

RELATIONSHIP BETWEEN COMPUTER ANXIETY AND STUDENTS ACADEMIC ACHIEVEMENT IN COMPUTER STUDIES IN JUNIOR SECONDARY SCHOOLS IN UMUAHIA SOUTH LOCAL GOVERNMENT AREA OF ABIA STATE

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Abstract

The Authors examined relationship between computer anxiety and students' academic achievement in computer studies in junior secondary schools in Umuahia South L. G. A. of Abia State. This study adopted correlation research design. The sample of the study was 320 computer studies students in four (4) secondary schools in the study area sampled through Simple random sampling technique. Three research questions and three hypotheses guided the study. Cronbach alpha statistic and Kuder Richardson 20 formula were used to determine reliability coefficient of the computer test anxiety scale (CTAS) and the computer achievement test (CAT). Reliability coefficient of 0.89 and 0.88 were obtained for CTAS and CAR. The research questions were answered using Pearson (r) statistic, mean and standard deviation while hypotheses were tested with t-test of significance of simple correlation statistic and independence sample t-test. The findings reveal that computer anxiety has higher relationship with students' academic achievement in computer studies. There was significant difference in the mean computer anxiety score of male and female students in computer studies in junior secondary schools with the female students having the higher mean anxiety score in computer studies. It was concluded that Computer anxiety is positively related with academic achievement and thus recommended that teachers should always find ways of creating and sustaining moderate test anxiety on the students. Seminar should be organized for the students by professional bodies like science teachers Association of Nigeria (STAN) to help eliminate the anxiety in the female students.

Keywords: computer, anxiety, computer anxiety, academic achievement.

Introduction

Computer Information Communication Technology has become an integral part of our society (Chiemeké, 2018). Exposure to this new medium gives one the opportunity to acquire unlimited amount of knowledge and a chance to communicate with others around the world. Computer teaching plays a key role in the modern systems of education. Students find it easier to refer to the Internet than searching for information in fat reference books. The process of learning has gone beyond learning from prescribed textbooks. Globally, computer technology is changing education and it offers several new possibilities for today's educational institutions of all kinds. Recently, it is now used to enhance traditional teaching methods, supplement traditional teaching methods, provide digital resources for students, and interactive learning opportunities such as online conferencing and digital teaching materials. Computer can also be used to improve the way information is conveyed, making learning more efficient and effective. The rapid expansion of online courses and the extensive use of mobile devices to support a wide range of programming tutorials and mixed learning programs (partly online, partly classroom) are some of the best examples.

According to Agbo (2018), almost every aspect of our lives, including education, has been revolutionized by technology. Computer is transforming education by making it easier to learn, teach and evaluate. Computers facilitate an efficient storage and effective presentation of information.

Presentation software like PowerPoint and animation software like Flash and others can be of great help to the teachers while delivering information.

Computers have now been accepted " unconditionally " as an integral part of our entire educational system. The increase in computer usage is rapid and has also generated new challenges. In fact, one of the most dynamic and innovative areas of growth in education is the utilization of computer technology. Shinn (2017) asserted that for a school to remain competitive it also must adapt to changes and be innovative with its use of computer. She further stated that, despite income, school budgets and location, soon all students will have access to information through the internet.

Today, the internet is being used as a payment method; telecommunication traffic is also possible through the computer video and audio services (Jonah, 2017). Technology can play a vital role in helping students meet higher standard and perform at increased levels by promoting alternative, innovative approaches to teaching and learning (George, 2018). Therefore, in considering computer utilization, it is important to consider psychological factor like computer anxiety. Studies have shown that computer anxiety and lack of confidence influence both the acceptance of computers and their use as teaching and learning tools (Fletcher & Deeds, 2014; Gressard & Loyd, 2016). Therefore there is need to disabuse the mind of both teachers and their students from such fears and replace these misconceptions with confidence.

Anxiety means apprehension, tension, or uneasiness characterized by fear, dread, or uncertainty about something the source of which is largely unknown or unrecognized by the individual; it may consist in persistent apprehensions of future events as well as in generalized emotional reactions to any choice point or decision. Freud (1936) defined objective anxiety as an internal emotional reaction to anticipated real external danger or threat in the environment, test anxiety could be viewed as an internal emotional response or reaction to the threat of test stimulus. Since test or examinations are real perceivable objects in the external environments, tests, anxiety is thus an objective anxiety and not neurotic. It is the physiological and emotional components of anxiety, theoretically propounded by Freud that guided the development of many test anxiety scales by various foreign psychometrics. Glaister (2009) mentioned that all anxiety disorders are defined by the dual characteristics of excessive emotional fear and physiologic hyper arousals. Anxiety is one of the most widely experienced emotion and one of the most essential constructs of all human behavior; it is a displeasing feeling of uneasiness, nervousness, apprehension, fear, concern or worry (Raub, 2014). Without any anxiety most of the people would lack the motivation to do anything in life. Therefore, moderate level of academic anxiety is essential to motivate students to study for examination and may incline them for better achievements. It has been observed that a high level of anxiety interferes with concentration power and also affects memory. In this way high academic anxiety may be one of the obstacles to academic achievement. Academic anxiety cannot be ignored at any cost, if we are concerned about students' performance.

"Computer Phobia" and "Computer Anxiety" are used in the literature vocabulary due to teacher and student resistance to computer use. Anxiety by definition is intense dread, apprehension, or worry. Computer anxiety as defined by Carlson and Wright (2017) as the fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer. Computer anxiety is a concept of specific anxiety type, which regularly occurs in a specific type of situation (Harris & Grandgenett, 2017). Computer anxiety has been associated with decrease this use and worse, avoidance of information technology. Avoidance can seriously affect some students' academic progress, lower performance in business settings and ultimately affect career opportunities (Brown & Vician, 2017). Those who have computer anxiety may experience fear of the unknown, feeling of frustration, possible embarrassment, failure and disappointment (Fajou, 2017). The causes of this anxiety according to Nickerson (2016) are not unconnected with feelings of stupidity, fear of obsolescence, fear of the unfamiliar operations done with computers and the thought that computers have a dehumanizing effect.

Computer ownership and computer experience are two very important and interrelated factors that

can help in mitigating fear and anxiety about computers from the minds of teachers and students. The teacher if guaranteed total access and freedom to experiment with the use of a computer as a teaching tool, then comes the reciprocal outcome of computer experience that provides the technical know-how and the intellectual ability to manipulate and discover the pedagogical power of the computer. The importance of knowledge and experience in the use of computer has been echoed and reiterated in many studies. Loyd and Gressard (2016) asserted that computer experience is gaining wide recognition as crucial component of the educational process. Shinn (2011) estimated that at least 30% of the community dealing daily with computers experience some form of anxiety about computers. Brown and Vician (2017) found that 24% of the 157 students in their sample reported Computer Anxiety Scale (COMPAS) scores that indicated they experienced anxiety toward computer use.

Deloaghry (2017) stated that increased computer use may not necessarily eliminate anxiety from all computer anxious users. Kadjevich (2018) noted that due to the lack of training and experience even when computers are available, mathematics teachers rarely use them in their educational practice. Limited computer experience has been found to be a factor that influences anxiety (Gressard & Loyd, 2016). Lack of training and experience is also believed to be, in part, the reason why many teachers have not been well disposed to computers and consequently deprived of their usefulness in the classroom. Computer-literate teachers with computer experience will be less inclined to doubt the usefulness of the computer in their classroom. Thus, the perceived usefulness of computers clearly influences attitudes toward computers. However, the amount of confidence a teacher possesses in using computers also influences the implementation of acquired skills in the classroom. Though computer technology is not a substitute for quality teaching and learning, yet there is need for conscious efforts to utilize computers effectively to enhance teaching and stimulate students' interest in learning. Most of the research on technology-related anxiety has been conducted in the area of computer anxiety and using computers as programme or instructional management tools for teacher's use (Fletcher & Deeds, 2014). Also many studies have only focused on factors that influence attitudes toward computer technology (Torkzadeh & van Dyke, 2016). More recent literature should be added and integrated in this section. Many factors have been reported to influence test anxiety. For example, Doyle, Stamouli and Huggard, (2015) found that computer anxiety decreases with increasing experience and knowledge of computer.

Computer anxiety also manifests in students irrespective of their level of education. Glaister (2019) found that students who reported medium and high levels of computer anxiety performed less well than those with low level in a nursing examination involving the use of computer. However, Tekinarslan (2018) reported there is no significant difference between male and female student computer anxiety. He further indicated that while students' computer experience and knowledge increase, computer anxiety level decreases. Many students may experience some computer anxiety when required to learn about or use computers, it is the manner in which students perceive computers that will or will not make the interaction a pleasant and rewarding experience Clement (2016). Researchers have indicated that negative emotional reactions toward computers influence the degree to which computers can effectively be utilized.

According to Ali Simsek (2017), academic achievement is the extent to which a learner is profiting from instructions in a given area of learning i.e., achievement is reflected by the extent to which skill or knowledge has been imparted into an individual. Academic achievement means achievement level of the students. It can be defined as what a student does or achieve at his school. It is a common practice to promote students from a lower class to a higher class on the basis of his academic achievement. It helps in declaring students successful or unsuccessful, choosing students for various courses and selecting students for different jobs. It is the level of learning in a particular area of subject in terms of knowledge, understanding, skill and application usually evaluated by teachers in the form of test scores in their annual examination.

According to Mkpaoro (2016) stated that our behaviours, thoughts and feelings are governed largely by innate biological drives, commonly referred to as instincts in this context. These are in born impulses or forces that rule our personalities. It is obvious that computer is very important in everyday life. In spite of this importance of computer, research study reveals that students' achievement is still very low. More importantly among the factors that inhibit students' achievement in computer seems to be test anxiety. Many students seem to be afraid of using computer because of fear of damaging it, fear it may shock them among others.

Furthermore, the researcher observed from the literature reviewed that any stimulus that causes an individual to think about dangerous and frightening situation may evoke high level of anxiety. It was also noted from the literature reviewed that anxiety often carries with it feeling of lack of confidence, irritability, reduction of self-liking interest and guilt. These negative tendencies, it was revealed could lower the academic achievement of students.

The literature shows that high anxiety children always perform poor in achievement. Computer anxiety may be a serious barrier against learning how to use computers effectively. Literature reviewed has shown that student's performance is influence by anxiety. Students fear that computer may shock them, fear of destroying computer and fear of mathematical calculation in computer all these amount to anxiety on students' performance. The question to ascertain the degree of the relationship of the anxiety on the students performance in computer studies seem to have not been established.

Purpose of the Study

The purpose of this study to establish the relationship between computer anxiety on students' academic achievement in computer studies in junior secondary school.

Specifically the study sought to:

determine relationship between computer anxiety and academic achievement of students in computer studies in junior secondary schools

find the mean computer anxiety score of male and female students in computer studies in junior secondary schools

find the mean academic achievement score of male and female students in computer studies in junior secondary schools

Research Questions

The following research question guided the study:

What is the relationship between computer anxiety and academic achievement of students in computer studies in junior secondary schools?

What is the mean computer anxiety score of male and female students in computer studies in junior secondary schools?

What is the mean academic achievement score of male and female students in computer studies in junior secondary schools?

Hypotheses

The following null hypotheses are formulated and were tested at 0.05 alpha levels.

H1: There is no significant relationship between computer anxiety and academic achievement of students in computer studies in junior secondary schools.

H2: There is no significant difference in the mean computer anxiety score of male and female students in computer studies in junior secondary schools.

H3: There is no significant difference in mean academic achievement score of male and female students in computer studies in junior secondary schools.

Method

This study adopted a correlational research design. The population of the study comprises of 2022 computer studies students in the twelve government own Junior secondary schools in Umuahia South local government area of Abia State. The sample of the study was 320 computer studies students in four (4) secondary schools in the study area. Simple random sampling technique was used to select the 4 schools used for the study. The four schools represent 30% of the total school in the study area and the 320 was determined using Yaro-Yamane formula. The instruments for the study were Computer Test Anxiety Scale (CTAS) and Computer Achievement Test (CAT). The CTAS has two sections. Section A is on personal data of the students and section B measured the students’ test anxiety. The instrument was scored in this order: Strongly agree (SA) -4, Agree (A) -3, Disagree (DA) -2, strongly disagree (SD) -1 for positively cued items and in the reverse other for negatively cued items. The computer achievement test (CAT) was adapted from the junior secondary schools past question papers. It consists of 20 item multiple-choice questions with 4 options A-D. It was marked over 100% therefore each correct answer carried 5marks. The topic to be covered is hard ware and software. Cronbach alpha and Kuder Richardson 20 formula were used to determine the reliability index of CTAS and CAT respectively and reliability coefficient of 0.89 and 0.88 for the CTAS and CAT were obtained respectively.

Results

Research Question 1

What is the relationship between computer anxiety and academic achievement of students in computer studies in junior secondary schools?

Table 1: Relationship between computer anxiety and academic achievement of students in computer studies in junior secondary schools

| V | n | $\sum XY$ | SS | SP | S2 | Cov. | R | Remarks |
|---|-----|-----------|----------|-----------|--------|--------|------|-----------------------|
| X | 320 | 7541 | 4721.353 | | 20.561 | | | Very High |
| | | | | 68354.442 | | 22.412 | 0.83 | Positive Relationship |
| Y | 320 | 8131 | 5422.245 | | 31.512 | | | |

The result presented in table 1 showed the relationship between the computer anxiety and academic achievement of students in computer studies in junior secondary school. Through the sum of squares and sum of products, or through the variances and covariance, a coefficient(r) of 0.83 was realized. The coefficient shows that there is a very high positive relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school. This is an indication that the higher the test anxiety, the higher the academic achievement of students in computer studies.

H01: There is no significant relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school

Table2: Relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school

| V | n | $\sum XY$ | r | A | Df | tcal | ttab | Decision |
|---|-----|-----------|------|------|-----|--------|------|-------------|
| X | 320 | 7541 | | | | | | |
| | | | 0.85 | 0.05 | 318 | 22.012 | 1.96 | H0 Rejected |
| Y | 320 | 8131 | | | | | | |

Sample Size (n), Coefficient of Relationship (r), Alpha Level (α), Degree of Freedom (df) and t-test of Significance of Correlation between two Variables

Table 2 presented the test of the coefficient of the relationship between computer anxiety and academic

achievement of students in computer studies in junior secondary school. The degree of freedom is 318 and the t-calculated value of 22.012 is greater than the t-tabulated value of 1.96. Since the t-calculated value is greater than the t-tabulated value, the null hypothesis is rejected. This means that there is a relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school

Research Question Two

What is the mean computer anxiety score of male and female students in computer studies in junior secondary school?

Table 3: Mean computer anxiety score of male and female students in computer studies in junior secondary school

| Variables | N | Mean | Standard Deviation |
|-----------|-----|-------|--------------------|
| Male | 148 | 34.37 | 13.43 |
| Female | 172 | 42.46 | 15.53 |

Table 3 showed that mean and standard deviation of computer anxiety score of male and female students in computer studies in junior secondary school. The male had mean value of 34.37 with standard deviation of 13.43 and the female had mean value of 42.46 with standard deviation of 15.53. The female computer students have highest mean anxiety score than the male which implies that the female have higher anxiety in computer studies than the male students in computer studies.

Hypothesis 2: There is no significant difference in the mean computer anxiety score of male and female students in computer studies in junior secondary school.

Table 4: t-test analysis of Mean difference in the mean computer anxiety score of male and female students in computer studies in junior secondary school

| Variables | N | Mean | Standard Deviation | df. | t-cal | t-critical | Decision |
|-----------|-----|-------|--------------------|-----|-------|------------|----------|
| Male | 148 | 34.37 | 13.43 | 318 | 4.94 | 1.96 | S |
| Female | 172 | 42.46 | 15.53 | | | | |

Where N= Number of respondents df= degree of freedom, t-cal= t-calculated, S=significant Table 4 showed mean difference in the computer anxiety score of male and female students in computer studies in junior secondary school. The independent sample t-test showed that the t-calculated value was 4.94 and t-critical value was 1.96 at 318 degree of freedom. The t-calculated value is higher than the t-critical value therefore the null hypothesis which stated that there is no significant difference in the mean computer anxiety score of male and female students in computer studies in junior secondary school is rejected and the alternative hypothesis is uphold.

Research Question 3

What is the mean academic achievement score of male and female students in computer studies in junior secondary school?

Table 5: Mean academic achievement score of male and female students in computer studies in

junior secondary school

| Variables | N | Mean | Standard Deviation |
|-----------|-----|-------|--------------------|
| Male | 148 | 63.32 | 22.42 |
| Female | 172 | 54.28 | 18.31 |

Table 5 showed mean and standard deviation of academic achievement score of male and female students in computer studies in junior secondary school. The male had mean value of 63.32 with standard deviation of 22.42 and the female had mean value of 54.28 with standard deviation of 18.31. The male computer students have highest mean achievement score than the female which implies that the male have highest academic achievement in computer studies than the female students in computer studies.

Hypothesis Three

There is no significant difference in mean academic achievement score of male and female students in computer studies in junior secondary school.

Table 6: t-test analysis of Mean difference in mean academic achievement score of male and female students in computer studies in junior secondary school

| Variables | N | Mean | Standard Deviation | df. | t-cal | t-critical | Decision |
|-----------|-----|-------|--------------------|-----|-------|------------|----------|
| Male | 148 | 63.32 | 22.42 | 318 | 3.91 | 1.96 | |
| Female | 172 | 54.28 | 18.31 | | | | |

Table 6 showed mean difference in the mean academic achievement score of male and female students in computer studies in junior secondary school. The independent sample t-test showed that the t-calculated value was 3.91 and t-critical value was 1.96 at 318 degree of freedom. The t-calculated value is higher than the t-critical value therefore the null hypothesis which stated that there is no significant difference in mean academic achievement score of male and female students in computer studies in junior secondary school is rejected and the alternative hypothesis is upheld.

Discussion of Findings

Result in Table 1 showed that there is a very high positive relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school. This finding is in agreement with the study of Ali Simsek (2017) who examined the relationship between computer anxiety and computer self-efficacy of students and teachers in elementary and secondary schools. The finding reported that computer anxiety influence the students self-efficacy.

Table 2 revealed that female computer students have highest mean anxiety score than the male which implies that the female have higher anxiety in computer studies than the male students in computer studies. This finding is not in agreement with Nwachukwu (1999) who investigated relationship among test- anxiety, academic achievement and interest of senior secondary school students in geometry. His finding showed that there was a significant difference in the mean test anxiety of male and female students with the male students having high test anxiety. However this finding is in line with MohdShakir (2014) who conducted study on the relationship and effects of academic anxiety on the academic achievements of students and reported that female students have higher academic anxiety than the male. In the present study it was found that the female have higher academic anxiety than the male.

Results in table 3 revealed that male computer students have highest mean achievement score than the

female which implies that the male have highest academic achievement in computer studies than the female students in computer studies. This finding is in line with the view of Manoa (2017) who pointed out that many factors in and outside the classroom result in girls being turned away from computer technology. These factors include the media depicting men as experts in technology, societal expectations of different goals for boys and girls, the structure of learning tasks, the nature of feedback in performance situations and the organization of classroom sitting. Because these factors are often restrained, they go unnoticed. It is little wonder why boys are more knowledgeable in computer than girls. In this present study there is an indication that male academic achievement was higher than the female students.

Conclusion

Based on the finding it is established on this study that there is a very high positive relationship between computer anxiety and academic achievement of students in computer studies in junior secondary school. The female computer students have highest mean anxiety score than the male which implies that the female have higher anxiety in computer studies than the male students in computer studies. The male computer students have highest mean achievement score than the female which implies that the male have highest academic achievement in computer studies than the female students in computer studies.

Recommendations

Based on the findings, the following recommendations were made.

Computer anxiety is positively related with academic achievement, the teacher should always find ways of creating and sustaining moderate test anxiety on the students. This is because anything short of this, either low or high will be debilitating to the academic achievement of these students in computer studies.

Seminar should be organized for the female students by professional bodies like science teacher association of Nigeria (STAN) since they have higher anxiety which in turn can affect their academic achievement. This will help them to change their orientation towards computer studies.

Female students should be more exposed to computer studies and encouraged them to take up studies in computer studies that will help to reduce phobia and anxiety on female students.

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