

## EFFECT OF CONNECTIVIST LEARNING FOR MATCHING SKILLS DEMAND IN THE KNOWLEDGE BASED ECONOMY.

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### Abstract

*Technology has changed the manner in which people learn and work in this era. This study determined the mean achievement score of students taught Business Communication using connectivism, and effects of chronological age on mean achievement score of students taught Business Communication using connectivism. The study answered two research questions and tested one hypothesis at 0.05 level of significance. The study adopted quasi-experimental design. Specifically, it is a non-equivalent control group design. The area of the study was Adamawa and Taraba States, Nigeria. The population for the study was 265 NCE III students of Business Education Department made up of 139 males and 164 females drawn from the two public Colleges of Education in Adamawa and Taraba State. There was no sampling for this study because the study involved intact classes. The tests scores generated were analysed using mean to answer the research questions and Analysis of Variance (ANOVA) to test the hypotheses at 0.05 level of significance. It was found out that the connectivist class performed better than the conventional class. Students taught in the connectivist classroom performed better than students taught in the conventional classroom. It was also found that a significant difference exists in the achievement scores of students taught Business Communication using connectivism based on their ages. Students within the ages of 15-25 were found to achieve more in the connectivist treatment class. Conclusively, there is a generation gap in the use of ICT, and competence plays a significant role in learning outcome. This is apparent especially in the ICTrelated pedagogical practices like connectivism. Also, ICT is an important factor that should be taken into consideration when designing classroom environments. Nigeria Commission of Colleges of Education (NCCE) should consider a review of her curriculum especially Business Education curriculum with a view of incorporating connectivist teaching/learning model into the teaching of Business Education subjects particularly Business Communication. The Government (Federal and states) through her Ministry of Education should provide technological facilities and resources adequate enough to pave way for the implementation of connectivism.*

### Introduction

Over decades, technology has reorganized how we live, talk and learn. The increasing complexity in the global economy, with its competitive productivity in the labour market, the impact of technology on the skills required

for employment, the dynamic job market with its festering unemployment, has necessitated the way and manner in which business education training is conducted (Hosea and Yaro, 2018). The global social and economic

changes have significantly influenced business education; therefore, the nature and content of business education programmes must grow concomitant with the expertise needed for today's world of work. Technological innovations have made the United States (US) economy more productive but the same technological innovation has rendered more people jobless in less advanced countries like Nigeria (Arowolo, 2014). The author further asserts that the increasing use of digital devices such as computers and robots do more of the work that people used to do. Digital labour has substituted a great deal of human labour. For instance, in Nigeria banking and insurance sectors, many of their workers lost their jobs to technology.

Because of these technological developments, many institutions have redesigned their curriculum, for example, secretariat studies offered in polytechnics and colleges of education have been replaced with Office Technology and Management (OTM).

Graduates of former secretariat studies are no longer needed in their field because their training does not comply with the present societal needs (Hosea and Yaro 2018).

Business Education as an integral part of Technical, Vocational Education and Training (TVET), is an education for skills acquisition. The National Policy on Education (2004) defines business education as that aspect of education that provides practical skills as well as basic

economic system. In other words, business education is that type of education that provides its students with theoretical knowledge, practical skills, creative abilities and competencies to function effectively as teachers, office administration, self-employment. Business Education has rapidly developed in recent times and has fitted into advance office technology and information systems. In agreement to this statement, Ekpenyong in Amoor (2014) posits that Technical, Vocational Education and Training (TVET) which Business Education is a part, has witnessed a tremendous change in the world and Nigeria in particular over the years. The importance of business education cannot be over-stressed. Business Education programme provides its students with knowledge, skills and competence in accounting, marketing and office technology and management. It prepares students for employment in miscellaneous office occupations apart from teaching profession. The skills students acquire in business education can make them to become originators in commerce and to become successful owners and managers of small and medium owned business enterprises.

The national education planners recognises technical, vocational education and training which business education is an integral part of it, and expressed its importance in the National Policy on Education (2013) as an education that

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scientific knowledge. Ibrahim in Amoor (2014) asserts that business education encompasses knowledge, attitudes and skills needed by all citizens in order to effectively manage their personal resources and participate in the

provides manpower in applied sciences, technology and commerce, particularly at sub-professional levels; it provides the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and

economic development and to give training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant.

In the present knowledge-based economy, a fresh awareness of the critical role vocational education plays in national development and economic growth has dawned among the policy makers in most of the African countries and within the international donor community (Arowolo, 2014). Technical, Vocational Education and Training (TVET) has emerged as one of the most effective human resources development strategies that international communities have embraced in order to train and modernize their skilful workforce for rapid national development and economic growth. Globally, governments are doubling their efforts in promoting technical, vocational education and training in primary and post primary schools with the aim to minimize unemployment, alleviate poverty and if possible eradicate poverty; enhances and sustains productivity in the knowledge economy.

Technical, Vocational Education and Training (TVET) is a comprehensive term which refers to the study of technologies and sciences with the acquisition of practical skills, knowledge and attitudes relevant for employment or self-employment. UNESCO (2002) described TVET as a training which is concerned with the acquisition of knowledge and skills for the world of work. The central metaphor of TVET is building a self-reliant nation through training in relevant skills needed for national development. Colleges of education plays an

important role in Nigeria, they train teachers, impart useful skills on trainees for self-employment and jobs creation. Colleges of education in Nigeria are established to provide skills training, prepare and produce teachers for primary and lower forms of secondary schools' education (NCCE, 2014).

For national development and knowledge-based economy, colleges of education should impart relevant skills needed in this present generation. The technology advancement in the world of work has necessitated a change in the way teaching and learning is carried out (Prensky, 2001). Therefore, the products of these colleges should fit effectively in the world of work. This change in the world of work has necessitated the need to introduce connectivism in teaching/learning in colleges of education. The significant role of technology in teaching/learning process has been established by various researchers. Colleges of education should take advantage of this by adopting connectivism in their instructional delivery.

Connectivism is the learning theory that says knowledge and learning can be described and explained using network principles. Learning is not to acquire a set of facts, but rather, to develop or grow into a certain neural configuration. Connectivism is a learning theory that is often referred to as networked learning. connectivism is more than just the technology used to achieve the end result. Connectivism can be seen as a networked construct which encompassing neural, conceptive and external processes. The neural and conceptive processes take place within the individual. Technology is the only external construct that lends itself to the learning processes. The modern-day shift in the cognitive process itself is what is significant and different, and this shift requires new theoretical perspectives.

Connectivism places emphasis on the importance of instructing students to search for, filter, analyses and synthesize information in order to obtain knowledge (Downes, 2012).

The author further opines that when an individual or a learner needs knowledge and the knowledge is not known, the ability to plug into sources to meet the requirements becomes a useful skill. As knowledge continues to grow and evolve, access to what is needed is more important than what the learner currently possesses.

Siemens and Downes (2008) compared the flow of information in a knowledge economy to the equivalent of the oil pipe in an industrial economy. Creating, preserving, and utilizing information flow should be a key organizational activity. The pipe is more important than the content within the pipe. The ability to learn what is needed for tomorrow is more important than what is known today (Siemens, 2004 and Downes, 2008).

When looking at the history of e-learning, it becomes clear that there was a need to develop a new learning theory that would encompass the type of learning that takes place online. In the late 1990's the Internet evolved and content was shifting from the controlled distribution of information to include end-user generated materials. As the barriers to developing network content continued to fall, end-users found they were able to create, collaborate and share with relative ease (Siemens, 2009). As a result, this information revolution had significant impact on traditional education as educators, no longer tied to textbooks, were able to offer students collaborative, online learning opportunities. In today's environment, learning is a process of connecting people to each other, and to

information resources (Weller, 2007). Siemens' connectivist principles can easily be link with Weller, an expert in virtual learning environments, who asserted that e-learning is a matter of connections between people and information resources. Siemens developed a set of connectivist principles that allows the influence of new technologies and rapidly changing information needs (Siemens, 2005 and Downes, 2012).

This less-formal approach is described in Connectivist Learning Theory. Connectivism recognizes that information is incredibly fluid, resides in multiple locations, and is highly disorganized (Siemen 2004, Siemens & Downes 2008). The learner has needs beyond basic skills, which are highly individualistic (Kop & Hill, 2008). The learner wants, first, to discover how to effectively find information; next, to discern its value; then, decide how and where to store this information; and finally, what meaning to give this information as it is turned into useful knowledge in the era where technology has changed how people learn.

Learning is the ability to find information, filter it and make decisions according to the filtered information. Learning is a process in which an individual experiences permanent, lasting changes in knowledge, attitudes and behaviour. Learning is an increase in knowledge or acquisition of information. Learning involves comprehending the world by reinterpreting knowledge. Siemens (2010) defined learning as the creation and remover of connections between entities and the adjustment of the strengths of those connections. According to the author learning is no longer a personal activity. Knowledge is gain through networks. In digital community, the connections and

connectiveness in a network causes learning. Therefore, learning needs and theories that interpret learning principles and processes should reflect the social needs of the society. To Hosea (2015), learning is the ability of an individual to access rightful and related materials, study and understand the materials and then share the ideas gotten from the studied materials with another person. Once this is done, it is expected that learning has occurred. The way people learn in this knowledge economy is different from what it used to be in the industrial economy. Today, learning is social and interactive than in the past. This work therefore, purposed connectivist model as an instructional method that enable learners to relate and interact with each other to effectively find information that are useful and knowledgeable in order to form knowledge in this knowledge-based economy.

### **Purpose of the Study**

Specifically, this study sought to determine the effect:

1. connectivist and conventional methods in teaching business communication
2. connectivist and conventional methods in teaching business communication on students of different age ranges.

### **Research Questions**

Two research questions guided this study:

1. what is the effect of connectivist and conventional methods in teaching business communication?
2. what is the effect of connectivist and conventional methods in teaching business communication on students of different age ranges?

### **Hypothesis**

**Ho<sub>1</sub>:** There is no significant difference on the effect of connectivist and conventional methods in respect to students age ranges.

### **Methodology**

The study adopted quasi-experimental design. Specifically, it is a non-equivalent control group design. The design was chosen because it was not possible to have complete randomization of subjects. The design according to Gbore (2013), the design is considered appropriate because it establishes a cause and effect relationship between the independent and dependent variables. In this design, intact classes will be used as experimental and control groups. In the present study, the independent variables are: connectivism, and gender while the dependent variable is achievement.

The study was carried out in Federal College of Education Yola, Adamawa State and College of Education Zing, Taraba State. The two colleges of education are the only Colleges of Education in the study area that offers business education. The population for the study was 265 students offering Business Communication in NCE III of the two Colleges of Education in Adamawa and Taraba

States, Nigeria. There was no sampling in the study.

Business Communication Achievement Test (BCAT) was used to collect data for the study. Business Communication Achievement Test (BCAT) consists of equaltest items for pre-test and post-test. The test items were developed by the researcher using the course content provided by National Commission for Colleges

of Education (NCCE) Nigeria Certificate in Education (NCE) Minimum Standards for Vocational and Technical Education 2012 edition. The items covered the following area: methods of communication, Principles of effective communication, impact of information technology, barriers/remedies of effective communication, guideline for composing letter, general format of a letter, advertisement, minutes, report-writing and meetings. The measured behaviour included knowledge of terms, principles and concepts, interpretation of concepts, application of principles and concepts.

Also, Delivery Package for Business Communication (DPBC) (which is generally known as lesson plan), instruments for data collection, which is Business Communication Achievement Test (BCAT) and Test Blue Print for Business Communication Achievement Test (BCAT) Construction were validated by three experts in Department of Business Education, University of Nigeria, Nsukka, Enugu State. The validates were provided with the purpose of the study, the research questions, Delivery Package for Business Communication (DPBC), Business Communication Achievement Test (BCAT) and Test Blue Print for Business Communication Achievement Test (BCAT) Construction (Table of Specification for BCAT). Validates were requested to verify whether the items were relevant to the study, clearly and appropriately stated and capable of eliciting the right responses from the respondents, appropriateness of language level of the items and choice of appropriate alternatives for the multiple-choice questions. Based on their comments and inputs, the items on the instruments were appropriately modified to make the instruments more valid. Content

validation of BCAT was done using the table of specification drawn from the content taught. The items of the instrument were developed to cover both lower order and higher order questions.

Kuder-Richardson formula 20 ( $K-R_{20}$ ) was used to determine the internal consistency of the instrument. To ensure the reliability of the instrument, thirty students of Business Education Department offering Business Communication in Federal College of Education (Technical) Gombe, Gombe State were experimented in a trial study because the College is not within the study area and they have common characteristics with those respondents in the study area. The Kuder-Richardson formula 20 ( $K-R_{20}$ ), according to Louis, Manion and Morrison (2007), Nworgu (2006), is used when test items are scored —a|| or —b|| (e.g. wright or wrong) or an untimed test assumed to measure one characteristic or quality. It is therefore suitable for multiple choice questions. The choice of Kuder-Richardson formula 20 ( $K-R_{20}$ ) was based on the assumption that all items in the scale have no equal difficult levels (i.e. no equal proportion of success on the items). Therefore, was considered to be a better reliability estimate (Lord & Novick, 1968 and Traub, 1994). This method was adopted because it ascertains the internal consistency of the instruments. The reliability coefficient for Business Communication Achievement Test (BCAT) was calculated and the result obtained was .952.

The scores obtained from the pre-test and post-test was analysed using mean and the pretest-posttest mean score in each of the two groups was computed. Also, the hypothesis  $H_{01}$  formulated for the study was tested at 0.05 level of significance using Analysis of Variance (ANOVA). According to Gall, Gall & Borg (2007),

ANOVA is a statistical procedure that compares the amount of between-group variance in individuals' scores with the amount of within-groups variance, and it also provides a post hoc method of matching group on such variables as age, aptitude, prior education, socioeconomic class or a measure of performance. The use of

### Result of the Study

The presentation, analysis and interpretation were organised base on the research questions and hypothesis of the study.

### Research Question 1

**Table 1: Mean Gain of Pre-test and Post-test of Students taught using Connectivist Model and those taught using Conventional Methods.**

Group	N	Pre-test	Post-test	Mean Gain
Conventional Class	126	24.24	62.20	37.96
Connectivist Class	139	24.30	78.24	53.94

ANOVA helped to compare the mean of the groups if the p-value is statistically significant at .05 level of significance the null hypothesis will be rejected otherwise the null hypothesis will not be rejected.

1. what is the effect of connectivist model and conventional method on teaching/learning process?

The data to this research question was presented in Table 1.

The data presented in Table 1 revealed that the conventional class had a mean score of 24.24 in the pre-test and a mean score of 62.20 in the post-test making a pre-test, post-test mean gain of the conventional class 37.96. The connectivist class had a mean score of 24.30 in the pre-test and a post-test mean score of 78.24 with a pre-test, post-test mean gain of 53.94. From this result, the students in the connectivist class performed better in the achievement test than the students in the conventional class.

### Research Question 2

2. what is the effect of connectivist model and conventional method on students of different age ranges?

The data for this research question is presented

**Table 2: Mean of pre-test, post-test score of students of specified age range.**

Group	N	Age Range	Pre-test	Post-test	Mean Gain
Conventional Class	126	15-25	23.27	56.62	33.35
		26-35	24.29	64.59	40.29
		36 and above	26.91	73.73	46.82
Connectivist Class	139	15-25	25.14	83.14	58.00
		26-35	24.53	76.00	51.47
		36 and above	22.34	69.83	47.49

in Table 2.

The data presented in Table 2 shows that students of age 15-25 taught in the conventional class had a mean score of 23.27 in the pre-test and a mean score of 56.62 in the post-test making a pre-test, post-test mean gain of 33.35. Students of ages 26-35 taught in the conventional class had a mean score of 24.29 in the pre-test and a post-test mean of 64.59 with a pretest, post-test mean gain of 40.29. Students of age 36 and above had a mean score of 26.91 in the pre-test and post-test mean score of 73.73 making a pre-test, post-test mean gain of 46.82. Students of age 15-25 taught in connectivist class had a mean score of

25.14 in the pre-test and a post-test mean score of

83.14 making a pre-test, post-test mean gain of 58.00. Students of ages 26-35 taught in connectivist class had a mean score of 24.53 in the pre-test and a post-test mean score of 76.00 with a pre-test, posttest mean gain of 51.47, and students age 36 and above taught in connectivist class had a mean score of 22.34 in the pre-test and a post-test mean score of 69.83 making the pre-test, post-test mean gain of

47.49.

From the result presented on the Table 2 above, it

can be deduced that students between the age **Testing of Hypothesis**

ranges of 15 to 25 performed better in a connectivist There is no significant difference on the effect of class than other age group while students within the learning using connectivist model and conventional age range of 36 and above performed better in the method with respect to students age ranges. conventional classroom.

**Table 3: ANOVA comparing the mean scores of students taught using connectivist model and those taught using conventional method based on their age range.**

	Sum of Squares	df	Mean Square	F	Sig.	Remarks
Between Groups	4400.063	2	2200.032	50.239	.003	Significant
Within Groups	5955.620	136	43.791			
Total	10355.683	138				

Table 3 shows the ANOVA result comparing the performance of the students taught in the connectivist class. The result showed that the p-value of 0.03 is statistically significant at .05 level of significance. The null hypothesis was therefore rejected as stated; hence, there was a significant difference in the performance of students taught in the connectivist class based on their age range.

## Discussion of the Findings

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The data provided in Table above 1 answered research question one. The findings revealed that the connectivist class performed better than the conventional class. Students taught in the connectivist classroom performed better than students taught in the conventional classroom. This supports the findings of Kropf (2013) that transforming the classroom into a large collaborative learning environment using the internet and social networking possibilities provided for by the development in the internet technology improves students' learning outcome. Carrillo, Onofa, and Ponce (2010), Barrow, Markman, and Rouse (2009) and Banerjee, Cole, Duflo, and Linden (2007) also noted that the adoption of information and communication technology for educational purposes can increase students' performances in at least two ways. First, the availability of ICT in the classroom shifts the level of educational inputs and could thus affect students' learning outcomes. Secondly, exposure to ICT may increase the cognitive abilities of students, allowing them to learn faster. Computeraided instruction may be more relevant in a context in which teacher quality is poor, which is the case in most developing countries. Therefore, ICT is an important factor that should be taken into consideration when designing classroom environments.

The result in Table 2 above proves that age is an important factor in the connectivist classroom. Students within the age range of 15 to 25 were found to have performed better than other age ranges in the connectivist classroom. This finding agrees with the opinion of Prensky (2001) who lamented that the major problem of education in the knowledge-based economy is that of teacher who are of industrial economy teaching students who belong to the knowledge-based economy. Prensky believe the fact that today students have grown up with technologies and that their brain is different from those students of other generation because of their direct contacts with technologies. They learn better when the educational programme is structured in line with their learning preference. Connectivism offers such an opportunity where the student is in charge of his learning as he networks with resources available in the various network nodes on the internet.

The hypothesis tested on the significant difference on the effect of students taught using connectivist model and those taught using conventional method with respect to their age range in table 3 also revealed that a statistical significance exists in the performance of students based on their age range. Ilomäki (2008) concur with the above finding by saying, there is a generational gap in the use of ICT and competence plays a significant role in learning outcome. This is apparent especially in the ICTrelated pedagogical practices like connectivism. The very different conceptions that generations have about technology influence strongly shows how they are able to use the technologies for academic purposes. From the finding, students between the ages of 15 to 25 were found to be more proficient in the use of technologies and in such performed better when taught using connectivist model.

## **Conclusion**

Teaching/learning process has been revolutionised by technology. The manner in which this process is carried out has given rise to concept such as virtual learning, online learning, connected learning etc. In

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this present generation, technology has proliferated within the process in tertiary education considering its impact on academic enhancement and social integration of students. Based on that, it is concluded that connectivist teaching and learning method is more effective than the conventional method in improving students' performance. The higher mean gain recorded in connectivist attest to the fact that the students interact with experts, peer-to-peer connection and increased interest of individual students to learn which makes the students active participants in the global digital community and proficient in the use of ICTs facilities and cyber space technology. This has increased e-readiness of both the teachers and students in teaching/learning process.

### Recommendations

Based on the findings, the following recommendations were made:

1. Tertiary institutions in Nigeria should consider a review of their curriculum with a view of incorporating connectivist model into the teaching and learning process.
2. Federal and states government through the Ministry of Education should provide ICT facilities and resources adequate enough to pave way for the implementation of connectivism.
3. Workshops and seminars should be organised by Nigeria tertiary institutions to enlighten education administrators, teachers and students on how to make effective use of connectivism in their everyday teaching and learning activities.

### Design of the Study

This study adopted quasi-experimental design. Specifically, it is a non-equivalent control group design. The design was chosen because it was not possible to have complete randomization of subjects. The design according to Gall, Gall & Borg (2007), is that research participants are not randomly assigned to the experimental and control groups and both groups take a pretest and posttest. To Ali (2006) and Gbore (2013), the design is considered appropriate because it establishes a cause and effect relationship between the independent and dependent variables. In this design, intact classes will be used as experimental and control groups. In the present study, the independent variables are: connectivism, and gender while the dependent variable is achievement.

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