Original Paper

Relationship between School Location and Secondary Technical Students' Acquisition of Knowledge-Based Skills in Cross River and Imo States of Nigeria

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Abstract

This paper investigated the influence of school location on students' acquisition of knowledge-based skills in selected secondary technical schools in Cross River and Imo States of Nigeria. The objective of the study was to ascertain the influence of location (urban and rural) of secondary technical schools on students' acquisition of knowledge-based skills (creative thinking, innovation, ICT and entrepreneurship skills) in the two states. A correlation design was adopted for the study. The population constituted 1328 SS II students drawn from 11 secondary technical schools across the two states out of which a stratified random sample of 330 was identified. Two research questions and two corresponding hypotheses were formulated to guide the study. A twelve-item multiple choice Students' Aptitude Test on Skills Acquisition (SATSA), validated by five experts in instruments construction, and was administered on the sample for data collection. Data were analyzed with One Sample Test and ANOVA to ascertain the relationship between school locations and students' acquisition of knowledge-based skills in the identified knowledge-based skill subjects. The paper recommended that principals and teachers of secondary technical schools should sustain and improve the performance of students in the two states. It further recommended that further investigations be conducted to ascertain students' acquisition of knowledge-based skills irrespective of school location.

Keywords

school location technical, students' acquisition knowledge-based skills

1. Introduction

Teachers, principals of secondary schools and secondary education policy makers are concerned with not only students' academic achievement in respect of cognition, application and synthesis of knowledge but also other factors that enhance or impede students' academic achievement. This paper set out to explore one area which could positively or negatively impact on students' academic achievement: school location. In Cross River and Imo States of Nigeria, some factors are considered in locating secondary grammar or technical schools: proximity to students from community catchment areas, accessibility of the schools, availability of electricity, domains of abandoned deities, confiscation of land in conflict between communities for locating secondary technical schools, government take-over of community schools, conversion of secondary grammar schools to technical, and so on. None of these factors appears to have an impact on students' academic achievement.

It may be argued that the establishment of secondary technical schools is in pursuit of meeting the requirements of scientific and technical manpower needs of Nigeria that will serve in different capacities and contribute positively to the nation's technological, socio-economic and political development (Abdulkareem, Fasasi, & Akinubi, 2011). Nigeria has a clear policy on providing education for her citizens and this is reflected in the objectives of her National Policy on Education 2014. The development of Nigerian secondary technical education is based on the realization of the early nationalists that the country could not develop without a proper grounding in a national technical education system that can guarantee the production of the desired high quality scientific, technological and business management workforce. Consequently, the country encourages the location of secondary technical schools in as many strategic places as possible: both urban and rural. This is why some community secondary schools are taken over by government and transformed into technical schools to ensure an even distribution of this category of secondary schools. This is also the reason why conscious efforts are made to equip secondary technical schools without preference.

According to the National Policy on Education (2014), an ideal secondary technical education should address the whole child; the whole person; and should not be limited to on-the-job professional development in the workplace (Commeyras, 2011) argued that the focus and objectives of education generally and technical education specifically, are to develop natural talents to enhance the quality of environment; production of skilled manpower and generation of knowledge necessary for knowledge-based economy; inspiring and enabling individuals to develop capacities to the highest level throughout life so that they can grow intellectually and contribute effectively to society; create a learning society necessary for participation in a world undergoing phenomenal changes; inculcation of the right attitude and values in the youths for fostering a democratic and civilized society, and finally, to increase knowledge and understanding for their own sake and foster their application of the acquired knowledge (skills) for the benefit of the economy and society. This was responsible for education authorities in Nigeria to restructure the Senior Secondary School (SSS) curriculum to have 42 subjects and 35 Vocational Trades/Entrepreneurship skill areas.

In this paper, the researchers define knowledge as a construct that enables a person to internalize the mastery of facts: nature, structure and distinctive properties of a word, an idea, an object or action through one or a combination of sense organs such that those details become the learner's nature and can vividly be recalled, described or action(s) performed without hesitation, mistakes or inaccuracies in such a way that subsequent repetitions exactly depict the original word, idea, object or action(s) without misleading or giving wrong experience to another person who does not know. Therefore, knowledge-based skills are a compendium of skills that enable secondary school students acquire practical knowledge or skills (facts) that are utilized with the brain in creative, innovative and entrepreneurship activities such as ability to integrate, apply acquired knowledge, synthesize and solve problems as well as contribute to the improvement of themselves and society (Quinones & Ehrenstein, 1997). In this regard, acquisition of knowledge-based skills, therefore, addresses the whole child; the whole person and is not limited to on-the-job professional development in the workplace.

2. Definition of Acronyms

In this paper, the following acronyms, unless otherwise stated, have the connotative and denotative meanings attached to them: ICT (Information and Communication Technology), ANOVA (Analysis of Variance), PMCCC (Pearson Product Moment Correlation Coefficient), SATSA (Students' Aptitude Test on Skills Acquisition), SSS (Senior Secondary School), SS II (Senior "Secondary" Students in second year), CT (Creative Thinking), INV (Innovation), EE (Entrepreneurship Education), ES (Entrepreneurship Skills) and SPSS (Statistical Package for Social Sciences).

3. Statement of the Problem

It was observed that a large number of secondary technical students in Cross River and Imo States could not find paid employment or become self-employed. For example, the *Annals of Statistics* (2016) documented that Nigeria's unemployment rate rose for the seventh straight quarter to 13.9 from 13.3 percent in the third quarter of 2016 as against the same period last year. It was the highest level since 2009. Unemployment rose to 11.2 million as the labour force increased to 80.7 million. Meanwhile, youth unemployment rate increased to 25% from 24% in the previous period. Secondary technical school leavers from Cross River and Imo States constitute a significant portion of these unemployment statistics.

4. Objective of the Study

The objectives of this paper were to: (1) ascertain the acquisition of knowledge-based skills (creative thinking, innovation, ICT and entrepreneurship skills) by secondary technical students in Cross River and Imo States; (2) ascertain if the location of secondary technical schools (urban or rural) had any influence on students' acquisition of these knowledge-based skills.

5. Research Questions

Based on the stated objectives, the following research questions were posed for the study: (1) What is the level of acquisition of knowledge-based skills by secondary technical students in the identified knowledge-based skills as measured by their aptitude test scores? (2) What is the influence of secondary school schools location (urban and rural) on students' acquisition of knowledge-based skills in the identified skill subjects as measured by their aptitude test scores?

6. Hypotheses

The following two corresponding hypotheses were formulated to guide the study:

H_o1- Technical students' level of acquisition of knowledge-based skills as measured by their aptitude test scores in the identified knowledge-based skill subjects is not statistically significant (at $P < 0.05$).

H_o2- School location (urban or rural) does not significantly influence secondary technical students' acquisition of knowledge-based skills as measured by their aptitude test scores in the identified knowledge and skills-based subjects (at $P < 0.05$).

7. Literature Review

A study carried out by Arnold, Newman, Gaddy, and Dean (2005) on "A look at the condition of rural education research: setting a direction for future research" concluded that the educational aspirations of rural students lag behind those of urban students. Another investigation by Haller and Virkler (1993) titled: "Another look at rural-non-rural differences in students' educational aspirations" supported Anold (2005) and his colleagues Khattri, Riley and Kane (1997) who investigated "Students at risk in poor, rural areas: A review of the research" and concluded same. Other researchers who have conducted studies in this area include: Cobb, McIntire and Pratt (1989); Haas (1992); Hektner (1995); Kannapel and DeYoung (1999); Ley, Nelson and Beltyukova (1996); Stern (Ed.). (1994); and Sarfo, Amartei, Adentwi and Brefo (2011).

8. Methodology

A correlation design was adopted for this study. The populations of the study constituted 1,328 validly registered SS II students for the 2017/2018 academic session (Appendix 1). The samples for this study were 11 secondary technical schools and 330 SS II students drawn from the senior secondary technical level across the two states (Appendix 1). Cluster and random sampling methods were used to identify the samples. These methods were used because secondary technical schools were intact units. Random sampling was used to identify SS II students. The instrument used for data collection was a Students' Aptitude Test on Skills Acquisition (SATSA) with 12 multiple-choice objective items in four sub-constructs of creative thinking, innovation, ICT and entrepreneurship skills. Data collected with the instruments were analyzed using Pearson Product Moment Correlation Coefficient (PPMCC) and Multiple Linear Correlation Analysis to answer research questions so as to determine the linear

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relationship between and among the variables of the study. The Hypotheses were tested using t-test of significance of correlation and One Way Analysis of Variance (ANOVA) at p < 0.05 level of significance. This helped to ascertain if the linear relationships were significant or not.

9. Results

Data generated from the Students' Aptitude Test on Skills Acquisition (SATSA) were analyzed with the Statistical Package for Social Sciences (SPSS). Results obtained were presented in Tables 1 and 2. Further information on the result of this hypothesis is given in Appendixes 2 and 3.

Table 1. Secondary Technical Students' Acquisition of Knowledge-Based Skills in the Identified Knowledge-Based Skill Subjects as Measured by Their Aptitude Test Scores (N = 330)

One-Sample Test

				Test value = 0		
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the Difference	
Rural	27.194	179	.000	12.82982	12.3523	13.3072
Urban	22.380	149	.000	12.63939	12.0639	13.2148

Table 2. ANOVA on Influence of Location (Urban or Rural) on Secondary Technical Students' Acquisition of Knowledge-Based Skills in the Identified Knowledge-Based Skill Subjects as Measured by Their Aptitude Test Scores (N = 330)

ANOVA[b]

Model	Sum of Squares	df	Mean Squares	F	Sig.
1 Regression	378.654	2	75.713		
Residual	25232.190	179	28.224	0.894	.020[a]
Total	25610.754	149			

a. Predictors (Constant), CT, INV, ICT, ES.

b. Dependent Variable: App. Test Scores.

10. Findings and Discussion

The objective of the first research question/hypothesis was to ascertain students' acquisition of knowledge-based skills in the knowledge-based skill subjects as stated in research question one and hypothesis one. The result in respect of null hypothesis one (Table 1) showed t-calculated values of rural, 27.194 and urban 22.380. Compared to the critical t-value of 1.96, these values were greater; thus, indicating that the result was significant. Based on this result, the null hypothesis was rejected and the alternative accepted. The finding indicated that students' acquisition of knowledge-based skills as

measured in their aptitude test scores in the identified knowledge-based skill subjects was statistically significant.

The objective of research question two/null hypothesis two was to ascertain if the location of secondary technical schools (urban or rural) had any influence on students' acquisition of knowledge-based skills (creative thinking, innovation, ICT and entrepreneurship skills). The finding in Table 2 was derived from a combined ANOVA (overall) and t-test for specific variables (components of the knowledge based skills tested). In addition, this result showed that some components, example CT, ICT and ES, were weightier than the INV component that had a negative contribution. This hypothesis was, consequently, adjudged not significant since the F—Calculated of 0.894 was less than the F—Critical value of 1.96 at P < 0.05. The finding, therefore, was that location did not have influence on students' acquisition of knowledge-based skills as measured by their aptitude test scores in the identified knowledge and skills-based subjects.

11. Conclusions

The first finding on the significant students' acquisition of knowledge-based skills implied that this was the level of acquisition of knowledge-based skills by the students. Moreover, it indicated that students in both urban and rural areas applied themselves to their studies, classroom assignments and other practical training. Students were not influenced by environmental factors. It further implied that the theoretical value derivable from the structure of the new Federal Government secondary school curriculum; namely, that students should study a compulsory four cross-cutting subjects (English, Mathematics, Civics and one trade or entrepreneurship subject), select and major in one of four fields of studies (Senior Secondary Science, Senior Secondary Business, Senior Secondary Humanities and Senior Secondary Technology), was paying off as they graduate with the requisite basic knowledge-based skills that could enable them secure paid employment or become self-employed.

The second objective was to ascertain if the location of secondary technical schools (rural or urban) influenced students' acquisition of knowledge-based skills as measured by the aptitude test scores in sampled knowledge and skills-based subjects. The insignificant result of F-Cal = 0.894 against F-Crit = 1.96, was a surprise finding because Calabar, Owerri, Aboh Mbaise, Ogoja and Ugep are in urbanized schools with the highest number of teachers (both qualified and professionally trained) in all subject areas. Ordinarily, the presence of these factors should have influenced urban secondary technical students to perform at a better level of acquisition of knowledge-based skills. Besides, technical schools in these areas have better infrastructure and equipment to complement a coterie of well qualified and experienced teachers. For example, Zhang (2017) found that there was an overall better academic performance difference between urban, suburban, and rural districts as a result of the presence of these factors. This was not the case in this study.

12. Recommendations

The first recommendation is that secondary technical school principals and teachers should sustain and improve students' acquisition of knowledge-based skills in the two states. The second recommendation is that further investigations should be conducted to ascertain the extent to which secondary technical students acquire knowledge-based skills irrespective of the location of their schools (rural or urban).

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Appendixes

Appendix 1. Population and Sample Distribution by LGAs, Schools and Number of Students

State	Local Governments	Schools in each Local Govt.	Population	Sample No. of Students
Cross River State	Calabar	Community Technical College	206	30
	Ugep	Community Tech. College, Ugep	102	30
	Boki	Ekpashi Tech. College, Ntamante	88	30
	Etung	Government Technical College, Ajasor	86	30
	Ogoja	Government Technical College, Ajasor	201	30
	Obanliku	Bendi Technical College, Bendi	81	30
Imo State	Owerri	Government Technical College, Owerri	212	30
	Mbaise	Nguru Secondary Technical School, Aboh-Mbaise	171	30
	Orlu	Okporo Technical School, Orlu	95	30
	Mbano	Obollo Secondary Technical School, Mbano	97	30
	Njabar	Okwudor Secondary Technical Sdchool, Njabar	89	30
Total			1,328	330

Source: Secondary Technical Education Boards, Cross River and Imo States).

Appendix 2. Summary of Secondary Technical Students' Acquisition of Knowledge-Based Skills in the Identified Knowledge-Based Skill Subjects as Measured by Their Aptitude Test Scores (N = 330)

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.041[a]	.005	.003	3.0672

a. Predictors (Constant), ES, ICT, INV, EE, CT

b. *Source*: Researchers' Field Work, 2018

Appendix 3. Coefficients of Secondary Technical Students' Acquisition of Knowledge-Based Skills in the Identified Knowledge-Based Skill Subjects as Measured by Their Aptitude Test Scores (N = 330)

Coefficients [a]

Model	Non-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std Error	Beta		
1 (Constant)	12.533	0.542		7.702	.000
CT	.117	.084	.014	0.645	.055
EE	.206	.084	.027	0.817	.005
ICT	.005	.082	.001	.019	.318
INV	-.179	.083	-.024	-.072	.010
ES	.022	.087	.003	.085	.266

a. Dependent Variable: App. Scores

Significance $P < 0.05$ with T or F = 1.96.

Source: Researchers' Field Work, 2018.

Appendix 4. Students' Aptitude Test on Skills Acquisition (SATSA)

Q.1 The aim of keyboard training in ICT and communication skills is to:

    A. Locate keys on the keyboard

    B. Know that there are many keys on the keyboard

    C. Know that the computer keyboard is like that of a typewriter

    D. Know that each key performs only one function

Q.2 What are task and tool bars in a computer?

    A. They are one and the same bar.

    B. They perform the same functions

C. They are different and perform different functions

D. When one bar is not functional, the other is used

Q.3 Basic packages of ICT and communication skills include:

A. Dbase + MS Word + SPSS + MS Excel

B. MS Word + MS Excel + Keyboarding + Internet Networking

C. Keyboarding + Analog + PageMaker + MS Word

D. PageMaker + Dbase + SPSS + MS Excel

Q.4 Internet operations involve:

A. Sending Messages + Computer + Computer Repairs + Watsap

B. Browsing + Downloading Docs + Sending Messages + E-Commerce

C. Chatting + Analog + Mainframe Computers + Money Transfer

D. Mainframe Computer + Browsing + Money Transfer + Chatting

Q.5 Self-employment skills include the following:

A. Establishing own-business + managing it + Partnership + Cooperative

B. Self-employment + Partnership + Taking Risks + Initial Capital

C. Initial Capital + Taking Risks + Managing Business + Profits

D. Government Grant + Loans + Cooperative Partners + Profits

Q.6 Maintaining business day books includes making entries in:

A. General Journal + Purchases Journal + Sales Journal + Cash Book

B. General Journal + Incomplete Records + Trial Balance + Returns

C. Purchases Journal + Sales Journal + Bank Reconciliation + Trial Balance

D. General Journal + Cash Book + Trial Balance + Profit & Loss Account

Q.7 Becoming self-employed means:

A. I work for myself, take risks, make profits and don't earn any salary.

B. I work for I, hire consultants, receive grant from government, employ others to work for me.

C. I take risks, own my business, receive government grants, and work with partners.

D. Work in my business, don't employ anybody, engage in cooperative ventures, and make profits.

Q.8 Originality in creative thinking means:

A. Ability to dream up, invent, and to think up to conceptualize new ideas or products.

B. Ability to create fresh, unique, unusual, totally new, or extremely different ideas or products

C. Ability to dream up, invent, or to see, to think, to conceptualize new value to services or products

D. Ability to generate a number of ideas so that there is an increase of possible solutions or related products.

Q.9 When a creative thinker is not distracted by worries or conflicting priorities, he is experiencing:

A. Immediate feedback

B. Merged action and awareness

C. Creative flow

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D. Distractions excluded from consciousness

Q.10 When a creative activity becomes an end in itself; that is when/it is/a:

    A. Autotelic

    B. Self-consciousness disappears

    C. Balance between challenges and skills occurs

    D. Distractions are excluded from consciousness

Q.11 Entrepreneurship skills involve all but one of these:

    A. Employing and managing staff in small ventures.

    B. Rendering practical business services or goods that have value

    C. Submitting audited accounts as required by the Companies' Act.

    D. Open and maintain basic day books

Q.12 A willingness to provide goods or services that people may need or want means:

    A. Identifying people's needs/wants

    B. Risk taking

    C. Satisfying people's needs or wants

    D. Rendering practical business services or goods that have value