

# Effect of Peer Tutoring on Students' Academic Achievement in Office Technology and Management in Nigerian Polytechnics

<sup>1</sup>Pauline Egberanmwun Ehirheme \*, <sup>2</sup>Titus I. Eze

Email : [paulineehirheme@gmail.com](mailto:paulineehirheme@gmail.com) \*

\*: coresponding author

<sup>1</sup>Department of Office Technology and Management, Yaba College of Technology, Yaba, Lagos State, Nigeria;

<sup>2</sup>Department of Technology and Vocational Education, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria;

## ARTICLE INFO

## ABSTRACT

### Article history

Received Apr 22, 2021

Revised May 21, 2021

Accepted May 31, 2021

### Keywords

Academic Achievement

Instructional Approach

Office Technology and Management

Peer Tutoring

Students' Centered Technique

Students of Office Technology and Management (OTM) in Nigerian polytechnics have consistently performed below expectations both academically and at work. This may be attributed to use of inappropriate instructional method. The need to improve this situation necessitated the research on effects of peer tutoring on students' academic achievement in OTM in Nigerian polytechnics. Using a research question to guide the study, and a null hypothesis was tested at 0.05 level of significance. A non-randomized quasi experimental research design, adopting pre-test; post-test non-equivalent control group design was used. South West Nigeria was the region of the research work with a populace of 503 National Diploma Year II (ND II) OTM students in four federal polytechnics. Using cluster random sampling, a sample of the intact classes of 227 students from two states in the area of the study was drawn. Three OTM experts validated the "Office Technology and Management Achievement Test (OTMAT)" 100 items instrument for face and content validity. The Experts input modified some items and cancelled some which reduced 140 test items to 100 used for collecting data. Descriptive statistics of mean was used to analyze data and to respond to the research question while t-test and Analysis of Covariance were used to test the null hypothesis. Kuder-Richardson Formula 21 was adopted to establish internal consistency and reliability of the instrument which yielded a coefficient of 0.86. The research showed that Peer Tutoring Instructional Technique (PTIT) has higher positive effects on students' academic achievement in OTM than Teacher-dominated Instructional Approach (TDIA), thus it can enhance students' academic achievement in OTM. It was, therefore, suggested that OTM lecturers should include the use of Peer Tutoring Instructional Technique to boost learning in teaching their students.

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



## Introduction

"Office Technology and Management (OTM)" as a discipline is designed to train proficient office managers and administrative assistants to fully and efficiently participate and progress in modern (computerized) office and business environment. National Board for Technical Education (NBTE

2004) emphasized that “apart from acquiring vocational skills in OTM, the students are given efficacious work competence and socio-psychological work skills pivotal to daily interactions with others”. Omoniyi and Elemure (2014) noted that “students of OTM can get not only saleable and cognitive skills relevant to various careers and businesses but also transferable skills to other job scenarios and life experience respectively”.

Office managerial services cut across all spheres of a country’s socio-economic and political life. OTM graduates are gainfully employed to provide services in the education, health and the legal sector as well as other forms of businesses. Their employment opportunities, Ehirheme (2014) postulated that “the demands for highly skilled and knowledgeable graduates in office occupation and technology who can function effectively and efficiently in any part of the world attest to OTM products as a global worker”. The OTM training plays a dual role of preparing the individuals for gainful and useful employment with a potential to create wealth and generation of employment through judicious use of both their brain and hands to achieve self-reliance. The OTM training in the aspect of job-oriented career prepares its products for work where they function as managers of managers through practical skills, in tone with the new sophisticated technologies, right job thinking, comprehension and knowledge of jobs in various sectors of the economy. Due to the omnipresent nature of office managerial services, it is unwise to ignore its undeniable role in all spheres of life. This means there are vast employments opportunities open to graduates of OTM. Moreover, besides having employment opportunity in many organizations, graduates of OTM are also trained to be self-employed.

Competence, effectiveness and job performance of OTM graduates either as employers of labour or employees form part of the yardstick to evaluate the success of the programme. If its implementation is deficient and faulty, the graduates will most likely be deprived of prerequisite knowledge and skill resultantly leading not only to being less effective and efficient but also unemployed. Thus it may not be out of place to say that OTM, as it is run today, is deficient. Therefore, OTM should be given proper support, recognizing the crucial role it can play in reducing the high unemployment menace in Nigeria. “Employers complain that new graduates (including OTM graduates) possess pre-mature competencies that will not enhance productivity; as applicants are performing below employers’ expectations,” (Essiet 2017; Fabamise 2018). As rightly noted by Huy (2009) “almost all enterprises agree that vocational training is currently being conducted in an inappropriate manner, failing to meet requirements and attract business’ involvement and requiring enterprise to invest their money in retraining”. According to Musa and Okorieocha (cited in Oviawe and Ehirheme, 2020), “TVET provides people with lifelong skills necessary for learning and working so as to become prolific citizens globally; thus, it is a prerequisite for developing the labour force of a country”. By interpretation, OTM can be seen as

focusing on the enhancement of salable skills in an area of specialization and emphasizing the advancement of job skills needed in a work environment.

The poor performance of students in school and workplace, as well as high rate of youth and graduate unemployment in Nigeria has been known to be caused by several factors namely poor funding, inadequate instructional facilities, teachers' incompetence/lack of commitment and inadequate instructional strategies. In this study academic achievement is synonymous with academic performance. As Okoye (2013) acclaimed, "poor academic performance in schools queries the method of instruction. Academic achievement is an indication of how much of the set goals of instructional activities student are able to accomplish". Therefore, students' academic achievement could be a major determinant of their ability to transfer what they learned in school to the workplace. This explains the high unemployment rate and ineffectiveness in the workplace among graduates; a reflection of the low students' performance in school and the incapability to reciprocate the knowledge acquired in school in their work place.

### **Instructional Approach**

"Effective teaching with right the pedagogy gives better comprehension as well as mastery of subject matter and inevitably high accomplishment" (Okoye 2013). Although there is no wrong teaching method per se, yet some teaching methods could prove more effective in a particular field of study. Prominent among the pedagogical approach for OTM in Nigeria are lecture and demonstration methods. These methods (especially lecture) are regarded as the teacher-dominated instructional approaches of teaching in this study. However, with the revolutionary effect of ICT on OTM, this teacher-dominated approach may no longer ensure effective learning of the OTM dynamic curriculum whose educators are mostly digital immigrants. Researchers (Boyle, Duffy & Dunleavy 2003; Oviawe, 2010) among others asserted, "The teacher-dominated instructional approach, which is teacher-centered, emphasizes knowledge transmission from teacher to passive learner and encourages memorization of facts". However, this is not in tone with the students who are digital natives in the contemporary society against the backdrop of their teachers who are mostly digital immigrants. Obviously, it is easier for these students to navigate with their peers through collaborative learning process to enhance their hands-on skill competence experiences thereby deepening their knowledge of the subjects.

In vocational education as in OTM, emphasis is usually on skill acquisition (competence) rather than mere memorization of facts. In this study teacher-dominated instructional approach is synonymous with teacher-centered instructional approach. Teacher-dominated instructional approach where teacher does most of the activities may not allow students active participation and hands-on experience. "Teacher-centered strategies are being criticized for inhibiting students' innovative capacities, lack of deep intellectual thinking, rote memorization, poor knowledge, poor

retention and high dependence on teachers by students” (Tella, Indoshi & Othuon 2010; Kompa 2012).

Rojewski (cited in Oviawe, 2010) acknowledged that “one of the consequences of using teacher-dominated teaching method in vocational education is that students are unable to retain their learning and apply it to new situations”. However, the teacher-dominated instructional approach has persistently been use for instructional delivery in OTM in Nigeria. Although the large number of students per class, peculiar to Nigerian situation may be the reason for persistent use of teacher-dominated instructional approach. One of the strengths of teacher-dominated instructional approach is the ability to attend to large number of audience.

It is not in doubt that instructional method can influence academic performance. It becomes important to try other innovative instructional methods, especially since students’ academic achievements have remained poor under teacher-dominated instructional approach. Moreover, Federal Republic of Nigeria (2013) recommended that “modern instructional techniques should be increasingly used and improved upon at all levels of educational system”. Therefore it is pertinent and timely to employ modern/innovative instructional approaches in teaching OTM, for the programme to adequately prepare students to face the challenges of this dynamic practice driven economy. One of such innovative instructional approaches that captured the interest of these researchers is peer-tutoring (peer tutoring instructional technique).

### **Peer Tutoring**

Peer-tutoring (peer tutoring instructional technique) is a learner oriented instructional techniques rooted in social constructivist theories. The nomenclature Peer tutoring instructional technique amounts to a tutoring arrangement with its success majorly on two students working together to help each other learn materials or carry out an academic assignment. “This instructional technique is most apt for students with different ability levels, working together” (Kunsch, Jitendra, & Sood 2007). Saga (2013) “explains that this instructional technique involves students instructing each other on a material in which one is an expert and the other is a novice”. In this research, the technique encompasses pairings of high-performing students tutoring lower-performing ones in a class-wide setting under the supervision of a teacher. Tella (2013) opine that “students’ pairings in peer tutoring instructional technique are based on ability levels and the selection of tutor is based on two criteria: (1) the tutors must demonstrate adequate knowledge of the subject to aid their low achieving cohorts in the learning process; (2) the tutors must possess the quality of promoting low achievers to engage keenly in the learning process, wait for tutees to have a go at a question independently before offering help, encouragement as well as correct responses”. Thus, peer tutoring instructional technique involves the use of more successful/experienced students to tutor less successful/experienced students in a collaborative

learning experience in which both parties richly gain.

The adage that “teaching is learning twice”, applies here because where one student may excel in a subject (e.g. shorthand), another student may be top-notch in another subject (e.g. business communication). The paired students can work together to comprehend difficult concepts, while strengthening their competence in the subjects. Comprehension takes place via individual constructions and dealings with the natural and physical world and through a social manner of interacting with others. “Peer tutoring instructional technique promises to address the intricate academic and social necessities of students with diverse learning abilities in a regular class without really affecting other students in the class. This is true when students supplement teachers’ efforts to assist low achievers in a large classroom typical of Nigerian situation” (Tella 2013).

Therefore, the challenges of preparing OTM students for today’s dynamic workplace necessitate a shift from teacher-dominated instructional approach to a blended approach as peer tutoring instructional technique. Upon this background, the research hopes to investigate how peer tutoring affects students’ academic output in “Office Technology and Management in Nigerian Polytechnics”.

### **Problem Of The Study**

The general academic poor performance of students in OTM courses has become worrisome. Despite the vast job opportunities open to graduates of OTM, including the option of running their own business, yet they constitute part of unemployed youths. “Employers complain that finding qualified graduate applicants is difficult, as applicants are performing below employers’ expectations” (Essiet 2017; Fabamise 2018). In the same vein, educators complain of poor performance of students, including in OTM. A look at the NDII academic performance of students in OTM 2011/2012 to 2016/2017 from three federal polytechnics in South West Nigeria showed that students performed poorly. Also the results of National Business and Technical Examination Board (NABTEB) in Business course relating to OTM from 2009 to 2018 showed that students performed poorly even in the foundational level. Academic achievement, which is measured by the examination results, is one of the major goals of a school.

Among several factors that weigh in to students’ poor academic performance, one of which is inadequate instructional approach. “Instructional approach, among others, has been attested to have direct impact on students’ academic performance and retention” (Nwachukwu 2001; Okoye 2013). Adekoya and Olatoye (2011) emphasize that “this instructional strategy vigorously involves students in learning thus promoting mastery, accuracy, and fluency in content learning”. Their study posited “clear goals, active students’ participation in the learning process, feedback, evaluation and individual pacing which stressed student centered learning”. This is in consonance

with the present study which investigates the “influence peer tutoring has on students’ academic achievements in OTM in polytechnics in Nigeria”.

Besides, previous evidences abound from different Scholars’ studies like Muhammad, Abdullah, and Osman 2020, Wolfe 2018, Alzahrani and Leko 2018, Alegre-Ansuategui, Moliner and Miravet, 2017 “on peer tutoring which reveal that as an instructional approach, pairing high-performing students with others while learning so as to achieve optimum benefits from each other helps significantly. As a result, it enriches the students’ educational experience irrespective of their academic ability”. Furthermore, other studies conducted by Lazarus; Sofroniou and Poutos, (cited in Muhammad, Abdullah, Osman, Ali, Samah, Jumaat, Ashari, & Kohar, 2020) assert that “peer tutoring was delved into as an operational strategy for involving learners and propping up academic achievement”. In the same vein, a research carried out by Oloo (2016) “on the result of 65 autonomous appraisals of school tutoring programme showed students that employ peer tutoring do better in examinations compared to students that used conventional approach”. These studies are also consistent with previous studies that revealed “the age of accumulating demand demands re-examining strategies which will maximize and expedite students’ involvement in learning process. This introduced peer tutoring as a progress in the academic achievement variable”. “Peer tutoring academic benefits seem usually significant as related results reported for tutors and tutees in both educational levels also tallies with current peer tutoring study” (Leung 2019b; Shin, Ok, Kang, & Bryant 2019). Likewise, Hickey and Flynn (2019) affirm that “this technique expects to attain educational accomplishment for almost all the students irrespective of the roles played”. The teacher-dominated approach which is predominately used in OTM has been criticized of not encouraging active participation of students. Therefore, there is need for “a student-centered learning approach” among which is peer tutoring which could be useful in enhancing students’ learning process.

### **Purpose Of The Study**

This research aims at ascertaining “effects peer tutoring has on students’ academic achievement in Office Technology and Management in Polytechnics within Nigeria”. Precisely, this work determined the: (1) mean performance scores of students of OTM for the pretest and post-test taught via peer tutoring instructional technique and the ones taught via teacher-dominated instructional approach.

### **Method**

Quasi experimental research was employed for this research. Particularly, non-equivalent pretest, post-test control group design involving nonrandomized but intact/pre-existing classes was used. Federal Polytechnics were covered based on ownership, thus assumed their condition of learning will be the same. The population of the study is 503 (388 female and 115 male) “ND II OTM

students in the four Federal Polytechnics” in the area that offer OTM programme. Sample size of 227 (174 female and 53 male) ND II students was used for the study.

Cluster random sampling, specifically balloting with replacement was used to draw two out of the four Federal Polytechnics. One intact class of 107 (83 females and 24 males) and 120 (91 females and 29 males) from each sampled Federal Polytechnic was obtained using cluster random sampling. “The classes were randomly allotted to experimental and control groups respectively for the research”.

The instrument used in collecting the data is “Office Technology and Management Achievement Test (OTMAT) developed by the researchers”. The 100 test items were developed based on the content of the topics chosen for the research. The topics were chosen from NBTE OTM curriculum specification for ND II in Polytechnics. The instrument covered four content areas viz.: shorthand (principles governing shorthand writing), record management (information processing cycle), office practice (how to compose correspondence) and desktop publishing (use of desktop publishing in the office). The number of items in each content area was based on the time allocated for teaching the content. Also the items adequately covered the Bloom’s taxonomy of educational objectives. “OTMAT 100 test items were employed for the pre-test and post-test”. However, after the pre-test, the items were reshuffled, the font size changed and the colour of the paper changed, before the post-test.

“The instrument for data collection was subjected for face and content validity by three experts”. One expert is in business education, Department of Technology and Vocational Education, while another is in Measurement and Evaluation unit, Department Educational Foundations in Nnamdi Azikiwe University, Awka. The third expert is in OTM from Yaba College of Technology, Yaba. “The content validity was determined by drawing items strictly in line with the Table of Specifications to ensure that questions cover all the topics and number of questions set in each content area reflects its relative importance”.

The researcher sought and obtained permission from the sampled institutions and recruited the course lecturers as research assistants. They were briefed on the study and the techniques that was used for the treatments; and as well handed over the lesson plans. The study lasted for six weeks. On the first week, the Pre-test was administered by the research assistants (course lecturers). The treatment started in the second week through the fifth week, and then the Post-test was administered in the sixth week. The researcher monitored the teaching and learning sessions (in order to ensure proper and uniform application of lesson plans in the groups) and the treatment for the pre-test, post-test. Attendance was taken at every class session, so that scores of students who missed any of the sessions were not used for data analysis. Peer tutoring and teacher centered approach were the methodologies for the experimental group and control group

respectively.

## Result and Discussion

**Research Question 1:** What are the are the pre-test and post-test mean academic performance scores of OTM students educated through peer tutoring instructional technique and those taught using teacher-dominated instructional approach?

“In response to Research Question 1, Table 1 reveals the mean and standard deviation score of the students educated using the peer tutoring instructional approach and the teacher-dominated instructional approach (TDIA)”. “The variance in the mean achievement scores of post-test and pre-test is higher for the peer tutoring instructional technique (PTIT) than the teacher-dominated instructional approach”.

**Table 1.** Pre-test and Post-test Mean Academic Performance Scores of OTM Students educated through Peer Tutoring Instructional Technique and those taught using Teacher-dominated Instructional Approach

Group	Test	N	Mean	Standard Deviation	Mean Gain
Peer Tutoring	Pre-test	120	22.85	3.37	
	Post-test	120	59.16	7.82	36.31
Teacher Dominated	Pre-test	107	24.38	3.30	
	Post-test	107	41.97	10.33	17.59

**Hypothesis 1,** “There is no significant difference between the post-test mean academic achievement scores of OTM students educated using peer tutoring instructional technique and those taught using teacher-dominated instructional approach”. Testing this we got the data illustrated in Table 2.

**Table 2.** Summary of the ANCOVA of OTM Student educated using Peer Tutoring Instructional Technique and those educated using Teacher-dominated Instructional Approach

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	16919.705	2	8459.852	103.087	.000
Intercept	14518.631	1	14518.631	176.916	.000
Pre-test	212.375	1	212.357	2.588	.109
Group	15050.670	1	15050.670	183.399	.000
Error	18382.551	224	82.065		
Total	627056.000	227			
Corrected Total	35302.256	226			

The result of the data displayed in Table 2 reveals a calculated F value 183.399 and a p-value of .000, testing at an alpha level of .05, the p-value is not up to the alpha level, hence the null hypothesis of no significant difference between the post-test mean academic achievement scores of OTM students taught using peer tutoring instructional technique compared to those tutored using teacher-dominated instructional approach is rejected. Consequently, there exists a



significant variance between the mean academic performance scores of OTM students tutored using peer tutoring instructional technique compared to the ones tutored using teacher-dominated instructional approach. From the foregoing, peer tutoring pedagogical technique is more potent for teaching students of OTM.

This research revealed that OTM students taught via peer tutoring instructional technique made better and significant academic accomplishment than those tutored with teacher-dominated instructional approach. Buttressing this, Flores and Duran in Alegre, Moliner, Marotol, and Lorenzo-Valentin (2020) reaffirm that “often times students enjoy the idea of being helped by their peers during learning processes. Peer tutors attain similar subject knowledge as their peers since they are apparently aware of the troubles faced by their peers when learning them”. Ezenwosu and Nworgu (2013) found that “students educated Biology using peer tutoring performed significantly higher than those educated using the teacher-dominated instructional approach”. Ogundola’s (2017) study showed that “peer tutoring approach was more efficient in boosting students’ cognitive achievement in Technical Drawing than the teacher-dominated instructional approach”.

This finding supports and justifies the reason behind the idea of peer tutoring instructional technique, which asserted that “most pupils working in pairs learn better in social context. It upholds the social constructivist’s theory that social interaction is fundamental in cognitive development process”. Thus, this finding is consistent with the view of many researchers Oviawe 2010 and Steinberg, Dornbusch and Brown; Light and Littleon; Wentzel; Burnish, Fuchs and Fuchs; Topping, (cited in Ehirheme, 2020), who affirm that “peer interaction can play a decisive role in academic motivation and achievement”.

Okeke (2018) in her own research affirms that peer-tutoring pedagogy significantly aids the learning of keyboarding skills, an essential course in OTM. This pedagogical approach reflects the improvement brought about by PTIT thus making it superior to the teacher-dominated instructional approach in enhancing students’ acquisition of the skill. Incidentally, this study lends credence to Okeke's findings by first ascertaining that among the numerous factors that implicated on students’ poor academic achievement, instructional delivery method plays a decisive role. Simply put, if the pedagogical approach is unsuitable, students' academic achievement will suffer tremendously and might never recover. Instructional approach employed in teaching is as sacrosanct as the subject knowledge as it can influence learning outcome. Thus when PTIT was introduced, students achieved better than those taught with TDIA.

Besides, this research brought to the fore the need for students’ active engagement in learning activities as it leads to better comprehension thus resulting in higher academic achievement. Use of more student-centered teaching technique like PTIT can enhance learning

when students not only learn to pass examinations but also become more effective members of the society with employable and saleable skills. Judging by the views of notable researchers like Azubuike, Igboanugo, and Olawoyin, (cited in Okeke, 2018), this study has made significant contribution to knowledge gap. They note that the high accomplishment could be due to the active and cooperative participation of the peer tutor and slow learner as a result of direct interaction. After all, students feel more comfortable and open when interacting with their peer group.

It is suggested that methodologies that give everybody the maximum opportunity to develop through blending PTIT with TDIA should be adopted in schools to give all students opportunity to achieve maximally.

### **Conclusion**

Using the outcome of this research, it can be deduced that peer tutoring is an efficacious pedagogy which can improve the educational accomplishment of OTM students at the Polytechnics more than the teacher-dominated instructional approach of teaching. These suggestions emerged due to the findings from this research: (1) Office Technology and Management lecturers in the Polytechnics and other lecturers and teachers should adopt peer tutoring instructional technique more than the teacher-dominated instructional approach. (2) "Effects of peer tutoring on students' academic achievement covered only four content areas in OTM, therefore the study can be conducted using other content areas". (3) There is also the need to try out the effects of this technique on students' academic accomplishment on other subjects along with other different levels of education. (4) Peer tutoring instructional technique strategy materials should be included in workshop and seminars to increase its applicability.

### **ACKNOWLEDGEMENT**

The researchers' special appreciation is extended to "Office Technology and Management (OTM) lecturers and students of the Polytechnics in South West Geopolitical Zone of Nigeria" used in this study for their cooperation, support and willingness to respond to the instruments used.

## References

- Adekoya, Y. M., & Olatoye, R. A. (2011). Effect of demonstration, peer-tutoring and lecture teaching strategies on senior secondary school students' achievement in an aspect of agricultural science. *Pacific Journal of Science and Technology*, 12(1), 320-332.
- Alegre, F., Moliner, L., Maroto, A., & Lorenzo-Valentin, G. (2020). Academic achievement and peer tutoring in mathematics: A comparison between primary and secondary education. SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).
- Alegre-Ansuategui, F. J., Moliner, L. & Miravet, L. M. (2017). Emotional and cognitive effects of peer tutoring among secondary school mathematics students. *International Journal of Mathematical Education in Science and Technology*, 48(8), 1185-1205.
- Alzahrani, T. & Leko, M. (2018). The effects of peer tutoring on the reading comprehension performance of secondary students with disabilities: A systematic review. *Reading & writing quarterly*; 34, 1-17.
- Boyle, E. A., Duffy, T., & Dunleavy, K. (2003). Learning styles and academic outcome: The validity and utility of versants inventory of learning styles in a British higher education setting. *British Journal of Educational Psychology* 73 (2), 267 – 290. (2003)
- Ehirheme, P. E. & Eze, T. I. (2020). Effect of peer tutoring on students' knowledge retention in office technology and management in polytechnics in South West, Nigeria. *Advances in Social Sciences Research Journal*, 7(9), 892-900. <https://doi.org/10.14738/assrj.79.9148>
- Ehirheme, P. E. (2014). Producing global worker through business education with office technology and management (OTM) in perspective. *Nigerian Journal of Business Education*. (The Official Publication of the Association of Business Educators of Nigeria). 2(1) 221 – 240. October.
- Essiet, D. (2017, September 13). Graduates lack job skills. *The Nations*. Retrieved from <http://thenationonlineng.net/graduates-lack-job-skills/>
- Ezenwosu, S. U. & Nworgu, L. N. (2013). Efficacy of peer tutoring and gender on students' achievement in biology. *International Journal of Scientific & Engineering Research*, 4 (12) 944 – 950 Retrieved from <http://www.ijser.org>
- Fabamise, O. (2018). Experts discuss 'lack of jobs skills' by Nigerian graduates. *Leadership*. Retrieved from <https://leadership.ng/2018/05/01/experts-discuss-lack-of-jobs-skills-by-nigerian-graduates/>
- Federal Republic of Nigeria, (2013). National policy on education (6th Edition). Yaba NERDC Press.
- Hickey, A. J., & Flynn, R. J. (2019). Effects of the TutorBright tutoring programme on the reading and mathematics skills of children in foster care: A randomised controlled trial. *Oxford*

- Review of Education, 45(4), 519–537.
- Huy, P. Q. (2009). Vietnam chamber of commerce and industry's role in vocational training. Linking Vocational Training with the Enterprises: Asian Perspective. Germany: InWent – Internationale Weiterbildung and Entwicklung gGmbH
- Kompa, J. S. (2012). Disadvantages of teacher-centered learning. Retrieved from <https://joanakompa.com/2012/06/25/the-key-disadvantages-of-teacher-centered-learning/>
- Kunsch, C., Jitendra, A., & Sood, S. (2007). The effects of peer-mediated instruction in mathematics for students with learning problems: A research synthesis. *Learning Disabilities Research & Practice*, 22(1), 1-12.
- Leung, K. C. (2019). Compare the moderator for pre-test-posttest design in peer tutoring with treatment-control/comparison design. *European Journal of Psychology of Education*, 34, 685–703
- Muhammad, S. A., Abdullah, A. H. & Osman, S. (2020). Effect of peer tutoring strategy on students' academic performance in a polytechnic linear algebra classroom. *Journal of Advanced Research in Dynamical and Control Systems*; 12(3), 415-422.
- Muhammad, S. A., Abdullah, H. A., Osman, S. Ali D. F., Samah, N. A., Jumaat, N. F., Ashari, Z. M, & Kohar, U.H.A (2020) A systematic review on the impact of peer tutoring strategy in linear algebra among polytechnic students. *Multidisciplinary Review Journal – Journal of Critical Reviews* 6, (5), 298-305
- National Board for Technical Education (2004). Office technology and management higher national diploma (HND) curriculum and course specifications. UNESCO – Nigeria Project. Retrieved from <http://unesdoc.unesco.org/images/0016/001614/161448e.pdf>
- National Business and Technical Examination Board (NABTEB 2019) Chief Examiners Report: Summarized 2009 to 2018 NBC/NTC May/June results for ten consecutive years. Benin City: Edo State, Nigeria. [www.nabtebnigeria.org](http://www.nabtebnigeria.org)
- Nwachukwu, C. F. (2001). Designing appropriate methodology in vocational and technical education for Nigeria. Nsukka: Falladu.
- Ogundola, P. I. (2017). Effects of peer tutoring strategy on academic achievement of senior secondary school students in technical drawing in Nigeria. *British Journal of Education, Society & Behavioural Science* 19(1): 1. Retrieved from [www.sciencedomain.org](http://www.sciencedomain.org)
- Okeke, A. U. (2018). Effect of peer-tutoring technique on secondary slow learners' acquisition of keyboarding skills in Anambra State. *The Intuition*, 8(1).
- Okoye, A. A. (2013). Effects of peer tutoring method on students' academic achievement in home economics. Doi:10.5901/ajis.2013.v2n5p193 *Academic Journal of Interdisciplinary*

- Studies2 (5) 193-197 MCSER-CEMAS-Sapienza University of Rome Retrieved from <http://www.mcser.org/journal/index.php/ajis/article/viewFile/610/632>
- Oloo, E. A., Mutsotso, S. N., & Masibo, D. E. N. (2016). Effect of peer teaching among students on their performance in mathematics. *International Journal of Scientific Research and Innovative Technology*, 3(12), 10–24.
- Omekwu, C. O. (2019). Smart school: New frontiers for education in the digital age. 5<sup>th</sup> Lecture of Faculty of Education, Ambrose Alli University, May 14. Ekpoma: SB
- Omoniyi, O. J. & Elemure, B. C. (2014). Challenges of curriculum development in office technology and management in tertiary institutions. *International Journal of Technology and Inclusive Education (IJTIE)*, 1 (3) Special Issue. Retrieved May 18, 2016 from <http://infonomics-society.ie/wp-content/uploads/ijtie/published-papers/special-issue-volume-1/Challenges-of-Curriculum-Development-in-Office-Technology-and-Management-in-Tertiary-Institutions.pdf>
- Oviawe, J. I., (2010). Differential effects of three instructional methods on students' performance in building technology in polytechnics in Nigeria. Unpublished PhD Dissertation of the Department of Vocational Teacher Education (Industrial Technology Education) University of Nigeria Nsukka November
- Oviawe, J. I., & Ehirheme, P. E. (2020). Sprouting sustainable industrial and technological Workforce through technical vocational education and training in South-South, Nigeria
- Saga B. (2013). How peer teaching improves student learning and 10 ways to encourage it. Retrieved from <http://www.opencolleges.edu.au/informed/features/peer-teaching/>
- Shin, M., Ok, M. W., Kang, E. Y., & Bryant, D. P. (2019). Korean elementary school teachers' implementation of mathematics instruction for students struggling to learn mathematics in inclusive settings. *Journal of Research in Special Educational Needs*, 19(2), 145–157.
- Tella, A. (2013). The effect of peer tutoring and explicit instructional strategies on primary school pupils learning outcomes in mathematics. *Bulgarian Journal of Science and Education Policy (BJSEP)*, 7 (1) 5-25 Retrieved from <http://bjsep.org/getfile.php?id=132>
- Tella, J., Indoshi, F. C. & Othuon, L. A. (2010). Relationship between students' perspectives on the secondary school English curriculum and their academic achievement in Kenya. *Journal of Educational Research*, (9), 382–389
- Temple, T. (2013). Focusing on student success: Assessment of learning outcomes in blended environments. Paper presented at the Lilly Conference on College and University Teaching, Greensboro. NC.
- Topping, K. J. (2008). Peer-assisted learning: A practical guide for teachers. Newton, Mass.: Brookline Books.

Wolfe, B. (2018). The impact of a peer-tutoring model on the academic performance of secondary students. PhD Thesis, submitted to University of South Carolina. Retrieved from <https://scholarcommons.sc.edu/etd/4468>.