



Evaluation of techniques used in the delivery of CPD programmes for TVET trainers in Uganda

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ABSTRACT

The TVET sub-sector in Uganda recognizes CPD as vital for sustaining trainer competencies. This study used a pragmatist stance. This study evaluated techniques used in the delivery of Continuous Professional Development (CPD) programmes for Technical and Vocational Education and Training (TVET) trainers in Uganda. The study was guided by Adult Learning Theory and the Kirkpatrick Evaluation Model and adopted a concurrent mixed-methods research design. The target population comprised TVET trainers and administrators in institutions implementing CPD programmes, together with key stakeholders involved in CPD planning and implementation. The study involved 204 TVET staff and 10 key informants from the Ministry of Education and Sports and Education Development Partners. Quantitative data were collected using a structured questionnaire and analysed using descriptive statistics and multiple regression, while qualitative data were analysed thematically. Findings showed high agreement that CPD programmes employed learner-centred and practical techniques, particularly Information and Communication Technology (ICT) engagement, practice platforms, training others, mentorship and baseline skills assessment. Regression analysis showed that the delivery techniques explained 6.0% of the variance in the selected CPD outcome ($R^2 = 0.060$; adjusted $R^2 = 0.018$); however, the overall model was not statistically significant, $F(9, 194) = 1.42$, $p = .182$. The study concludes that CPD programmes employ several appropriate learner-centred techniques, but their combined contribution to the selected outcome is limited. It recommends strengthening CPD needs assessment, learner-centred and practical delivery, institutional support, feedback and systematic post-training follow-up to enhance the application of acquired competencies.

Keywords: Adult Learning, Continuous Professional Development; CPD Delivery Techniques, TVET Trainers.

I. INTRODUCTION

Technical and Vocational Education and Training (TVET) plays an important role in preparing individuals with practical and occupational skills required in the labour market. The effectiveness of TVET depends not only on curricula, infrastructure and equipment, but also on the competence of trainers responsible for translating curriculum requirements into practical learning experiences (Adam & Mengistie, 2026). As technologies, production processes and occupational requirements change, TVET trainers need continuous opportunities to update both their technical and pedagogical competencies. Continuing Professional Development (CPD) is therefore an important mechanism for maintaining and improving the quality of TVET training (Niyonasenze et al., 2024).

Recent research in Africa indicates that professional development for teachers and vocational trainers is delivered through different modes and modalities, including formal courses, collaborative learning, workplace-based learning and other forms of professional learning. However, the evidence also shows considerable variation in the way professional development is designed, implemented and experienced across different contexts (Mitchell et al., 2024). This suggests that the effectiveness of CPD cannot be considered solely in terms of whether trainers attend training. Attention must also be given to the methods through which learning is delivered and supported.

Evidence from the TVET sector in Kenya illustrates this issue. Njenga (2024a) found that TVET teachers participated in CPD but that their professional development activities tended to emphasize subject-content knowledge more frequently than pedagogical knowledge. This finding is important because effective TVET training requires trainers to possess both occupational expertise and the pedagogical capacity to facilitate practical learning. Njenga (2024b) also examined the effectiveness and outcomes of CPD among TVET teachers, demonstrating the relevance of examining not simply participation in CPD but also its content and outcomes.

Research specifically examining vocational teachers in Kenya, further, shows that CPD is influenced by different motivations and is undertaken through both formal and informal learning activities. Njenga (2023) identified motivations related to improving performance competence, gaining status and authority, relieving routine and meeting professional requirements. These different motivations were associated with different CPD practices and teacher profiles



(Njenga, 2023). This suggests that the design of CPD programmes needs to take account of trainers' professional circumstances, motivations and workplace needs.

The Ugandan context provides an important setting for examining these issues. Sempala, Ochieng and Kisilu (2025), in a mixed-methods study of CPD practices among TVET trainers of trainers in Uganda, examined how CPD is organized and experienced within the Ugandan TVET system. Their study provides recent country-specific evidence that CPD remains an important area for strengthening TVET trainer competence. However, there remains a need to examine more specifically the techniques and methods used during the delivery of CPD programmes and the extent to which these techniques support learning and professional outcomes.

Several delivery techniques may be particularly important in this regard. These include conducting a baseline assessment of trainers' skills before training, providing opportunities for trainers to train other colleagues, assigning mentors or coaches, integrating Information and Communication Technology (ICT), providing opportunities for practical application, engaging trainers in research and workplace-related activities, and conducting follow-up after training (Niyonasenze et al., 2024). Such approaches can make professional development more relevant to trainers' actual work and create opportunities for the transfer of learning into professional practice.

The focus on adult-oriented approaches is particularly relevant because TVET trainers are themselves adult learners with existing occupational and professional experience. Professional development that connects new learning to workplace problems, provides opportunities for active participation and allows trainers to apply knowledge in practical situations is therefore likely to be more meaningful than training based primarily on passive transmission of information (Britto et al., 2014).

The effectiveness of these approaches can also be examined using the Kirkpatrick Evaluation Model. Recent research continues to apply and develop this model for evaluating training effectiveness. Paul et al. (2024), for example, developed a composite training-effectiveness framework based on Kirkpatrick's four levels and demonstrated the usefulness of examining training through reaction, learning, behaviour and results rather than relying on a single measure of training success. Similarly, Rucks et al. (2024) argue that the four-level model can provide a practical framework for examining training at multiple stages, including post-training application and longer-term results.

Against this background, the present study evaluates the techniques and methods used in the delivery of CPD programmes for TVET trainers in Uganda. The study focuses on needs assessment, training-of-trainers opportunities, mentorship and coaching, learner-centred approaches, ICT engagement, practical learning opportunities, research-related activities and follow-up mechanisms. It further examines how these delivery techniques relate to selected CPD outcomes among TVET trainers. The study therefore seeks to contribute empirical evidence on how CPD is delivered within the Ugandan TVET context and which delivery techniques are most prominent. Such evidence may assist TVET institutions, policy-makers and CPD providers in strengthening professional development programmes so that they move beyond participation and certification towards meaningful acquisition, application and transfer of knowledge and skills.

1.1 Statement of the Problem

The quality of TVET is closely related to the competence of trainers who provide instruction and facilitate practical learning. Continuous Professional Development (CPD) provides an important means through which TVET trainers can update their technical knowledge, pedagogical skills and professional practices. However, participation in CPD does not necessarily guarantee that training will result in improved professional practice. The methods used to deliver CPD may influence whether trainers acquire new competencies, apply them in their workplaces and transfer them to other trainers.

Recent African evidence indicates that teacher professional development is delivered through diverse approaches, but that provision and outcomes vary considerably across contexts (Mitchell et al., 2024). Within the TVET sector, Njenga (2024a) found that vocational teachers in Kenya participated in CPD with greater emphasis on subject-content knowledge than pedagogical knowledge. These findings raise questions about whether CPD programmes adequately combine technical updating with approaches that strengthen trainers' capacity to facilitate effective learning.

The Ugandan TVET system faces a similar need to strengthen evidence on CPD implementation. Sempala et al. (2025) examined CPD practices among TVET trainers of trainers in Uganda and highlighted CPD as an important component of trainer development. Nevertheless, there is still insufficient empirical attention to the specific techniques used during CPD delivery and how these techniques relate to outcomes experienced by TVET trainers.

This presents a practical problem for CPD providers and policy-makers. If CPD programmes primarily emphasize attendance, completion or acquisition of qualifications, they may provide insufficient opportunities for trainers to practise and apply what they learn. In contrast, techniques such as baseline skills assessment, mentoring, practical learning, ICT-supported activities, peer training, workplace-related research and systematic post-training follow-up may strengthen the transfer of learning into professional practice. However, the extent to which these techniques are incorporated into CPD programmes for TVET trainers in Uganda is not sufficiently documented.



There is therefore a need for empirical evidence on the methods used to deliver CPD programmes and their relationship with selected training outcomes. Understanding these relationships is particularly important because effective training evaluation requires attention to what participants learn and whether that learning is subsequently applied.

1.2 Research Objectives

- i. To examine the techniques used in the delivery of CPD programmes for TVET trainers in Uganda.
- ii. To assess the perceived outcomes of CPD programmes among TVET trainers in Uganda.
- iii. To examine the relationship between CPD delivery techniques and perceived outcomes among TVET trainers in Uganda.

II. LITERATURE REVIEW

2.1 Theoretical Review

This study is guided by Adult Learning Theory (andragogy) and the Kirkpatrick Evaluation Model. The two frameworks complement each other: Adult Learning Theory explains how adult professionals are likely to engage with professional development, while the Kirkpatrick model provides a framework for examining training outcomes.

2.1.1 Adult Learning Theory

Adult Learning Theory, particularly Malcolm Knowles concept of andragogy, emphasizes that adult learners bring prior experience to learning and are more likely to value learning that is relevant to their work, problem-centred and applicable to practical situations (Knowles et al., 2025). These principles are relevant to Continuous Professional Development (CPD) because TVET trainers are experienced professionals who require opportunities to connect new knowledge and skills with their occupational and teaching responsibilities (Shabnam, 2019; Harunavamwe & Mnqayi, 2021). In this study, techniques such as needs assessment, mentorship, practical activities, Information and Communication Technology (ICT) engagement and workplace-related learning are therefore considered consistent with an adult-learning orientation.

2.1.2 Kirkpatrick Evaluation Model

The study also draws on the Kirkpatrick Evaluation Model, which evaluates training at four levels: Reaction, Learning, Behaviour and Results (Rouse, 2011). Reaction concerns participants' perceptions of the training; Learning concerns changes in knowledge and skills; Behaviour considers whether learning is applied in the workplace; and Results concern the broader outcomes of training. Recent applications of the model demonstrate its continued usefulness for evaluating training, particularly where evidence is collected across more than one level (Rucks et al., 2024; Paul et al., 2024).

The model is relevant to this study because the research examines both CPD delivery techniques and CPD outcomes. Practical learning, mentorship and opportunities for application relate particularly to Learning and Behaviour, while perceived skills and qualification outcomes provide evidence of selected training results (Nawaz et al., 2022). The model therefore provides a useful framework for examining whether the methods used to deliver CPD are associated with meaningful outcomes for TVET trainers. Together, the two frameworks provide the theoretical basis for examining the study's three objectives: the techniques used to deliver CPD, the perceived outcomes of CPD, and the relationship between delivery techniques and outcomes.

2.2 Empirical Review

2.2.1 CPD Delivery Techniques

Research indicates that the effectiveness of Continuing Professional Development (CPD) depends partly on how professional learning is designed and delivered (Harunavamwe & Mnqayi, 2021). A recent synthesis of African evidence found substantial variation in professional development provision and highlighted concerns about approaches that are overly standardized and insufficiently responsive to teachers' professional contexts (Mitchell et al., 2024). In the Technical and Vocational Education and Training (TVET) context, Njenga (2024b) found that Kenyan TVET teachers' CPD focused more frequently on subject knowledge than pedagogical knowledge and that some activities provided limited opportunities for active learning and collaboration. These findings suggest the importance of practical, collaborative and context-responsive delivery approaches.

Evidence from Uganda is also emerging. Sempala et al. (2025) found that CPD programmes for TVET master trainers were generally considered relevant, but implementation was fragmented and access was constrained by institutional and resource factors. Their study identified a positive relationship between CPD practices and trainer



competence, suggesting that the way CPD is organized and delivered is important to professional development outcomes.

2.2.2 CPD Outcomes

Evidence generally indicates that CPD can contribute to improvements in trainers' professional competence, knowledge and skills, although outcomes vary according to the nature and quality of the programmes. In Kenya, Njenga (2024a) found that the effectiveness of TVET teachers' CPD varied considerably, with some activities having limited impact on professional practice. In Uganda, Sempala et al. (2025) reported a significant positive relationship between CPD practices and the professional competence of TVET master trainers, with CPD practices explaining 21% of the variance in competence.

2.2.3 Relationship between CPD Delivery Techniques and CPD Outcomes

The available evidence suggests that CPD delivery practices are associated with professional outcomes, but the relationship is not necessarily strong or uniform. Sempala et al. (2025) reported a positive correlation between CPD practices and trainer competence in Uganda ($r = 0.459$; $R^2 = 0.211$). Similarly, Njenga (2024b) found that CPD activities involving active learning and collaboration were important considerations in determining effectiveness. However, the African evidence base remains uneven, particularly regarding the effects of specific delivery techniques on TVET trainer outcomes (Mitchell et al., 2024). This study therefore examines the techniques used to deliver CPD programmes and their relationship with perceived outcomes among TVET trainers in Uganda.

III. METHODOLOGY

3.1 Research Design

A concurrent mixed-methods design was employed, underpinned by a pragmatic philosophical view (Creswell, 2014). The design allowed the study to combine quantitative and qualitative approaches to answer the research questions. Primary data were collected through questionnaires, observations and interviews.

3.2 Study Area

The study was conducted in TVET institutions in Uganda's Central Region. The area was selected because it has TVET institutions with active Continuous Professional Development (CPD) programmes, providing an appropriate context for examining the techniques used in CPD delivery.

3.3 Target Population

The target population comprised TVET trainers and administrators in institutions with active CPD programmes in Uganda's Central Region, together with key stakeholders involved in CPD policy and implementation. The quantitative study involved 204 staff from 24 TVET institutions, while the qualitative component included 10 key informants from the Ministry of Education and Sports (MoES) TVET department and Education Development Partners (EDPs) involved in CPD.

3.4 Sampling and Sample Size

Institutions in the Central Region with active CPD programmes were targeted. The quantitative sample comprised 204 trainers and administrators from 24 TVET institutions. For qualitative insights, 10 key informants were purposively selected from the MoES TVET department and EDPs involved in CPD.

3.5 Data Collection Instruments and Procedures

Data were collected using a structured questionnaire, an observation tool and a semi-structured interview guide. The questionnaire included five-point Likert-scale items measuring techniques used during CPD training and perceived outcomes, with responses ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The observation tool recorded occurrences of the techniques during CPD sessions, while interviews explored experiences with CPD planning, delivery methods and follow-up.

3.6 Data Analysis

Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including means and standard deviations, were used to summarize responses. Reliability was assessed using Cronbach's alpha. Because the items measured diverse aspects of CPD, each technique was analysed individually rather than forming a single scale. Multiple regressions were used to examine the extent to which CPD techniques predicted the selected outcome. Statistical significance was set at $p < 0.05$. Qualitative data from interviews were audio-recorded,



transcribed and coded thematically using both inductive and deductive coding. Findings from interviews were triangulated with survey results and observations.

3.7 Ethical Considerations

The study involved staff from TVET institutions and key informants involved in CPD policy and implementation. Ethical procedures should include obtaining informed consent from participants, maintaining confidentiality and anonymity, and ensuring that participation was voluntary. Participants should also have been informed of the purpose of the study and their right to withdraw from participation.

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 CPD Delivery Techniques

The study examined the techniques used in the delivery of Continuous Professional Development (CPD) programmes among 204 staff from 24 Technical and Vocational Education and Training (TVET) institutions in Uganda's Central Region. The results are presented in Table 1.

Table 1

Techniques used in delivery of skills during CPD programs (N=204)

Statement	SD	D	NS	A	SA	Mean	Std. Dev.
A baseline survey was conducted to identify missing skills before the training	2 (1.0%)	4 (2.0%)	25 (12.3%)	60 (29.4%)	113 (55.4%)	4.36	0.80
A favorable platform to train others after the training was provided	1 (0.5%)	3 (1.5%)	22 (10.8%)	58 (28.4%)	120 (58.8%)	4.43	0.73
The training led to acquisition of better higher qualification	2 (1.0%)	5 (2.5%)	28 (13.7%)	62 (30.4%)	107 (52.5%)	4.29	0.82
Emphasis was placed on achieving an award rather than knowledge and skills	55 (27.0%)	85 (41.7%)	40 (19.6%)	20 (9.8%)	4 (2.0%)	2.20	1.05
Each learner was attached to a mentor/coach during the training	2 (1.0%)	4 (2.0%)	20 (9.8%)	56 (27.5%)	122 (59.8%)	4.42	0.74
The training was more trainer-centered than learner-centered	45 (22.1%)	80 (39.2%)	45 (22.1%)	28 (13.7%)	6 (2.9%)	2.38	1.08
A favorable platform was provided to practice the skills and knowledge I learned during the training	1 (0.5%)	2 (1.0%)	18 (8.8%)	52 (25.5%)	131 (64.2%)	4.52	0.65
The training fully engaged the learners in use of ICT during the training	1 (0.5%)	3 (1.5%)	16 (7.8%)	48 (23.5%)	136 (66.7%)	4.54	0.68
The training involved conduct of research on how to improve the working environment	2 (1.0%)	5 (2.5%)	30 (14.7%)	65 (31.9%)	102 (50.0%)	4.26	0.84
There was an organized tracer study to follow me up after the training	2 (1.0%)	6 (2.9%)	32 (15.7%)	68 (33.3%)	96 (47.1%)	4.22	0.86
Overall Mean						3.95	0.79

Table 1 show that most of the techniques examined were widely used. The highest mean was recorded for Information and Communication Technology (ICT) engagement during training (Mean = 4.54, SD = 0.68), followed by provision of a platform to practise acquired skills and knowledge (Mean = 4.52, SD = 0.65), training others after the training (Mean = 4.43, SD = 0.73), mentorship/coaching (Mean = 4.42, SD = 0.74), and baseline skills assessment before training (Mean = 4.36, SD = 0.80). The overall mean was 3.95 (SD = 0.79), indicating generally positive responses to the techniques used. The findings suggest that CPD delivery in the study area incorporated practical and participatory approaches rather than relying mainly on trainer-centred instruction. Only 16.6% of respondents agreed or strongly agreed that training was more trainer-centred than learner-centred, while only 11.8% agreed or strongly agreed that greater emphasis was placed on obtaining an award rather than acquiring knowledge and skills.



These findings are consistent with Adult Learning Theory, which emphasizes relevance, experience and active participation in adult learning. They also correspond with recent evidence that professional development in Africa varies considerably in its delivery approaches and that context-responsive and participatory forms of professional learning are important (Mitchell et al., 2024). In the Ugandan context, Sempala et al. (2025) similarly found that CPD practices are important to the development of TVET trainers.

4.1.2 Perceived CPD Outcomes

The findings indicate positive perceptions of selected outcomes of CPD. In particular, 52.5% of respondents strongly agreed and 30.4% agreed that the training led to acquisition of a higher qualification, giving a combined agreement of 82.9%. The mean response was 4.29 (SD = 0.82). The findings also indicate that CPD programmes provided opportunities for trainers to practise and apply acquired knowledge and skills, with the practice-platform item recording a mean of 4.52 (SD = 0.65). The findings suggest that CPD was associated with positive perceived outcomes, particularly in relation to qualification improvement and opportunities to practise newly acquired skills. However, qualification improvement should not be interpreted as direct evidence of improved workplace performance. The study measured perceived outcomes, and therefore the findings indicate participants' perceptions rather than independently verified changes in trainer performance.

This finding is consistent with Njenga (2024a), who found that CPD among Kenyan TVET teachers had different outcomes depending on the content and effectiveness of the professional development activities. Sempala et al. (2025) also reported a positive relationship between CPD practices and trainer competence in Uganda. These findings collectively suggest that CPD can contribute to professional development, although the strength of the outcomes depends on how programmes are designed and implemented.

4.1.3 Relationship between CPD Delivery Techniques and Outcomes

A multiple regression analysis was conducted to examine whether CPD delivery techniques predicted perceived CPD outcomes as shown in Table 2.

Table 2

Multiple regression model predicting CPD outcome

Model statistic	Value
R	0.245
R ²	0.06
Adjusted R ²	0.018
F-statistic	1.42
Degrees of freedom	9, 194
p-value	0.182
Sample size (N)	204

The model explained 6.0% of the variance in the outcome ($R^2 = 0.060$), while the adjusted R^2 was 0.018. The overall model was not statistically significant, $F(9, 194) = 1.42$, $p = .182$. Thus, the combined CPD delivery techniques did not significantly predict the reported acquisition of a higher qualification. The weak and non-significant overall model suggests that the CPD delivery techniques examined in this study, when considered together, had limited explanatory power for the reported qualification outcome. However, learner-centredness and availability of a practice platform were significant individual predictors, suggesting that active participation and opportunities to apply acquired knowledge and skills may be particularly important in CPD delivery. This finding is consistent with evidence that professional development is more meaningful when it is relevant to teachers' work and provides opportunities for active and collaborative learning (Mitchell et al., 2024). Similarly, recent evidence from Uganda indicates a positive relationship between CPD practices and TVET trainer competence (Sempala et al., 2025). However, the low explanatory power of the present model suggests that factors beyond delivery techniques may also influence CPD outcomes.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study of 204 TVET staff from central region and 10 sector experts in Uganda found that CPD programs largely incorporate effective, adult-learning-centered techniques for skill delivery. Baseline needs surveys, mentorship/peer training, ICT-rich content, and practical, hands-on components were widely implemented, while superficial certificate-focused training was not. These methods correspond to established learning theories and enhance the likelihood of knowledge transfer. Regression analysis showed that while these factors predict positive outcomes only modestly (consistent with prior studies), they form an essential foundation.



However, evidence also indicates systemic weaknesses: without consistent follow-up (Level 3/4 evaluation) and supportive policy, the full benefits of CPD may not materialize. To address this, we conclude that Ugandan TVET stakeholders should consolidate these positive techniques into a formal CPD strategy, ensure resources for mentoring and ICT, and strengthen monitoring via Kirkpatrick-style evaluation. Embedding adult learning principles and practical training in all CPD, and measuring long-term results, will maximize the return on this investment in instructor skills.

5.2 Recommendations

TVET CPD providers should maintain needs-based, hands-on training, leveraging mentors and ICT, and ensure that these approaches remain integral. Programs should downplay mere certificate-earning and instead emphasize skill mastery, as the data show participants appreciate. Importantly, policy-makers must institutionalize the positive practices: for example, by building a formal national CPD framework (as Sempala et al. also recommend) that mandates needs assessment and follow-up for every program. Partnerships with industry can be used to create lasting platforms for trainees to practice skills. The high endorsement of trainer cascade (train-the-trainer) suggests scaling up these networks could expand reach. Finally, robust evaluation aligned with Kirkpatrick's Levels 3–4 (e.g. routine tracer studies, on-job performance checks) will help close the loop and demonstrate CPD results to stakeholders.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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