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IFE JOURNAL OF INTEGRATED SCIENCE (IJIS)

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GOVERNMENT AREA, OSUN STATE, NIGERIA**

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Abstract

The study investigated the influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State. The study adopted a descriptive survey research design of correlation type. The population for this study consisted of Senior Secondary School (SSS) 2 Chemistry students in Ife Central Local Government area, Osun State. A sample of 100 SSS 2 Chemistry students was used for the study. A multi-stage sampling procedure was adopted for this study. In the first stage, the stratified sampling technique was adopted where Schools are grouped into public and private categories. The second stage was a random sampling technique where ten secondary schools were randomly selected. At the last stage, systematic sampling technique was used in the selected schools where 50 boys and 50 girls were systematically chosen to ensure a representative sample. Two research instruments tagged "Locus of Control and Self-Efficacy Questionnaire" (LCSQ) and "Chemistry Achievement Test" (CAT) were used to collect data for the study. Data collected after the administration of the instruments were analyzed using frequency, percentage, Pearson Product Moment Correlation (PPMC) and regression analysis statistical tools. Results of the study showed that there was a significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry ($r=0.785$; $p<0.05$). Results of the study also revealed that there was a significant

relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State ($r = 0.815$; $p < 0.05$). Results of the study further showed that there was a significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in the study area ($F = 5.515$; $p < 0.05$). The study concluded that there was a significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in the study area.

Keywords: Locus of Control, Self- Efficacy, Chemistry, Academic Achievement, Predictors

Introduction

Education is universally acknowledged as a fundamental human right and a crucial factor in personal and societal development. In other words, education in every human community is an indispensable instrument for human progress and national development. It is an important component for the achievement of sustainable development, fostering economic growth, and enhancing social cohesion. Education can therefore be referred to as all the activities, which go on in the schools, colleges or universities with the aim of imparting desirable knowledge, ideas, concepts or skills to learners so that they might become useful to themselves and the society. In every society, individuals and governments take education seriously because of its great influence on the lives of the individuals and the nation. Over the years, the role of education in shaping the future of individuals and nations has been increasingly emphasized, with various educational reforms and policies aimed at improving access, quality, and equity. Education is seen as a tool for the individual's social mobility and the transformation or changing of the society. A well-educated person is an asset not only to himself but also to his country. Despite the huge investments in education by both parents and government, the performance of science students in senior school certificate examinations (SSCE) has long been a matter of concern to many well-meaning individuals, institutions and organizations as well as to various levels of

government (Kpolovie, Ololube & Ekwebelem, 2011). The Nigerian educational system has undergone several changes and reforms to address the challenges of access, quality, and relevance. Despite these efforts, the country still faces significant challenges in its education

sector. Issues such as inadequate funding, poor infrastructure, insufficient qualified teachers, and socio-economic disparities continue to hinder the effective delivery of education.

Chemistry as a science subject taught in school to students, deals with matter and the changes matter undergoes. It is a subject that is more interested with composition, structure, properties, behavior of matter and also the chemical changes this matter undergoes during chemical reaction and under certain conditions. There are branches of chemistry that investigate the laws that control these transformations. Ugwoke (2017), while stressing the importance of chemistry opined that chemistry does not just start and end in the classroom or school as often perceived. Chemistry is regarded as the hub of science and it is considered as a service subject (Bajah, 1997). It is the catalyst for sustainable national growth and development. The nature of chemistry as a core science subject gives the reason for occupying a central position amongst the pure science subjects which are Physics, Biology and Chemistry. Despite the central position of chemistry as a core science subject there is evident poor enrolment of students in chemistry. A number of factors have been identified as contributing to this ugly trend which is lack of qualified chemistry teachers, poor method of teaching chemistry, peer group influence, lack of motivation in students to study chemistry, lack of students' interest in chemistry, inadequate chemistry laboratory and inadequate supply of laboratory equipment (Kola & Akanbi, 2013; Kola, 2013).

Chemistry is extremely important and has a broad application across various sectors. Some phenomena in chemistry are practiced in our everyday activities outside the four walls of the school. Some of the activities that involves chemistry includes practices such as cooking of food, washing of clothes with detergent or soap, the process of boiling grinded fresh tomatoes to

allow the liquid to get dried, addition of salt to perishable food stuffs in order to preserve them, the act of melting ice block into liquid water for the purpose of drinking and so on. Chemistry was also involved in the production of chemical fertilizers such as ammonium sulfate, calcium superphosphate, sodium nitrate, and urea in the nineteenth century. These compounds have made a significant contribution to boosting the yield of fruits, vegetables, and other agricultural crops. As a result, we are able to meet the food demand that is ever-increasing. These principles, concepts and facts of chemistry are also practiced in some industries such as food industry, petroleum industry, building industries, road construction industries and many others. As a science subject, chemistry is concerned with the study of composition and properties of natural substances. It occupies a pivotal position in science and technology and is needed by everybody and in every aspect of human endeavor (Agwagah & Harbor-Peters, 1994; Akinsola, Tella & Tella, 2007; Olayemi, 2009; Abubakar & Eze, 2010). For instance, human beings have used organic compounds and their reactions for thousands of years in the manufacture of many valuable products for the use of men e.g. soap, oils, hydrogenated oil, kerosene, petrol, plastic, lubricants, vaseline, ceramics and detergents. Also, the ancient Egyptians used organic compounds (indigo and alizarin) to dye clothes which are products of scientific discovery.

Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific and learning goals that were the focus of activities in instructional environments, specifically in school, college, and university. Academic achievement is a very important factor in education. It is the extent to which a student, teacher or institution has achieved their educational goals (Sepehran, 2013). It is often measured through examinations and or continuous assessments. Academic achievement refers to particular learning in a particular setting which is defined by examination marks, teachers' given grades and percentiles in academic subjects. It may be defined as a measure of knowledge, understanding or skills in a specific subject or a group of subjects (Steinmayr, Mibner, Weidinger &

Wirthwein, 2015; Tamannaifar & Gandomi, 2011). Avoseh, as cited in Okafor, Obi and Oguzie (2018), simply defined academic achievement as how well an individual has done in his cognitive tasks. He further explained that it is the general ability of students regarding their performance in school subjects compared to a specified standard called 'pass mark'. It is one of the most important indicators of learning and understanding in all educational systems. Academic achievement is interestingly an important issue; a fundamental premium upon which all teaching-learning activities are measured using some criteria of excellence e.g. good academic performance, poor academic performance and academic failure. Aryana (2010), observed that students with high academic achievement have a high tendency to feel more convinced and satisfied than those with poor academic achievement. Also, students who obtain higher academic achievement tend to feel more confident, whereas those who lack confidence in themselves record low academic achievement. According to Squier (2016), academic achievement is sometimes viewed as the amount of content learned by students. It is measured by intelligence (example Intelligence quotient) and standardized tests in core subject areas (example mathematics, chemistry, physics). The outcome of examinations or assessments serves as a pointer to the direction of their achievement, whether positive or negative. In recent times, the outcry over the poor academic achievement of students in Nigeria is on the increase.

Self-efficacy is largely grounded in social cognitive theory. This theory explains that human functioning results from interactions among personal factors (e.g., cognitions, emotions), behaviors and environmental conditions (Bandura, 1986, 1997). From this perspective, self-efficacy affects one's behaviors and the environments with which one interacts and is influenced by one's actions and conditions in the environment. Self-efficacy, on the other hand, refers to individuals' beliefs in their own ability to successfully perform tasks and achieve goals. It is closely related to self-confidence and plays a significant role in motivation, effort, and perseverance. It is assumed to affect individuals' task choices, effort, persistence and achievement (Bandura, 1997;

Schunk, 1995). Compared to learners who doubt their capabilities, those who feel self-efficacious about learning or performing a task competently are to participate more readily, work harder, persist longer when they encounter difficulties and achieve at higher levels while locus of control is the amount of control a person believes they have over their life. A person with an internal locus of control believes they have a high amount of control over their life and circumstances, while someone with an external locus of control believes outside factors have more control over the situation than they do. The factors that affect self-efficacy are mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Locus of control refers to an individual's generalized expectations concerning where control over subsequent events resides. In other words, it refers to whom or what is responsible for what happens. According to Turker and Inel (2012), locus of control forms during childhood and stabilizes during adolescence, and it depends on various experiences the individual goes through like culture, religion, societal influence, sex, age and training. It is an individual's belief system regarding the causes of his or her experiences and the factors to which that person attributes success or failure (Majzub, Bataineh, Ishak & Rahman, 2009). According to Rotter (1992), locus of control refers to the site of a cause, meaning whether or not the outcome of an event is attributed to something inside (internal) or outside (external) to the person involved.

Locus of control can either be internal or external. Students with internal locus of control attribute the cause of their success or failure in academic achievements to their own abilities and skills. They consider themselves to be responsible for their own destiny; this motivates the student to work hard in order to perform well in tests. On the other hand, a student with an external locus of control believed that external factors or situations are responsible for determining their success or failure. Such students have high chances to perform very poorly in tests because they believe that their success is as a result of luck, fate or chance. Individuals are expected to have an internal locus of control in itself because it will have a positive impact for the development of

their lives and make their work more successful (Cakir, 2017; Manichander, 2014). In line with this, Friedman and Schustack (2008) mention individuals with an internal locus of control are more oriented to success because these set of people perceived that their actions would result in something positive.

The relationship between locus of control and self-efficacy is often intertwined and affects the ability of the person to adjust in a given situation. Some research has shown a positive relationship between self-efficacy and internal locus of control, describing how people who believe they have control over future events are more likely to use that control to achieve a positive result and experience enhanced wellbeing. Individuals with an internal locus of control tend to believe that their efforts and actions directly influence their academic outcomes. They are more likely to set challenging goals, exert effort, and persist in the face of obstacles, which contributes to their sense of self-efficacy. Individuals or students with an internal locus of control tend to be more successful and happier than those with an external locus of control. Likewise, some of the benefits of self-efficacy are lower stress, higher motivation, and a higher likelihood of success. However, when expectations are realistic, an internal locus of control will generally cause a person to be happier and more successful. Individuals with a low internal locus of control and low self-efficacy report experiencing higher levels of psychological and physical complications and worse levels of psychological well-being (e.g., depression, increased general stress, anxiety). They perceive their outcomes as being determined by factors beyond their control, being more susceptible to external influences and being more likely to focus on obstacles rather than opportunities. According to Ogunmakin and Akomolafe (2013), self-efficacy is the measure of one's competency to complete tasks and reach goals. Students with an internal locus of control tend to have higher levels of self-efficacy because they believe they have the power to influence outcomes through their actions. These students believe that their success or failure is as a result of the effort and hard work they invested in

their learning while students with external locus of control believe that their success or failure is as a result of external factors beyond control such as luck, fate, spiritual beings amongst others. Self-efficacious students are more likely to take responsibility for their learning, set challenging goals, and persist in the face of academic challenges.

Statement of the Problem

Studies have shown that students performed poorly in Chemistry both in internal and external examinations. This may not be unconnected with the locus of control and self-efficacy of senior secondary school students. Internal locus of control and high self-efficacy could be a prerequisite for high academic performance among secondary school students because of its tendency to improve higher motivation, hard work, perseverance and positive attitude towards Chemistry hence should not be treated with levity because the opposite will be catastrophic leading to loss of interest in Chemistry and massive failures in schools. Therefore, the need to investigate locus of control and self-efficacy as predictor of senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State. Hence, this study.

Purpose of the Study

The purpose of the study was to investigate senior secondary school students' locus of control and self-efficacy as predictors of their academic achievement in Chemistry. The specific objectives of the study are to:

- i. determine the relationship between Locus of Control and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State;
- ii. examine the relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State; and
- iii. determine the influence of locus of control and self-

efficacy on senior secondary school students' academic achievement in Chemistry in the study area.

Hypotheses

The following hypotheses guided the study:

- H₀1: There is no significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.
- H₀2: There is no significant relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.
- H₀3: There is no significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Methodology

This study adopted a descriptive survey research design of correlational type to investigate the relationship between locus of control, self-efficacy, and academic achievement and was conducted in Ile-Ife, Osun State, Nigeria. The population for this study consists of all Chemistry senior secondary school students SSS 2 of 2023/2024 academic session in Ife central local government area, Osun State. The choice of SSS 2 Chemistry students is due to their extensive exposure to the Chemistry curriculum and upcoming final examinations. A sample of 100 SSS 2 Chemistry students was used for the study. The choice of these students is because it is assumed that they have been taught mostly all the various concepts in the curriculum and are getting ready write WAEC/NECO and other external examinations. A multi-stage sampling procedure was adopted for this study. In the first stage, the stratified sampling technique was adopted where Schools are grouped into public and private categories. The second stage was a random sampling technique where ten

secondary schools were randomly selected. At the last stage, systematic sampling technique was used in the selected schools where 50 boys and 50 girls were systematically chosen to ensure a representative sample.

Two research instruments tagged “Locus of Control and Self-Efficacy Questionnaire” (LCSEQ) and “Chemistry Achievement Test” (CAT) were used to collect data for the study. The questionnaire titled “Locus of Control and Self-Efficacy Questionnaire” (LCSEQ) was developed by the researcher. Locus of Control Scale (LCS) was Adopted from Rotter's Locus of Control Scale, and it measures students' perceptions of control over their academic outcomes. The scale is ranging from “strongly agree” to “strongly disagree”. The scale consists of 10 items. The self-efficacy scale (SEQ) was Adapted from Bandura's Self-Efficacy Scale, it assesses students' beliefs in their capabilities to perform specific academic tasks. The scale consists of 15 items in which the students' responses were measured using a 4 point like scale ranging from “strongly agree” to “strongly disagree”. A chemistry achievement test (CAT) was given to the students to determine their results in chemistry. The instruments (scales) were revalidated by the project supervisor and other experts in test and measurements and correction were made before administering the questionnaires. The reliability of the instruments was established by administering the instruments (LCS & SEQ) to 20 SS2 Chemistry students who were not part of the study. Cronbach's alpha method was used to determine the reliability of Self-Efficacy Scale and its reliability index is 0.85 while Kuder-Richardson Formula 20 method was used to determine the reliability of Rotter's Locus of Control Scale and its coefficient is 0.78. The reliability indices obtained from the various instruments shows that the instruments are reliable for the study. Copies of the questionnaire were directly administered to the students in each of the schools and retrieved the same day the school was visited. Also, the chemistry achievement test (CAT) that was given to the SSS2 chemistry students to assess their level of knowledge in the subject matter was also collected the same day from the school. This was carried out with the aid of the subject teacher at the

permission/consent of the school authority. Proper supervision was done during the completion of the questionnaires and tests to maintain the integrity of the data. The data collected was analyzed using the following statistical methods: Descriptive Statistics which involves percentage and frequency distribution to summarize the demographic characteristics of the sample and the main variables. Pearson Correlation Coefficient was used to determine the strength and direction of the relationships between locus of control, self-efficacy, and academic achievement. Multiple Regression Analysis was employed to identify the predictive power of locus of control and self-efficacy on academic achievement in chemistry.

Results

Hypothesis One:

There is no significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Table 1

Groups	N	Mean	SD	r	Sig. (2-tailed)	Remark
Locus of Control	100	29.51	5.35	0.785	.001	Significant
Achievement	100	15.29	3.19			

($r = 0.785$; $p < 0.05$)

Results in Table 1. showed that there was significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State ($r = 0.785$; $p < 0.05$). Therefore, the null hypothesis that states that there is no significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry in Ife Central Local

Government Area, Osun State is hereby rejected. The result implies that locus of control predicts senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Hypothesis Two:

There is no significant relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Table 2

Groups	N	Mean	SD	r	Sig. (2-tailed)	Remark
Self-Efficacy	100	43.37	6.99	0.815	.001	Significant
Achievement	100	15.21	3.19			

($r = 0.815$; $p < 0.05$)

Results in Table 2. showed that there was a significant relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State ($r = 0.815$; $p < 0.05$). Hence, the null hypothesis that states that there is no significant relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State is hereby rejected. The result implies that self-efficacy predicts senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Hypothesis Three:

There is no significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in the study area.

Table 3

R = 0.697 ^a	Unstandardized		Standardized		
R ² = 0.486	Coefficients		Coefficients		
Adj. R ² = 0.125					
F = 5.515	B	Std. Error	Beta	t	Sig.
(Constant)	18.835	5.302		1.875	.000
Locus of Control	0.564	0.629	0.528	0.794	.002
Self Efficacy	0.447	0.224	0.384	1.651	.001

a. Dependent Variable: Students' Academic Achievement

b. Predictors: (Constant), Locus of Control (LC) and Self-Efficacy (SE)

Results in Table 3 showed that there was significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in the study area ($F = 5.515$; $p < 0.05$). Thus, the null hypothesis that states that there is no significant influence of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in the study area is hereby rejected. The results implied that locus of control and self-efficacy collectively predict students' academic achievement in Chemistry in senior secondary schools in the study area.

Discussion of Findings

Findings of the study showed that there was significant relationship between locus of control and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State. The result supports the findings of Ogunmakin and Akomolafe (2013) when they studied the relationship between locus of control and academic achievement, he discovered that internal locus of control is positively related to academic achievement adding that behaviors such as class participation, positive study habits and positive learning attitudes leads to high academic achievement. The authors further noted that students with internal locus of control showed significant low academic procrastination, low exhausting test anxiety and

therefore achieved higher academically. In addition, the authors added that internal locus of control is a moderator of academic work readiness and positive attitude to academic work. Though the above study did not report on those with external locus of control, it can be deduced from the findings of the study that those with external locus of control are likely to have high levels of test anxiety, academic procrastination, fear and distrust. In this direction Rotter (2016), pictures that Individuals with external locus of control believe that they are largely powerless on their own. The individuals with external locus of control prefer the activities in which they can show the role of chance, luck, fate and significant others in their life.

In addition, Mali (2013) examined the locus of control on a student's academic achievement. The researcher studied a sample of 84 students who were randomly selected. The result showed that students with external locus of control were more passive and reactive during the learning process and recorded more low examination grades. They display fewer compliance attitudes than individuals with internal locus of control. External locus of control individuals cannot cope with the stress and difficulties in life.

Results of the study revealed that there was a significant relationship between self-efficacy and senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State. The result is in line with the findings of Meera and Jumana (2015) examined the relationship between self-efficacy and academic performance of secondary school students. The students with high self-efficacy were found to show better performance in learning and thinking, hence better performance. Research exploring a relationship between self-efficacy and students' academic performance on the basis of gender was carried out by Bushra and Lubna (2015). A positive relationship between self-efficacy and academic performance was observed with male students, who showed a higher level of self-efficacy as compared to female students. The impact of academic self-efficacy on academic performance was assessed on university science students in Katsina State, Nigeria. The academic self-

efficacy scale and students CGPA records were applied in obtaining data for the study. A weak but significant positive correlation was observed to exist between students' academic self-efficacy and their performances (Suleiman et al., 2021). An investigation of the effect of self-efficacy on students' achievement was evaluated in science secondary school (Aslam & Ali, 2021). The students' information on self-efficacy was obtained through a questionnaire. Female students were observed to have lower self-efficacy than male students.

Results of the study indicated that there was significant multiple relationship between locus of control and self-efficacy on senior secondary school students' academic achievement in Civic Education in the study area. The result corroborates a study by Abid, Kanwal, Nasir, Iqbal and Huda (2016) when they carried out research on the effect of locus of control on academic performance of students at tertiary level in University of Faisalabad, Pakistan. Two research questions and one hypothesis guided the study. The purpose of the study was to discover the influences that locus of control has on the academic achievement of students. In the research quantitative research method was used. The sample size consisted of 100 students who were selected and given questionnaires to collect data. Multiple regression analysis was employed to analyze the data collected using SPSS. The findings of the study showed that the academic achievement of students with internal locus of control is high and they are more proactive and effective during the learning process. On the other hand, the ones with external locus of control are more passive and reactive during this period. This implies that locus of control has a positive relationship on academic achievement of the students. The previous study is quite related to the present study in that the locus of control on academic achievement studied in the previous study is also studied in the present study. But the previous research was conducted in a university setting, but the present study research focused on senior secondary school students.

Conclusion

The study concluded that there was significant influence

of locus of control and self-efficacy on senior secondary school students' academic achievement in Chemistry in Ife Central Local Government Area, Osun State.

Recommendations

Based on the conclusion of findings of this study, it is hereby recommended that:

- i. Students should be educated on the impact of locus of control and self-efficacy towards their academic achievement
- ii. Workshops, seminars and conferences should be organized for Chemistry teachers on the need to improve learners' academic achievement through locus of control and self-efficacy meaningfully.
- iii. Parents and guidance should also help their wards to build good locus of control and self-efficacy so as to be buoyant academically.
- iv. Governments should embark on a realistic programme to train, employ and retain enough seasoned Chemistry teachers in the field.

References

- Abubakar, R. B., & Eze, F. B. (2010). Female students' academic performance in Mathematics at Federal College of Education (Technical), Omoku, Rivers State. *International Journal of Social and Policy Issues*, 6(1&2), 48-53.
- Agwagah, U. N. V., & Harbor-Peters, V. F. (1994). Gender difference in Mathematics achievement. *Journal of Education and Psychology in third world Africa*, 1(1), 19-22.
- Akinsola, M. J., Tella, A., & Tella, A. (2007). Correlates of academic procrastination and Mathematics achievement of University undergraduate students. *Journal of Mathematics, Science and Technical Education*, 3(4), 363-370.
- Aryana, M. (2010). Relationship Between Self-esteem and Academic Achievement Amongst Pre-University Students. *Journal of Applied Sciences*, 10(20), 2474-2477.

- Bajah, S. T. (1997). *Senior Secondary Chemistry Textbook (New Edition)*, Lagos: Longman Nig. Plc.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Journal of Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). *Social Foundation of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs: NJ: Prentice Hall.
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman. *Australian Journal of Teacher Education*. 35(8) December 2010 p 56
- Cakir, Mustafa. (2017). "Investigating Prospective Teachers' Perceived Problem-solving Abilities in Relation to Gender, Major, Place Lived, and Locus of Control". *Universal Journal of Educational Research*, 5(6): 1030-1038.
- Friedman, Howard S dan Schustack, Miriam W. (2008). *Kepribadian: Teori Klasik dan Riset Modern Edisi Ketiga*. Jakarta: Erlangga.
- Majzub, R.M., Bataineh, T.M., Ishak, M.N., & Rahman, S. (2009). The Relationship between Locus of Control and Academic Achievement and Gender in a Selected Higher Education Institution in Jordan. Retrieved from <https://pdfs.semanticscholar.org>
- Ogunmakin, A.O., & Akomolafe, J.M. (2013). Academic Self-efficacy, Locus of Control and Academic Performance of Secondary School Students in Ondo state, Nigeria. *Mediterranean Journal of Social Sciences*, 4(11), 570-576. doi:10.5901/mjss.2013.v4n11p570
- Okafor, E.O., Obi, J.S., & Oguzie, A.E. (2018). Relationship between Students' Self-esteem and their Academic Achievement in Imo State. Hofa: *African Journal of Multidisciplinary Research HAJMR*, 1(1), 24-32.
- Olayemi, O. O. (2009). Students' correlates and achievement as predictors of performance in physical chemistry. *ABACUS: The Journal of Mathematics Association of Nigeria* 34(1), 99-105.

- Kola, J.A., & Akanbi, A.G., (2013). Perceived causes of students' enrolment in science in secondary Schools, Nigeria. *International Journal of secondary education*, 1(5), 18-22.
- Kpolovie, P. J., Ololube, N.P., & Ekwebelem, A.B., (2011). Appraising the performance of secondary school students on the WAEC and NECO SSCE from 2004 to 2006. *International journal of scientific research in Education*, 4(2), 105-114.
- Schunk, D. H. (1995). Self-efficacy, Education and Instruction. In J. E. Maddux (Ed.), *Self-efficacy, adaptation and adjustment: Theory, research and application*. Pp. 281-303. New York: Plenum
- Sepehrian, F.A. (2013). Self-efficacy, Achievement Motivation and Academic Procrastination as Predictors of Academic Achievement in Precollege Students. *Proceedings of the Global Summit on Education*. Retrieved from <https://worldconferences.net>
- Steinmayr, R., Mibner, A., Weidinger, A., & Wirthwein, L. (2015). Academic achievement retrieved from <http://www.oxfordbibliographies.com/view/document/obo-9780199756810-0108.xml>
- Squier, K.L (2016). Self-efficacy retrieved from <http://www.excellenceinschoolcounseling.com>
- Tamannaifar, M.R., & Gandomi, Z. (2011). Correlation between Achievement Motivation and Academic Achievements in University Students. *Education Strategies in Medical Sciences*, 4(1), 15-19.
- Turker, M.V, Inel, M.N. (2012). The Effect of Locus of Control Orientation on Perceived Individual Innovativeness: An Empirical Research in Turkey. *Procedia-Social Behavioural Science*, 58, 879-888.
- Ugwoke, J., (2017). Factors affecting the enrollment of Students in Chemistry education in colleges of education in Enugu State [Blog post]. Retrieved from http://academicpower.blogspot.com/2017/08/factors_affecting_enrollment_of.html?m=1

- Rotter, J.B. (1992). Some Comments on the “Cognates of Personal Control”. *Applied & Preventive Psychology*, 1, 127-129. doi: 10.1016/S0962_1849(05) 80154-4.
- Manichander, T. (2014). “Locus of Control and Performance: Widening Applicabilities”. *Indian Journal of Research*, 3 (2): 84-86.