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Research Article

Does Emotional Intelligence Drive Better Grades in Computer Studies? A Predictive Analysis

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Abstract
The study investigated students' emotional intelligence as a predictor of their achievement in Computer Studies in Awka Education Zone. The study was guided by two research questions and two hypotheses. It adopted the correlation survey research design on a population of 14,657 senior secondary two (SS2) students, out of which a sample of 390 students was obtained using Taro Yamane's formula. However, only 335 (128 males and 207 females) students, representing 85.9% of the sample size, accurately completed the administered questionnaires and thus were used as the sample for the study. Emotional Intelligence Scale (EIS) with a Cronbach alpha reliability coefficient of 0.79 was used for collecting data for this study. Three experts from the Faculty of Education, Nnamdi Azikiwe University, Awka, validated the instrument. Data were collected by direct administration of the instruments to the students. Also, the second-term examination results of the students in Computer Studies for the 2023/2024 academic session were used as the achievement scores for the study. The data were analysed using the Pearson product-moment correlation Coefficient and regression analysis. The study's findings revealed that emotional intelligence significantly predicted students' academic achievement in Computer Studies. Also, the findings showed a moderating gender influence in the prediction in favour of the female students. The study's findings imply that Computer studies teachers, as well as other educational stakeholders, should not just focus on helping students attain cognitive intelligence. These stakeholders should give emotional intelligence sufficient attention in the classroom, considering its significant role in predicting students' academic achievement.

Keywords: Academic Achievement, Computer Studies, Emotional Intelligence, Students

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1. INTRODUCTION

The 21st century has evolved into a digital age characterized by the increasing use of computers and artificial intelligence (AI) technology across all spheres of human life. This evolution has taken a global perspective, with developed nations leading and developing nations trailing behind. In recognizing the relevance of technology to societal development, many developing nations, particularly those on the African continent, are beginning to emphasize access to and the use of technology as a necessity rather than a luxury (Eme et al., 2015). According to the researchers, the effective use of computers has become an integral part of education. This integration stems from the widespread replacement of manual skills with computerized practices and the increasing interconnection of every career with technology (Gbeleyi et al., 2022). Thus, to remain globally relevant, the citizens of any nation must have access to and be able to use computers and other technological tools effectively. To align with this global trend, Computer Studies was added to the list of core science subjects in Nigeria's school curriculum.

Computer Studies is a scientific discipline that examines computer systems' theory, design, application, and analysis (Adigun et al., 2015). This definition suggests that the focus is mainly on understanding the computer and its functionality, without acknowledging the importance of this knowledge for societal advancement. Okekeokosisi and Okigbo (2021) highlighted the importance of Computer

Studies by emphasizing the societal impact of its algorithmic processes and hardware and software designs. The Nigeria National Policy on Education (FRN, 2014) highlighted the objectives of learning Computer Studies to include the promotion of lifelong learning among students and the development of essential skills for employment and responsible citizenship. Ohadugha et al. (2020) and Saka et al. (2019) assert that Computer Studies is essential for students' success in the digital society, as it provides familiarity with information communication technology.

Since Computer Studies is significant to Nigeria's scientific and technological development and as a vocational, scientific, and technological subject, Badmus and Omosewo (2018) emphasized that Nigerian students are expected to pass the subject with a minimum of 70%. This emphasis is because students are expected to advocate for their nation's scientific and technological development using the knowledge and skills they acquire from learning about science and technology. However, the West African Examination Council (WAEC) Chief Examiner's report for Computer Studies between 2019 and 2023 reveals a varying performance trend among Nigerian secondary school students at the Senior School Certificate Examination (SSCE). The reports indicate that the percentage of students who achieved grades ranging from credits (C6) to distinctions (A1) in the subject in 2019 was 64.4%. The proportion decreased to 53.3% in 2020 and subsequently rose to 60% in 2021. Furthermore, the report showed a declining performance even up to 2023. This performance trend, coupled with the non-realization of the advocated 70% minimum pass rate in the subject, shows that the objectives for introducing Computer Studies in Nigerian schools are not being realized sufficiently.

The quest to ameliorate the situation for the scientific and technological development of the Nigerian society necessitated studies by researchers to determine the underlying factors for students' poor performance in Computer Studies. For example, Okekeokosisi and Okigbo (2021) attributed the poor performance to the pedagogical method used by teachers to teach Computer Studies to their students. The researchers posited that Computer Studies teachers use traditional and teacher-centred methods that fail to enhance students' active participation in the classroom, failing to prepare students for their examinations and the future of work. On the other hand, some researchers have identified psychological variables as responsible for students' poor Computer Studies. One such study was done by Okigbo and Ozumba (2024). The researchers attributed students' poor performance in Computer Studies to academic stress. According to them, secondary school students were unable to manage the stress they faced from studying Computer Studies content. This stress may arise from particular stressors in Computer Studies learning, including students' misconceptions regarding foreign syntax, deficiencies in conceptual and strategic knowledge, challenges with natural language, mathematics proficiency, flawed mental models, inadequate methodologies, programming environments, the qualifications and training of educators, and the dynamics of student interactions with teachers and peers (Gbeleyi et al., 2022; Grover & Basu, 2017; Qian & Lehman, 2017). More general academic stressors that could impede students' performance in the subject include adapting to a new learning environment, managing a heavy school workload, and experiencing pressure from parents, teachers, and peers to excel academically (Pasco et al., 2020). These academic stressors can lead to different levels of academic stress and can affect students' achievement in the long run. These students' stress management issues can be a product of their lack of emotional intelligence.

Emotional intelligence is defined as an individual's capacity to recognize, regulate, and effectively interact with their own emotions (Akintunde & Olujide, 2018). The presence or lack of this ability is often realized in social interactions. Ranjbar et al. (2017) conceptualized emotional intelligence as a subset of social intelligence that allows individuals to control their emotions. According to Al-Qadri and Zhao (2021), emotional intelligence assists individuals in directing their behaviours in accordance with the circumstances in their surroundings. Emotional intelligence refers to an individual's capacity to regulate the expression of their emotions while interacting with others.

Considering the importance of emotional intelligence, the concept has been studied in several fields. For example, Al-Qadri and Zhao (2021) posited that emotional intelligence has been examined in the fields of psychology and educational outcomes. Within the field of psychology, Omoniyi and Adelowo (2014) argued that emotional intelligence is crucial for maintaining order and stability in life, which can result in fewer negative experiences for individuals. Also, Akintunde and Olujide (2018) argued that emotional intelligence, as a psychological factor, necessitates individuals to adapt their behaviour towards others to achieve success and psychological well-being. Similarly, Damavandi and Golzari (2015) argued that emotional intelligence improves the ability of individuals to maintain successful relationships, make good

adaptations, and effectively manage a range of emotions. These abilities are crucial for maintaining peace and order in society. Nevertheless, research conducted in Nigeria by Bisji et al. (2019) has demonstrated that the adverse behaviours observed in Nigerian society might be linked to low levels of emotional intelligence among the population. These behaviours have resulted in the endorsement of savagery and hostility among the Nigerian population, frequently culminating in diverse religious, ethnic, and political disputes.

On the other hand, in terms of educational outcomes, Al-Qadri and Zhao (2021) posited that students need emotional intelligence to establish a harmonious rapport with their peers and gain confidence in handling academic challenges. Likewise, Akintunde and Olujide (2018) argued that students require emotional intelligence to know their strengths and weaknesses, regulate their emotions, and focus on their academic tasks, ultimately resulting in enhanced academic achievement. In stressing the significance of emotional intelligence to students' achievements, Bimayu et al. (2020) asserted that the lack of it makes even an intelligent student appear unintelligent as they begin to engage in negative behaviours such as truancy, aggressiveness, and drug addiction, among others. Edobor and Ebiye (2017) posited that these negative behaviours were both detrimental to students' mental well-being and academic achievement.

Several studies have investigated the association between students' emotional intelligence and their academic performance. For instance, findings reported by Engin (2017), Getahun Abera (2023), and Zhoc et al. (2018) show no significant relationship between the two variables. In contrast, Bimayu et al. (2020) reported a strong positive correlation between emotional intelligence and students' academic achievement. Accordingly, the researchers posited that emotional intelligence improves students' academic achievement by promoting effective relationships among teachers and students, as well as encouraging the expression of appropriate behaviours within the school environment. Similarly, Bereded et al. (2025) observed that students' emotional intelligence correlated with their academic achievement by influencing their engagement in challenging learning tasks rather than shying away from them. These relationships and behaviours create an enabling environment for meaningful learning and improved academic achievement. Several other researchers (Al-Qadri & Zhao, 2021; Halimi et al., 2021; Okwuduba et al., 2021; Pranata et al., 2023; Ugwuanyi et al., 2020) supported this research position. Research findings on this subject are still inconclusive.

Similarly, existing studies have reported mixed results concerning whether gender influences the relationship between emotional intelligence and students' academic achievement. For example, research evidence (Akintunde & Olujide, 2018; Al-Qadri & Zhao, 2021) showed that female students have more control over their emotions and thus achieve more academically when compared with their male counterparts. However, Getahun Abera (2023) reported otherwise. According to Getahun Abera, although no disparity exists in the emotional levels of students based on their gender, their academic achievement differs in favour of the male gender. The observed discrepancies in research findings and the non-satisfactory performances of students in Computer Studies necessitated the conduct of the present study.

2. METHODS

2.1. Research Design

The correlation survey design was used. Nworgu (2015) describes this research design as one that is used to show the relationship between variables by collecting opinions from a limited sample and utilizing this information to create generalizations about a broader population. Thus, the design aimed to predict students' achievement in Computer Studies using their emotional intelligence.

2.2. Participants

The study's population comprised 14,657 (6,346 males and 8,311 females) senior secondary school two (SS2) students in Awka Education Zone. These students are enrolled in the 62 public secondary schools in the zone (Statistics and Planning Unit of the Post Primary Schools Service Commission of Anambra State for the 2023/2024 academic session). The sample of the study was 390 students who were offered Computer Studies, derived using Taro Yamane's formula. This sample was obtained from one co-educational/mixed school in each of the five Local Government Areas in the zone. However, only 335

(128 males and 207 females) SS 2 students, representing 85.9% of the projected sample size, who accurately completed the administered questionnaires, were used for the study.

2.3. Research Instruments

The study used the Emotional Intelligence Scale (EIS), adapted from Afolabi's (2017) Indigenous Emotional Intelligence Scale, to collect data. The EIS utilized a four-point scale for responses, ranging from strongly disagree (1) to strongly agree (4). Also, the students' second term results in Computer Studies for the 2023/2024 academic session, retrieved from their form teachers, were utilized to represent their achievement in the subject. Three experts from the Faculty of Education, Nnamdi Azikiwe University, Awka, validated the EIS. The Cronbach's alpha reliability technique yielded a reliability score of 0.79 for the EIS.

2.4. Procedures

The researchers administered the research instrument to the participants in their schools after getting approval from the school authorities. The instruments were both administered and retrieved on the same day. The students' second-term Computer Studies results were collected from their form teachers and recorded in a proforma, which was used as their Computer Studies achievement scores.

2.5. Data Analysis

The Pearson Product–Moment Correlation coefficient (R) and the coefficient of determination (R^2) were used to address the research questions. In contrast, regression analysis was conducted to evaluate the null hypothesis at the 0.05 significance level. The results were interpreted as follows: coefficients of .80 or higher signify a strong relationship, values between .31 and .79 indicate a moderate relationship, and values of .30 or below reflect a weak relationship. For hypothesis testing, the null hypothesis is rejected when the p-value is less than or equal to .05 ($p \leq .05$). Conversely, if the p-value exceeds .05 ($p>.05$), the null hypothesis is accepted.

3. RESULTS

3.1. Research Question 1: What is the predictive power of emotional intelligence on secondary school students' achievement in Computer Studies in Awka Education Zone?

Table 1 shows the prediction of emotional intelligence on students' academic achievement in Computer Studies. The result from the table revealed a weak positive relationship between students' emotional intelligence and their academic achievement in Computer Studies (R = .147). Also, the result revealed that emotional intelligence predicts 2.2% ($R^2 = .022$) of the variance observed in students' academic achievement in Computer Studies.

Table 1. Pearson Product-Moment Correlation and Coefficient of Determination of Emotional Intelligence on Students' Academic Achievement in Computer Studies

Model	R	R^2	Adjusted R^2	Std. Error	Change Statistics				
					R^2 Change	F Change	df_1	df_2	Sig. F Change
1	.147[a]	.022	.019	18.703	.022	7.465	1	336	.007

3.2. Research Hypothesis 1: Emotional intelligence does not significantly predict the achievement of secondary school students in Computer Studies in Awka Education Zone.

Table 2 shows the result of the regression analysis of the prediction of students' emotional intelligence on their academic achievement in Computer Studies. The analysis shows a good model summary: $F(1, 336) = 7.46$, $P < 0.05$, Adj $R^2 = .019$ and $R^2 = .022$. This implies that emotional intelligence

significantly predicts students' academic achievement in Computer Studies (β = .147, t = 2.73, P < 0.05). Hence, hypothesis 3 was rejected.

Table 2. Regression Analysis of the Prediction of Emotional Intelligence on Students' Academic Achievement in Computer Studies

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Emotional Intelligence	.255	.093	.147	2.732	.007	.071	.439

3.3. Research Question 2: What is the predictive power of emotional intelligence on male and female secondary school students' achievement in Computer Studies in Awka Education Zone?

Table 3 shows the prediction of male and female students' emotional intelligence on their academic achievement in Computer Studies. The results reveal low positive relationships between male (R = .086) and female (R = .170) students' emotional intelligence and achievement in Computer Studies, respectively. More so, the results reveal that male (R^2 = .007) and female (R^2 =.029) students' emotional intelligence predicts 0.7% of the variance observed in students' achievement in Computer Studies, and female students' emotional intelligence and 2.9% of the observed changes in their academic achievement in Computer Studies.

Table 3. Pearson Product-Moment Correlation and Coefficient of Determination of Male and Female Students' Emotional Intelligence on Academic Achievement in Computer Studies

Gender	Model	R	R^2	Adjusted R^2	Std. Error	Change Statistics				
						R^2 Change	F Change	df_1	df_2	Sig. F Change
Male	1	.086[a]	.007	.000	19.961	.007	.939	1	127	.334
Female	1	.170[a]	.029	.024	17.710	.029	6.158	1	206	.014

3.4. Hypothesis 2: Emotional intelligence does not significantly predict the achievement of male and female secondary school students in Computer Studies in Awka Education Zone.

The result of the regression analysis of the prediction of male and female students' emotional intelligence on academic achievement in Computer Studies is shown in Table 4. The analysis shows a non-significant model summary for males: F(1, 127) = .939, P > 0.05, Adj. R^2 = .000, R^2 change = .007. However, the result revealed a good model summary for the female students, F(1, 206) = 6.158, P < 0.05, Adj. R^2 = .024, R^2 change = .029. The analysis shows that male students' emotional intelligence does not significantly predict their academic achievement in Computer Studies (β = .086, t = .969, P > 0.05). However, the female students' emotional intelligence significantly predicts their academic achievement in Computer Studies (β = .170, t = .2.482, P < 0.05. Thus, hypothesis 4 was rejected for male students but was not rejected for female students.

Table 4. Regression Analysis of the Prediction of Male and Female Students' Emotional Intelligence on Academic Achievement in Computer Studies

Gender	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Male	1	.161	.166	.086	.969	.334	-.167	.489
Female	1	.276	.111	.170	2.482	.014	.057	.496

4. DISCUSSION

The study's findings indicated a low positive relationship between students' emotional intelligence and their achievement in Computer Studies. The findings also indicated that emotional intelligence predicts students' achievement in the subject. Again, the finding from the hypothesis testing indicates that the prediction of students' achievement by their emotional intelligence is significant. The observed prediction

of students' achievement by their emotional intelligence and the significance of this prediction may even be the reason why some studies report that students' academic stress experience does not affect their achievement. The investigated students could be described as highly intelligent and emotionally able to manage and navigate the day-to-day feelings and emotions associated with their exposure to stressful academic activities that may involve them relating to their peers and teachers. The findings suggest that non-cognitive skills like emotional intelligence play crucial roles in students' science and technical learning outcomes. This finding negates the larger emphasis placed on logical reasoning and technical aptitude in the learning of STEM compared to non-cognitive skills (Halimi et al., 2021; Bereded et al., 2025). Programming and problem-solving tasks in Computer Studies often require persistence and the management of frustrations. Thus, students must be emotionally intelligent to cope with the challenges of these tasks and excel at them. The study's findings confirm the assertion that was made by Bimayu et al. (2020) regarding the close association between being emotionally intelligent and performing exceptionally in one's academics. Similarly, the present study's findings corroborate the research positions of Pranata et al. (2023, Al-Qadri and Zhao (2021), Okwuduba et al. (2021), and Ugwuanyi et al. (2020) on the subject of discourse. On the other hand, the present study's findings disagree with the research positions of Engin (2017), Getahun Abera (2023), and Zhoc et al. (2018) that there is no relationship between emotional intelligence and students' achievements.

Regarding gender influence in the prediction, the study's findings showed low positive relationships between male and female students' emotional intelligence and their achievement in Computer Studies. Also, the findings showed that while male students' emotional intelligence predicts 0.7% of the variance observed in their achievement in the subject, female students' emotional intelligence predicts a higher variance of 2.9%. Again, while the finding from the hypothesis testing indicates that the prediction of achievement by the male students' emotional intelligence is not significant, that of female students is significant. The findings indicate that the male and female students investigated in this study do not share similar characteristics in terms of their ability to manage the feelings and emotions borne out of their engagement in stressful academic activities. The female students displayed a higher emotional intelligence in managing stressful feelings and emotions than their male counterparts, contrary to popular opinions that females are emotional beings who are too fragile and should be treated delicately. Maybe the call for gender equality and the abolishment of societal gender stereotyping by the United Nations Sustainable Development Goal number four (UN, 2015) is beginning to yield positive dividends in Nigeria and has allowed female students to act stronger, even against popular opinions.

The study's findings agree with the research positions of Akintunde and Olujide (2018) and Al-Qadri and Zhao (2021), who asserted from the findings of their studies that female students have more control over their emotions and thus achieve more academically when compared with their male counterparts. This finding, however, contradicts a recent study by Getahun Abera (2023), who posited that no disparity exists in the display of emotional intelligence by male and female students.

5. CONCLUSION

The study concluded that the investigated students' emotional intelligence positively correlated and predicted their achievements in Computer Studies, and the prediction was significant. Also, the study concluded that gender influence in the prediction of students' academic achievement by their emotional intelligence was significant in favour of female students. These findings indicate that students' emotional intelligence is significant to their achievement in school subjects like Computer Studies. This emotional intelligence determines how students perceive academic stressors and the consequent feelings and emotions. These perceptions can go a long way to determine how the students respond to and manage stress from academic stressors, which invariably affect their school achievement.

6. IMPLICATIONS OF FINDINGS

The study's findings have some implications for educational stakeholders. First, the study established that the way students perceive academic stress from academic stressors, as influenced by their emotional intelligence, can affect their achievement. Thus, educational stakeholders should work towards improving the emotional intelligence of students. For example, intervention programs aimed at training

both in-service and pre-service Computer Studies teachers to help them improve students' emotional intelligence can be introduced in teachers' training programs. Also, emotional intelligence training for students can be introduced into the Computer Studies curriculum to help students become aware of, manage, and regulate their emotions while interacting with others. Similarly, schools can provide counselling services through professional counsellors who can help strengthen students' emotional intelligence. All these introductions may help students perceive both academic stressors peculiar to computer studies as a subject and the general academic stressors as a challenge and not as a threat to optimal task performance. This change in students' perceptions of academic stressors may make them proactive about tackling them, often leading to their improved academic achievement. Also, this change in their perceptions is necessary because it holds the key to how students respond to and manage feelings and emotions that emanate from the academic stressors they are presented with. The change will go a long way in addressing mental health issues associated with stress that are common among students. These issues include anxiety, depression, and suicidal tendencies, among others.

Secondly, the stronger emotional intelligence shown by the female students in the present study is an indication that the mission to achieve gender equality and abolish societal stereotyping (where women are considered the weaker vessels when compared to their male counterparts) in Nigeria was beginning to yield dividends. Thus, the mission should be continued. However, the continuation of the mission should not focus on the female gender alone, leaving behind the male gender, so as not to leave them disadvantaged. The focus on both genders is necessary to avoid creating another problem in an attempt to solve one.

Notwithstanding the implications of the study's findings, the generalization is limited by several factors. First, the study adopted a quantitative research approach, which offers limited insights into emotional intelligence. Thus, qualitative research is required to explain the factors that affect individual students' emotional intelligence. Secondly, the self-report measures used in the study may have affected participants' compliance and quest for social approval. Subsequent research should incorporate a multi-rated assessment of emotional intelligence using teachers' and students' measures.

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Research Ethics. The authors confirm that necessary approvals were sought and obtained from the school authorities of the participating schools before the study was ever conducted.

Data Availability Statement. All data can be obtained from the corresponding author.

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