

FUNCTIONAL PEDAGOGY REQUIRED FOR EFFECTIVE LEARNING OF TECHNICAL SKILLS AMONG UNDERGRADUATES OF TERTIARY INSTITUTIONS IN CROSS RIVER STATE

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ABSTRACT

The study investigated functional pedagogy required for effective learning of technical skills. The paper examined: the literacy skills required for effective learning of technical skills; the communication skills needed for effective learning of technical skills and the level of engagement for effective teaching and learning of technical skills. The descriptive survey research was employed in carrying out the study. The area of the study was Cross River State tertiary institutions with a population of 159 vocational educators, into two groups; 103 from 2 federal tertiary institutions and 56 from 2 state owned tertiary institutions. Data were analyzed using mean and standard deviation to answer the research questions, while independent t-test was employed to test the three null hypotheses at 00.5 level of significance. The findings revealed that the vocational educators have diverse opinions on functional pedagogy strategies for effective learning of technical skills, which in conclusion, there are other strategies for effective learning of technical skills other than the ones mentioned in the study. It was recommended, among others, that vocational educators should, majorly adopt student – centred approach pedagogy to promote literacy skills as a strategy for effective learning of technical skills.

Keywords: Functional Pedagogy, Effective learning, Technical skills and Undergraduates.

INTRODUCTION

Cultivating one's mind is more important than anything else one can do to prepare for personal and professional success as the modern world is unpredictable. The whirlwind of technology changes our lives so quickly that there is no way to anticipate how the future will be. The industries, one's job, and even the day-to-day life of an individual may be very different, five, ten or twenty years from now. The only way to get ready for what comes next is to create a mental infrastructure to thrive in any environment with regard to learning a skill that would make one self-reliant and reduce unemployment. Helping students develop the independent thinking and learning skill they need to not only carry them through their formal education but to help them navigate throughout their life need be promoted.

Skill has to do with ability to do or perform activity that is related to some meaningful exercise, work or job. It is the integration of both theory and practice in a given discipline (Akpan & Okon, 2021). Okorie (2000) posited that skill is acquired when theoretical knowledge is translated into practical activity. The author defined skill as the expertness, practical ability and dexterity usually displayed in a systematic pattern. There are various skills, but the type of skill needed is the "technical skills".

Technical skills are the specialised knowledge and expertise required to perform a specific task, often involving the use of tools, equipment or software in real-world situations and are typically learned through training or education (Coursera Staff, 2025). Technical skills are the abilities and know-how unique to a specific job role. It often requires specific education and training to acquire. These skills are essential for many jobs and industries, ranging from Information Technology (IT) and engineering to healthcare and customer service.

Technical skills sometimes refer to as "hard skills" and are distinct from soft skills, like communication or teamwork (football), involve the practical knowledge used to complete tasks, such as machining, data analysis, web development and others. They involve practical application of knowledge and expertise in specific skills. Technical skills are often quantifiable and can be demonstrated through certifications, projects or work experience (Haroony, 2025). Below are the importance of Technical skills;

1. Technical Skills enable individuals to perform their job duties effectively and efficiently.
2. They enhance productivity and contribute to competitive advantage for both individuals and organizations.
3. There is growing demand by industries for individuals with strong technical skills.

These technical skills can be developed through:

1. Formal education and training programs.
2. On-the-job training and experience
3. Continuous learning and staying updated with industry trends.

Online courses, workshops and self-study can also help build and refine technical skills. To acquire the needed technical skills as enunciated above require a functional

pedagogy. According to Anand (2021), pedagogy is a method of teaching in which teachers teach both in theory and in practice. Pedagogy is shaped by educators teaching beliefs and involves their understanding of culture and different learning styles. It is essential for students to have meaningful classroom relationship in order to build on prior learning.

Pedagogy refers to the methods and approaches used to facilitate learning. It is the art and science of teaching, encompassing the strategies, techniques and theories that educators employ to help students acquire knowledge, develop skills and grow intellectually (Kayode-sanni, 2025). In essence, pedagogy is how teachers teach and how students learn. The key aspects of pedagogy are: Adapting to learners, creating supportive environment, fostering critical thinking and promoting life learning (Kayode-Sanni, 2005).

Functional pedagogy is an intervention to provide technical skills among graduates which would make them economically productive (Dike 2009). Functional pedagogy is a process that emphasizes workshop practice that encourage motor skills to achieve its goals. Pedagogy that is functional engages the students in activity-based learning, exhume learners creative experience which would lead to technical and intellectual knowledge acquisition (Ekong & Ekong, 2018). While the curriculum outlines what is to be taught, functional pedagogy is concern with how it is taught. Essentially, Pedagogy is the bridge between the curriculum and the learners, ensuring that the knowledge skills are effectively transferred and internalised by students.

The quality of graduates from our tertiary institutions has been a source of worry to employers of labour. The educational system seems to be malfunctioning, thereby creating problem of scientific and technological manpower production which is heading to crisis level. The result of this is graduates not getting jobs and rising unemployment as employers of labour cannot find necessary talents. This is due to lack of functional pedagogy leading to poor literacy skills, ineffective communication skills, low academic and professional performance and declining focus of engagement in teaching and learning.

Employers of labour are more interested in those who have acquired appropriate skills for job placement. Paradoxically, large number of tertiary institution graduates go jobless for years while service and industrial organizations complain of lack of skilled workers.

The purpose of the study is to identify functional pedagogy required for effective learning of technical skills among undergraduates of tertiary institutions. Specifically, the study sought to ascertain;

1. The literacy skills required for effective learning of technical skills
2. The communication skills needed for effective learning of technical skills
3. Level of engagement for effective teaching and learning to achieve technical skills.

The study is guided by the following research questions:

1. What are the literacy skills required for effective learning of technical skills?
2. What are the communication skills needed for effective learning of technical skills?

3. Does the level of engagement in teaching and learning adequate to achieve technical skills?

Three hypotheses were formulated:

1. There is no significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the literacy skills required for effective learning of technical skills
2. There is no significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the communication skills needed for effective learning of technical skills
3. Significant difference does not exist in the mean ratings between vocational educators in federal tertiary institutions and those of state institutions on the level of engagement for effective teaching and learning of technical skills.

Method

Survey research was adopted for the study. In the opinion of Fraenkel, Wallen & Hyun in Okanazu (2019), survey design involves asking the same set of questions in the form of written questionnaire or ability test to a large number of individuals. The area of study was Cross River state. The population for the study comprised 159 vocational educators drawn from 2 federal tertiary institutions and 2 state owned tertiary institutions in Cross River State offering vocational and technical education programmes. The breakdown shows; University of Calabar (UNICAL) 48, Federal College of Education, Obudu, 55. University of Cross River State (UNICROSS) 24 and University of Education and Entrepreneurship, Akamkpa 32. Due to the relatively manageable size, the entire population was involved in the study, therefore, there was no sampling. The instrument for data collection was a structured 24-item questionnaire titled: Functional Pedagogy for Effective Learning of Technical skills Questionnaire (FPELTSQ). Four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD)/Very High Level (VHL), High Level (HL), Low Level (LL) and Very Low Level (VLL) were employed. The instrument was face-validated by three experts in Vocational Technical Education Department, University of Uyo. The reliability of the instrument was test-run in an area outside the area of study, determined using Cronbach alpha formula for internal consistency with reliability coefficient of 0.87 and 0.83 obtained. With these high values, the instrument was considered reliable. The data collected were analysed using mean and standard deviation to answer the research questions, while t-test was employed to test the null hypotheses at 0.05 level of significance. The decision rule was adopted using real limit of numbers as follows: 3.50 – 4.00 for Strongly Agree/Very High level; 2.50 – 3.49 for Agree/High level; 1.50 – 2.49 for Disagree/Low level and 0.50 – 1.49 for Strongly Disagree/Very low level.

Results

Research question one

Table 1: Mean responses of Vocational Educators to Literacy Skills required for effective learning of Tech. Skills (N=159)

S/N	ITEMS	Mean	Std. Dev.	Decision
1	Breaking down texts into their micro structures	3.25	0.89	Agreed
2	Focusing on effective reading and writing	3.28	0.86	Agreed
3	Emphasizing real-world application of writing	3.21	0.88	Agreed
4	Making it easier for students to compose conventional texts that are value in school	3.25	0.88	Agreed
5	Structuring approaches that align well with academic expectations	3.21	0.87	Agreed
6	Understanding and interpreting texts to students	3.27	0.86	Agreed
7	Engaging in written and spoken language to gain knowledge and ideas	3.24	0.87	Agreed
Grand mean and pooled mean 22.71/3.24				

The results in Table 1 from the 159 vocational educators show agreement on all 7 items measuring literacy skills, using a 4-point scale with a 2.50 cut-off. Highest rated item: Item 2 “Focusing on effective reading and writing” had the highest mean = ‘3.28’. This implies that reading and writing competence is seen as the most important literacy foundation for technical skills. Lowest rated items: Items 3 and 5 tied at ‘3.21’ “Emphasizing real-world applications of Writing” and “Structuring approaches that align well with academic expectations”. They are still well above the cut-off mark. Consistency: Standard deviation ranges from ‘0.86 to 0.89’, which is low. This shows little variation, meaning respondents were in close agreement. Since ‘3.21 > 2.50’, it confirms that literacy skills are required for effective learning of technical skills. For each null hypothesis, the procedures used in testing was independent t-test analysis at 0.05 level of significant with a brief explanation followed by the presentation and interpretation of results.

Hypothesis one

There is no significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the literacy skills required for effective learning of technical skills. To test this hypothesis, since the dependent variable (effective learning of technical skills) is continuous variable and the

independent variable (literacy skills required) is in two groups (vocational Educators in Federal tertiary institutions and their counterparts in State owned institutions), independent t-test analysis was used, with result as shown in Table 2.

Table 2: Independent t-test analysis on the significant difference between the mean rating of vocational educators in Federal tertiary institutions and their counterparts in state owned institutions on the literacy skills required for effective learning of technical skills (N = 159).

Variables	N	χ	S.d	t-cal	Sig.
Vocational Educators in Federal tertiary institutions	103	2.9063	.85999	1.609	0.001
Vocational Educators in State owned institutions	56	2.7500	.43853		

*Significant at 0.05, df = .267, critical t-value = 1.112

The result of the analysis presented in Table 2 shows that the calculated t-value of 1.609 is greater than the critical t-value of 1.112 at 0.05 alpha levels with .267 degrees of freedom. With these results, it is concluded that there is a significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the literacy skills required for effective learning of technical skills. The null hypothesis which states that there is no significant difference between the means ratings of vocational educators in federal tertiary institutions and their counterparts in State owned institutions on the literacy skills required for effective learning of technical skills was rejected.

Research question two

Table 3: Mean responses of Vocational Educators to Communication Skills needed for effective learning of Tech. Skills (N=159).

S/N	ITEMS	Mean	Std. Dev.	Decision
8	Ability to build strong relationship	3.30	0.87	Agreed
9	Communication using numbers, images and digital technologies	3.20	0.85	Agreed
10	Ability to express and understand information	3.27	0.88	Agreed
11	Ability to convey and receive messages	3.25	0.87	Agreed
12	Paying close attention to what others are saying	3.23	0.87	Agreed
13	Adjusting your communication style to suit your audience	3.21	0.85	Agreed
Grand mean and pooled mean		19.46/3.24		

The results show that all 159 vocational educators agreed on the 6 items under communication skills. With a cut-off mean of 2.50, all items were accepted. Highest rated item: Item 8 “Ability to build strong relationship” had the highest mean = `3.30`. This indicates that building a good lecturer-student relationship is seen as most critical for communicating technical content effectively. Lowest rated item: Item 9 “Communication using numbers, images and digital technologies” had the lowest mean = `3.20`, but it is still above the cut-off mark. This shows that while ICT/digital communication is accepted, it is ranked slightly lower than interpersonal aspects. The Standard deviation ranges from `0.85 to 0.88`, which is low. This means responses were closely clustered and there was high agreement among respondents. The mean scores range from `3.21 to 3.30`. Since `3.21 > 2.50`, it confirms that communication skills are needed for effective learning of technical skills.

Hypothesis two

There is no significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the communication skills needed for effective learning of technical skills.

Table 4: Independent t-test analysis on the significant difference between the means ratings of Vocational Educators in Federal tertiary institution and their counterpart in State owned institutions on the communication skills needed for effective learning of Technical skills (N = 159)

Variables	N	χ	S.d	t-cal	Sig.
Vocational Educators in Federal tertiary institutions	103	4.1062	.6220	1.554	0.000
Vocational Educators in State owned institutions	56	6.4320	.6312		

*Significant at 0.05, df = .265, critical t-value = 1.102

The result of the analysis presented in Table 4 shows that the calculated t-value of 1.554 is greater than the critical t-value of 1.102 at 0.05 alpha levels with .265 degrees of freedom. With these results, it is concluded that there is a significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the communication skills needed for effective learning of technical skills. Showing this analysis, the null hypothesis.

Research question three**Table 5: Mean responses of Vocational Educators to Level of engagement in teaching and learning for Tech. Skills (N=159)**

S/N	ITEMS	Mean	Std. Dev.	Decision
14	Ability to demonstrate a desire to think critically	3.30	0.86	Agreed
15	Motivation to deeply participate in lessons and activities	3.26	0.86	Agreed
16	Exhibiting sustained effort and positive investment	3.24	0.86	Agreed
17	Effective strategies in connecting learning to students' interests	3.23	0.87	Agreed
18	Fostering collaboration through group work	3.28	0.86	Agreed
19	Encouraging interaction among students	3.25	0.86	Agreed
20	Creating positive learning environment	3.27	0.86	Agreed
Grand mean and pooled mean		22.83/3.26		

The result in Table 5 show that all 7 items were accepted: All the mean `3.23 - 3.30` are above the 2.50 benchmark. Highest: Item 14 = `3.30` - Critical thinking is rated most important for engagement in technical skills. Lowest: Item 17 = `3.23` - Connecting learning to students' interests, but still strongly agreed. Consistency: Standard deviation `0.86 - 0.87` = very low spread to high consensus among the 159 educators.

Table shows the responses of 159 vocational educators on functional pedagogy for effective learning of technical skills. All 20 items recorded mean scores above the 2.50 cut-off, ranging from 3.20 to 3.30. The highest means were for Item 8 "Ability to build strong relationship" and Item 14 "Desire to think critically" with 3.30 each. The lowest was Item 9 "Communication using numbers, images and digital technologies" with 3.20, but still accepted. The low standard deviation values, all < 1.00, indicate a high level of agreement among respondents with little variation. The Grand Mean of 3.25 confirms that literacy skills, communication skills, and level of engagement are generally perceived as essential for effective learning of technical skills.

Hypothesis three

There is no significant difference between the means ratings of vocational Educators in Federal tertiary institutions and their counterparts in State owned institutions on level of engagement for effective teaching and learning of Technical skills. The result of the t-test analysis was

Table 6: Independent t-test analysis on the significant difference between the means ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the level of engagement for effective teaching and learning of technical skills (N = 159).

Variables	N	$\bar{x}$	S.d	t-cal	Sig.
Vocational Educators in Federal tertiary institutions	103	3.9211	.8321	1.221	0.002
Vocational Educators in State owned institutions	56	3.4211	.4220		

*Significant at 0.05, df = .27, critical t-value = 1.121

The result of the analysis presented in Table 6 shows that the calculated t-value of 1.221 is greater than the critical value of 1.121 at 0.05 alpha levels with .27 degrees of freedom. With these results, it is concluded that there is a significant difference between the mean ratings of vocational educators in federal tertiary institutions and their counterparts in state owned institutions on the level of engagement for effective teaching and learning of technical skills. Therefore, the null hypothesis was rejected.

Discussion of findings

Functional pedagogy required for effective learning of technical skills was the main goal of the Study. Findings from the results presented in Table 1 revealed that the vocational educators in federal institutions and those of state-owned institutions differ in opinion on the literacy skills required for effective learning of technical skills. This is in agreement with what Media embedded (2016) stated that functional literacy pedagogy has several strengths, particularly in how it helps students understand the structure and purpose of different types of text. Functional approaches to literary focus on students learning to read and compose the kinds of text that enable them to succeed at school. The findings were in congruent with Reko & Maxwell (2016) that functional literacy pedagogy is lacking most, is needed in tertiary institution for acquisition of effective technical skills.

Regarding the findings of hypothesis two in Table 2, which shows that the vocational educators in both federal and state-owned tertiary institution were in disagreement on the communication skills needed for effective learning of technical skills. Pedagogy enables teachers to adopt the best suitable communication practices for a classroom setting. This is in consonant with Functional pedagogy (2020) that effective communication helps teachers to know how different students learn and grasp information so that they can tailor their lessons to satisfy those needs. It is likely to improve the quality of teaching and the way it is received by the students. The words of Anand (2021) that communication skills play an important role to help teachers understand the best ways to conduct a classroom. It gives them insights into

how students learn differently in different topics so that they can conduct lessons to suit their needs.

The findings of hypothesis three in Table 3 which revealed that there is significant difference in the mean ratings between federal tertiary institution educators and their counterparts in state owned institutions on the level of engagement for effective teaching and learning of technical skills. Pedagogy is of two main types, Teacher-centred (Tractional Approach) where the teacher is the main source of knowledge, students only take notes. Another is Student-centred; Here, students are the main actors and take an active role in their learning. The teacher only acts as a referee to balance and guide learning instead of dominating the whole process. The learning is personalized and based on the needs, learning styles and interest of the students. The finding of the study was in line with the opinion of Kayode sanni (2025) that for functional pedagogy to be effective, there must be high level of engagement in teaching and learning to attain technical skills. She further stated that in inquiry-based pedagogy, learning starts by identifying a problem or asking questions. Also Estrella (2024) was of the same view that functional pedagogy must be at high level of engagement if learning of technical skills is to be attained.

Conclusion

Pedagogy is a method and popular teaching practice involving the strategies, techniques and approaches educators use to facilitate and deliver learning among students. It fully accounts for the focuses on learners' needs, abilities and areas of interest. It is not just about delivering information but about structuring learning in a way that promotes a positive learning experience, encouraging assimilation and makes students eagerly anticipate learning activities that would make them acquire skills in different areas of their interests. A well-thought modern-day pedagogy is a complete interrelation of the concepts and ideas along with ways of teaching the students. It also indicates that these practices have direct involvement with the student's achievement, results and skills development after following approaches. It was concluded that literacy, communication skills and level of engagement in teaching are functional pedagogy needed for effective learning of technical skills.

Recommendations

1. Majorly, student-centred approach pedagogy should be adopted by vocational educators to promotes literacy skills with the guidance of the teacher as brainbox for the students.
2. Teachers should continue to evaluate the students regularly to see if they are improving in their communication skills and moving towards their targeted outcomes.
3. There should be high level of teaching and learning engagement on the part of both teachers and students to achieve positive skill development outcomes. This can be enhanced through encouragement of team-work and group projects.

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