AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

STUDENTS COGNITIVE CONCEPTS AS CORRELATES OF SECONDARY SCHOOL STUDENTS' PERCEIVED ACADEMIC PERFORMANCE IN COMPUTER STUDIES

Ekoyo, Destiny Onyebuchi
Department Of Science Education,
Nnamdi Azikiwe University Akwa
Email: do.ekoyo@unizik .edu.ng; 07034516620
&
Ogwudu Clement Ekeh
Department Of Science Education,
Ebonyi State University, Abakaliki
Email: clementchinagorom@mail.com; Phone number: 08169910442

ABSTRACT

The study investigated on students' cognitive concepts as correlates of secondary school students' perceived academic performance in Computer Studies in Abakaliki Local Government of Ebonyi State. The study used correlation research design. The population of the study was 2070 Junior Secondary two (JSSII). The sample was 300 hundred students (150 male and 150 female) drawn using Yamame, sample size of 0.2% of the total population. Two purpose of study, two research questions and two hypotheses were raised to guide the study. Two instruments were used to collect the data. One is named Students Cognitive Concept Questionnaire SCCQ adopted from "Individual psychological -Concept" as developed by Goñi, A. in 2000 aim to measure personal perceptions regarding Self-fulfillment (6 items), Honesty (3 items), Autonomy (4 items), Emotional psychological concept (5 items), and General Personal psychological concept (4) and Perceived Academic Performance Questionnaire (PAPQ) adopted from Goyal (2017) consisted of two 10-item subscales: students' academic confidence (11 items) and students' academic effort (10 items). The data collected were analysed using Pearson's Product Moment Correlation for both research questions and hypotheses which were tested at .05 level of significance. The results revealed a high positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies. Hence, a significant difference in relationship exists between students' cognitive concepts and their perceived academic performance in Computer Studies. Also from the research findings, there is a low positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. Hence, a significant relationship exists between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. From the results recommendations and conclusions were made.

Keywords: Computer Studies, Cognitive Concept and Performance

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

Introduction

Computer studies is the study of computers and computational systems. Unlike electrical and computer engineers, computer studies deal mostly with software and software systems; this includes their theory, design, development, and application which is set aside for millennium use and attend it objectives among secondary school students. The objectives of computer studies at the secondary school level of education according to Federal Ministry of Education (FME, 2019) is to enable the learner to: Acquire basic computer skills such as the use of the keyboard, mouse and system, use the computer to facilitate learning electronically; develop reasonable level of competence on ICT applications that will engender entrepreneurial skills. Realising the objectives of Computer Studies as stipulated in the curriculum requires appropriate learning strategies, techniques, approaches, strategies and cognitive concept towards the subject.

Cognitive concepts also known as self-concept is a hypothetical construct that help explain and predict students' performance. It includes elements of reciprocity, where a student's actions influence their psychological perceptions and perceptions of self, in turn, influence their actions (Obidigbo, 2020). Cognitive concept is the psychological or thinking aspect of self that is self-image related factor (Asanbe et. al.,2018). It is also the totality of a complex, organized and dynamic system of learned beliefs, attitudes and opinions that each person holds to be true about his or her personal existence. Cognitive concept has significant effect on adjustment and positive mental health. Therefore, very important personality constructs, develop and grow out of life experiences base on cognitive concept (Obidigbo, 2020). Some studies found that students with poor cognitive concept had less satisfactory relationships, more negative attitudes toward illness and more maladaptive coping behaviors (Hughes, 2014). Therefore, students who have positive cognitive concept will tend to possess a higher social and emotional compatibility which would likely make them have the potentiality to make better progress and good academic performance in any endavour (Liu & Wang 2005; Fayombo, 2021).

In the study conducted by Ellah and Achor (2017) to determine the relationship between students' cognitive thinking in Basic Science and Technology (BST) and their performance in senior secondary science subjects in Benue state, the researchers observed that there is a low percentage variation in students' cognitive thinking in science can be attributed to their perceived academic performance in Basic Science and Technology, there still exist significant relationship between students' cognitive concepts in Basic Science and Technology and their performance in science. Similarly, Adegbite (2017) opined that a moderate relationship exists between students' cognitive concepts and their performance in ICT in Oyo state Nigeria. The author asserted

that there is a significant in relationship between students' cognitive concept and their performance in ICT. Meanwhile Goyal (2017) reported a moderate relationship in high students' cognitive concept and academic performance in computer related programs but did not find a significant in the relationship using Psychological-Worth Theory (PWT) in Glasgow.

Furthermore, Anugwo and Ekoyo (2019) asserted a moderate relationship between student cognitive thinking and academic performance in computer education in Ebonyi state. The authors maintained no significant relationship in students' cognitive thinking and academic performance in computer education. Anthony (2018) also reported a moderate positive relationship between high school students' cognitive concept and academic performance in Computer studies. Contrary, a large body of literature has also reported the relationship between gender, students' cognitive concept and academic performance. Ogbeba et. al. (2019), Ajmal and Rafique (2018) reported that boys seem to have a more positive relationship in their cognitive concept and academic performance in a number of dimensions such as science and Psychology courses than girls. In a relative manner, Oluwatosin and Bamidele (2014) reported differences in the strength of relationship between students' cognitive concept and academic performance in science subjects seems to be stronger for boys. Further, in a study to find the influence of cognitive concept on perceive academic performance among students of College of Education, Akwanga, Nasarawa State-Nigeria Nalah (2014) found that boys showed significantly have high academic performance in college courses than the girls. Meanwhile, researchers working in the area of gender issues have not resolved the long-smoldering debate on gender difference in students' cognitive concepts and academic performance for example, Wondu (2018) reported that despite comparable academic preparation and within classroom cognitive concept, males continue to outperform females at the elementary, middle and high school levels on standardised tools measuring science subject. More so, many researchers in their different studies in science agreed that male out form their female counterpart especially when their performance is correlated with their cognitive abilities in the subject but no significant difference in relationship (Masiu & Chukwuere, 2018; Nidhi & Sunita 2019; Olaore, 2014) whereas, Onyebueke, (2016), Arsal (2019), Salini and Reeves (2017) in their different studies in Computers studies and other science subjects reported that females' complete out smart their male counterpart with high relationship between their cognitive concept and their academic performance but no difference in significant relationship.

From the forgoing argument, it appears the question of whether relationship exists or does not exist between students' cognitive concept and academic performance in Computer studies has not been concisely

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

answered because both the theoretical and empirical studies reviewed in this study have produced diverse and contradictory results. Similarly, the issue of gender difference in students' cognitive concept in Computer studies has not been resolved and therefore subject to further investigation. Thus this study focused on students' cognitive concepts as correlates of secondary school students' perceived academic performance in Computer studies.

Purpose of the Study

The main purpose of this study is to determine the students' cognitive concepts as correlates of secondary school students' perceived academic performance in Computer studies.

1. To determine the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies.
2. To determine the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender.

Research Questions

The following research questions guided the study

1. What is the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies?
2. What is the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender?

Hypotheses

HO_1: There is no significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies.

HO_2: There is no significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender.

Research Method

The study employed a correlation research design. This design seeks to establish the relationship that exists between two or more variables. The area of the study was Abakaliki local government of Ebonyi state. The population of the study comprised of all the 2070 Junior Secondary two (JSSII) Computer studies students in the state. Simple random sampling was used to draw 300 students (150 female and 150 male) from the total population using standard table of Yamame, sample size of 0.2% of the total population. Data were collected using two instruments. The first instrument was 22-item Likert-type inventory questionnaire known as Students Cognitive Concept Questionnaire SCCQ. The standard instrument "Individual Cognitive -Concept" was adopted as developed by Goñi, A. in 2000 aim to measure personal perceptions regarding Self-fulfillment (6 items), Honesty (3 items), Autonomy (4 items), Emotional psychological concept (5 items), and General Personal psychological concept (4). The questionnaire is a Liker scale with five response options ranging from strongly

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

disagree to strongly agree. The second instrument was a Perceived Academic Performance Questionnaire (PAPQ) adopted from Goyal (2017). PAPQ consisted of two 10-item subscales: students' academic confidence (11 items) and students' academic effort (10 items). its option responses were "Very high extent", "High extent", "Very low extent", "Low extent". These instruments are standardized and were adopted by the researchers. Pearson product moment correlation was used to answer both research questions and test the hypotheses at 0.05 level of significant.

Ranges of scores

	Decision
±0.80 – ± 1.00	High positive or negative relationships
±0.31 – ± 0.79	Moderate positive or negative relationship
±0.00 – ± 0.30	Low positive or negative relationship.

While decision rule for hypotheses was that when p-value is less than or equal to .05 ($p<.05$) the hypothesis was reject but when it is the other way round it is accepted.

Presentation of Results

Research Question 1: What is the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies?

Table 1: Pearson's Product Moment Correlation Analysis of the relationship between Students' Cognitive Concepts and Their Perceived Academic Performance in Computer Studies

Variable	N	r	R^2	Magnitude & Direction	Sig	Decision
SCCQ PAPQ	300	0.73	0.54	high positive	.000	S

Result on Table 1 is correlation coefficients analysis of students' cognitive concepts and their perceived academic performance in Computer Studies. Results showed that the correlation between students' cognitive concepts and their perceived academic performance in Computer Studies was 0.73. This means there was a high positive relationship between students' cognitive concept and their perceived academic performance in Computer studies. The coefficient of determination associated with 0.73 is 0.54. The coefficient of determination (0.73) also known as the relationship value means that 54% of students' cognitive concepts accounted for the variation in perceived academic performance in Computer Studies. This is an indication that

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

46% of variation in perceive academic performance of Computer Studies students is attributed to other factors other than their cognitive concepts.

Research Question 2: What is the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender?

Table 2: Pearson's Product Moment Correlation Analysis of the relationship between Students' Cognitive Concepts and Their Perceived Academic Performance in Computer Studies as Moderated by Gender

Variable	N	r	R^2	Magnitude & Direction	Sig	Decision
SCCQ PAPQ	300	0.13	0.9	low positive	.000	S

Result on Table 2 is correlation coefficients analysis of students' cognitive concept and their perceived academic performance in Computer Studies as moderated by gender. Results showed that the correlation between students' cognitive concept and their perceived academic performance in Computer Studies as moderated by gender was 0.13. This means there was a low positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies. The coefficient of determination associated with 0.13 is 0.9. The coefficient of determination (0.13) also known as the relationship value means that 9% of male and female students' cognitive concepts accounted for the variation in perceived academic performance in Computer Studies. This is an indication that 91% of variation in perceive academic performance in Computer Studies of male and female students is attributed to other factors other than their cognitive concepts.

The hypotheses were tested in this study at .05 alpha level of significance.

HO_1: There is no significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies.

Table 1 revealed the Pearson correlation coefficient for the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies. A high positive correlation was found r (300) =0.73, p=0.00<0.05) indicating a significant relationship between the two variables. The null hypothesis which stated that there is no significant relationship between students' cognitive concepts and their perceived

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022; https://ajemates.org
Impact Factor: SJIF 2020=5.536; SJIF 2021 = 5.57
Impact Factor URL: http://sjifactor.com/passport.php?id=21362
Ranking URL:http://sjifactor.com/masterlist.php?area=all&country=ng&ord=sjif

AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.7 (1), August-December, 2022 https://ajemates.org

academic performance in Computer Studies was therefore rejected. The inference drawn was that the higher students' cognitive concepts, the more their academic performance in Computer Studies.

HO2: There is no significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender.
Table 1 revealed the Pearson correlation coefficient for the relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. A low positive correlation was found r (300) =0.13, p=0.00<0.05) indicating a significant relationship between the two variables. The null hypothesis which stated that there is no significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender was therefore rejected. The inference drawn was that the higher students' cognitive concepts, the more their academic performance in Computer Studies irrespective of gender.

Discussion

The result on table 1 is correlation coefficients analysis of students' cognitive concepts and their perceived academic performance in Computer Studies. The result shows a high positive relationship between students' cognitive concept and their perceived academic performance in Computer Studies. Hence there was a significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies. The finding is not in line with Adegbite (2017), Goyal (2017), Anugwo and Ekoyo (2019) whom in their different findings, fields and locations observed a moderate relationship between students' cognitive concept and their academic performance.

More so, the finding of the study supports the findings of other previous researchers such as Adegbite (2017), Ellah and Achor (2017) whom in their different studies maintained that there is a significant in relationship between students' cognitive concept and their performance in ICT and there still exist significant relationship between students' cognitive concepts in Basic Science and Technology and their performance in science. In contrary the finding does not support the findings of Anugwo and Ekoyo (2019) who observed no significant relationship in students cognitive thinking and academic performance in computer education and Goyal (2017) who did not find a significant in the relationship between students' cognitive concept and academic performance using Psychological-Worth Theory (PWT) in Glasgow. This finding portrays that students' cognitive concept plays an important role to affect their academic performance in Computer Studies. By virtue of this finding, this study has joined the school of thought that relates students' cognitive concepts and academic performance. The result on table 2 is correlation coefficients analysis of students' cognitive concepts and their perceived

academic performance in Computer Studies as moderated by gender. The result shows a low positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. Hence there was a significant relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. The finding is not in consonance with researchers like Ogbeba et. al. (2019), Wondu (2018), Nalah (2014), Ajmal and Rafique (2018), Oluwatosin and Bamidele (2014) who reported in different courses and subject that that boys have a more positive relationship in their cognitive concept and academic performance. Also the finding is not in line with Onyebueke (2016), Arsal (2019), Salini and Reeves (2017) whom in their different studies reported that females' complete out smart their male counterpart with high relationship between students' cognitive concept and their academic performance.

Furthermore, the finding is not in line with group of researchers like Masiu and Chukwuere (2018), Nidhi and Sunita (2019) and Olaore (2014) who differently observed no significant difference in relationship between students' cognitive concept and academic performance in different science subjects. This finding portrays that cognitive concept plays an important role to affect their academic performance in Computer Studies irrespective of gender. By virtue of this finding, this study has joined the school of thought that relates students' cognitive concepts and academic performance as moderated by gender.

Conclusion

The study investigated students' cognitive concepts as correlates of secondary school students' perceived academic performance in Computer Studies. From the research findings, there is a high positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies. Hence, a significant difference in relationship exists between students' cognitive concepts and their perceived academic performance in Computer Studies. Also from the research findings, there is a low positive relationship between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender. Hence, a significant relationship exists between students' cognitive concepts and their perceived academic performance in Computer Studies as moderated by gender.

Recommendations

Based on the findings of the study, it was recommended that:

1. Parents and guardians should imbibe the culture of encouraging and strengthening the cognitive concept of their children rather, than condemning and criticizing the child with abusive statements that will make them feel inadequate, incompetent, and inferior; this would help in developing positive academic outcome.
2. Teachers and the school management need to design an orientation exercise in form

of paper presentation, seminar, or symposium in order to sensitize and enlighten the students on how to build and develop individual cognitive concept towards enhancing their academic performance.

References.

Adegbite, A.F. (2017). Analysis of the Impact of ICT on the Performance of Students in Secondary School, Oyo State. *International Journal of Research in Business Studies and Management Volume 4* (8), 23-29.

Anugwo, M.N. & Ekoyo, D. O. (2019). Evaluation of the level of implementation of the contents of the national computer education core curriculum for primary schools in Nigeria. *International Journal of Scientific and Engineering Research*, 10 (10), 1649-1668.

Anthony A. (2018). *Factors contributing to academic performance of students in a junior high school, Munich, Grin Verlag.* https://www.grin.com/document/450284.

Ajmal, A. O. & Refuque, B. O. (2018). *A Multi-Causal Evaluation of Academic performance of Nigerian Learners:* Issues and Implications for National Development. Department of Guidance of Counseling, University of Ibadan, Ibadan. 89.

Arsal, Z (2019). The impact of self-regulated instruction on mathematics achievements and attitudes of elementary school students. *Egitimve Rilim Journal, 34(3), 33-45.*

Asanbe, C.B., Zamani, A., Aiyedogun, M. A. (2018) Self-Concept and Stress: A Cross-Cultural Investigation of American and Nigerian Undergraduate. *African Journal of Applied Psychology*, 2(3&4): 1-10.

Ellah, B. & Achor, E.E. (2017) Achievement in Basic Science and Technology as Correlates of Students Performance in Science in Senior Secondary Schools in Nigeria. *Journal of Research in Instructional education*, 3(2), 1-7.

Fayombo, G. A. (2021). Improving the Academic Achievement of some Nigerian Adolescents through Self-Concept grooming. *African Journal of Educational Research*, 7(2),168-177.

Federal Ministry of Education, (2018). 9-year Basic education curriculum: *computer Studies for JSS1-3: NERDC.* https://stcharlesedu.com/

Goñi, A. (2000). Psicología del individualismo. Donostia: Erein.

Goyal, V. (2017). ICT revolutionizes education in India, the education Post, Jun., 30. https://educationpostonline.in/2017/06/30/ict-revolutionizes-education-in-india/

Hughes, B. M. (2014). Academic study, college examination and self-concept. *Journal of Applied Psychological Research*, 9(1), 24-44.

Liu, W. C. & Wang, C. K. J. (2005). Academic self-concept: A cross-sectional study of grade and gender differences in a Singapore Secondary School. *Asia Pacific Education Review, 6(1), 20-27.*

Masiu, M.T & Chukwuere, J. E (2018). The Effect of Smartphones on Students'

Academic Life: A Perceptive from a South African University. International Conference on Business and Management Dynamics ICBM-2018.

Nala, P.O. (2014). Student Self-Concept on Mathematics achievement. www: *eurojournals. Com.*

Nidhi, P & Sunita, D, (2019). Impact of Ict In Education: Students' Perspective Manuscript Track: Digital Technologies in Teaching. ICDP 2019: International Conference On Digital Pedagogie : https://ssrn.com.

Obidigbo, G. C. (2020). The Relationship between Self-Concept and Academic Performance of Nigerian Students. *Ife Psychologia 2020,10(2),20 -7.*

Ogbeba, J., Enemarie, V. & Ajayi, V.O. (2019) Students' achievement in basic science and technology as a predictor of quality science education. *ICSHER Journal, 4(2),178-187.*

Olaore, I. A. (2014). The Impacts (Positive and Negative) of ICT on Education in Nigeria. www.iiste.org ISSN 2224-607X (Paper) ISSN 2225-0565 (Online) 4(23).

Oluwatosin, S.A & Bamidele, E.F. (2014) Self-concept and academic performance of secondary school students in chemistry. *International Journal of Social Science & Education, 4(3), 11-19.*

Onyebueke, E. (2016). The Role of ICT in Enhancing teaching and learning in Primary. Schools. *Journal of Resourcefulness and Distinction, 13* (1), 1-13.

Salini, R and Reeves, W, (2017). Factors affecting students' adoption of ICT tools in higher education institutions: An Indian Context. *International Journal of Information and Communication Technology Education,* 13(2), 1-12.

Wondu T.B. (2018). Psychological factors affecting students' academic performance among freshman psychology students in dire dawa university. *Journal of Education and Practice,* 9(*4), 1-9.*