

---

---

## EFFECT OF COMPUTER SELF-EFFICACY ON STUDENTS' ACADEMIC PERFORMANCE AMONG FEDERAL UNIVERSITIES IN NORTH-EAST NIGERIA

By

***M. M. Bayero, A. Y. Dutse and Ahmad, A.***

Department of Management and Information Technology

Abubakar Tafawa Balewa University, Bauchi

Email: [mmusabayero@gmail.com](mailto:mmusabayero@gmail.com), [adutse@atbu.edu.ng](mailto:adutse@atbu.edu.ng), & [aminuahmad@atbu.edu.ng](mailto:aminuahmad@atbu.edu.ng)

---

---

### ABSTRACT

*This study aimed to examine effect of computer self-efficacy on students' academic performance among federal universities in north-east Nigeria. The theoretical consideration was grounded to Martin Ford's motivational system theory. Cross-sectional survey design was adopted and the units of analysis were undergraduate students. Stratified random sampling was employed to collect data from 461 students where each stratum was apportioned a questionnaire proportionate to its size in relation to other strata. Descriptive and inferential statistics were used to analyze data using SPSS for windows, version 20. Linear regression was used for data analyses. The findings of the study revealed that computer self-efficacy has significant positive effect on student's academic performance.*

**Keywords:** Academic performance, Computer, Federal University, North-East Nigeria, Self-efficacy, Students.

### INTRODUCTION

Science, technical and vocational education are the major type of education offered in most advanced countries which are responsible for the transformation of economies with modernization and sophistication to cope with the dynamic challenges of this world (Gbenu, 2012). The major factors for the differences between the economies of developed and developing countries lie on the quality of education offered to their citizens (Joe, Kpolovie, Osonwa, & Iderima, 2014). The quality of education offered in developed countries is such that make recipients creators of jobs rather than job seekers largely in addition to the fact that basic education is mandatory which is responsible for high literacy level (Gbenu, 2012). Ability to assimilate, retain, recall and communicate knowledge of what has been learnt determines one's academic performance and has been considered to be a comprehensive construct that

encompasses different learning domains (Joe et al., 2014).

Balogun and Olanrewaju (2016) notes that academic performance continue to fall drastically as a result of low computer self-efficacy. Students' academic performance tend to be low and become negatively self-preoccupied or low computer self-efficacy especially when subjected computer based testing conditions (Ossai, 2011). Soyinka (1999) reveals that the decline in the academic performance of students in Nigerian Universities at all levels has attracted a lot of criticisms which suggest the system's need for restructuring. He further said that academic standard had fallen drastically and the quality of graduates being produced by the nation's universities was questionable and subject to re-examination. Despite all guidance programmes and counselling strategies put by the key industry players in institutions of academic learning to improve students' academic performance, yet poor performances are

recorded yearly (Ushie, Emeka, Ononga, & Owolabi, 2012). Therefore, it is against this background that this study intends to investigate the effect of computer self-efficacy on academic performance of students among federal universities in north-east Nigeria.

## Literature Review

### *Computer Self-Efficacy*

The work of Albert Bandura in the area of social cognitive theory was the first to discuss the concept of computer self-efficacy (Hauser, Paul, & Bradley, 2012). CSE refers to the belief of an individual in his/her ability to use computer skills to a wider range of tasks (Compeau & Higgins, 1995a, 1995b). CSE has been revealed to have a direct impact on students' academic performance thus the antecedents to CSE might provide a mechanism that can be used to influence it (Hauser et al., 2012). A number of antecedents and consequents of computer self-efficacy have been studied. These antecedents have been grouped into categories such as social influence (encouragement, management support), demographic variables (experience, age, sex, prior performance), and beliefs (self-conceptions of ability, anxiety) (Agarwal, Sambamurthy, & Stair, 2000).

Literature evidenced that Internet as an advanced computer tools use platforms such as e-mail, the World Wide Web, and Social Networking Websites are 'must use' is applied in the teaching and learning contexts (Ige, 2015). Academics need to enhance their Internet usage skills in order to meet the learning demands of teeming students who have been afforded unhindered Internet access with the application of third generation (3G) mobile communication, which has aided internet development around the world (Zhou, 2014).

### *Students' Academic Performance*

Performance is defined as the behavioural ability of a person to observe or measure a particular situation mostly in an experimental situation (Simpson & Weiner, 1989). This reveals that performance measures a

specific aspect of behavior at a given point in time. To determine the level of performance of people, a performance test has to be conducted. Singer (1999) defines performance test as a mental/psychological examination in which something is asked to be done in a given subject matter. Performance test provide light about the capability of an individual with things rather than symbols (Drever, 1981).

The concept of student performance has covered wide range of educational achievement measurements, which depends on the varied indicators used its measurement (Steinmayr, Meißner, Weidinger, & Wirthwein, 2016). In measuring students' academic performance, there are conventional indicators such as procedural method and declarative knowledge acquired in an educational system, more curricular-based standard such as grades or performance on an educational achievement test, and cumulative indicators of academic achievement such as educational degrees and certificates. All criteria have reflected the base of intellectual commitment in common, and more or less, they mirror the intellectual capacity of an individual. Most often, it is measured using the grade (Steinmayr et al., 2016).

With regard to the field of educational research, academic performance of a student could be regarded as the observable and measurable process to student development at a given point (Yusuf, 2002). For example, in social studies students' academic performance entails scores at any given period of time obtained from a teacher. Therefore, with this justification, we can adequately relate academic performance with the observed behaviour or expectation of achieving a specific statement or statement of educational intention in a research.

### *Computer Self-Efficacy and Students' Academic Performance*

Literature exist based on the study variables, for example, Semerci and Keser (2015), Elbitar (2015) and

Turel (2014) studied teachers' CSE to predict their academic performance in instruction delivery where they found a significant difference between their computer self-efficacy to have influence their performance in instruction delivery. Their findings further revealed that teachers use variety of technologies for variety of purposes. In relation to age, gender and employment status a high score was obtained against academic achievement (Hüseyin & Süel, 2014; Öztürk, Bozkurt, Kartal, Demir, & Ekici, 2011).

In another dimension, Nwosu et al. (2015) studied the electronic learning (e-learning) using CSE, technology dependence on e-learning of undergraduate students and found a significant relationship. Hauser et al. (2012) lineated a similar study on CSE and anxiety in online versus face-to-face medium and found the importance of structure and innovation in e-learning but dialog is more important in the face-to-face medium. Additionally, Kim and Park (2015) presented how self-efficacy affects satisfaction in online classes and has found significantly that online classes predicted self-regulated learning and CSE. Similarly, Sabzwari, Bhatti, and Ahmed (2012) investigated ICT skills (awareness, usage) and CSE of research students, the respondents respond to have aware and able to use Microsoft office, search engines, e-mails and online/digital libraries.

In a narrow to e-learning, Tuncer (2013) conducted an analysis on the effect of CSE on scientific research self-efficacy and information literacy self-efficacy. His analysis revealed that computer self-efficacy has a positive effect on information literacy. Also, information literacy positively affects scientific research self-efficacy and CSE has positive impact on scientific research. It was revealed that elementary students are less anxious than secondary students; males are also less anxious than their female counterparts, not significant difference between students and their teachers in computer anxiety but students have higher CSE than their teachers in a study of Simsek (2011). In addition, perceived

social support, CSE and computer use was investigated and was found perceived peer support played important role in predicting the effect of advanced CSE the result further revealed that GCSE was strongly associated with students computer use (Hsi-Chi, Ya-Ling, & Hsin-Nan, 2012). Furthermore, Korkmaz (2016) studied the effect of scratch-based game activities on students' attitudes towards learning computer programming and found that scratch-based game activities rendered significant contribution on students' academic achievement. Also, Ige (2015) studied the predicting effect of CSE, computer competency, commitment to goodness and community bonding factors influencing pre-service teachers' internet self-efficacy and found that they are good predictors.

Grounding upon the reviewed literature, there is a need to study the effect of computer self-efficacy on students' academic performance specifically on university context. Most of the literature reviewed use computer self-efficacy to predict another dependent variable (not students' academic performance) or they predict students' academic performance with a different independent variable (not computer self-efficacy). Hence, the study formulated the following hypothesis:

*H<sub>1</sub> There is a positive effect of computer self-efficacy on students' academic performance.*

### ***Theoretical Framework***

This study is underpinned to Martin Ford's motivational systems theory (MST) as subset of Sigmund Freud's theory. Ford's framework focuses on the individual as the unit of analysis, but embeds the individual in the biological, social, and environmental contexts that are crucial to development. MST attempts to describe the development of the whole person-in-context, in similar way biologist might describe an individual plant in relation to its immediate ecological environment, as well as the larger environment within which it resides (Pintrich & Schunk, 1996). Ford proposed a model in form of a mathematical formula to capture all the factors which he

called formula for effective person-in-context functioning:

$$\text{Performance/Achievement} = \frac{(\text{Motivation} \times \text{Skill})}{\text{Biological Structure}} \times \text{Responsive Environment}$$

The formula showed that actual "performance, achievement and competence are the results of a motivated, skillful, and biologically capable person interacting with a responsive environment" (Ford, 1992, p.70). This model attempts to provide a comprehensive theory of motivation and proposes that actual achievement and competence as the results of a motivated, skilful, and biologically capable person interacting within a responsive environment.

To contextualize the variables of this study within the framework of the MST model, Students Academic Performance could be explained by one of the four constructs espoused by Ford. The *person-in-context* is the individual student whose performance needs to be boosted through the combination of Ford's *motivation and skill* conceptualized here as Computer Self-Efficacy. From the above explanation, the MST model has provided the essential theoretical backing for underpinning the conceptual framework adopted in this study.

## METHODOLOGY

This study adopted a cross-sectional survey design using stratified random sampling technique in order to achieve its overall objective. The study considered 69,041 federal universities undergraduate students in North-East Nigeria as its unit of analysis. Based on Krejcie and Morgan (1970) table for determining sample size, a total number of 384 structured and 5-point Likert's scale (ranging from "strongly disagree" to "strongly agree"). 461 questionnaires were determined, including 77 (20%) in order to take care of the non-response rate (Hair, Money, Samouel, & Page, 2007). The questionnaire administration was based on the principle of proportionality (where each stratum was apportioned

a number proportionate to its size in relation to other strata) across the strata that made the population of the study (Nickolas, 2015). The questionnaire items on the independent (7 items) and the dependent (5 items) variables were adapted from the works of Marakas, Johnson, and Clay (2007) and Ahmed and Qazi (2011) with a reported Cronbach's alpha reliability of .80 and .76 respectively. The study finally employed simple linear regression method as the technique for data analysis using SPSS for windows, version 20.

## RESULTS AND DISCUSSIONS

A total of 367 respondents constituted the actual samples for this study which indicated the attainment of a good response rate as 80% after the rejection of 19 questionnaires that were found not useable. This rate was sufficient and acceptable (Punch, 2003; Tabachnick & Fidell, 2007, 2014). The results show the central tendency as average value of the data set among the study variables (Sekaran & Bougie, 2010) using 5 point Likert's scale (Nik, Jantan, and Taib (2010). Pearson's Correlation between computer self-efficacy and students' academic performance indicated a significant positive relationship (.895\*\*) at 95% confidence level (1-tailed) (Cohen (1988). Assumptions of multiple regression based on; normality (normal) (Tabachnick & Fidell, 2007), linearity (linear) (Tabachnick & Fidell, 2007), Kothari and Gauray (2014); Zikmund, Babin, Carr, and Griffin (2010) and homoscedasticity (outliers retained) (Kothari & Gauray, 2014) were performed. Table 1 presented the results of items on computer self-efficacy based on 5-point Likert's scale's frequencies and percentiles, mean scores and standard deviations. The grand total for the mean scores and standard deviations of the seven items in this construct is (M=4.21, SD=0.49). This means on average; options that were chosen by the total respondents of these construct's items are at the level of 4.21, while the level of disparity of the option was .49

On the other hand, table 2 reveals the results of students' academic performance. The table contains analysis of frequencies, percentiles mean scores and standard deviations. The grand total of mean scores and standard deviations of the dependent variables as (M=4.23, SD=0.58). The grand total of the mean scores

reveals that the respondents in this study have averagely (4.23) in support of what the construct's items are asking. While grand total of the level of dispersion on choices about the construct's items by the study's respondents is .58, which is far below 1

**Table 1:** Frequency, Percentile, Mean and Standard Deviation of Items in CSE

Items	SD	D	N	A	SA	Mean	SD	N
I believe I have the ability to describe how a computer works	2(5%)	20(5.4%)	44(12%)	141(38.4%)	160(43.6%)	4.19	.89	367
I believe I have the ability to install new software applications on a computer	5(1.4%)	21(5.7%)	35(9.5%)	150(40.9%)	156(42.5%)	4.17	.92	367
I believe I have the ability to identify and correct common operational problems with a computer	4(1.1%)	18(4.9%)	21(5.7%)	176(48%)	148(40.3%)	4.22	.84	367
I believe I have the ability to unpack and set up a new computer	2(5%)	22(6%)	35(9.5%)	172(46.9%)	136(37.1%)	4.14	.86	367
I believe I have the ability to remove information from a computer that I no longer need	9(2.5%)	22(6%)	25(6.8%)	142(38.7%)	169(46%)	4.20	.98	367
I believe I have the ability to understand common operational problems with a computer	6(1.6%)	23(6.3%)	33(9%)	168(45.8%)	137(37.3%)	4.11	.92	367
I believe I have the ability to use a computer to display or present information in a desired manner	1(.3%)	2(.5%)	9(2.5%)	179(48.8%)	176(48%)	4.44	.60	367
<b>Grand Total</b>	<b>29(7.9%)</b>	<b>128(34.8%)</b>	<b>202(55%)</b>	<b>1128(307.5%)</b>	<b>1082(294.8%)</b>	<b>4.21</b>	<b>.49</b>	

**Table 2:** Frequency Percentile, Mean and Standard Deviation of Items in SAP

Items	SD	D	Neu	A	SA	Mean	S D	N
I can maintain my class performance	7(1.9%)	19(5.2%)	20(5.4%)	171(46%)	150(40%)	4.19	.94	367
I can meet my studies targets	7(1.9%)	19(5.2%)	32(8.7%)	140(38.1%)	169(46%)	4.21	.94	367
I can cover my syllabus with little time devoted to my studies	7(1.9%)	17(4.6%)	22(6%)	155(42.2%)	166(45.2%)	4.24	.90	367
Others get impressed by my class performance	4(1.1%)	9(2.5%)	18(4.9%)	185(50.4%)	151(41.1%)	4.28	.76	367
I am competing well in my studies	3(.8%)	12(3.3%)	26(7.1%)	182(49.6%)	144(39.2%)	4.23	.79	367
<b>Grand Total</b>	<b>38(7.6%)</b>	<b>76(20.8%)</b>	<b>118(32.1%)</b>	<b>833(226.3)</b>	<b>780(211.5%)</b>	<b>4.23</b>	<b>.58</b>	

### Regressions Analysis and Hypotheses Test

Regression analysis is a method of neutrally assessing the degree and the character of the relationship between dependent and independent variable (Hair et al., 2007; Sekaran & Bougie, 2010). Regression coefficient shows the relative importance of independent variable in predicting the dependent variable. When independent variable(s) is/are regressed independently or jointly on a dependent variable in order to explain the level of variance, the size of each (individual) regression coefficient will show - how each individual variable will

affect the dependent variable and the increase in one unit, taking into account all individual variables and the dependent variable captured in the regression equation (Sekaran & Bougie, 2010; Zikmund et al., 2010).

Table 3 presented the linear regression of the first independent variable (CSE) on the dependent variable (SAP) and the result showed ( $\beta=.895$ ,  $t=38.386$ ,  $p<.000$ ) values. Therefore, based on these extracted values, hypothesis one ( $H_1$ ) which states; "Computer self-efficacy has positive effect on students' academic performance" is supported.

**Table 3:** Regression of CSE on SAP -  $H_1$ 

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.	Collinearity Statistics	
	B	Std Error				Tolerance	VIF
(Constant)	-.163	.115		-1.416	.158		
CSE	1.044	.027	.895	38.386	.000	1.000	1.000

Table 4 as the model summary has shown reliability of prediction of students' academic performance by computer self-efficacy. Cohen (1988) classified  $R^2$  into: 0.02 as weak, 0.13 as moderate; 0.26 as considerable. The table further revealed the dependence

of students' academic performance on computer self-efficacy as; ( $R=.895^a$ ,  $R^2=.801$ ,  $R^2\text{-change}=.801$ ,  $F\text{-Change}=1473.487$  and finally the significant  $F\text{-Change}=.000$ ). Based on this classification, the  $R^2$  for this study is considerable. The generalizability for this model

in the population was 80.1%. The significant F-test reveals the relationship (1473.487,  $p < .000$ ) indicates the overall

significant prediction of the dependent variable by the independent variable (Cohen (1988).

**Table 4:** Model Summary

Model	R	R <sup>2</sup>	R <sup>2</sup> -Change	F-Change	Sig. F-Change
1	.895 <sup>a</sup>	.801	.801	1473.487	.000

Predictor: (Constant), CSE                      Dependent Variable: SAP

The aim of this study is to determine whether or not, if an individual student with a belief on his capability to use information and communication technologies can improve his academic performance/achievement/attainment among students of federal universities in north-east Nigeria. This was further presented as research hypothesis (1-tailed) that; computer self-efficacy has positive effect on students' academic performance. Simple linear regression test was employed to test this hypothesis. The result indicated that computer self-efficacy as independent variable, was 89.5% able to explain the model ( $R^2 = .801$ , Adjusted  $R^2 = .801$ ,  $F\text{-Change} = 1473.487$  and  $p < .000$ ) at 95% confidence level. The result indicated that computer self-efficacy is a valid predictor of students' academic performance of undergraduate studies among federal universities in north-east Nigeria. This result has supported  $H_1$  and therefore it is not rejected.

The finding of this study on the relationship as well as the effect of computer self-efficacy on students' academic performance was positive amongst federal universities in north-east Nigeria. The result is consistent to previous study of Tuncer (2013) who found computer self-efficacy has significant positive effect on information literacy self-efficacy as the dependent variables for the study. Similarly, Korkmaz (2016) conducted a study on the effects of scratch-based game activities on students' attitudes, self-efficacy and academic achievement, where he found that significant number of students are averagely efficient in C++ programming. The findings further revealed that scratch-based game activities

provided a significant contribution on academic achievement. But scratch-based game activity has no effect on students' attitudes and their self-efficacy. Also, in a study of Oye, A.Lahad, and Ab.Rahim (2012) on computer self-efficacy, anxiety and attitude towards the use of technology among 100 academicians in university of Port Harcourt, Nigeria. The result found that computer self-efficacy has influence their use of ICTs and also significantly impacted on their behavioural intention to use the technology.

In the same vein, Sabzwari et al. (2012) further studied ICT skills and computer self-efficacy of research students where they found females of young ages were the more frequent users of ICTs such as Microsoft (MS) Word, MS Power Point, Google search and Excel sometimes and MS Access but seldom use Endnote. Other search engine like Safari, Yahoo, Chrome, and Bing are becoming less and less useable. Computer self-efficacy and competitive anxiety on flow state was studied by Hong, Chiu, Shih, and Lin (2012) using 101 college students whereby the result revealed that computer self-efficacy together with game competitive anxiety have positive relationship with flow state, but computer self-efficacy has negative correlation with game competitive anxiety.

On the contrary, this result was not in support of Shu, Tu, and Wang (2011) who found negative relationship between computer self-efficacy and technostress using the model of social cognitive theory. Also Öztürk et al. (2011) evaluated computer self-efficacy of prospective teachers (students) and found that computer self-efficacy vary significantly based on demographic

differences. But they found that the students did not differ significantly according to the general academic achievements. Hüseyin and Süel (2014) studied computer self-efficacy of 173 prospective physical education teachers in Turkey in terms of gender, age and level of study in which they found no significant differences exist. This result was contrary to the study in Egypt by Elbitar (2015) who found a significant difference between secondary school teachers' ages, computer training and experience level and computer self-efficacy.

Based on these discussions, the studies used either computer self-efficacy to predict different dependent variable (not students' academic performance) or they predict academic performance of students or teachers using different independent variable (not computer self-efficacy). Moreover, none was found to have been conducted in the proposed region considering federal university students in North-East Nigeria.

## FINDINGS

Within the capacity of this study, it was found that computer self-efficacy has significant positive effect on students' academic performance. Conceptual model was proposed, based on extant literature to subject the study variable of students' academic performance to computer self-efficacy. The model was underpinned to Martin Ford's motivational systems theory. Furthermore, the findings of this study showed that the conceptual model has sufficiently in support of the empirical data for this study. It could be concluded therefore, that; the results have validated the underpinned theory (MST).

## CONTRIBUTIONS

The prediction of students' academic performance by the independent variables (computer self-efficacy) among students of federal universities in North-East Nigeria served as the major contributions of this study to the body of literature.

Although, most of previous researches conducted in an attempt to improve students' academic performance considered the cognitive aspects, but this study attempted considering the aspect of the non-cognitive performance. Furthermore, adapted measurements from previous studies (Ahmed & Qazi, 2011; Marakas et al., 2007) were tested in terms Cronbach's alpha reliability in North-East Nigeria. Governments, stakeholders as well as students were provided with recommendations in order to have insight regarding educational priorities which can go a long way in improving students' academic performance. Therefore, this study provided empirical evidences that computer self-efficacy has significant positive relationship and effect with/on individual academic performance of university students.

## LIMITATIONS/RECOMMENDATIONS

Geographically, the current study was conducted on students of federal universities in North-East Nigeria; therefore, future researches were suggested to be carried out in the remaining five geo-political zones of Nigeria in order to provide wider acceptability and generalizability of these results. Moreover, a descriptive study of this kind is also recommended to be carried out in other tertiary institutions such as polytechnics and colleges etc. Although, this study used cross-sectional data, other researchers should consider longitudinal form of a similar study in order to test whether the trend of the study variables (computer self-efficacy and students' academic performance) can change over a long period of time. Triangulating the finding of this study has also been recommended for future researches via methods such as interviews and content analysis.

## REFERENCES

Agarwal, R., Sambamurthy, V., & Stair, R. (2000). The evolving relationship between general and specific computer self-efficacy—An empirical



- assessment. *Information Systems Research*, 11(4), 418-430.
- Ahmed, I., & Qazi, T. F. (2011). A look out for academic impacts of Social networking sites (SNSs): A student based perspective. *African Journal of Business Management*, 5(12), 5022-5031. doi:10.5897/AJBMI1.595
- Alay, A., & Triantoro, S. (2013). Effects of Self-Efficacy on Students' Academic Performance. *Journal of Educational, Health and Community Psychology*, 2(1), 19-25.
- Balogun, A. G., & Olanrewaju, A. S. (2016). Role of Computer Self-Efficacy and Gender in Computer-Based Test Anxiety Among Undergraduates in Nigeria. *Psychological Thought*, 9(1), 58-66. doi:10.5964/psyc.v9i1.160
- Bandura, A. (1977). Self-Efficacy: Toward a Unifying Theory of Behavioural Change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall: Englewood Cliffs.
- Bandura, A. (1994). Self-efficacy. In V.S. Ramachandran (Ed.). *Encyclopedia of Human Behavior*, 4, 71-81.
- Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge: Cambridge University Press.
- Bandura, A. (2001). Social Cognitive Theory - Annual Agentive Perspective. *Annual Review of Psychology*, 52, 1-26.
- Bello, T. O. (2011). Effect of Group Instructional Strategy on Students' Performance in Selected Physics Concepts. *The African Symposium: An online journal of the African Educational Research Network*, 1(1), 71-79.
- Betz, B. L., Strobeck, M. W., Reisman, D. N., Knudsen, E. S., & Weissman, B. E. (2002). Re-expression of hSNF 5/INI 1/BAF 47 in pediatric tumor cells leads to G1 arrest associated with induction of p16 ink4 and activation of RB. *Oncogene*, 23(34), 5193-5203.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). New Jersey: Lawrence Erlbaum Associates.
- Collins, J. L. (1982). *Self-efficacy and ability in achievement behavior*. Paper presented at the Paper presented at the Annual Meeting of the American Educational Research Association, New York.
- Compeau, D., & Higgins, C. (1995a). Application of social cognitive theory to training for computer skills. *Information Systems Research*, 6(2), 118-143.
- Compeau, D., & Higgins, C. (1995b). Computer Self-Efficacy: Development of a measure and initial test. *MIS Quarterly*, 19(2), 189-211.
- Drever, J. (1981). *The penguin dictionary of psychology*. Middlesex: Penguin Books Ltd.
- Elbitar, H. M. M. (2015). Egyptian industrial education teachers' perceived computer self efficacy. *International Journal of Vocational and Technical Education*, 7(8), 80-88. doi:10.5897/IJVTE2015.0173
- Farounbi, A. I. (2014). Relationship between Students' Performance in Ordinary Level Mathematics and NCE Biology in Osun State College of Education, Ila Orangun, Nigeria. *Journal of Research in Education and Society*, 5(2), 70-73.
- Ford, M. (1992). *Motivating humans: Goals, emotions, and personal agency beliefs*. Newbury Park: CA: Sage Publications.
- Gbenu, J. P. (2012). State of Nigerian Secondary Education and the Need for Quality Sustenance. *Greener Journal of Educational Research*, 2(1), 7-12.
- Gbore, L. O. (2014). Entry Qualifications, Study Habit and Self-Concept as Correlates of Academic Achievement among University Undergraduates in South West, Nigeria. *Journal of Education and Human Development*, 3(2), 597-606.

- Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). *Research method for Business*. West Sussex, England: John Wiley and Sons Ltd.
- Hauser, R., Paul, R., & Bradley, J. (2012). Computer Self-Efficacy, Anxiety, and Learning in Online Versus Face to Face Medium. *Journal of Information Technology Education: Research*, 11, 141-154.
- Hong, J., Chiu, P., Shih, H., & Lin, P. (2012). Computer Self-Efficacy, Competitive Anxiety and Flow State: Escaping from Firing Online Game. *The Turkish Online Journal of Educational Technology*, 1(3), 70-76.
- Hsi-Chi, H., Ya-Ling, T., & Hsin-Nan, C. (2012). Perceived Social Supports, Computer Self-Efficacy, and Computer Use among High School Students. *The Turkish Online Journal of Educational Technology*, 1(2), 167-177.
- Hüseyin, Ü., & Süel, E. (2014). Computer Self-Efficacy of Prospective Physical Education Teachers. *Journal on Efficiency and Responsibility in Education and Science*, 7(2), 33-36. doi:10.7160/eriesj.2014.070202
- Hwang, Y. S., & Vrongistinos, K. (2002). Elementary in-service teachers' self-regulated learning strategies related to their academic achievements. *Journal of Instructional Psychology*, 29(3), 147-154.
- Ige, O. A. (2015). Computer Self-Efficacy, Computer Competency, Commitment to Goodness and Community Bonding Factors Influencing Pre-Service Teachers' Internet Self Efficacy in SouthWest, Nigeria. *Caribbean Educational Research Journal*, 3(1), 44-61.
- Iroegbu, M. N. (2013). Effect of test anxiety, gender and perceived selfconcept on academic performance of Nigerian students. *International Journal of Psychology and Counselling*, 5(7), 143-146. doi:10.5897/IJPC2013.0218
- Joe, A. I., Kpolovie, P. J., Osonwa, K. E., & Iderima, C. E. (2014). Modes of admission and academic performance in Nigerian Universities. *Merit Research Journal of Education and Review*, 2(9), 203-230.
- Kim, J., & Park, M. (2015). E-Learning Satisfaction by Self-Efficacy in Higher Education. *International Journal of Software Engineering and Its Applications*, 5(10), 109-116.
- Korkmaz, Ö. (2016). The Effects of Scratch-Based Game Activities on Students' Attitudes, Self-Efficacy and Academic Achievement. *International Journal of Modern Education and Computer Science*, 2016(1), 16-23. doi:10.5815/ijmecs.2016.01.03
- Kothari, C. R., & Gauray, G. (2014). *Research Methodology - Methods and Techniques* (3rd ed.). New Delhi: New Age International Publishers.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 19(30), 607-610.
- Marakas, G. M., Johnson, R. D., & Clay, P. F. (2007). The Evolving Nature of the Computer Self-Efficacy Construct: An Empirical Investigation of Measurement Construction, Validity, Reliability and Stability Over Time. *Journal of the Association for Information Systems*, 8(1), 16-46.
- Matawal, D. B. (2013). Analysis of the Relationship Between Students' Achievements in Mathematics in SSCE and Remedial Sciences Programme, University of Jos-Nigeria. *Comprehensive Journal of Educational Research*, 1(3), 42 - 46.
- Matthew, I. A. (2013). Provision of secondary education in Nigeria: Challenges and way forward. *Journal of African Studies and Development*, 5(1), 1-9. doi:10.5897/JASD11.058
- McKenzie, K., Gow, K., & Schweitzer, R. (2004). Exploring first-year academic achievement through

- structural equation modeling. *Higher Education Research and Development*, 32(1), 95-112.
- Nasrollahi, A., & Barjasteh, H. (2013). Iranian Students' Self Efficacy and Their Language Achievements. *Theory and Practice in Language Studies*, 3(10), 1837-1843. doi:10.4304/tpls.3.10.1837-1843
- Nbina, J. B. (2012). Analysis of Poor Performance of Senior Secondary Students in Chemistry in Nigeria. *An International Multidisciplinary Journal, Ethiopia*, 8(4), 324-334.
- Nickolas, S. (2015, March 26, 2015). What are some examples of stratified random sampling? Retrieved from <http://www.investopedia.com/ask/answers/032615/what-are-some-examples-stratified-random-sampling.asp>
- Nik, N. M., Jantan, M., & Taib, M. F. (2010). Moderating effect of Information Processing Capacity to Investment Decision Making and Environmental Scanning. *Business Management Quarterly Review*, 1(1), 9-22.
- Nwosu, K. G., Achukwu, C. B., Akuezilo, J., & Uzoekwe, H. E. (2015). Computer Self Efficacy, Computer-related Technology Dependence and On-line Learning Readiness of Undergraduate Students. *International Journal of Higher Education Management*, 1(2), 60-71.
- Ossai, M. C. (2011). Guidance and counseling implications of examination anxiety as a predictor of students' attitude towards examination malpractices. *Mediterranean Journal of Social Sciences*, 2(7), 85-90.
- Oye, N. D., A.Lahad, N., & Ab.Rahim, N. (2012). Computer Self-Efficacy, Anxiety and Attitudes Towards use of Technology Among University Academicians: A Case Study of University of Port Harcourt—Nigeria. *International Journal of Computer Science And Technology*, 3(1), 213-219.
- Öztürk, N., Bozkurt, E., Kartal, T., Demir, R., & Ekici, G. (2011). Evaluation of Prospective Science Teachers' Computer Self-Efficacy. *Western Anatolia Journal of Educational Sciences*(Special Issue: Selected papers presented at WCNTSE), 181-188.
- Pajares, F. (2002). *Overview of social cognitive theory and of self-efficacy*.
- Pintrich, P., & Schunk, D. (1996). *Motivation in education: Theory, research, and applications*. Englewood Cliffs: NJ: Prentice Hall.
- Punch, K. F. (2003). *Survey Research: The Basics*. London: Sage Publications Ltd.
- Sabzwari, M. N. S., Bhatti, R., & Ahmed, B. (2012). ICT Skills and Computer Self-Efficacy of Research Students. *Library Philosophy and Practice (e-journal)*, 1(2), 1-15.
- Salas, E., & Kozlowski, S. W. (2010). Learning, training, and development in organizations: Much progress and a peek over the horizon. *Learning, training and development in organizations*, 461-476.
- Sekaran, U., & Bougie, R. L. (2010). *Research methods for business: A skill building approach* (5 ed.). Chichester: John Willey and Sons Ltd.
- Semerçi, A., & Keser, H. (2015). Examining instructors' self-efficacy perceptions towards computers. *World Journal on Educational Technology*, 7(3), 186-198. doi:<http://dx.doi.org/10.18844/wjet.v7i3.206>
- Shu, Q., Tu, Q., & Wang, K. (2011). The Impact of computer self-efficacy and technology dependence on computer-related technostress: A Social cognitive theory perspective. *International Journal of Human-Computer Interaction*, 27(10), 923-939. doi:10.1080/10447318.2011.555313
- Simpson, J. A., & Weiner, E. S. C. (1989). *The oxford English dictionary* (Vol. 1). Oxford: Clarendon Press.
- Simsek, A. (2011). The Relationship between Computer Anxiety and Computer Self-Efficacy.

- Contemporary Educational Technology*, 2(3), 177-187.
- Singer, J. (1999). Opinion gap: Measuring Public School Academic Performance. *ACS - VT 2000*, 4(2), 78-91.
- Soyinka, W. (1999). *University System in Nigeria*. Tampere: University of Tampere Press.
- Steinmayr, R., Meißner, A., Weidinger, A. F., & Wirthwein, L. (2016). Academic Achievement. (6), 1-4. doi:10.1093/obo/9780199756810-0108
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education Inc.
- Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate statistics* (6th ed.). Boston: Pearson Education Limited.
- Tuncer, M. (2013). An analysis on the effect of computer self-efficacy over scientific research self-efficacy and information literacy self-efficacy. *Educational Research and Reviews*, 8(1), 33-40. doi:10.5897/ERR12.122
- Turel, V. (2014). Teachers' Computer Self-Efficacy and their use of Educational Technology. *Turkish Online Journal of Distance Education*, 14(4), 1302-6488.
- Ushie, M. A., Emeka, J. O., Ononga, G. I., & Owolabi, E. O. (2012). Influence Of Family Structure On Students' Academic Performance In Agege Local Government Area, Lagos State, Nigeria. *European Journal of Educational Studies*, 4(2), 177-187.
- Yusuf, A. (2002). Interrelationships among academic performance, academic achievement and learning outcomes. *Journal of curriculum and Instruction*, 1(3), 87-96.
- Zhou, T. (2014). Examining continuance usage of mobile internet services from the perspective of resistance to change. *Information Development*, 30(22), 94-101.
- Zikmund, G. W., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business Research Methods* (8 ed.). USA: South Western College Publishing.