



Strategies Considered Effective For Teaching Technology Education Courses In Tertiary Institutions In Anambra State

¹Professor Justina I. Ezenwafor; ^{2*}Festus Ikechukwu Aduhuekwe
& ³Dr. Ogochukwu Grace Akamobi

¹Department of Technology and Vocational Education, Nnamdi Azikiwe University
Email address: justed1998@yahoo.com & ji.ezenwafor@unizik.edu.ng

^{2,3}Department of Elect/Elect. Technology Education, Federal College of Edu. (T), Umunze
*Email address: fesike2011@gmail.com & ogochukwuakamobi@gmail.com

ABSTRACT

The need to improve students' academic achievement in technology education necessitated the study that sought to determine the strategies considered effective for teaching technology education courses in tertiary institutions in Anambra State. Two research questions and four null hypotheses guided the study. Census survey research design was used for the study. The population of 55 technology education lecturers in all the tertiary educational institutions in the state was studied without sampling as the size was not too large. Instrument used for data collection was a five point rating scale questionnaire containing 23 items in two clusters in line with the objectives of the study. The instrument was face validated by three experts and the internal consistency was determined with Cronbach Alpha method and coefficient values of 0.79 and 0.78 were obtained for the two sections with an overall coefficient index of 0.79. Mean and standard deviation were used to answer the research questions and determine how close the respondents rating were to the mean while t-test and analysis of variance (ANOVA) were used to test the hypotheses at 0.05 level of significance. Findings indicated that the subjects considered demonstration, and activity based strategies effective for teaching technology education courses in tertiary institutions in Anambra State. The respondents did not differ significantly in their mean ratings as a result of level of education and experience. Based on the findings, it was concluded that students' academic achievement in technology education will greatly improve if the lecturers adopt suitable strategies. It was recommended among others that technology education lecturers should widely adopt demonstration and activity-based teaching strategies in order to enhance students' understanding and academic achievement.

Keywords: Technology education, teaching strategies, effective teaching, tertiary institution

INTRODUCTION

Education is the bedrock of any nation's development as no nation can develop with a higher rate of illiteracy among the citizens. All fields of human endeavour need the services of education because the success of all human activities in any country is directly determined by the educational system of the nation. This is why Chukwura in Akamobi (2016) stated that education is a formidable foundation on which the skill of a nation's workforce is built. Therefore, the education system has the mandate to provide training programmes which will help to equip the youths with knowledge and necessary skills for paid and/or self-employment.

Technology education is that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge (Mbah, 2012). The Federal Republic of Nigeria (FRN, 2014) posited that technology education is a post secondary vocational training programme whose major purpose is to provide training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel that will be enterprising and self-reliant. Technology education provides appropriate technology training, development and adaptation, to sustainable poverty alleviation in an environment (Akamobi, 2016). From the foregoing, it can be

deduced that technology education is the type of education that equips its recipients with specific skills that will make them become self-reliant.

In Nigeria, technology and vocational education exists at three levels, namely; pre-vocational and pre-technology training usually offered in secondary schools, and craftsmen training usually offered in technical colleges, trade centers and vocational schools as well as technology training usually offered in polytechnics and colleges of technology (Okwelle & Dokubo, 2018). Each of these levels has well articulated objectives by relevant supervisory agencies to achieve. For instance, the main objective of technology education at the tertiary level is to supply the nation with trained manpower in applied sciences, technology and commerce particularly at sub-professional levels.

Achievement of the objectives of technology education at any level depends on many factors including the teaching strategies adopted by teachers in presenting the learning contents and experiences to learners. Okafor (2009) opined that the teaching adopted by a teacher has a significant role in achieving change in behaviour of the students. Study conducted by Ukejerson and Ezeokoye (2015) revealed that the primary difference between effective and ineffective teachers does not lie in their qualification, gender or the years they have been in the teaching profession. These authors affirmed that the difference exists more fundamentally in the manner in which teachers deliver the knowledge and skills while interacting with students in the classroom. In the same vein, Okafor and Ile (2014) observed that academic achievement in education is believed to be a product of the teaching methods and strategies adopted by the teachers and learners interaction with the learning experiences.

Teaching strategies refer to the process of planning and carrying out teaching tasks in order to achieve educational goals (Okoye and Umezulike, 2014). A strategy is seen as a plan action designed to achieve overall aim of instruction in class. Taylor (2009) stressed that the type of teaching strategy to be used depends on the information or skills the teacher is trying to convey. A good teaching strategy must cater for the three major educational domains; cognitive, affective and psychomotor. According to Ogbodo (2016) active teaching strategies must possess characteristics such as;

- Integrate thought and practical activities
- Enable varied learning styles
- Enable a methodologically corrected teaching of curriculum content
- Promote cognitive interaction with others
- Develop high-level cognitive processes
- Foster reflection and metacognitive activity
- Support readiness to carry out tasks and motivation to learn and
- Enable observation and monitoring of the students.

Teaching strategies used in the classroom differ from subject to subject relative to students' background knowledge, environment and learning goals. Roberts (2010) opined that various teaching strategies are utilized in teaching technology education courses for a better understanding of the content because of the nature of the programme. The teaching strategies identified by Wright (2014) include field trip, activity-based, demonstration, discovery, lecture, discussion, guest-speaker and reading of textbooks, manuals and handouts. Others are collaboration/collaborative strategy, individualized instruction, kinesthetic teaching, project method and seminar presentation among others. Teaching strategies may be teacher centered or student centered.

Each of the strategies adopted must be anchored on a particular teaching method. This is why Onaga and Omeje (2015) explained that teaching method is the general principles, pedagogy and management strategies used for classroom instruction. The choice of teaching method depends on what fits the teacher and the society, curriculum content, educational philosophy, classroom, demographic nature of the class, subject area, school mission statement and the level of the learners. Consequently, it is pertinent for the teacher to understand the different types of teaching strategies and realize their advantages and disadvantages to know how and when to apply them judiciously. This is because, according to Ezenwafor and Akpobome (2017), strategies adopted by the teacher determine the effectiveness of the instructional delivery and students' learning outcome.

In the contemporary era, some teaching strategies that are popularly used by teachers as identified by Onaga and Omeje (2015) include field trip, project, demonstration, activity-based, discovery, problem solving/inquiry, questioning, interactive and cooperative method. Among these strategies there are some that have positive influence in teaching technology education courses in tertiary institution for

skill development and self-reliance of the learners. Ezenwafor and Akpobome (2017) stressed that demonstration, activity, discovery, field trip, questioning and discussion teaching strategies are widely used by vocational teachers in impacting vocational skills and competencies to students. The study would consider the effectiveness of demonstration, activity-based strategies in teaching technology education courses in tertiary institution among other strategies like discovery, field trip, questioning etc. Demonstration is another strategy of teaching popularly used by technology education lecturers and others. The word demonstration means to give demos or to perform the particular activity or concept. In demonstration, the teaching-learning process is carried out in a systematic way. Onaga and Omeje (2015) pointed that demonstration strategies consist of illustrating a technique or performing an activity that would allow students to make use of their sensory organs to observe and repeat. Demonstration often occurs when students have a hard time connecting theories to actual practice or when students are unable to understand the applications of theories. Demonstration teaching strategies may lead to activity-based teaching in technology education course.

Activity-based teaching strategies are intended to make the students active rather than passive participants in the learning process. According to Okafor (2009), activity teaching refers to the teacher-guided instructional task or assignment for students to perform in the teaching and learning exercise. In activity based teaching strategy, students actively participate in the learning experience rather than sit as passive listeners.

Currently, teachers of technology education courses in Nigerian tertiary institutions popularly use teacher-centered strategies such as lecture, reading of textbooks, mimeographs and discussion. Omeje (2011) noted that many teachers still use lecture in teaching technology subjects and posited that lecture strategies do not sufficiently give students the opportunity to participate in class activities. Teaching strategies that do not actively involve students could lead to inadequate practical skill acquisition, low interest and poor academic performance by technology education students. The position of Omeje (2011) agreed with Okoye and Umezulike (2014) who affirmed that teacher-centered strategies such as demonstration and lecture have proved incapable of contributing to technological and vocational skill development. Technology education, being skill-oriented, needs to be taught using strategies that will require teachers and learners to perform the skills rather than merely talk about them. This implies that teachers should be experienced, competent and sensitive to the individual learning needs of students and the learning situation in order to know suitable strategies to apply for greater effectiveness.

The technology education lecturers to be used in this study include lecturers of different educational attainments and years of teaching experience working in colleges of education and universities. These variables may influence their views on the extent of effectiveness of the teaching strategies they use in teaching technology education courses. For instance, Akinsolu (2010) reported that teachers' experiences, qualification and teacher-student ratio were significantly related to their teaching effectiveness. This implies that teachers' competence is affected by the number of years spent in the profession, level of qualification and class population. It is against this background that this study sought to determine the extent of effectiveness of these teaching strategies used by technology education lecturers in tertiary institutions' in Anambra State.

Statement of the Problem

Technology education is regarded as a tool for providing the developmental needs of the society. It is a means of preparing beneficiaries for employment in a recognized occupation by inculcating skills, knowledge and attitude required for utilizing available natural resources for individual self-empowerment and the economic development of the nation. Technology education involves manual dexterity (use of hands) and requires practical skills acquisition and specific work habits such as commitment and diligence to design, construct materials and repair technological equipment and tools.

This implies that teachers of technology education courses ought to use appropriate teaching strategies in order to achieve the learning objectives. It is pertinent to note that academic achievement in education is believed to be mainly dependent on the teaching strategies used by teachers. Unfortunately the current strategies of teaching technology education courses in Nigerian tertiary institutions are mainly teacher-centered which include lecture method, reading of handout or manuals and discussion. These may not sufficiently give students the opportunity to participate in class activities and develop their skills for self-reliance.

The problem of this study, therefore, is that technology education graduates in Anambra State do not seem to possess adequate relevant skills for effective work performance in employment. This is confirmed by the report of Mbah (2016) that graduates of technology education in the state do not possess the basic employability skills required for contemporary job demands. Mbah attributed this to the teaching strategies used by the teachers in covering the curriculum contents. If this situation is allowed to continue, the job market will be flooded with more unemployable graduates that will increase the level of unemployment in the state and related problems for the society. This anomaly can be addressed if technology education lecturers weigh the effectiveness of their teaching strategies and use those that are found more effective in order to develop students competencies for effective performance after graduation, hence the need for this study.

Purpose of the Study

The main purpose of the study was to determine the strategies considered effective for teaching technology education courses in tertiary institutions in Anambra State. Specifically the study determined the how technical education lecturers consider;

1. Demonstration strategies effective for teaching technology education.
2. Activity-based strategies effective for teaching technology education

Research Questions

The following research questions guided the study:

1. How effective do lecturers consider demonstration strategies for teaching technology education courses in tertiary institutions in Anambra State?
2. How effective do lecturers consider activity-based strategies for teaching technology education courses in tertiary institutions in Anambra State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significant:

1. There is no significant difference between the mean ratings of respondents on how effective demonstration strategies as used by technology education lecturers are for in teaching technology education courses in tertiary institutions based on educational attainment (first degree/higher degree).
2. Respondents do not differ significantly in their mean ratings on how effective demonstration strategies as used by technology education lecturers are for teaching technology education courses in tertiary institutions in Anambra State as a result of years of experience (5 years, 6-10 years, above 10 years).
3. There is no significant difference in the mean ratings of respondents on how effective activity-based strategies used by technology education lecturers are for teaching technology education course in tertiary institutions in Anambra State as a result of educational attainment (first degree/higher degree).
4. Respondents do not differ significantly in their mean ratings on how effective activity-based strategies used by technology education lecturers are for teaching technology education course in tertiary institutions Anambra State as a result of years of experience (5 years, 6-10 years, above 10 years).

RESEARCH METHODS

The design of this study was the census survey design. Idoko (2011) and Mbah and Udegbe (2014) defined census survey research design as one in which data are collected from entire group of people or items and analyzed in order to draw conclusion on the group relative to a given phenomenon. This design was considered suitable for this study because it will collect data from population of technology education lecturers in tertiary institutions in Anambra State using questionnaire and analyze the data to determine the extent they consider different teaching strategies effective for teaching technology education courses. The area of the study was Anambra State which is one of the states in Anambra State. The population of the study was all the 55 technology education lecturers in all the tertiary institutions in Anambra State offering the programme. There was no sampling because of the manageable size of the population. The instrument for data collection was a five-point rating scale titled "level of effectiveness of strategies used in teaching technology education courses in tertiary institutions in the Anambra State". The instrument for data collection was questionnaire containing 23 items in two clusters. The questionnaire was validated by three experts in Technology

Education and Educational Measurement and Evaluation from the faculty of Education Nnamdi Azikiwe University Awka. A pilot test involving 20 Technology Education lecturers in Enugu State was carried out. The data collected were analyzed using Cronbach Alpha and the reliability coefficient value of 0.79 and 0.78 were obtained with an overall reliability coefficient value of 0.79. This indicates that the instrument was reliable for the study as posited by Uzoagulu (2011) that reliability index of 0.60 and above depicts that an instrument is reliable for a study. The researchers personally administered the instrument to the respondents in their institutions with the help of two research assistants. Data collected were analyzed using mean and standard deviation to answer the research questions and determine the closeness of the respondents' response. SPSS Version 22 was used to analyze the data. Decision on the research questions was cluster mean relative to the real limits of numbers on five-point rating scale.

Analysis of variance (ANOVA) and t-test were used to test the null hypotheses at 0.05 level of significance. A hypothesis was not rejected where the calculated t-value or f-value was equal to or greater than the alpha level of 0.05 and was rejected where the calculated value of t or f-value was less than the alpha level.

RESULTS

Table 1: Respondents' mean ratings on how effective they considered demonstration strategies for teaching technology education courses in tertiary institutions in Anambra State

N= 53

S/N	Demonstration strategies	Mean	SD	Remark
1	Making sure that all students see teachers demonstration	4.42	0.60	Effective
2	Preparing the equipment and materials before hand	4.40	0.63	Effective
3	Asking questions to students while setting up equipment for the demonstration to keep them involved	4.39	0.59	Effective
4	Illustrating points efficiently	4.04	0.73	Effective
5	Developing an outline to guide the demonstration	4.13	0.65	Effective
6	Planning the demonstration carefully	4.38	0.63	Effective
7	Practicing the demonstration to focus attention	4.08	0.83	Effective
8	Encouraging students to ask questions to integrate their verbal experiences with their visual experiences	4.13	0.65	Effective
9	Asking students a written assignment on what they observed	3.91	0.69	Effective
10	Asking students to describe what they observed	4.40	0.59	Effective
11	Giving students opportunity to repeat demonstration	4.60	0.57	Very Effective
Cluster Means		4.26		Effective

Table 1 shows that one out of the 11 demonstration strategies with mean rating of 4.60 was considered as very effective while 10 with mean ratings ranging between 3.91 and 4.42 were considered as effective for teaching technology education courses. The cluster mean of 4.26 indicates that the respondents considered demonstration strategies only effective for teaching technology education courses in tertiary institutions in Anambra State. Standard deviation for all the items fell within the same range indicating that the respondents were not wide apart in their mean ratings.

Table 2: Respondents’ mean ratings on how effective they considered activity-based strategies for teaching technology education courses in tertiary institutions in Anambra State

N= 53

S/N	Activity-based strategies;	Mean	SD	Remark
1	Asking students to collect real objects for class work	4.51	0.61	Very Effective
2	Presenting a video clip and asking students to share their observation	3.94	0.77	Effective
3	Bringing students together for them to share what they learned with the group	4.23	0.54	Effective
4	Guiding the students to arrange the objects for class use	4.34	0.55	Effective
5	Providing an interview topic for three-step interview and stating the duration	3.50	0.79	Effective
6	Asking students to explain how a new topic learnt in class tie in with what was learnt before	4.36	0.81	Effective
7	Encouraging open dialogue between students and teachers during class instruction	4.23	0.54	Effective
8	Allowing students to share their thoughts and ideas on a topic or reading sections	4.23	0.70	Effective
9	Asking students to state the ways any two concepts experience are similar	3.83	0.96	Effective
10	Allowing students to share their thought and ideas on a topic or reading section	4.11	0.78	Effective
11	Encouraging students to take notes during class instruction	4.30	0.61	Effective
12	Pairing students and allowing cross-fertilization of ideas during instruction	4.58	0.60	Very Effective
Cluster Means		4.18		Effective

The data in Table 2 indicate that two out of the 12 activity based strategies with mean ratings of 4.51 and 4.58 were considered very effective while 10 with mean ratings ranging between 3.50 and 4.36 were considered effective for teaching technology education courses. The cluster mean of 4.18 depicts that the respondents considered activity based strategies effective for teaching technology education course in tertiary institutions in Anambra State. Standard deviation for all the items fell within the same range indicating that the respondents do not differ remarkably in their mean ratings.

Table 3: Summary of t-test analysis of mean ratings of respondents on the level of effectiveness of demonstration strategies for teaching Technology Education courses based on educational attainment (first degree/higher degree)

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
First Degree	24	.496	51	.622	.62213	1.25508	NS
Higher Degree	29						

Table 3 shows that the t-value at 0.05 level of significant and 51 degree of freedom is 0.496 with a significant value of 0.622. Since the significant value of 0.622 is more than the 0.05 level of significance, it means that there is no significant difference on how effective the lecturers considered demonstration strategies for teaching technology education courses in tertiary institutions in Anambra State as a result of their educational attainment (first degree/higher degree). Therefore, the null hypothesis was not rejected.

Table 4: Summary of ANOVA test result on respondents’ mean ratings on how they effective they consider demonstration strategies for teaching technology education courses in tertiary institutions in Anambra State based on years of experience (0-5 years, 6-10 years, above 10 years)

Sources of variation	Sum of Squares	df	Mean square	F	Sig	Decision
Between Groups	29.471	2	14.736	.715	.494	NS
Within Groups	1030.604	50	20.612			
Total	1060.075	52				

The data in Table 4 shows that the f-value of .715 and degree of freedom of 2 and 50 with significant value of .494 is greater than 0.05 level of significant, which implies that there is no significant difference on the respondents mean rating on how effective they consider demonstration strategies for teaching technology education courses on tertiary institutions in Anambra State on the basis of years of experience. Thus, the null hypothesis was not rejected

Table 5: Summary of t-test analysis of mean ratings of respondents on how effective activity-based strategies for teaching Technology Education courses based on educational attainment (first degree/higher degree)

Variables	N	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Decision
First Degree	24	.098	51	.278	1.64655	1.50014	NS
Higher Degree	29						

Table 5 show that the t-value at 0.05 level of significant and 51 degree of freedom is 1.098 with a significant value of 0.278. Since the significant value of 0.278 is more than the 0.05 level of significance, it means that there is no significant difference with respect to the items on the mean ratings of respondents on how effective the lecturers consider activity-based strategies for teaching technology education course in tertiary institutions in Anambra State as a result of their educational attainment (first degree/higher degree). Therefore, the null hypothesis was not rejected.

Table 6: Summary of ANOVA test result on how effective activity-based strategies used by technology education lecturers for teaching technology education course in tertiary institutions in Anambra State based on years of experience (5 years, 6-10 years, above 10 years)

Sources of variation	Sum of Squares	df	Mean square	F	Sig	Decision
Between Groups	24.778	2	12.389	.408	0.667	NS
Within Groups	1518.014	50	30.360			
Total	1542.792	52				

The data in Table 6 show that the f-value of .408 and degree of freedom 2 and 50 with significant value of 0.667 is greater than 0.05 level of significant, which implies that there is no significant difference on the respondents mean rating on how effective they consider activity based strategies for teaching technology education courses in tertiary institution in Anambra State as a result of years of experiences. Therefore, the null hypothesis was not rejected.

DISCUSSION

The findings of the study depicted that demonstration strategies are effective in teaching technology education courses in tertiary institutions in Anambra State. This finding is in line with that of Okeke (2017) that stated that demonstration teaching strategies are effective for improving the students' academic performance. Okeke stressed that during demonstration strategies clear language should be used so that students may understand concepts easily. This showed that acquisition of practical skills in technology education could be improved through the use of demonstration strategies to instructional delivery. The findings of the study agreed with Daluba (2013) that found demonstration strategies in teaching had a significant effect on students' achievement when taught with conventional lecture methods. Some of these findings were made in teaching business education courses and agricultural education courses but none was made on teaching technology education courses. This depicted that the technology education lecturers should utilize demonstration strategies in their instructional delivery as the findings depict that demonstration strategies are effective in teaching.

Further, the findings of the study revealed that there was no significant difference in the mean rating of respondents as a result of level of education and experience. This implies that no matter the teachers' level of education and experience, their opinions on the level of effectiveness of demonstration strategies were not affected. The findings of no significance showed that the technology education teacher's pedagogical performance in utilizing demonstration teaching strategies is not determined by level of education and experience. This finding is in consonance with the study carried out by Okeke (2015) that higher educational qualifications has no relationship with

the type of teaching strategies used by the teacher in improving instructional delivery in the schools. This showed that lecturer's irrespective educational qualification and experience need to adopt demonstration teaching strategies to improve the students understanding of the technology education courses in tertiary institutions in Anambra State.

Findings of the study showed that activity-based strategies were considered effective for teaching technology education courses in tertiary institutions in Anambra State by the lecturers. This finding is in agreement with Mohidin, Jaidi, Sang and Osman (2009) who found that activity based teaching acts as activity based problem solver in which students are required to participate actively in the instructional delivery process. The findings also agree with Iwuji (2012) who reported that activity based teaching strategies enable students to retain concepts than the lecture method. The studies of Mohidin, Jaidi, Sang and Osman (2009) and Iwuji (2012) were on Accounting and Basic Science while the present study is on technology education. The fact that the findings of these studies agree on the effectiveness of activity-based teaching strategies shows how important engaging students in activities is vital for high achievement. It clearly shows that the strategies provide students with varied experiences to facilitate acquisition of knowledge, experiences, skills and values.

Moreover, the findings showed that the respondents do not differ significantly in their mean ratings on how effective activity-based strategies are for teaching technology education courses based on educational qualification and experience. This finding agrees with Ezenwafor and Akpobome (2017) who reported that educational qualifications and experience are not a major determinant on the selection of instructional strategies to promote effective teaching in the school. It means that the focus on using activity-based strategies is not lecturers' but the students who learn better by engaging in planned activities.

CONCLUSION

Based on the findings and discussions of the study, it was concluded that the teaching of technology education courses in tertiary institutions in Anambra State would be more effective with demonstration and activity-based strategies as they improve students' academic achievement and enable them develop their requisite knowledge skills for gainful employment on graduation.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Technology education lecturers in tertiary institution in Anambra State adopt showed demonstration and activity-based teaching strategies more to enhance students' understanding of the concepts as well as better academic achievement.
2. Administrators of tertiary institutions in Anambra State should provide technology education lecturers with relevant facilities to implement demonstration and activity based teaching strategies.
3. Technology education curriculum developers should emphasize the use of demonstration and activity-based teaching strategies in the minimum standard and carefully monitor their implementation by lecturers.

REFERENCES

- Akamobi, O. G. (2016). Electrical installation and maintenance practices teachers' assessment of the entrepreneurial skill needs of technical students in Anambra and Enugu State. M.Sc. Thesis submitted to *Department of Vocational Education, Nnamdi Azikiwe University Awka*.
- Akinsolu, A. O. (2010). Teachers and students perception on academic performance students in Nigeria secondary schools. *Florida Journal of Education Administration and policy* 3(2), 86-103
- Daluba, N. E. (2013). Effect of demonstration method of teaching on student's achievement in agricultural science. *World Journal of Education* 3(6) 1-7
- Ezenwafor, J. & Akpobome, E. C. (2017). Strategies considered effective for teaching accounting courses by business educators in tertiary institution in Delta State Nigeria. *International Journal of Innovative Social & Science Education Research* 5(3) 36-44
- Federal Republic of Nigeria (2014). *National policy on education* Lagos: Nigeria Education and Research Council (NERDC) press

- Idoko, C. E. (2011). *Research in Education and Social Sciences (Practitioners Companion)*. Enugu; Our Saviour Press Ltd.
- Iwuji, N. P. (2012). Effect of activity based teaching strategies on academic achievement and retention in Basic Science concepts among Upper Basic Education students. *A Thesis Submitted to Postgraduate Studies Ahmadu Bello University Zaria*.
- Mbah, C.O. (2012). Technology competencies needed by mechanical students in technology colleges for employment in Enugu State. *Unpublished B.Sc project report*. Presented to the Department of Technology and Vocational Education, Faculty of Education ESUT.
- Mbah, C. O. (2016). Mechatronics technology craft training needs of technology college students in Anambra State. *Unpublished M. Sc. Dissertation* presented to the Department of Technology and Vocational Education. Enugu State University of Science and Technology, Enugu
- Mbah, N. N. & Udegbe, G.I. (2014). *Educational Research and Statistics*. Onitsha; Sams Printing Press.
- Mohidin, R., Jaidi, J., Sang, L. and Osman, Z. (2009) "Effective Teaching Methods and Lecturer Characteristics a Study on Accounting Students at Universities Malaysia Sabah," *European Journal of Social Sciences*, 8(1), 21-29
- Ogbodo, C.N. (2016). Strategies for enhancing the teaching of Agricultural science in secondary schools in Omeke Education Zone, of Ebonyi State. *Unpublished M.Sc Dissertation*. Department of Technology and Vocational Education Enugu State university of Science and Technology Enugu.
- Okafor, E.M. & Ile, C.M. (2014). Comparative effect of guided -discovery method on achievement in financial accounting among secondary school students in Anambra State. *NAU Journal of Technology and Vocational Education*, 1(1), 17-28.
- Okafor, E.N. (2009). *Theory and practice of educational technology with element of instructional media*. Umunze: Annyco Publishers.
- Okeke, A. F. (2017). Influence of demonstration teaching method on the academic performance of business education students in Enugu State. *Journal of Research in Education and Social Science* 4 (2) 43-57
- Okeke, C. O. (2015). Constraints to effective utilization of innovative teaching strategies in business education programme in colleges of education in Enugu State. *Unpublished M.Sc. Dissertation* Presented to Department of Technology and Vocational Education Enugu State University of Science and Technology, Enugu.
- Okoye, A.C. & Umezulike, A. N. (2014). Assessment of secondary school business studies teacher's effectiveness in using problem solving and simulation strategies. *Nigeria journal of Business Education*, 1(3), 64-71.
- Okwelle, P. C. & Dokubo, C. I. (2018). Constraints on the utilization of field trips in technology education instruction delivery in Universities in South-South Nigeria. *International Journal of Innovative Social Science & Humanities Research* 6 (1) 80-89
- Omeje, H. O.(2011). Practices in pedagogical applications; A solution to the challenges of instructional delivery in technology; and vocational education and training in Nigeria. *Technology and Science Education Today (A Multi disciplinary Journal)* 1(1), 16-22
- Onaga, P.O. & Omeje, H.O. (2015). *Teaching vocational and technology education in Nigeria*. Enugu: Quiptechs creation.
- Robert, T. G. (2010). Teaching effectiveness and why it matters. *A Research Synthesis* 1(1), 9-13
- Taylor, J.B. (2009). The financial crisis and the policy responses; An empirical analysis of what went wrong. Retrieved on 7/10/2017 from <https://www.nber/papers/w4631>
- Ukejeso, M. & Ezeokoye, B. N. (2015). Improving instructional delivery in technology education and training (TVET) for sustainable economic diversification. *Proceeding of National Association of Teachers of Technology* 34-39
- Uzoagulu, A.E. (2011), *Practical guide to writing research report in tertiary institutions*. Enugu: John Jacobs Classic Publishers Ltd
- Wright, G.B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education*, 23(3), 92-97.