

STUDENTS' SELF-CONCEPT AND COLLEGE-INDUSTRY COLLABORATION AS CORRELATE FOR SKILL ACQUISITION IN MOTOR VEHICLE MECHANIC WORKS IN TECHNICAL COLLEGES IN EDO STATE

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Abstract

The study examined students' self-concept and college-industry collaboration as correlate for skill acquisition in motor vehicle mechanic works (MVMW) in technical colleges in Edo State. Two research questions were raised to guide the study and two null hypotheses were formulated and tested at .05 level of significance. The study adopted a correlational survey research design. The population of the study consisted 74 MVMW students from two public technical colleges in Edo State where MVMW is being offered. The population was adopted as the sample because it is of manageable size. The research instrument used for data collection in the study were Standardized Motor Vehicle Mechanic Works Practical Performance Checklist (SMVMWPPC) with 15 skill tasks, Self-Concept Questionnaire (SCQ) and College-Industry Collaboration Questionnaire (CICQ). The questionnaires had 10 items each. The questionnaires were validated by two experts in the Department of Vocational and Technical Education and one from the Test and Measurement, Department of Guidance and Counselling, Faculty of Education, Ambrose Alli University, Ekpoma. In order to establish the stability of the questionnaires, Cronbach alpha coefficient formula was used. The test yielded an overall coefficient of .76 and .80 respectively. The findings of the study revealed that student self-concept and college-industry collaboration correlates positively and significantly with skills acquisition in MVMW in public technical colleges in Edo State. Based on the findings, it was recommended that there should be concerted effort by parents, teachers and students to ensure students develop positive beliefs about themselves and that industries should ensure collaboration with technical colleges for improved skills acquisition in motor vehicle mechanic works.

Keywords: TVET, PWDs, Inclusive and Sustainable Development

Introduction

Vocational and Technical Education represents an educational approach that merges practical skill development with general academic learning. Skill acquisition demands a comprehensive and integrated approach. In this regard, Mbah and Umurhurhu (2016) explained skills as the coordinated use of cognitive processes and physical actions directed toward the successful performance or mastery of a task. Skill can therefore be seen as the practical ability or manual proficiency required to achieve a specific outcome, often within a defined time frame. Skill requirements may be classified into psychomotor (manipulative), technical, conceptual, and transferable skill domains. According to Olabiyi, et al. (2013), skills development involves a learned and organized sequence of movements that work together to produce efficient and fluent performance, leading to mastery of a given task.

A basic institution responsible for skills acquisition, according to the Federal Republic of Nigeria (FRN) (2013) in her national policy on education, are the technical colleges. Technical colleges in Nigeria train craftsmen in trades such as plumbing, carpentry and joinery, cabinet making, painting and decoration, welding and fabrication, electrical installation, radio and TV repairs, building and construction, motor vehicle mechanic works (MVMW), among others.

An individual trained in MVMW is called a motor vehicle mechanic. According to the National Business and Technical Examinations Board (NABTEB) (2007), a motor vehicle mechanic is expected to inspect, diagnose, and fully repair faults associated with major automobile assemblies and systems in line with manufacturers' specifications. It also involves engine servicing, lubrication of automobile systems, brake repair, auto-electrical work, air-conditioning services, body repair, workshop and service-station management, spray painting, upholstery, chassis work, vulcanizing, radiator repair, crankshaft reconditioning, engine rebuilding, wheel alignment and balancing, and the application of On-Board Diagnostic (OBD) equipment. The modular curriculum for motor vehicle mechanic works includes petrol and diesel engine maintenance, engine reconditioning, auto electrical work, and the maintenance of transmission, suspension, steering, and braking systems. It also includes preparing individuals to function as driver-mechanics-drivers trained to perform basic automobile inspection, diagnosis, and maintenance when professional mechanics are unavailable or unnecessary (FRN, 2000). However, skill acquisition in MVMW could be affected by certain students' variable, such as self-concept.

Self-concept, which can also be referred to as academic self-concept, is an individual student's self-perceptions of their own competence, ability, and confidence in academic domains (cognitive, affective and psychomotor). Sewasew and Schroeders (2019) viewed academic self-concept as students' evaluation of their likelihood of achieving academic success when compared with their peers. Similarly, Wigfield and Karpathian (2021) conceptualized academic self-concept as an individual's understanding and awareness of themselves within academic settings, including how they judge their abilities and capacity to improve their academic outcomes. Furthermore, to Basarkod and Marsh (2023), self-concept is a person's perceived competence and sense of their own abilities and skills in academic subjects. In an educational setting, having a positive self-

concept leads to improvements in a host of educational outcomes such as achievement, attainment, persistence, and course selection.

Self-concept is closely tied to motivation and engagement, influencing how students approach their studies. Those with higher self-perception of their abilities tend to invest greater effort, participate more actively, and adopt effective study habits. Hence, in the view of Oviawe and Ogbebor (2024), self-concept “has significant implications for a student's academic accomplishment and advancement if it is utilized as a predictor of academic success”. For the purpose of this study, self-concept is understood as a learner’s perception of his or her ability and competence in relation to skill acquisition generally, and in motor vehicle mechanics works specifically. This means that academic self-concept has important implications for students’ skill acquisition in motor vehicle mechanics works. A positive self-concept is bound to enhance skill acquisition.

According to Wentzel et al. (2021), students with a positive self-concept were more likely to engage with class materials, persist through academic challenges and collaborate with peers. However, experts are of the view that for students’ effective skills acquisition there has to be other form of collaboration, such as college-industry collaboration through the provision of teaching and learning materials.

According to Keyton (2020), collaboration is a type of interaction in which individuals, or team or organizational members, work together to reach a common shared goal, activity, or production. Hence, collaboration between educational institutions and industries implies that they jointly work together to produce skilled manpower, so as to equip students with skills and competencies that will fit the contemporary workplace after graduation. Abu (2014) opined that industry-institution collaboration programme can bridge technological gap by providing appropriate knowledge and skills required to handle modern technologies all around the world and that modern industries are equipped with sophisticated technologies that technical college students are not familiar with. Carrying out repairs and maintenance on these systems demands the application of modern tools and equipment. Nevertheless, graduates of technical colleges may lack sufficient competence in operating and handling such contemporary tools and equipment as a result of inadequate collaboration between technical colleges and industries.

Evidence suggests that some graduates of MVMW do not meet expected performance standards and often struggle to carry out maintenance tasks to the level required by customers. This shortcoming may stem from a disparity between the competencies acquired during training in technical colleges and the skills demanded by contemporary industries, a situation largely caused by the use of obsolete instructional methods and facilities. According to the World Bank Annual Report (2018), the equipment and facilities in most public technical colleges in Nigeria are largely outdated, while materials needed for effective practical instruction are either inadequate or completely unavailable. Consequently, instructional outcomes in technical colleges have been predominantly theoretical rather than practice-oriented. To bridge this skills gap, closer collaboration between technical colleges is essential. Ogbebor (2023) suggests that college-industry collaboration includes visitation by industry professionals to various schools to expose students to practical work, industries permit students’ excursion visit to their facilities, industry professionals teaches part-time in the colleges, industries permits students use of facilities during

industrial training and industries support the colleges with tools, equipment, machines and human resource for skill development. Furthermore, Osuyi and Ogbebor (2024) identified the establishment of school-based industry as a way of enhancing college-industry collaboration.

Therefore, Ogunbote et al. (2025) are of the view that ensuring the provision of adequate tools and equipment by industries will, in a large way, support practical skill development in technical colleges.

Statement of the Problem

Technical colleges are charged with the mandate of providing trained manpower at craft and technical levels, capable of contributing effectively to industrial growth, national development, poverty alleviation, and self-sufficiency, in accordance with Nigeria's national objectives (FRN, 2013). Specifically, graduates of MVMW programme are expected to possess practical competencies in vehicle testing, fault diagnosis, troubleshooting, servicing, and repair of defective components, among others, which should be carried out in line with manufacturers' specifications and through the appropriate use of standard tools and equipment.

However, this expectation has increasingly not been realized in recent years. Motor vehicle mechanic works chief examiner's report for 2016, 2017, 2018, 2019, and 2020 shows a trend of non-impressive performance in the practical component of MVMW. This implies that most students of motor vehicle mechanic works seems to possess the necessary skills to operate in the modern industry upon graduation. Hence, the researchers are worried that if nothing is done to halt this trend, graduates of motor vehicle mechanic works would gradually become unemployable or unable to become self-reliant. A positive student self-concept and an effective college-industry collaboration could provide the needed recipe for students to acquire the appropriate and relevant skills in motor vehicle mechanic works. Thus, the need to conduct this research on students' self-concept and college-industry collaboration as correlates for skills acquisition in motor vehicle mechanic works in technical colleges in Edo State.

Purpose of the Study

The main purpose of this study was to examine students' self-concept and college-industry collaboration as correlate for skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State. Specifically, the study sought to determine the:

1. relationship between students' self-concept and skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State.
2. relationship between college-industry collaboration and skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State.

Method of Study

A correlational survey research design was used to achieve the specific purpose of the study. The study investigated, on one hand, the relationship between self-concept and students' skill acquisition in motor vehicle mechanic works and, on the other hand, the relationship between college-industry collaboration and skill acquisition in motor vehicle mechanic works in technical

college in Edo State. This type of design involves collecting data to determine whether and to what extent a relationship exists between two or more quantifiable variables (Edokpolor, 2019). The result obtained from the sample could be used to generalize for the entire population. Students self-concept and college-industry collaboration were the independent variable, while skills acquisition in motor vehicle mechanic works was the dependent variable.

The population of the study consisted 74 respondents, who are motor vehicle mechanic works students from the 2 public technical colleges in Edo State where motor vehicle mechanic works is being offered, namely Benin Technical College, Benin City and Igarra Technical College, Igarra. Only Tech. 2 and Tech 3 were used for the study because Tech 1 is an introduction class. The data was obtained directly from the office of principals of the colleges.

The sample size for the study consisted 74 respondents, who are motor vehicle mechanic works students from the 2 public technical colleges in Edo State where motor vehicle mechanic works is being offered. The entire population was adopted as the sample because it is of manageable size, hence a census.

The instruments used for data collection were Standardized Motor Vehicle Mechanic Works Practical Performance Checklist (SMVMWPPC), Self-Concept Questionnaire (SCQ) and College-Industry Collaboration Questionnaire (CICQ). The Standardized Motor Vehicle Mechanic Works Practical Performance Checklist (SMVMWPPC) was adopted from National Technical Certificate (NTC) past examinations MVMW practical performance checklist, as conducted by NABTEB. The practical performance checklist contained 15 practical skill tasks based on the practical skills they have been trained on. Students were scored as they performed each task. The SCQ was designed to find out the level of students' self-concept. 10 questions were adopted from Ericson (2011) while the CICQ was designed with 10 self-developed items to elicit students' response on the level of college-industry collaboration. Each item in the SCQ and CICQ had four response categories of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) rated 4, 3, 2 and 1 respectively.

The SCQ and CICQ were validated by two experts in the Department of Vocational and Technical Education and one expert from Teast and Measurement, Department of Guidance and Counselling, Faculty of Education, Ambrose Alli University, Ekpoma, Edo State.

In order to establish the reliability of the instruments, they were administered once to 20 respondents who were motor vehicle mechanic works students in Delta State. The data obtained was subjected to Cronbach alpha statistics. The SCQ yielded a coefficient of .76 and the CICQ yielded a coefficient of .80.

The instruments were thereafter administered to the respondents in the public technical colleges in Edo State. The researcher was assisted by 4 research assistants who were briefed on how to administer the instrument. The research assistants administered the instrument to the respondents and retrieved all administered instrument within 14 days. This signifies a 100% retrieval rate.

The data collected were analyzed with the aid of Statistical Package for Social Sciences (SPSS). The research questions were answered with Pearson Product Moment Correlation (PPMC)

statistics. Simple linear regression was also used to test the null hypotheses at .05 level of significance.

The decision rule was based on a criterion Pearson r value of 0.5. A Pearson r value of 0.5 and greater implies a strong relationship and a Pearson r value less than 0.5 implies weak relationship while the sign indicates the direction of the relationship. A p-value equal less than .05 alpha means that the hypothesis was rejected whereas p-value greater than .05 alpha means that the hypothesis failed to be rejected.

Results

Research Question 1: What is the relationship between students' self-concept and skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State?

Table 1

Correlation between Students' Self-Concept and Skill Acquisition in Motor Vehicle Mechanic Works in Public Technical Colleges in Edo State

Variables	N	M	SD	Pearson r	p-value	Remark
Students' Self-Concept	74	27.76	7.64			
				.67	.000	Significant
Skills Acquisition in MVMW	74	38.72	7.91			

Note: $p < .05$

Table 1 revealed that there was a strong positive correlation between students' self-concept and skills acquisition in motor vehicle mechanic works in public technical colleges in Edo State. The Pearson Product Moment Correlation coefficient of .67 analysis revealed a very strong positive relationship between students' self-concept and skill acquisition in motor vehicle mechanic works.

Research Question 2: What is the relationship between college-industry collaboration and skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State?

Table 2

Correlation between College-Industry Collaboration and Skill Acquisition in Motor Vehicle Mechanic Works in Public Technical Colleges in Edo State

Variables	N	M	SD	Pearson r	p-value	Remark
college-industry Collaboration	74	2.64	.48			
				.62	.000	Significant
Skills Acquisition in MVMW	74	38.72	7.91			

Note: $p < .05$

Table 2 revealed that there was a positive and significant correlation between college-industry collaboration and skills acquisition in motor vehicle mechanic works in public technical colleges in Edo State. The Pearson Product Moment Correlation coefficient of .62 revealed a moderate positive relationship between students' self-concept and skill acquisition in motor vehicle mechanic works.

Hypotheses 1: There is no significant correlation between students' self-concept and skills acquisition in Motor Vehicle Mechanic Works in public technical colleges in Edo State

Table 3

Linear Regression of the Correlation between Students' Self-Concept and Skills Acquisition in Motor Vehicle Mechanic Works in Public Technical Colleges in Edo State

Students Self-Concept → Skills Acquisition in MVMW							
β	R	R ²	Adj. R ²	F	t	(p-value)	Decision
.67	.67	.45	.44	58.64	7.66	.000	Reject Ho

The result in Table 3 revealed that the correlation ($r = .67$) between students' self-concept and skills acquisition in motor vehicle mechanics works is high and positive. At $F = 58.64$, $t = 7.66$, $\beta = .67$ and $P < .000$, the results depict that increase in self-concept will lead to improved students' skills acquisition in motor vehicle mechanic works. The coefficient of determination ($R^2 = .45$) shows that 45% of the variance in skills acquisition is explained by students' self-concept. This implies that self-concept is a substantial predictor of students' ability to acquire practical skills, while the remaining 55% may be attributed to other factors not included in the model. Since the p-value (.000) is less than 0.05, the null hypothesis is rejected.

Hypothesis 2: There is no significant correlation between college-industry collaboration and skills acquisition in Motor Vehicle Mechanic Works in public technical colleges in Edo State.

Table 4: Linear Regression of the Correlation between College-Industry Collaboration and Skills Acquisition in Motor Vehicle Mechanic Works in Public Technical Colleges in Edo State.

college-industry Collaboration → Skills Acquisition in MVMW							
β	R	R ²	Adj. R ²	F	t	(p-value)	Decision
.62	.62	.38	.37	44.14	6.68	.000	Reject Ho

The result in Table 4 revealed that the correlation ($r = .62$) between college-industry collaboration and skills acquisition in motor vehicle mechanics works is statistically significant and positive. At $F = 44.14$, $t = 6.68$, $\beta = .62$ and $P < .000$, the results depict that improved college-

industry collaboration leads to improved students' skills acquisition in motor vehicle mechanic works. The coefficient of determination ($R^2 = .38$) shows that 38% of the variance in skills acquisition is explained by college-industry collaboration. This means that college-industry collaboration is a substantially predicts students' ability to acquire practical skills in motor vehicle mechanic works, while the remaining 62% may be attributed to other factors not included in the model. Since the p-value (.000) is less than .05, the null hypothesis is rejected.

Discussion of Findings

The findings from research question one indicates that students with higher self-concept scores tend to achieve higher practical skill test scores, while those with lower self-concept scores record poorer practical performance. There is a significant and strong positive relationship between students' self-concept and skill acquisition in motor vehicle mechanic works in technical colleges. This implies that students' perception of their own abilities plays a critical role in the acquisition of practical skills. This finding corresponds with that of Wentzel et al. (2021) who found out that students with a positive self-concept were more likely to engage with class materials, collaborate with peers, and persist through academic challenges. Furthermore, the findings agreed with that of Oviawe and Ogbemor (2024) who said that self-concept has significant implications for a student's academic accomplishment and advancement if it is utilized as a predictor of academic success. This consequently leads to adequate skills acquisition. Hence, higher students' self-concept leads to improved skills acquisition in motor vehicle mechanics works.

Findings from research question two revealed that improved college/industries collaboration contributes to improved skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State. This outcome aligns with the position of Ogunbote et al. (2025) who revealed that collaboration between industries and institutions through the provision of adequate tools and equipment will support practical skill development in technical colleges. It also revealed that college-industry collaboration involves visitation by industry professionals to various schools to expose students to practical work, industries permit students' excursion visit to their facilities, industry professionals teaches part-time in the colleges, industries permits students use of facilities during industrial training and industries support the colleges with tools, equipment, machines and human resource for skill development (Ogbemor, 2023).

The result of the test of hypothesis one revealed a strong positive relationship between students' self-concept and skills acquisition in motor vehicle mechanic works (MVMW) in public technical colleges in Edo State. The correlation coefficient indicates a strong linear association between the predictor and the criterion variables.

Similarly, the result of the test of hypothesis two revealed a statistically significant positive relationship between college-industry collaboration and students' skill acquisition in motor vehicle mechanic works in public technical colleges in Edo State. This indicates that improvements in college-industry collaboration are associated with corresponding increases in students' practical skill acquisition. .

Conclusion and Recommendations

Based on the findings of the study, it was concluded that students self-concept, and college-industry collaboration such as visitation by industry professionals to various schools to expose students to practical work, industries permit students' excursion visit to their facilities, industry professionals teaches part-time in the colleges, industries permits students use of facilities during industrial training and industries support the colleges with tools, equipment, machines and human resource for skill development correlates skills acquisition in motor vehicle mechanic works in public technical colleges in Edo State.

In order to enhance skill acquisition in motor vehicle mechanic works in Edo State:

1. there should be concerted effort by parents and teachers to develop positive beliefs in students. Furthermore, students should develop positive view about their abilities.
2. Industry professionals and college administrators should work closely to develop an effective college-industry collaboration.

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