

EFFECTS OF CAREER TRAINING INTERVENTION ON ELECTRONICS TECHNOLOGY EDUCATION PRE-SERVICE TEACHERS' MOTIVATION AND ENGAGEMENT IN PSYCHOMOTOR SKILL ACQUISITION: AN EXPLORATION OF FITTS AND POSNER TRAINING MODEL

Ejaita Duke Akpokiniovo¹, and Theresa Chinyere Ogbuanya²

¹ Department of Industrial Technical Education, University of Nigeria, Nsukka.

Ejaita.akpokiniovo@unn.edu.ng; +2348062388512

<http://orcid.org/0000-0003-3822-6155>

² Senior Fellow, School of Education Studies, Faculty of Education, University of Free State, Bloemfontein, South Africa.

Chinyere.ogbuanya@unn.edu.ng

<http://orcid.org/0000-0002-1656-0147>

Abstract

This study examines the effects of a career training intervention model based on Fitts and Posner's stages of skill acquisition on the motivation and engagement of electronics technology pre-service teachers in South-South, Nigeria. The intervention aimed to enhance psychomotor skill acquisition through structured training sessions over 15 weeks. Using a quasi-experimental design, 130 pre-service teachers participated in the study, with data collected via surveys and performance assessments. Paired t-tests, Analysis of Covariance (ANCOVA), and Multivariate Analysis of Variance (MANOVA) were employed to analyze the data collected. Results indicated significant improvements in both motivation, engagement and psychomotor skill acquisition, post-intervention. These findings suggest that integrating Fitts and Posner's model into teacher training programs can significantly benefit skill acquisition and overall teaching efficacy. Thus, the study contributed significantly to the literature.

Keywords: Career training, Pre-service teachers, Motivation, Engagement, Psychomotor Skills

Introduction

The acquisition of psychomotor skills is crucial for electronics technology pre-service teachers, as these skills directly impact their teaching effectiveness and professional competence. Despite the importance of these skills, many pre-service teachers in South-South Nigeria face challenges in mastering them due to inadequate training programs that fail to engage and motivate learners (Obioha, 2016). To address this issue, this study investigates the impact of a career training intervention model based on Fitts and Posner's (1967) stages of skill acquisition.

Several studies have highlighted the importance of structured training programs in enhancing psychomotor skills. For instance, Johnson et al. (2015) found that targeted training interventions significantly improved skill acquisition in medical students. Similarly, a study by

Wang and Zhu (2017) demonstrated that motivation and engagement are critical factors influencing the effectiveness of skill training programs. While these studies provide valuable insights, there is limited research focusing on the application of Fitts and Posner's model in the context of electronics technology education in Nigeria. Moreover, the unique cultural and educational dynamics in South-South Nigeria necessitate tailored research to address specific challenges faced by pre-service teachers in this region. This study aims to fill this gap by investigating the effects of a career training intervention model based on Fitts and Posner's stages of skill acquisition on the motivation and engagement of electronics technology pre-service teachers in South-South Nigeria, specifically in the context of psychomotor skill acquisition.

1.2 Literatures

Pre-service teachers

Students in a teacher education program are called pre-service teachers. Pre-service teachers are students who are in the process of becoming professional teachers (Keollner & Greenblatt, 2021). Pre-service teachers are a set of individuals engaged in a structured program or activity aimed at developing or reinforcing knowledge and skills before they enter into the teaching profession (WHO, 2014). In this study, Pre-service teachers is conceptualized as apprentice-teachers in teacher education programs engaged in career training geared toward becoming a professional teacher. Pre-service teachers are those who are in a teacher education program in order to pursue teaching credentials in public schools or private sectors domestically or internationally (Lee, 2015). In other words, they are career teachers in training.

Pre-service teachers' success in their chosen career upon graduation could be largely dependent on the quality of career training intervention they received. Career training intervention is defined as the acquisition of knowledge, skills and attitude (Maduabum, 1996:4; Maduabum, 1996; Reilly, 1999) required to perform a given task or job and help the person to be more effective in the performance of a specific job. In the context of this study, career training is operationalized as intervention or treatment intended to boost performance of individuals, guide individuals' career development and career decision making, intrinsically motivate the individual and lead to engagement in their chosen career. In their summation, Thorne and Mackey (2007) stated that career training is job enhancement and employment training scheme. Career training based on skill acquisition model is meant to among other things help in motivation and proper engagement of students (Stone & Lewis, 2012; Kemple

& Scott-Clayton, 2004; Kemple & Snipes, 2000; Kemple & Willner, 2008) in course of their career training program. In Nigeria, previous studies (e.g., Ekong & Ekong 2016) have shown that Pre-service teachers of Electronic Technology Education are not fully motivated to engage in psychomotor activities. We therefore argue that the seemingly lack of motivation to engage in psychomotor activities could be the result effect of a poor pedagogical approach or inadequate career training intervention.

Motivation

Motivation is the impetus that propel individuals or persons to willingly engage in an activity and how hard they prepare to make effort (Dornyei, 2001; Ismail 2014). Motivation arouses interest, enthusiasm and regulate the individual behavior in order to perform different tasks with interest for the attainment of particular goals (Maimoona & Fauzia, 2013). Motivation in the context of education refers to the internal and external factors that stimulate a student's desire and energy to be continually interested and committed to their studies, and to attain a goal. According to Wigfield and Eccles (2000), motivation is influenced by the expectation of success and the value attached to the task. This means that If ETE students believe they can successfully acquire psychomotor skills and see the value in these skills for their future careers, their motivation to engage in psychomotor skill acquisition would be higher. In the theory of self-determination, Ryan and Deci (2000) argued that students engage in an activity because it's inherently interesting and or because there is an external pressure or rewards. This implies that ETE students might exhibit higher levels of motivation when they find engagement in psychomotor skill acquisition intrinsically interesting or relevant to their future careers. However, available data showed that many ETE students face demotivation due to outdated curricular, lack of hands-on training intervention that is based on a training model (National Center for Education Statistics, 2019). Previous studies on motivation (e.g., Orji & Ogbuanya, 2020; Wurf & Croft-Pigging, 2014; Inayat & Ali, 2020; Ogbuanya & Afeez, 2019; & Van Nuland et al., 2010) found that problem-based learning, emotional intelligence, structured and targeted learning can improve student's motivation. However, their studies did not explore the intricate relationship between motivation and career training intervention based on a skill acquisition model.

Engagement

Engagement in education refers to the level of interest, curiosity, and involvement that students show towards their learning and school activities. It's a multi-dimensional construct

involving behavioural, emotional, and cognitive components (Pithway, 2012). Behavioural engagement involves ETE students' participation in academic, social, and extracurricular activities. It includes behaviors such as attending classes, completing assignments, and participating in school-related activities (Fredricks et al., 2004). Thus, we infer that behavioral engagement might be reflected in ETE student's participation in laboratory/Workshop activities, group projects, and consistent attendance to classes. Emotional engagement refers to ETE students' expressive reactions in the classroom and school, such as interest, boredom, happiness, sadness, and anxiety (Finn & Zimmer, 2012). In other words, ETE students' emotional engagement can be seen in their enthusiasm for hands-on projects and their emotional responses to the successes and challenges they encounter in skill acquisition. Cognitive engagement involves ETE students' investment in learning and the willingness to exert the effort necessary to comprehend complex ideas and master difficult skills (Fredricks et al., 2004). This means ETE students show cognitive engagement when they make efforts to understand technical concepts, solve complex problems, and apply their knowledge to practical situations. A cursory look at the current state of ETE students' engagement show that ETE students often face disengagement which could be due to monotonous teaching methods, lack of relevance in the curriculum, and insufficient practical experience (National Research Council, 2012). Previous studies (e.g., Martin, 2008; Tinto, 2012; Orji & Ogbuanya, 2020 & Prince, 2004) found that self-complete learning, supportive learning environments and problem-based learning significantly enhanced students' engagement. However, their studies did not consider the possibility of boosting students' engagement with career training intervention based on skill acquisition model.

Career training and Psychomotor Skills Acquisition

Career training is job enhancement and employment training scheme (Thorne & Mackey, 2007). Career training based on skill acquisition model is meant to among other things help in motivation and proper engagement of students (Stone and Lewis, 2012; Kemple and Scott-Clayton, 2004; Kemple and Snipes, 2000; Kemple and Willner, 2008) in course of their career training program. Contextually, career training is operationalized as intervention or treatment intended to boost Preservice teachers' performance in terms of motivation and engagement in psychomotor skill acquisition. Psychomotor skill acquisition refers to the process of learning skills that require both mental and physical activities. This involves the integration of cognitive functions with physical movement. Psychomotor skill acquisition is a taxonomy that outlines the progression from observing and imitating actions to mastering and

adapting skills (Simpson, 1972). It means that Preservice teachers would acquire psychomotor skills better if they progress from basic tasks like handling tools (perception and set) to more complex skills such as building and troubleshooting electronic circuits (mechanism and complex overt response). It is anticipated that preservice teachers upon graduation are well equipped with the basic practical skills needed for their employability. However, study (e.g., Eze, 2014) stated many preservice teachers are faced with the challenge of acquisition of psychomotor skills due to lack of coordinated hands-on skill training intervention, outdated equipment, and lack of qualified instructors. Although, previous studies (e.g., Ogbuanya & Chukwuedo, 2017) did a study on training intervention influence on practical skill learning. However, their study did not employ Fitts and Posner model of skill acquisition.

Anchor model and hypotheses development

Fitts and Posner model (1967) was the intervention skill acquisition training model adapted in this study. The model proposed that physical learning/training can be divided into three sequential stages termed the cognitive, associative and autonomous stages. The cognitive phase marks the phase in which the learner needs to break down the desired skill into smaller different parts and understand how these parts come together as a whole to correctly perform the task. Learning at this stage generally involves the use of explicit knowledge. The associative stage marks the stage where the learner repeatedly practices the task until patterns of response emerge. At this stage, the learner figures out what works and what doesn't. The overall actions of the skills at this stage are learned or automated as a learner's sensory system acquires the accurate spatial and symbolic data required for the completion of the skills. The last stage is the autonomous/procedural stage. This phase involves perfecting the skills learned. At this phase, the ability to decipher important from unimportant stimuli are quicker and the less cognitive process is required because the skill has become automated. At the cognitive stage, motivation is crucial as learners are beginning to understand new skills. An effective training intervention model could provide the necessary support and encouragement, thus enhancing motivation (Schunk & Zimmerman, 2012; Deci & Ryan, 2000). Based on the tenet of the model and previous studies, we therefore hypothesized that:

H1: The career training intervention model will significantly increase the motivation of pre-service teachers.

At the associative stage of the Fitts and Posner's model, engagement tends to increase when learners start to see progress and understand the relevance of the skills they are acquiring. The

training intervention model, through structured practice and feedback, is expected to enhance engagement by providing clear goals and the means to achieve them (Bandura, 1997; Ryan & Deci, 2000). Thus, we hypothesized that:

H2: The career training intervention model will significantly enhance the engagement of pre-service teachers.

Lastly, at the autonomous stage, their skills are well-developed, and they require less cognitive effort to perform tasks. Thus, a well-designed training intervention would not only lead to higher skill proficiency but also sustain motivation by showing tangible results and successes (Ericsson et al., 1993; Deci & Ryan, 1985). Based on this tenet and previous studies, we therefore, hypothesized that:

H3: The career training intervention model will significantly improve psychomotor skill acquisition of preservice teachers.

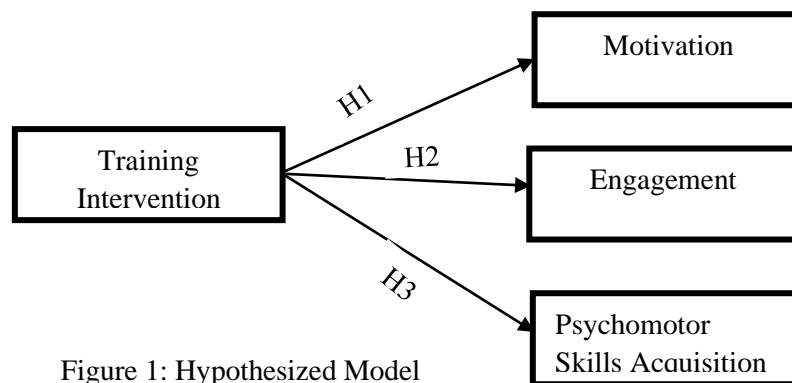


Figure 1: Hypothesized Model

3.0 Method

Design

This study adopted the quasi-experimental design with a non-equivalent control group design as the focus. The idea of non-equivalent control group in this study is that a group of students from two Nigerian Universities were used as the control group, while another set of students from another two Nigerian Universities were used as the intervention group (Thomas, 2021; Gall, et al., 2007). This research design was chosen for this study because it helped to us to establish the cause-effect relationship between the independent, dependent and other variables in this study.

Participants and procedures

The participants of this study were 130 pre-service teachers (ETE students) of four public universities in South-South Nigeria who willingly indicated interest to participate in the study. To ensure representative sample, stratified random sampling was employed. Confidentiality and anonymity ethics were strictly adhered to. Demographic data of the participants in the two groups (intervention and control) revealed that they have similar characteristics even though they are from different universities. The intervention group had 70 students (Male, N = 55, M age =20.51; SD =1.67; and Female, N = 15, M age = 21:42, SD = 1.51). The control group were 60 students (Male N =50, M age =21.40, SD = 1.70; and Female, N = 10, M age = 20.12, SD = 1.60).

The intervention procedure

The career training intervention was a three-phase intervention program which entails three active hands-on training sessions on corrective maintenance of LED Television. It lasted for 15 weeks. The hands-on training sessions was based on the application of Fitts and Posner model of skill training (Fitts & Posner, the 1961). Participants engaged in structured training sessions that included theoretical instruction (cognitive stage), hands-on practice with feedback (associative stage), and independent skill application (autonomous stage) on corrective maintenance of LED Television for the period of the intervention. Participants were divided into experimental and control groups. The experimental group received the intervention, while the control group continued with the standard training program. Pre- and post-intervention data were collected using surveys and performance assessments.

3.1 Measures*Career Training*

The career training construct was measured by Student Career Training Questionnaire (SCTQ) developed from literature. The instrument is a 9-item questionnaire rated on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). An example of its item is “I am confident this training intervention will help me achieve my goals”. Confirmatory factor analysis shows a reasonable fit of the instrument ($df = 20$; $\chi^2/df = 1.88$; $CF = 0.90$; $TLI = 0.91$; $RMSEA = .076$). The alpha reliability from previous study is 0.77

Engagement

Engagement construct was measured by Psychomotor Engagement questionnaire (SPEQ) adapted from Student Engagement Questionnaire (Handelsman et al., 2005). The SPEQ is an 11- item instrument rated on a five-point Likert scale ranging from the strongly agree (5) to strongly disagree (1). An example of its item is “I participate actively during practical class”. Confirmatory factor analysis to establish the construct validity shows a reasonable fit to the data ($df = 44$; $\chi^2/df = 3.98$; $CF = 0.91$; $TLI = 0.90$; $RMSEA = 0.78$). The alpha reliability from previous study is $\alpha = 0.92$.

Motivation

This construct was measured using Motivation Scale (MS) adapted from Academic Motivation Scale (AMS – C 28) College version (Vallerand, et al, 1992). The MS is a 9 – item questionnaire. An example of its item is “I learn because of pleasure and satisfaction while learning new things”. All the items were rated on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). Confirmatory factor analysis check revealed that the construct validity shows a reasonable fit to the data ($df = 9$; $\chi^2/df = 2.25$; $CFI = 0.92$; $TLI = 0.90$; $RMSEA = 0.072$). The alpha reliability from previous study is ($\alpha = 0.81$).

Psychomotor Skills Acquisition

The psychomotor skills acquisition was assessed by a practical performance rating scale questionnaire. The questionnaire was divided into three sections. Section A has seven items that assessed the Cognitive stage outcome of the training, section B has five items that assessed the Associative stage of the training, and section C has five items that measured the Autonomous stage of the practical training.

3.2 Data Analysis and hypotheses testing

To determine the significant effect of the intervention on the dependent variables, paired t-tests was used to compare pre- and post-intervention scores. Analysis of Covariance (ANCOVA) was conducted to control for any pre-existing differences and to accurately attribute the changes to the intervention. Multivariate Analysis of Variance (MANOVA) was equally conducted to determine the overall impact of the intervention on multiple dependent variables simultaneously. Prior to the analysis, normality test was checked using the Shapiro-Wilk test. A significant value of 0.6 was obtained, indicating a normal distribution. Levene's test of homogeneity of variance indicated a p -value of 0.10, meaning the test was not significant. Thus, the variances are approximately equal and the assumption of variance is met.

The relationship between the covariates and the dependent variables as assessed by the regression slope were found to be the same for each cell. Therefore, the assumption of homogeneity of regression slopes is met. All computations were done using SPSS version 24.

4.0 Results

Table 1: Paired sample t-test for pre and post intervention for the two groups

Variables	Control Group				Intervention Group			
	Pre-Intervention		Post-Intervention		Pre-Intervention		Post-Intervention	
	M	SD	M	SD	M	SD	M	SD
Motivation	2.70	0.62	2.80	0.55	2.81	0.59	3.72	0.61
Engagement	3.21	0.70	3.23	0.67	3.24	0.54	4.46	0.65
Psychomotor Skills	66.10	9.82	67.22	10.12	65.34	10.20	85.45	8.73

Note: M= Mean; SD = Standard Deviation

Table 2: ANCOVA of Motivation

Variables	Control Group				Intervention Group			
	Pre-Intervention		Post-Intervention		Pre-Intervention		Post-Intervention	
	M	SD	M	SD	M	SD	M	SD
Motivation	2.70	0.62	2.80	0.55	2.81	0.59	3.72	0.61
Engagement	3.21	0.70	3.23	0.67	3.24	0.54	4.46	0.65
Psychomotor Skills	66.10	9.82	67.22	10.12	65.34	10.20	85.45	8.73

Table 3: ANCOVA of Engagement

Source	SS	df	MS	F	p-value	Partial Eta Squared
Corrected Model	45.23	2	22.62	42.78	<.001	0.40
Intercept	80.42	1	80.42	152.16	<.001	0.55
Engagement_Pre	20.11	1	20.11	38.06	<.001	0.23
Group	9.12	1	9.12	17.25	<.001	0.12
Error	67.15	127	0.53			
Total	192.81	130				
Corrected Total	112.38	129				

The result of the paired samples t-test in Table 1 conducted to compare the scores of the dependent variables before and after the intervention in the experimental group indicated that there was a significant difference in the; Motivation scores for pre-intervention (M = 2.81,

SD = 0.59) and post-intervention (M = 3.70, SD = 0.61); $t(69) = 12.39, p < .001, d = 1.48$; Engagement scores for pre-intervention (M = 3.20, SD = 0.56) and post-intervention (M = 4.40, SD = 0.65); $t(69) = 16.55, p < .001, d = 1.97$; and Psychomotor skills scores for pre-intervention (M = 65.30, SD = 10.20) and post-intervention (M = 85.40, SD = 8.70); $t(69) = 17.71, p < .001, d = 2.12$. On the contrary, the result in the control group revealed that there was no significant difference in the; Motivation scores for pre-intervention (M = 2.70, SD = 0.62) and post-intervention (M = 2.80, SD = 0.55); $t(59) = 1.32, p > .05, d = 0.17$; Engagement scores for pre-intervention (M = 3.20, SD = 0.70) and post-intervention (M = 3.20, SD = 0.67); $t(59) = 0, p > .05, d = 0$; and Psychomotor skill scores for pre-intervention (M = 66.10, SD = 9.80) and post-intervention (M = 67.20, SD = 10.10); $t(59) = 0.857, p > .05, d = 0.11$. This implies that the career training intervention had positive impact on the dependent variables. Thus, H1, H2, & H3 were upheld. Also, to compare the effectiveness of the training intervention on the dependent variables, a one-way analysis of Covariance (ANCOVA) was conducted as shown in Table 2, 3, & 4. The independent variable was the groups (intervention vs. control), the dependent variables were the post-intervention scores, and the pre-intervention scores were used as the covariates. After adjusting for pre-intervention scores, there was a significant effect of the intervention: on post-intervention motivation scores, $F(1, 127) = 15.32, p < .001, \text{partial } \eta^2 = 0.11$; on post-intervention engagement scores, $F(1, 127) = 17.25, p < .001, \text{partial } \eta^2 = 0.12$; and on post-intervention psychomotor skill scores, $F(1, 127) = 27.38, p < .001, \text{partial } \eta^2 = 0.18$. Furthermore, the result of the one-way multivariate analysis of variance (MANOVA) in Table 5 shows that there was a significant difference between the intervention and control groups on the combined dependent variables, $F(3, 126) = 34.23, p < .001, \text{Wilks' Lambda} = 0.46$. A Follow-up univariate analysis of variance (ANOVAs) as a test of between subjects as indicated in Table 6 shows that the intervention had a significant effect on: Motivation: $F(1, 127) = 15.32, p < .001, \text{partial } \eta^2 = 0.11$, Engagement: $F(1, 127) = 17.25, p < .001, \text{partial } \eta^2 = 0.12$, Psychomotor skills: $F(1, 127) = 27.38, p < .001, \text{partial } \eta^2 = 0.18$.

Table 4: ANCOVA of Psychomotor Skills

Source	SS	df	MS	F	p-value	Partial Eta Squared
Corrected Model	5203.32	2	2601.66	59.12	<.001	0.48
Intercept	10200.45	1	10200.45	231.91	<.001	0.65
Psychomotor_Pre	2580.20	1	2580.20	58.67	<.001	0.32
Group	1203.52	1	1203.52	27.38	<.001	0.18
Error	5578.31	127	43.91			

Source	SS	df	MS	F	p-value	Partial Eta Squared
Total	21001.12	130				
Corrected Total	10781.63	129				

Table 5: MANOVA

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Wilks' Lambda	0.98	1542.24	3	126	<.001
Group	Wilks' Lambda	0.46	34.23	3	126	<.001

Table 6: Tests of Between-Subjects Effects

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Motivation_Post	5.61	1	5.61	15.32	<.001	0.11
Engagement_Post	9.12	1	9.12	17.25	<.001	0.12
Psychomotor_Post	1203.52	1	1203.52	27.38	<.001	0.18

5.0 Discussion

The purpose of this study was to evaluate the effects of a career training intervention based on Fitts and Posner's model of skill acquisition on motivation, engagement, and psychomotor skills among electronics technology education (ETE) pre-service teachers in South-South, Nigeria. The results indicated a significant improvement in motivation levels among the intervention group compared to the control group. Specifically, the univariate analysis revealed a significant main effect of the intervention on post-intervention motivation scores, $F(1, 127) = 15.32$, $p < .001$, partial $\eta^2 = 0.11$. This suggests that the career training intervention effectively enhanced the motivation of ETE pre-service teachers. Motivation is critical for the successful acquisition of skills among preservice teachers, as it drives them to engage deeply with the learning material and persist in the face of challenges (Eccles & Wigfield, 2002). The significant increase in motivation observed in this study aligns with previous research, which has shown that well-structured training programs can boost student motivation by providing clear goals, relevant feedback, and a sense of competence (Ryan & Deci, 2000). The intervention also had a substantial impact on student engagement, as evidenced by the significant difference in post-intervention engagement scores between the

intervention and control groups, $F(1, 127) = 17.25$, $p < .001$, partial $\eta^2 = 0.12$. Engagement is a multi-faceted construct that includes behavioral, emotional, and cognitive dimensions (Fredricks, Blumenfeld, & Paris, 2004). Higher levels of engagement are associated with better academic outcomes and skill acquisition. The career training intervention likely enhanced engagement by incorporating interactive and hands-on activities that aligned with the students' interests and career goals. This finding is consistent with the literature, which emphasizes the importance of active learning strategies and real-world applications in maintaining student engagement (Prince, 2004).

The most pronounced effect of the intervention was observed in the domain of psychomotor skills, with the intervention group showing significantly higher post-intervention scores compared to the control group, $F(1, 127) = 27.38$, $p < .001$, partial $\eta^2 = 0.18$. Psychomotor skills are essential for ETE students, as they directly relate to the practical competencies required in the field of electronics technology. The significant improvement in psychomotor skills can be attributed to the structured practice and feedback mechanisms embedded in the Fitts and Posner model of skill acquisition. This model emphasizes the importance of repetitive practice, feedback, and the gradual transition from cognitive to autonomous stages of skill acquisition (Fitts & Posner, 1967). Previous research supports the effectiveness of such models in enhancing practical skills in vocational training (Ericsson et al., 1993).

Implications for practice

The findings of this study have several important implications for educators and policymakers. First, the significant improvements in motivation, engagement, and psychomotor skills suggest that career training interventions based on established models of skill acquisition can be highly effective in vocational education settings. Educators should consider integrating these models into their curricula to enhance student outcomes. Additionally, the positive effects on motivation and engagement highlight the need for training programs that not only focus on skill development but also address the psychological and emotional needs of students.

Limitations and future research

While the study provides robust evidence for the effectiveness of the intervention, it is not without limitations. The quasi-experimental design, although robust, does not allow for random assignment, which could introduce selection bias. Future research could employ

randomized controlled trials to further validate these findings. Additionally, long-term follow-up studies are needed to assess the sustainability of the observed effects over time. Finally, exploring the differential impacts of the intervention on various subgroups within the population could provide more balanced insights.

Conclusion

In conclusion, the career training intervention based on Fitts and Posner's model significantly enhanced motivation, engagement, and psychomotor skills among ETE pre-service teachers. These findings underscore the importance of well-designed training programs in vocational education and provide a strong basis for further research and practice in this field.

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Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Theresa Chinyere Ogbuanya, **data collection:** Ejaita Duke Akpoikiniovo, **analysis and interpretation of results:** Ejaita Duke Akpoikiniovo, **draft manuscript preparation:** Ejaita Duke Akpoikiniovo. All the authors reviewed the results and approved the final version of the manuscript.

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