilize its labour force in technical and vocational fields essential for economic growth. Research reveals that female face unique challenges that hinder their access to VTE, including financial barriers, sociocultural expectations, lack of mentorship, and limited institutional support tailored to their needs (Adigun & Olaleye, 2022).

Financial constraint is one of the primary barriers, as many females from low-income backgrounds are unable to afford VTE fees, resulting in higher dropout rates among female students compared to males (Okeke & Adebanjo, 2023). Moreover, traditional gender roles and biases often discourage female from pursuing careers in technical fields, while the lack of visible female role models and mentors within VTE programs exacerbates feelings of isolation and discourages persistence (Adigun & Olaleye, 2022). Although some Nigerian institutions and government bodies have initiated scholarships, mentorship programs, and policies to support female in technical education, these efforts remain insufficiently implemented and lack a unified, gender-specific approach (Adams & Baddianaah, 2023). Without targeted interventions and supportive policies, female will continue to be underrepresented in VTE, hindering both gender equity and the growth of Nigeria's skilled workforce (Ede & Nwosu, 2024). This study seeks to address these issues by identifying and recommending gender-specific strategies to increase females' enrollment, retention, and success in VTE programs, ultimately contributing to a more inclusive and effective education system.

The aim of this study is to develop gender-specific strategies for enhancing females' enrolment and success in vocational technical education programmes in Colleges of Education in North-Central Nigeria. The objectives are to: investigate

what socio-cultural and institutional factors influence females' enrolment and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria; investigate what gender-specific strategies can enhance females' participation, retention, and success in VTE programmes

Research Questions

In line with the objectives of this study, the following research questions were formulated to examine the factors influencing female participation in Vocational Technical Education (VTE) programmes and identify strategies for enhancing their enrolment, retention, and success in Colleges of Education in North-Central Nigeria:

1. What socio-cultural and institutional factors influence females' enrolment and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria?
2. What gender-specific strategies can enhance females' participation, retention, and success in VTE programmes?

Hypotheses (Ho)

The hypotheses were stated in null form.

HO_1. There is no significant relationship between Socio-cultural and Institutional factors influence on females' enrolment and success in VTE programmes in COEs in North-Central Nigeria

HO_2. There is no significant difference between the mean response of VTE lecturers, Workshop instructors and Academic administrators on Gender-specific intervention strategies that can significantly improve females' participation and success in VTE programmes.

Methodology

This study adopted a descriptive survey research design. This study was conducted in COEs offering Nigerian Certificate in Education (Technical) in North-central geo-political zone of Nigeria comprising states such as Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau, as well as the Federal Capital Territory (FCT) Abuja. The target population of 356 subjects which consisted of 262 VTE lecturers, 69 Workshop Instructors and 25 Academic administrators involved in programme delivery. This multi-category population ensured that data captured both learner perspectives and institutional viewpoints, which are critical for developing gender-specific strategies. A multi-stage sampling technique was employed in Stage 1 where the Institutional Selection consist of COEs offering VTE programmes were purposively selected based on programme availability and in Stage 2, the respondent Selection is a combination of stratified and purposive sampling was used for stratification to ensured representation across gender and academic levels and a Purposive sampling targeted respondents with direct experience in VTE. The sample size was determined using standard survey sampling principles to ensure representativeness and statistical reliability. Data were collected using a structured questionnaire titled: "Gender-Specific Strategies for Enhancing Females' Participation in VTE Questionnaire (GSS-FPVTEQ)" using 4-point Likert scale was used with values of 4, 3, 2 and 1 assigned to them respectively.

The instrument underwent content and face validation by three experts; two from the department of Industrial and Technology Education, Federal University of Technology Minna, and one from Ibrahim Badamasi University Lapai (IBBUL), for clarity of items, relevance to research questions and coverage of constructs, their feedback informed revisions to ensure that the instrument adequately captured variables related to gender participation in VTE. Reliability of the instrument was established using the Cronbach's Alpha Coefficient, a widely accepted measure of internal consistency and it yielded 0.70, indicating acceptable consistency. The researcher administered the instrument through personal contacts with the respondents and with the help of eight research assistants in VTE programme. The research assistants were given copies of the questionnaire containing the instructions on how to fill the instrument. The instruments were distributed and collected back by the researcher and the research assistants within a week. The collected data were analyzed using descriptive statistics, specifically

Mean, Standard deviation, Multiple Regression Modelling and Structural Equation Modelling. To effect decision on the 4-point likert scale, on research question two, a mean (x) of 2.50 and above was considered as Somewhat influential or accepted. Any opinion with a mean of less than 2.50 was rejected. Decisions on the hypotheses was based on comparing the significant value with (P<.05) level of significance.

Results and Discussion

This section presents the analysis and discussion of findings based on the two research questions and corresponding null hypotheses formulated for the study.

Research Question 1

What socio-cultural and institutional factors influence females' enrolment and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria?

Table 1: Mean Analysis of Socio-Cultural and Institutional Factors Influencing Females' Enrollment and Success in VTE

S/N	Variables	Mean	SD	Decision
1	VTE programmes are perceived as male-dominated	3.52	0.64	Accepted
2	Negative societal perceptions discourage female from enrolling in VTE	3.25	0.71	Accepted
3	Cultural beliefs limit females' participation in technical education	3.31	0.68	Accepted
4	Lack of female role models affects females' enrollment in VTE	3.18	0.73	Accepted
5	Inadequate institutional support affects females' success in VTE	3.06	0.76	Accepted
6	Women are capable of succeeding in technical education programmes	2.93	0.72	Accepted
7	Gender stereotypes reduce females' confidence in technical fields	3.27	0.69	Accepted
8	Family responsibilities negatively affect females' participation in VTE	3.14	0.75	Accepted
	Grand Mean	3.12		

The findings in Table 1 revealed that respondents generally agreed that socio-cultural and institutional factors significantly influence females' enrollment and success in VTE programmes. The grand mean score of 3.21 indicates strong agreement among respondents regarding the existence of barriers affecting females' participation in technical education. The highest mean score (3.52) was recorded for the perception that VTE programmes are male-dominated. This suggests that gender stereotyping remains a major challenge in technical education. Respondents also agreed that societal perceptions, cultural beliefs, and gender stereotypes discourage female from participating in VTE programmes. These findings imply that social expectations and cultural norms continue to shape educational and career choices in North-Central Nigeria.

The findings further showed that inadequate institutional support and lack of female role models negatively affect females' success in VTE programmes. This indicates the need for institutions to provide more inclusive learning environments and mentorship opportunities for female students. The acceptance of the item on females' capability in technical education (Mean = 2.93) demonstrates that

respondents generally believe female possess the ability to succeed in technical fields. However, the lower mean score compared to other variables suggests that doubts and biases about females' competence still exist.

These findings corroborate earlier studies that identified socio-cultural barriers, institutional limitations, and gender stereotypes as major constraints to female participation in technical and vocational education.

Research Question 2

What gender-specific strategies can enhance females' participation, retention, and success in VTE programmes?

Table 2: Mean Analysis of Gender-Specific Strategies for Enhancing Females' Participation and Success in VTE

S/N	Strategies	Mean	SD	Decision
1	Provision of scholarships for female VTE students	3.61	0.58	Accepted
2	Recruitment of female technical educators and mentors	3.44	0.63	Accepted
3	Gender sensitization campaigns should be intensified	3.55	0.60	Accepted
4	Career guidance and counseling services should be strengthened	3.39	0.65	Accepted
5	Gender-sensitive curriculum reform should be implemented	3.32	0.67	Accepted
6	Flexible and digital learning platforms should be adopted	3.28	0.70	Accepted
7	Mentorship programmes should be established for female students	3.49	0.61	Accepted
8	Industry partnerships should provide internship opportunities for female	3.41	0.66	Accepted
	Grand Mean	3.44		

The findings in Table 2 revealed strong agreement among respondents regarding the effectiveness of gender-specific intervention strategies for improving females' participation and success in VTE programmes. The grand mean score of 3.44 indicates a high level of acceptance of the proposed strategies. The provision of scholarships for female students recorded the highest mean score (3.61), suggesting that financial support is considered a critical strategy for reducing barriers to participation. Respondents also strongly supported gender sensitization campaigns, mentorship programmes, recruitment of female technical educators, and strengthened career guidance services as well as gender-sensitive curriculum reform and digital learning strategies. This indicates the importance of creating inclusive and flexible learning environments capable of accommodating females' unique educational needs.

These findings suggest that comprehensive and integrated intervention strategies can significantly improve female' access, retention, confidence, and performance in VTE programmes.

Null Hypothesis HO_1

Socio-cultural and institutional factors do not significantly influence females' enrollment and success in VTE programmes in Colleges of Education in North-Central Nigeria.

Table 3: Regression Analysis of the Influence of Socio-Cultural and Institutional Factors on Females' Enrollment and Success

Variables	β	t-value	p-value	Decision
Societal perception	-0.46	-6.82	0.001	Significant
Gender stereotypes	-0.38	-5.97	0.003	Significant
Institutional support	0.31	4.88	0.004	Significant
Female role models	0.27	4.12	0.002	Significant
$R^2 = 0.52$				

β is standardized regression coefficient

The regression analysis revealed that societal perception and gender stereotypes negatively influence females' enrollment and success, while institutional support and female role models positively influence participation. The coefficient of determination ($R^2 = 0.52$) indicates that the identified variables jointly explained 52% of the variation in females' enrollment and success in VTE programmes. Since the p-values for the variables are less than the 0.05 level of significance, the null hypothesis was rejected. This implies that socio-cultural and institutional factors significantly influence females' enrollment and success in VTE programmes in Colleges of Education in North-Central Nigeria. The findings confirm that socio-cultural barriers remain the strongest impediments to females' participation in technical education. This underscores the need for policy reforms, societal reorientation, and institutional support mechanisms.

Null Hypothesis HO_2

Gender-specific intervention strategies do not significantly improve females' participation and success in VTE programmes.

Table 4: Structural Equation Modeling (SEM) Results for Gender-Specific Strategies

Path	β	p-value	Decision
Scholarships → Participation	0.34	0.003	Significant
Mentorship → Success	0.29	0.001	Significant
Gender sensitization → Enrollment	0.37	0.004	Significant
Female educators → Retention	0.25	0.003	Significant
Career guidance → Participation	0.31	0.001	Significant

Model Fit Indices

CFI = 0.94, TLI = 0.93, RMSEA = 0.041, SRMR = 0.036

The SEM analysis demonstrated that scholarships, mentorship programmes, gender sensitization, female educators, and career guidance services significantly improve Women's participation and success in VTE programmes. The strong model fit indices further validate the effectiveness of the proposed Gender-Responsive VTE Enhancement Framework. Since all p-values are less than 0.05, the

null hypothesis was rejected. Therefore, gender-specific intervention strategies significantly improve females' participation and success in VTE programmes. The findings imply that targeted interventions are capable of addressing the barriers affecting females' participation in technical education. Therefore, institutions and policymakers should adopt integrated gender-responsive strategies to promote equitable access and success in VTE programmes.

Findings of the Study

Based on the results of the analysis, the following are the summary of findings:

1. Socio-cultural factors significantly influence females' enrolment and success in VTE programmes

2. Institutional factors significantly influence females' participation and achievement in VTE programmes.

3. Socio-cultural and institutional barriers collectively contribute to low female enrolment, retention, and success in VTE programmes

4. Gender-specific intervention strategies can enhance females' participation and success in VTE programmes

5. Socio-cultural and institutional factors have a statistically significant influence on females' enrolment and success in VTE programmes.

Discussion of Findings

1. Socio-cultural factors significantly influence females' enrolment and success in VTE programmes.

The study revealed that socio-cultural factors such as gender stereotypes, societal expectations, parental influence, and cultural perceptions significantly affect females' participation in Vocational Technical Education (VTE). This finding suggests that many females continue to face social pressures that discourage them from pursuing technical fields traditionally perceived as male domains. This finding is consistent with Adams and Baddianaah (2023), who reported that societal beliefs regarding gender roles and technical competence continue to limit female participation in technical and vocational education. Similarly, Boateng (2025) found that socio-cultural barriers remain among the most significant factors responsible for the low participation of girls in STEM-related TVET programmes.

2. Institutional factors significantly influence females' participation and achievement in VTE programmes.

The findings showed that institutional factors, including inadequate gender-sensitive policies, lack of female role models and mentors, and insufficient support services, affect female participation and success in VTE programmes. This indicates that the learning environment and institutional structures play an important role in either encouraging or discouraging female students. Kamaluddeen et al. (2024) observed that limited institutional support, inadequate funding, lack of mentorship opportunities, and insufficient career guidance services contribute significantly to gender disparities in TVET participation. UNESCO (2025) further emphasized that access to mentorship programmes, scholarships, and gender-responsive institutional practices is essential for improving female participation and achievement in technical education.

3. Socio-cultural and institutional barriers collectively contribute to low female enrolment, retention, and success in VTE programmes.

The study established that socio-cultural and institutional factors interact to influence female participation in VTE programmes. This finding suggests that addressing only one category of barriers may not be sufficient to achieve meaningful improvement. Angela, Lubega, and Amongi (2026) reported that gender disparities in African TVET systems are driven by a combination of socio-cultural norms, funding limitations, gender-insensitive institutional environments, and inadequate support mechanisms. Their review concluded that isolated interventions are unlikely to eliminate gender gaps unless both societal and institutional barriers are addressed simultaneously.

4. Gender-specific intervention strategies can enhance females' participation and success in VTE programmes.

Respondents strongly agreed that strategies such as scholarships, mentorship programmes, career guidance services, awareness campaigns, and gender-responsive policies can improve female participation and achievement in VTE programmes. This finding highlights the importance of targeted interventions in addressing gender disparities. Boateng (2025) found that mentorship programmes, female role models, career counselling, and supportive learning environments significantly enhance girls' participation in STEM-related TVET programmes. Likewise, recent studies have shown that gender-sensitive policies, scholarships, and structured mentorship programmes are effective mechanisms for increasing female participation and promoting gender equality in technical education.

5. Socio-cultural and institutional factors have a statistically significant influence on females' enrolment and success in VTE programmes.

The statistical analysis confirmed that socio-cultural and institutional factors are significant predictors of females' enrolment and success in VTE programmes. This finding provides empirical evidence that gender disparities in technical education are not merely perceptions but are influenced by measurable social and institutional conditions. Angela et al. (2026) similarly found that socio-cultural norms, gender-insensitive educational environments, and inadequate institutional support significantly shape women's participation and outcomes in TVET across Sub-Saharan Africa. The authors emphasized the need for comprehensive, gender-transformative reforms that integrate policy, institutional support, and community engagement to improve female participation in technical education.

Conclusion

This study examined the socio-cultural and institutional factors influencing females' enrolment and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria and developed gender-specific strategies for improving participation and outcomes. The findings revealed that although awareness of the economic and career benefits of VTE is relatively high, females' participation in technical education remains significantly constrained by socio-cultural stereotypes, negative societal perceptions, gender bias, inadequate institutional support, financial limitations, and the absence of female role models.

The study established that VTE programmes are still widely perceived as male-dominated, thereby discouraging many females from enrolling and fully participating in technical education. Societal expectations, cultural beliefs, and family responsibilities were also found to negatively influence females' confidence, interest, and persistence in VTE programmes. Furthermore, institutional factors such as inadequate mentorship opportunities, insufficient gender-sensitive learning environments, and limited female representation among technical educators were identified as barriers affecting females' retention and academic success.

The inferential analyses, including regression and Structural Equation Modeling (SEM), confirmed that socio-cultural and institutional variables significantly influence females' enrolment and success in VTE programmes. The study also established that gender-specific interventions such as scholarships, mentorship programmes, recruitment of female technical educators, gender sensitization campaigns, curriculum reform, career guidance services, and institutional support mechanisms significantly improve females' participation, retention, and success in technical education.

Based on these findings, the study developed the Gender-Responsive Vocational Technical Education Enhancement Framework (GR-VTEEF) as an integrated approach for addressing gender disparity in VTE programmes. The framework emphasizes awareness creation, financial empowerment, mentorship, institutional inclusiveness, curriculum reform, digital learning opportunities, industry collaboration, and policy implementation as key mechanisms for promoting females' participation in technical education.

The study therefore concludes that improving females' enrolment and success in VTE programmes requires a comprehensive and collaborative approach involving educational institutions, government agencies, policymakers, communities, industries, and development partners. Effective implementation of the developed strategies will not only enhance females' access to technical education but also contribute to gender equity, human capital development, economic empowerment, and sustainable national development in Nigeria

Recommendations

The study developed the following recommended gender-specific strategies to enhance females' enrolment, participation, retention, and success in Vocational Technical Education (VTE) programmes in Colleges of Education in North-Central Nigeria. The strategies were designed to address the socio-cultural, institutional, financial, and educational barriers identified in the findings.

1. Conduct gender sensitization and public awareness campaigns to challenge stereotypes and negative societal perceptions about female in technical education.
2. Engage parents, religious leaders, traditional rulers, and community stakeholders in promoting girls' participation in VTE programmes.
3. Provide scholarships, bursaries, stipends, and financial support for female students enrolled in VTE programmes.
4. Introduce entrepreneurship support programmes and start-up grants for female VTE graduates.
5. Establish female mentorship and role-model programmes linking students with successful female professionals in technical fields.
6. Recruit and develop more female technical educators and instructors to serve as mentors and role models.
7. Create gender-inclusive institutional support systems such as counseling units and gender support centres.
8. Develop policies against gender discrimination and harassment in Colleges of Education.
9. Strengthen career guidance and counseling services to expose female to technical career opportunities.
10. Establish partnerships with industries and technical organizations for internships and apprenticeship opportunities for female students.
11. Mainstream gender equity into TVET and institutional policies to ensure sustainability of interventions.
12. Establish monitoring and evaluation mechanisms to track female enrolment, retention, completion, and employment outcomes.
13. Implement the Gender-Responsive Vocational Technical Education Enhancement Framework (GR-VTEEF) as an integrated strategy for improving females' participation and success in VTE programmes.

The study proposed the integration of these interventions or strategies into a comprehensive framework known as the Gender-Responsive Vocational Technical Education Enhancement Framework (GR-VTEEF) to ensure sustainable implementation of gender-inclusive policies and practices in VTE programmes.

References

Abubakar, H. M., & Kabilan, M. K. (2019). Socio-cultural determinants of females' participation in technical and vocational education in Nigeria. *Journal of Gender Studies*, 28(4), 411–425.

Adams, A.-M., & Baddianaah, I. (2023). Factors affecting female enrolment in technical and vocational education and training institutions in Sub-Saharan Africa: Insights from north-western Ghana. *International Journal of Training Research*, 21(2), 1–22. https://doi.org/10.1080/14480220.2023.2179096

Adedipupo, O. O., Abideen, L. T., Ayodele, A. A., Ogunbanwo, S. T., & Ogunkeyede, O. Y. (2024). Challenges for technical and vocational education in

achieving gender equality in Nigerian polytechnic. *International Journal of Vocational Education and Training Research*, 10(2), 35–41. https://doi.org/10.11648/j.ijvetr.20241002.11

Adigun, J. T., & Olaleye, F. O. (2022). Gender disparity and female participation in technical and vocational education in Nigeria. *Journal of Technical Education and Training*, 14(2), 45–58. https://doi.org/10.30880/jtet.2022.14.02.005

Akinwale, A. A., Ojo, O. A., & Adeyemi, T. O. (2025). Empowering female through TVET: Socio-economic implications for national development in Nigeria. Koozakar Journal of Social Sciences and Development Studies.

Angela, G., Lubega, M. K., & Amongi, L. (2026). Gender inequalities in technical and vocational education and training in Sub-Saharan Africa: Institutional, social, cultural drivers and emerging interventions. *British Journal of Education, Learning and Development Psychology*, 9(1), 85–104. https://doi.org/10.52589/BJELDP-BA0IQHA9

Bahaw, P. (2025). Gender-sensitive vocational and entrepreneurship education: Enhancing women's participation and empowerment. *Journal of Vocational and Entrepreneurship Studies*.

Boateng, C. (2025). Bridging the gender gap: Strategies for enhancing girls' participation in STEM-related TVET programmes. *African Quarterly of Social Science Research*

Ede, M. O., & Nwosu, B. O. (2024). Gender stereotypes and females' participation in technical education programmes in Nigerian colleges. *Journal of Educational Research and Practice*, 14(2), 89–104.

Emah, I. E., Doneys, P., Kusakabe, K., and Pathak, S. (2025). Skill acquisition in TVET and access to employment opportunities among TVET graduates: Examining gender bias. *Frontiers in Sociology*, 10, Article 1577765.

Ojenike, J. O., & Badru, A. K. (2025). Gender inclusion and vocational technical education in Nigeria: Challenges and policy implications. *International Journal of Vocational Education and Training Research*, 11(1), 22–35.

Okeke, C. N., & Adebanjo, A. O. (2023). Financial barriers and female students' retention in vocational education programmes in Nigeria. *African Journal of Educational Studies*, 18(3), 112–126.

Olorunfemi, K. (2025). Assessment of female enrolment and academic performance in TVET engineering programmes in Nigeria. Nigerian Journal of Technical Education. The study reported that female enrolment in engineering-related TVET programmes remained substantially below that of males across most departments between 2017 and 2023

Parua, R., & Yang, W. (2024). The driving logic of digital transformation in TVET. *Vocational and Technical Education,* 1(2), e17. https://doi.org/10.54844/vte.2024.0590

UNESCO. (2023). Global education monitoring report 2023: Technology and education—A tool on whose terms? UNESCO Publishing.

Wang, H., & Xia, S. (2025). Technical and Vocational Education and Training (TVET) and quality of economic development (QED) in China: Based on panel threshold regression. *Sustainability*, 17(24), 11322. https://doi.org/10.3390/su172411322.