

Vocational Mentoring on Practical Skill Engagement: The Mediating Role of Vocational Identity and Practical Skills Motivation Beliefs

Agbogidi Ogheneakpobor Goodnews¹ & Chinyere Theresa Ogbuanya²

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

²Senior fellow, School of Education Studies, Faculty of Education, University of the Free State, Bloemfontein, South Africa

e-mail: chinyere.ogbuanya@unn.edu.ng Orcid:0000-0003-4800-0248.

*Corresponding author: **Chinyere Theresa Ogbuanya²**

Abstract

The study investigated mediating roles of vocational identity and practical skills motivational beliefs on the relationship between vocational mentoring and practical skills engagement among Automobile Technology students in technical colleges in Delta State. In line with these, five research hypotheses were tested. The study employed quasi-experimental research design. The population of the study was 444 year 2 and 3 Automobile Technology students. The sample was made up of 137 Automobile students, which consisted of 81 in the intervention group and 56 in the control group. The questionnaire and rating scale used for data collection were validated by experts, and the overall reliability coefficients were 0.86 and 0.84 respectively. Data analysis were carried out using bivariate correlation and Bias Corrected (BO) bootstrap of regression estimates. The moderating effect of gender and age were found not significant except for moderating effect of age on vocational mentoring and practical skill engagement that was significant. It was therefore, recommended among others that technical colleges should have periodic vocational mentoring to foster students' vocational identity and enhance their Practical skills motivational beliefs and engagement.

Keywords: Career mentoring, vocational exploration, vocational commitment, vocational reconsideration, and motivation belief.

Introduction

Technical colleges in Nigeria offer different trades, which include electrical trade, building trade, woodwork trade, mechanical trade, electronic trade, and automobile trade. The focus of this study is on automobile trade which is herein referred to as automobile technology trade and automotive technology. Automotive Technology (AT) simply refers to multi-vocational discipline whose primary focus is on the study of fundamental theory and repairs of motor vehicles (Emennu, 2017). It is an education that provides the students with the knowledge and skills with adequate practical experience in the field of professional motor vehicle mechanics technology for national development (Jatawa & Mohammed, 2021).

Automobile technology involves the application of scientific knowledge in the design, selection of materials, construction, operation, repairs and maintenance of the motor vehicles (Fadairo, 2009; Owoso, Jimoh & Olayinka 2006; Tumba & Shuaibu, 2016). Hence, as a subject offered in Nigeria technical colleges,

it is aimed to produce competent vehicle mechanics with adequate skill and sound theoretical knowledge that should be able to diagnose and carryout repairs and/or maintenance on all types of Diesel and Petrol Vehicles. In other words, it is a subject that inculcates practical skills in students and helps to foster their vocational or career statuses for smooth transition from school to work (Orji, 2015; Orji &Ogbuanya, 2018; Orji, 2021; Orji &Ogbuanya, 2022)

Despite the benefits inherent in automobile technology trade in technical colleges, most of the students tend to exhibit self-doubt in their academic pursuit and career development. Similarly, the number of students who register in technical colleges continues to drop, which also affects career development in automobile technology. Although researcher have made attempts via module development, determining effects of more approachable teaching methods, and evaluating available human and material resources, such concerns still persist. Hence, the need to address such academic and career-related concerns via career mentoring approach.

Vocational mentoring is a dimension of mentoring that focuses on establishing a relationship between a mentor and a mentee in acquiring the necessary practical skills for career development. Generally, mentoring is a personal and reciprocal relationship in which a more experienced faculty member (mentor) acts as a guide, role model, teacher, sponsor or supporter of a less experienced student or faculty member (protégé) (Renn,Steinbauer, Taylor& Detwiler, 2014; Scandura, 1992); but vocational mentoring is specific to a relationship in which a more experience person who has acquired and developed allied skillsets over the years helps a less experienced person (mentee) who needs the skills for career development (Chukwuedo, 2018). One of the benefits of vocational mentoring is fostering ones' vocational perspectives in one's academic major (vocational identity status) as well as building one's beliefs and motivation in one's career.

Vocational identity status refers to the state of possessing a clear, stable, secure, and realistic idea of one's goals, interests, talents, and personal values for career and work (Chukwuedo&Ohanu, 2022; Porfeli et al., 2011). It is a process that may begin with the individual's inclination to a particular academic or career development, but it is more relatively realized via a guided model such as mentoring or counselling. Therefore, this study is based on mentoring approach to help students in attaining or optimizing their vocational identity statuses. Student who has relatively established a level of vocational identity status, even via vocational mentoring, is more likely to exhibit high motivational beliefs.

Motivation beliefs refer to the reasons that move an individual to work on or perform a task. It is an individual's motives to perform a given task in a given context (Facer, Galloway, Inoue, &Zigarmi, 2014), and it acts as a system to promote and sustain goal-directed behaviours. Motivational belief also refers to students' opinions of the efficacy or effectiveness of learning and the teaching process (Boekaerts, 2002; Koca, 2016). Thus, motivational beliefs act as a frame of reference that guides students' thinking, feelings, and actions in any subject area (Boekaerts, 2002; Koca, 2016). Hence, individuals with higher motivational beliefs have higher tendencies to recognize a task and perform it for self-development than individuals with lower motivation beliefs. In the context of this study, practical skills motivation beliefs are the reasons that propel an automobile technology student to work on an automobile task. It is believed that when an automobile technology student exhibits higher motivation beliefs, there is a high tendency that the student will show higher practical skills engagement in automobile technology.

Engagement is characterized with the time and effortstudents devote to educational tasks in the classroom and the practices planned by institutions to inspire students to participate in such activities (Orji &Ogbuanya, 2022).It is a conscious and voluntary effort an individual makes to allocate and direct their resources towards achieving studious, academic, and vocational-related tasks or to achieve the seeming unattainable expectancy equity in academic major or vocation (Chukwuedo, Mbagwu, &Ogbuanya, 2021). Similarly, engagement has been dimensioned as emotional, behavioural, social, and cognitive engagement. these characteristics are embedded in one's ability to acquire practical skills. It is expected that vocational mentoring will facilitate students' engagement in practical skills, vocational

identity, and motivation beliefs in practical skills. Thus, the researcher theorizes a possible mediation model from the cause-effect relationship between vocational mentoring and students' engagement in practical skills through vocational identity and motivation beliefs in practical skills. In addition, demographic characteristics such as Gender and Age were also theorized as potential moderators in this study.

Research Hypotheses

1. There is no significant serial mediating roles of vocational identity and practical skills motivation beliefs on the relationship between vocational mentoring and practical skills engagement?
2. There is no significant moderating roles of demographic characteristics (gender and age) on the relationship between vocational mentoring and practical skills engagement?

Methodology

Design of the Study

The quasi-experimental research design was employed in this study. The quasi-experimental design enables a researcher to manipulate variables, establish cause-effect relationship between variables and apply the non-randomized approach in selecting participants (Gall, Gall & Borg, 2007)

Area of the Study

The area of the study was Delta State, Nigeria, which has three senatorial districts, 25 local government areas, and six technical colleges.

Sample and Sampling Technique

The sample of this study was 137 automobile students for the 2022/2023 academic session from two out of the six technical colleges in Delta State.

Instrument for Data Collection

The questionnaire was used to collect data on vocational mentoring, vocational identity status, and practical skills motivation beliefs. The rating scale was used to measure the practical skills engagement. The items of the questionnaire were rated on a five-point Likert scale of strongly agree (5), agree (4), undecided (3), disagree (2), and strongly disagree (1). Similarly, the rating scale has six items that measured practical skills engagement. The adapted scales are explained as follows:

Vocational Mentoring is measured with eight items of the vocational mentorship subscale of the Scandura (1992) mentorship scale. The items of the scale are adapted in this study to determine the automobile students' opinions of their vocational mentoring experiences.

Vocational Identity Statuses is measured with the 30-item Vocational Identity Status Assessment (VISA) developed by Porfeli, Lee, Vondracek & Weigold (2011). The scale has three main subscales that measure career or vocational exploration, career or vocational commitment, and career or vocational reconsideration, each having 10 items. Career exploration has two dimensions measuring career in-breadth explorations and career in-depth exploration, each having five items. Career commitment has two dimensions measuring career commitment making and identification with commitment, each having five items. Career reconsideration has two-dimension measuring career self-doubt and career flexibility, each having five items.

Practical Skills Motivation Beliefs is measured with the six items of expectancy valence subscale of the Facer, Galloway, Inoue and Zigarmi (2014) motivation beliefs inventory. The items were adapted to measure students' beliefs in their motivation to perform given task or skills in their area of study. Although the original scale measured employees' motivation beliefs in their tasks, the researcher adapted it to reflect students' motivation beliefs in their practical skill.

PracticalSkills Engagement is assessed with the six items of engagement in practical skills (Chukwuedo&Ementa, 2022). The scale is adapted to rate the students social, cognitive, behavioural and affective engagement while participating in workshop practice involving acquisition of practical skills in automobile trades. For reliability, vocational mentoring (0.89), vocational identity status- exploration (0.84), vocational identity status – commitment (0.86), vocational identity status – reconsideration (0.77), practical skills motivational beliefs (0.82). The overall alpha value for the questionnaire was 0.80. On the other hand, the rating scale were collated and analysed, the alpha value was found to be 0.81

Intervention Procedure

In line with the existing intervention procedures, the researcher adapted the *Career-training Mentorship Intervention Guide* (Chukwuedo, 2018; Ogbuanya&Chukwuedo, 2017) and the *Vocational/Career Practical Skills Support/Training Guide* (Chukwuedo&Ohanu, 2022). Consequently, this study's intervention guide is titled *Vocational Mentoring for Vocational Identity and Practical Skills Guide*. It was organized into two broad sections, namely vocational mentoring and guidance section and practical skills with mentoring section.

The Vocation Mentoring and Guidance Section

The vocational mentoring process was planned, formal and conscious. The students were given organized series of career guidance in automobile technology, as well as identity formation and modification. The vocational mentoring was organized in two phases. The first phase of the mentoring session was on career concerns for the students, while the second phase will be on vocational identity concerns, formation or modification for the students

Phase 1 – Academic and Career Concerns. This was a series of career talk by the mentors for the students' career or vocational matters. The mentors cautiously found out areas of career difficulties faced by the students in automobile technology, as well as the areas in their academic pursuit in automobile technology where the students face challenges. These formed the basis for the mentors to understand how to guide the students in their academic and career development and pursuit. At each stage of interaction, the students were given opportunities to ask questions relating to academic matters, career choice, prospects, interest, and practical skills in automobile technology.

Phase 2 – Vocational Identity Guidance. The mentors were provided with the details of the dimensions of the vocational identity statuses. This enabled the mentors to ask the students questions about their vocational identity formation in automobile technology. Thus, it was an interactive session to help the students develop or increase their career exploration and commitment in automobile technology.

Method of Data Collection

First, for effective data matching between the questionnaire and the rating scale, the teacher provided students identification from their register, which was used as a code on the students' questionnaire as well as the teachers rating scale. Then, data was collected at two different times – pre-test and post-test, by the researcher with the help of four research assistants – two from each of the colleges that were used as the experimental group and the control group. However, the automobile technology teacher, technologist or technician rated the students' practical skills engagement during workshop practice using the rating scale that measure the construct. Then the questionnaire and the rating scale were retrieved and coded by the researcher.

Then, the post-test data was collected after the intervention. As in the pre-test, the students responded to the questionnaire while the teacher or technologist rated each student's practical skills engagement. Then, the instruments were retrieved by the researcher for data analysis.

Method of Data Analysis

Bivariate correlation and Bias Corrected (BC) bootstrap of regression estimates were used as the statistics for data analysis. The BC bootstrap regression estimates was used to test hypotheses since it permits the test of mediation and moderation.

To perform the data analyses statistical software that were used are Statistical Package for Social Science (SPSS version 23.0) and PROCESS macro (Version 4.). SPSS was used to conduct the bivariate correlation, while PROCESS Macro was used for BC bootstrap method.

The decision rule for establishing a relationship via bivariate correlations was based on correlation coefficients ranging between -.35 to +.35 for weak/no correlation; +.35 to +.65 or -.35 to -.65 for moderate correlation; and +.65 to 1.00 or -.65 to -1.00 for strong correlation (Gay et al., 2011). For the test of mediation, the decision rule was based on confidence interval (CI) such that if the CI includes zero, there is no significant mediation; but if the CI excludes zero, it is significant. For the moderation, a significant interaction implies moderation, otherwise, there is no moderation. All hypothesis were tested at 0.05.

Results

Table 1: Bootstrap Regression Estimate on Serial Mediation on the Effect of Vocational Mentoring on Practical Skills Engagement via Vocational Identity and Practical Skills Motivational Beliefs.

Effects	Pathways	β	SE	t	95% CI	
					LL	UL
Total	VM 2 → PSE 2	.407	.115	4.477***	.287	.745
Direct	VM 2 → PSE 2 (+ VI 2 & PSMB 2)	.254	.112	2.861**	.099	.545
	VM 2 → VI 2 → PSE 2	.006	.030	-	-.061	.064
Indirect	VM 2 → PSMB → PSE 2	.167	.068	-	.056	.321
	VM 2 → VI2 → PSMB 2 → PSE 2	.021	.018	-	-.009	.060

Note. VM = vocational mentoring, PSE = practical skills engagement, VI = vocational identity, PSMB = practical skills motivational beliefs, CI = confidence interval, LL = lower limit, UL = upper limit, *** $p < .001$, ** $p < .01$,

Data shown in Table 1 reveals the regression path models of the serial mediating roles of vocational identity and practical skills motivational beliefs in the cause-effect relationship between vocational mentoring and practical skills engagement. The table show that the total effect ($\beta = .407, t = 4.477, p = .001$) and the direct effect ($\beta = .254, t = 2.861, p = .01$) are significant. The results of the indirect effects reveal that the path involving only vocational identity as a mediator is not significant ($\beta = .006, SE = .030, CI = -.061$ to $.064$), but the path involving only practical skills motivational beliefs is significant ($\beta = .167, SE = .068, CI = .056$ to $.321$). however, since the path involving both vocational identity and practical skills motivational beliefs is not significant ($\beta = .021, SE = .018, CI = -.009$ to $.060$), the null hypothesis is accepted. Thus, there is no significant serial mediating roles of vocational identity and practical skills motivation beliefs on the effect of vocational mentoring on practical skills engagement.

Table 2: Bootstrap Regression Estimate on Moderating Roles of Gender and Age on the Effect of Vocational Mentoring on Practical Skills Engagement

Moderators	Pathways	β	SE	<i>t</i>	95% CI	
					LL	UL
Gender	VM → PSE (+ Gender)	.990	.115	.471	- 1.498	2.431
	Gender → PSE	3.065	.112	-.060	- 6.263	5.899
	VM*Gender → PSE	.969		.051	- 1.874	1.972
Age	VM → PSE (+ Age)	1.257	.030	- 1.644	- 4.561	.427
	Age → PSE	.243	.068	- 2.102*	-.995	-.029
	VM*Age → PSE	.075	.018	2.059*	.006	.304

Note. VM = vocational mentoring, PSE = practical skills engagement.

The results of Table 2 shows regression paths of the moderating roles of gender and age in the cause-effect relationship between vocational mentoring and practical skills engagement. The results shows that the path involving vocational mentoring and gender interaction with practical skills engagement is not significant ($\beta = .049$, SE = .969, $p = .960$), indicating that gender is not a significant moderator in this model. Conversely, the Table shows that the path involving vocational mentoring and age interaction with practical skills engagement is significant ($\beta = .155$, SE = .075, $p = .042$), indicating that age is a significant moderator in the model. Overall, the null hypothesis is accepted for gender but rejected for age in this model. Hence, there is no significant moderating role of gender on the effect of vocational mentoring on practical skills engagement; but there is a significant moderating role of age on the effect of vocational mentoring on practical skills engagement.

Discussion

The importance of vocational mentoring with practical skill training especially in auto mechanics cannot be underestimated. Findings from this study showed that the effectiveness of vocational identity on vocational mentoring and practical skills engagement can be explained via an individual’s vocational identity and practical skill motivational beliefs. The study showed that vocational identity mediated the relations between vocational mentoring and practical skills engagement. Similarly, practical skills motivational beliefs also mediated the relations. Thus, increase in vocational exploration and commitment in Automobile technology education, and corresponding decrease in vocational reconsideration from the intervention can be explained via practical skills motivational beliefs. This finding supports the findings of Wong and Kaur (2018) who found positive association between in-depth career exploration and the students’ engagement variable, while career self-doubt emerged as a negative predictor. Furthermore, students’ perceived value in academic activities, played a critical role in mediating the relationship. On the hand, the findings of this negate the aspect of Wong and Kaur result that despite significant associations, other vocational identity processes (in-depth career exploration, commitment making and career flexibility) and motivational beliefs failed to as predictors and mediators respectively. The result also aligns with that of Siu, Bakker, and Jiang (2014) that student intrinsic motivation is a significant mediator between psychological capital and study engagement. This study also revealed that there was no significant moderating role of gender on the effect of vocational mentoring on practical skills engagement; but there is a significant moderating role of age on the effect of vocational mentoring on practical skills engagement. This finding this study agrees with what Hirsch (2011) earlier found out that status change pattern did not support the hypothesized difference according to gender. The finding of this study also contradicts the findings of Rogers et al (2008) that sex and age do not influence career exploration.

Conclusion

Overall, the findings of the study provide important insights into the effect of vocational mentoring on vocational identity. Thus, the study concludes that vocational mentoring effectively increases vocational exploration (in-breadth and in-depth), vocational commitment (commitment making and identification with commitment). Vocational reconsideration (flexibility and self-doubt) decreases with mentoring. Furthermore, vocational mentoring can effectively improve vocational identity, practical skills motivational beliefs and paratactical skills engagement irrespective of gender and age. Therefore, vocational mentoring is a viable instrument for improving Automobile students' vocational identity, practical skills motivational beliefs as well as their practical skills engagement, their gender and age notwithstanding.

Recommendations

Based on the findings of this study the following recommendations are made:

1. Automobile teachers in technical college should intermittently carry out vocational mentoring for their students especially those in penultimate and final year to enable create vocational identity for themselves, develop practical skills motivational beliefs, be engaged in their skills training and orientation. This will enable them acquire adequate skills for smooth transition from school to work.
2. Individual technical colleges should as a matter of importance, prioritize career talks and vocational mentoring to help Automobile students understand, appreciate and value their training which will enable them form vocational identity, acquire necessary skills, transit smoothly into the world of work and earn their living satisfactorily without self-doubt.

Limitations of the Study

The following may be the shortcomings of this study despite the positive effects of vocational mentoring on vocational identity, practical skills motivational beliefs and practical skills engagement:

1. The study adopted quasi – experimental design since it wasn't possible to randomize the subjects intact was used. It's possible the result may change if true experimental research design is employed with a randomized sample. As is a limitation of quasi-experimental research design that subjects under study may have been grouped using certain criteria before the researcher and arrival of the researcher.
2. This study was carried out using two technical colleges. May be if a large sample size involving many schools is studied, a different outcome may be obtained.

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