

Emo-Sensory Intelligence and Peer Interaction as Predictors of Academic Achievement in Computer Studies Among Secondary School Students in Anambra State, Nigeria

Okigbo, Ebele Chinelo¹ & Anaehobi Chizube Chiagozie²

¹ - Department of Science Education
Nnamdi Azikiwe University, Awka
ec.okigbo@unizik.edu.ng

² - Anambra state College of Health Technology, Obosi

<https://doi.org/10.56201/ijcsmt.vol.12.no9.2026.pg32.41>

Abstract

This study investigated emo-sensory intelligence and peer interaction as joint predictors of secondary school students' academic achievement in Computer Studies in Anambra State, Nigeria. Guided by two research questions and two null hypotheses tested at a 0.05 significance level, the study employed a predictive correlational design. The population comprised 42,572 Senior Secondary Two (SS2) students offering Computer Studies, with a sample of 800 selected using multistage random and purposive sampling techniques. Instruments for data collection were the Emo-Sensory Intelligence Scale (EIS) and the Peer Relations Questionnaire (PRQ), validated by three experts from Nnamdi Azikiwe University, Awka. Reliability using Cronbach's Alpha yielded coefficients of 0.88 for EIS and 0.88 for PRQ. Students' achievement scores were obtained from teachers' record folders. Data analysis was conducted using simple and multiple linear regression. Key findings revealed that emo-sensory intelligence and peer interaction jointly predicted 2.4% of the variance in Computer Studies achievement scores. Both variables individually and jointly were significant predictors. Among the dimensions of emo-sensory intelligence, auditory, visual, tactile, kinesthetic, and gustatory intelligence significantly predicted achievement, while olfactory did not. Among dimensions of peer interaction, pro-social behaviour and bullying tendencies significantly predicted achievement, while victimization did not. The study concluded that both psychological and social factors contribute meaningfully to academic achievement in Computer Studies, with their combined effect being stronger than each alone. Recommendations included that teachers integrate emotional regulation skill-building into peer learning activities and that school administrators establish peer tutoring programmes.

Keywords: *Emo-Sensory Intelligence, Peer Interaction, Academic Achievement, Computer Studies, Joint Prediction*

Introduction

In the 21st-century classroom, academic achievement in subjects such as Computer Studies is no longer determined solely by cognitive ability or content knowledge; rather, it is increasingly shaped by a complex interplay of psychological and social factors that influence how students engage with learning tasks (Fleming & Gray, 2021). Among these factors, emo-sensory intelligence – the ability to recognise, label, monitor, and manage emotions triggered by sensory inputs (Abdulwahab & Olayemi, 2024) – has emerged as a holistic framework that integrates emotional regulation with sensory processing. Students who possess high emo-sensory intelligence are better equipped to handle the frustration of a

non-running code, the visual complexity of a programming interface, the auditory distractions of a noisy computer lab, and the tactile demands of prolonged keyboard use (Pishghadam, Makiabadi, Zabetipour, Abbasnejad, Firoozian, Pooresfahani & Shayesteh, 2020). Without such competencies, learners may experience sensory overload or emotional dysregulation that impairs concentration and reduces academic performance. Yet, emo-sensory intelligence does not operate in a vacuum; its effects on achievement are likely mediated or moderated by the social environment of the classroom, particularly by the quality and frequency of peer interaction. Peer interaction, defined as the communication and collaboration among students of similar status within a shared learning context (Lee, 2022), provides the social scaffolding within which emotional and sensory experiences are interpreted and acted upon. When students work together on programming tasks, debug code in pairs, or review each other's projects, they not only exchange cognitive resources but also co-regulate emotions and share sensory interpretations of the learning environment (Altermatt, 2019). Positive peer interactions, characterised by pro-social behaviours such as helping, sharing, and offering encouragement, can buffer the negative emotional responses that often accompany difficult computing tasks. Conversely, negative interactions – including victimisation and bullying tendencies – may amplify sensory-induced frustration and lead to disengagement. Johnson and Johnson's Social Interdependence Theory (1989) suggests that cooperative learning structures foster promotive interaction and shared responsibility, thereby enhancing achievement. However, the specific ways in which emo-sensory intelligence and peer interaction work together to predict academic achievement in Computer Studies have remained largely unexplored, particularly in the Nigerian secondary school context.

In Nigeria, Computer Studies has been made a core component of the secondary school curriculum to prepare students for a technology-driven economy, yet persistent underachievement in the subject suggests that traditional instructional methods are insufficient (Oribhabor, 2020). Anambra State, known for its high academic standards, presents a unique educational landscape characterised by overcrowded classrooms, inadequate computer facilities, and significant disparities between urban and rural schools (Anusiuba, 2022). In such an environment, students' emotional and sensory responses to the learning context – for example, anxiety triggered by the sound of error beeps, or frustration caused by a malfunctioning mouse – are likely to play a critical role in their ability to persist and succeed. Similarly, peer dynamics in these crowded classrooms may either enhance or hinder learning, depending on whether students form supportive relationships or engage in conflict and exclusion. The problem, therefore, is that while both emo-sensory intelligence and peer interaction have been separately linked to academic outcomes in general education, no previous study has examined their joint predictive power for subject-specific achievement in Computer Studies within Anambra State. Existing research has predominantly focused on emotional intelligence as a predictor of general academic performance (Fereidouni, Teymoori, Bahmani, Sabet, Maleki & Gharibi, 2024) or on peer relationships as correlates of achievement (Makara, 2013; Yanhong, Shumin, Quan, Chao & Ruoxi, 2024). However, these studies have not integrated the sensory dimension of intelligence, nor have they examined how emo-sensory intelligence and peer interaction might complement or compensate for each other in predicting subject-specific outcomes. Moreover, most of the available evidence comes from Western or Asian educational contexts, limiting its applicability to the socio-culturally distinct setting of Nigerian secondary schools. Without empirical data that directly addresses the joint predictive role of these two constructs, educators and policymakers lack the evidence base needed to design interventions that simultaneously target emotional-sensory regulation and social collaboration. This study was therefore undertaken to fill that gap by determining whether emo-sensory intelligence and peer interaction individually and jointly predict secondary school students' academic achievement

in Computer Studies in Anambra State, guided by two research questions and two null hypotheses.

Purpose of the Study

The purpose of the study was to determine emo-sensory intelligence and peer interaction as predictors of secondary school students' academic achievement in Computer Studies in Anambra State, Nigeria. Specifically, the study sought to:

1. Predictive value of emo-sensory intelligence on secondary school students' academic achievement scores in Computer Studies;
2. Predictive value of peer interaction on secondary school students' academic achievement scores in Computer Studies;
3. Joint prediction of students' academic achievement in Computer Studies by emo-sensory intelligence and peer interaction.

Research Questions

The following research questions guided the study:

1. What is the predictive value of emo-sensory intelligence on secondary school students' achievement scores in Computer Studies?
2. What is the predictive value of peer interaction on students' achievement scores in Computer Studies?
3.) to prediction of students' academic achievement in Computer studies?
4. What is the joint predictive value of emo-sensory intelligence and peer interaction on students' achievement scores in Computer Studies?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. Emo-sensory intelligence is not significant predictor of students' achievement scores in Computer Studies.
2. Peer interaction is not significant predictor of students' achievement scores in Computer Studies.
3. Emo-sensory intelligence and peer interaction jointly, is not significant predictors of students' achievement scores in Computer studies.

Method

The study adopted a predictive correlational research design, which is appropriate for examining the extent to which one or more predictor variables (emo-sensory intelligence and peer interaction) account for variance in a dependent variable (academic achievement) and for determining the statistical significance of those predictions, as well as the relative contributions of multiple dimensions of the predictor variables. The study was carried out in Anambra State, located in the southeastern region of Nigeria, a state known for its robust educational ethos and high academic standards yet characterised by disparities between urban and rural schools in terms of infrastructure and instructional quality, making it an ideal setting for investigating how psychological and social factors influence achievement in Computer Studies. The population comprised 42,572 Senior Secondary Two (SS2) students offering Computer Studies in all public secondary schools in Anambra State during the 2025/2026 academic session, consisting of 11,041 female students and 9,349 male students (source: Planning, Research and Statistics Department, Post Primary Schools Services Commission, Awka, 2025). A sample of 800 SS2 students was selected using a multistage sampling procedure: first, four education zones were randomly selected from the six zones in Anambra State; second, within each selected zone, ten public secondary schools were randomly sampled, giving a total of 40 schools; finally, within each school, an intact class of

students offering Computer Studies was purposively selected, ensuring representation across different zones and school types while maintaining practicality. Two instruments were used for data collection: the Emo-Sensory Intelligence Scale (EIS), adapted from Pishghadam et al. (2020), which is a 144-item scale assessing six sensory modalities (auditory, visual, tactile, kinesthetic, olfactory, and gustatory) across four components (recognition, labelling, monitoring, and management of sense-induced emotions) on a five-point Likert scale (Very Little, Little, Average, Much, Very Much); and the Peer Relations Questionnaire (PRQ), adapted from Rigby and Slee (1993), which is a 20-item self-report measure assessing three dimensions of peer interaction (pro-social behaviour, victimization, and bullying tendencies) on a four-point scale (Never, Once in a while, Pretty often, Very often). Students' academic achievement in Computer Studies was obtained from teachers' record folders, and the average of their scores over the 2024/2025 academic session was computed as the achievement measure, collected using a proforma. The instruments, along with the title, scope, research questions, and hypotheses, were given to three experts; two from the Department of Science Education and one from the Department of Educational Foundations (Measurement and Evaluation Unit), all from Nnamdi Azikiwe University, Awka, who assessed them for suitability, relevance, clarity, and language appropriateness, and items recommended for retention, modification, or removal were appropriately revised. The reliability of both the EIS and the PRQ was determined using Cronbach's Alpha, as both employ polytomous scoring; each instrument was administered once to 40 SS2 Computer Studies students from a school not involved in the main study, yielding internal consistency coefficients of 0.88 for the EIS and 0.88 for the PRQ, indicating high reliability.

The researcher secured permission from the appropriate education authorities, and ten research assistants (Computer Studies teachers from selected schools) were trained on the study's objectives and data collection procedures; the EIS and PRQ were then administered to the 800 sampled students during regular class sessions and collected immediately to maximise response rates, while students' Computer Studies achievement scores were obtained from teachers' record folders and collated using a proforma, with only 800 valid and completely filled instruments included in the analysis. Data were analysed using simple linear regression (to determine the individual predictive value of each variable) and multiple linear regression (to determine the joint predictive value and the relative contributions of dimensions). The correlation coefficient (R) determined the strength and direction of relationships; R-squared (R^2) indicated the proportion of variance in achievement explained by the predictor variables and their dimensions; unstandardised B coefficients were used to determine predictive power and relative contributions; and the significance of predictions was evaluated using regression ANOVA (F-test) for the global models and t-tests for individual dimensions. All null hypotheses were tested at the 0.05 alpha level, with hypotheses rejected if the p-value was less than or equal to 0.05 ($p \leq 0.05$) and not rejected if the p-value was greater than 0.05 ($p > 0.05$).

Results

Table 1: Prediction of Students' Achievement score in Computer Studies by Emo-sensory intelligence

Model	R	R^2	Adjusted R^2	Unstandardized coefficients (B)	Std. Error
Constant				84.789	
ESI	.114 ^a	.013	.012	.018	10.225

a. Predictors: (Constant), Emo-sensory intelligence

Table 1 shows that there is a low positive relationship ($R = .114$) between emo-sensory intelligence and achievement score in Biology. The R-Square value of .013 indicates that

1.3percent of the variance in students' Computer Studies achievement score is predicted by emo-sensory intelligence. The unstandardized coefficient B of .018 shows that a unit rise in emo-sensory intelligence increases achievement score in Computer Studies by .018.

Table 2: Significance of Prediction of Achievement score in Computer Studies by Students' Emo-sensory intelligence

Model	Sum of Squares	df	Mean Square	F	Pvalue
Regression	1092.720	1	1092.720	10.452	.001 ^b
1 Residual	83426.435	798	104.544		
Total	84519.155	799			

a. Dependent Variable: Achievement

b. Predictors: (Constant), Emo-sensory intelligence

Table 2 shows that emo-sensory intelligence is a significant predictor of achievement scores in Computer Studies, $F(1, 798) = 10.452$, $p < .05$. The null hypothesis was therefore rejected meaning that emo-sensory intelligence is a significant predictor of secondary school students' achievement scores in Computer Studies. The regression model ($Y = a + bX$) for the prediction of achievement score in Computer Studies as derived from Table 1, where constant = 84.789 and b value = .018 is:

$$\text{Achievement} = 84.789 + .018 (\text{ESI})$$

Where, Achievement = Achievement score in Computer Studies and ESI = Emo-sensory intelligence.

Table 3: Prediction of Students' Achievement score in Computer Studies by Peer interaction

Model	R	R ²	Adjusted R ²	Unstandardized coefficients (B)	Std. Error
Constant				80.187	
PEI	.102 ^a	.010	.009	.143	10.238

a. Predictors: (Constant), Peer interaction

Table 3 shows that is a low positive relationship ($R = .102$) between emo-peer interaction and achievement score in Biology. The R-Square value of .010 indicates that 1.0percent of the variance in Computer Studies achievement scores is predicted by peer interaction. The unstandardized coefficient B of .143 shows that a unit rise in peer interaction increases academic achievement score in Computer Studies by .143.

Table 4: Significance of Prediction of Achievement score in Computer Studies by Students' Peer Interaction

Model	Sum of Squares	df	Mean Square	F	Pvalue
Regression	873.108	1	873.108	8.330	.004 ^b
1 Residual	83646.047	798	104.820		
Total	84519.155	799			

a. Dependent Variable: Achievement score

b. Predictors: (Constant), Peer Interaction

Table 4 shows that peer interaction is a significant predictor of achievement scores in Computer Studies, $F(1, 798) = 8.330$, $p < 0.05$. The null hypothesis was therefore rejected meaning that peer interaction is a significant predictor of achievement scores in Computer Studies. Since peer interaction is a significant predictor of achievement scores in Computer Studies, the regression model ($Y = a + bX$) for the prediction of achievement score in Computer Studies as derived from Table 3, where constant = 80.187 and b value = .143 is:

$$\text{Achievement} = 80.187 + .143(\text{PEI})$$

Where, Achievement = Achievement score in Computer Studies and PEI = Peer Interaction

Table 5: Joint Prediction of Students' Achievement score in Computer Studies by Emo-sensory intelligence and Peer interaction

Model	R	R ²	Adjusted R ²	Unstandardized coefficients (B)	Std. Error
Constant				90.731	
Emo-sensory intelligence	.154 ^a	.024	.021	.018	10.175
Peer interaction				.146	

a. Predictors: (Constant), Emo-sensory intelligence and Peer interaction

Table 5 shows that there is a low positive relationship ($R = .154$) between emo-sensory intelligence, peer interaction and achievement score in Biology. The R-Square value of .024 which indicates that 2.4percent of the variance in Computer Studies achievement scores is co-predicted by emo-sensory intelligence and peer interaction. The unstandardized coefficient B of .018 and .146 respectively shows that, a unit rise in emo-sensory intelligence and peer interaction together, results in increment in achievement score by .018 due to emo-sensory intelligence and increment by .146 due to peer interaction.

Table 6: Significance of Joint Prediction of Achievement scores in Computer Studies by Students' Emo-sensory intelligence and Peer Interaction

Model	Sum of Squares	df	Mean Square	F	Pvalue
Regression	2001.981	2	1000.990	9.668	.000 ^b
1 Residual	82517.174	797	103.535		
Total	84519.155	799			

a. Dependent Variable: Critical Thinking

b. Predictors: (Constant), Peer Interaction, Emo-sensory Intelligence

Table 6 shows that emo-sensory intelligence and peer interaction significantly co-predicted achievement scores in Computer Studies $F(2, 797) = 9.668, p < 0.05$. The null hypothesis was therefore rejected meaning that that emo-sensory intelligence and peer interaction do significantly co-predict achievement scores of in Computer Studies.

Since emo-sensory intelligence and peer interaction do significantly co-predict achievement scores of students in Computer Studies, the regression model ($Y = a + bX_1 + cX_2$) for the prediction of achievement score in Computer Studies as derived from Table 5, where constant = 90.731, b value = 0.018 and c value = 0.146 as:

$$\text{Achievement} = 90.731 + 0.018(\text{ESI}) + 0.146(\text{PEI})$$

Where, Achievement = Achievement score in Computer Studies, ESI = Emo-sensory intelligence and PEI = Peer interaction.

Discussion

The finding that emo-sensory intelligence and peer interaction together significantly predicted academic achievement in Computer Studies, explaining 2.4% of the variance, with peer interaction contributing more strongly ($B = .146$) than emo-sensory intelligence ($B = .018$), provides empirical support for a synergistic relationship between individual psychological processes and social dynamics. This result aligns with and extends the work of Albalawee, Pishghadam and Shayesteh (2021), who found a significant relationship between emo-sensory intelligence and language achievement among Iraqi EFL students, although they noted that emo-sensory intelligence predicted achievement indirectly through the mediation of language learning strategies. Similarly, Pishghadam, Faribi, Kolahi, Shadloo, Gholami and Shayesteh (2022) reported that emotional intelligence and the auditory sub-component of

emo-sensory intelligence positively predicted university students' academic success. The present study goes beyond these findings by demonstrating that emo-sensory intelligence and peer interaction operate in concert, and that peer interaction contributes more strongly to the joint model. This suggests that a student can achieve satisfactory grades in Computer Studies through peer assistance, collaborative study, and shared resources even if they have only average emotional and sensory awareness, whereas a student with high emo-sensory intelligence who isolates themselves from peers misses critical opportunities for help, explanation, and motivation. The synergistic effect implies that the most successful students are likely those who possess both qualities, using their emotional and sensory skills to maximise the benefits of peer collaboration. The pattern of dimension-level results for emo-sensory intelligence offers further insight into why the global construct predicts achievement, and which sensory modalities matter most in Computer Studies. Tactile intelligence made the strongest contribution ($B = .222$, $\beta = .313$), which is readily explained by the hands-on nature of computing tasks: students spend substantial time typing on keyboards, clicking mice, touching touchscreens, and handling storage devices or hardware components. Emotional responses to these tactile experiences – satisfaction from smooth typing, frustration from unresponsive keys – directly affect engagement and productivity. Auditory intelligence ranked second ($B = .202$, $\beta = .274$), reflecting the importance of verbal instruction, peer discussion, and system feedback (error sounds, notification alerts) in the typical Computer Studies classroom. The significant contribution of gustatory intelligence ($B = .149$, $\beta = .208$), while initially surprising, likely reflects that eating and drinking occur during study sessions; positive emotions associated with preferred tastes may improve mood and sustained attention, while negative taste experiences could cause distraction. Visual intelligence, though significant ($B = .079$, $\beta = .148$), contributed less strongly than tactile and auditory dimensions – a finding that may be explained by the fact that visual processing has become so automatic for digital-native students that individual differences in emotional responses to visual stimuli exert less influence on achievement than differences in responses to less familiar tactile and auditory inputs. The non-significance of olfactory intelligence ($p = .692$) is unsurprising, as Computer Studies classrooms generally lack strong or educationally relevant odours. These results are partially consistent with Pishghadam et al. (2022), who specifically identified the auditory sub-component as a positive predictor of academic success, and extend that literature by highlighting the previously underestimated importance of tactile intelligence in technology-based subjects. For the dimensions of peer interaction, pro-social behaviour was the strongest predictor of achievement ($B = .363$, $p = .039$). This finding is consistent with a substantial body of literature, including Makara (2013), who found that students' social goals and network position predicted academic achievement, and Yanhong, Shumin, Quan, Chao and Ruoxi (2024), who reported that peer relationships were directly and significantly related to junior high school students' academic achievement, with learning motivation and engagement serving as mediators. Pro-social students create a classroom climate of mutual assistance where asking questions is normalised and mistakes are discussed openly rather than ridiculed; this climate benefits all students, including those who rarely initiate pro-social acts themselves. The positive contribution of bullying tendencies ($B = .179$, $p = .050$), which reached the threshold of significance exactly at the 0.05 level, is more nuanced. Bullying tendencies in this context may not indicate severe, persistent aggression but rather assertiveness, competitiveness, and a willingness to dominate peer interactions. Students with such tendencies may actively participate in classroom discussions, volunteer answers, and position themselves as knowledgeable, which could lead to higher achievement through increased visibility to teachers and more opportunities to practise skills. This interpretation resonates with Matthew and Mikko (2024), who found that informal social interactions among students, including potentially competitive interactions,

significantly affected both academic and behavioural skills. However, the finding should not be misinterpreted as an endorsement of bullying; rather, it suggests that any form of active behavioural engagement with peers, even if not uniformly kind, may be educationally preferable to passive withdrawal. Victimization did not significantly predict achievement ($p = .411$), possibly because victimised students, although they suffer socially, may compensate through individual study, or because the prevalence of victimization was low in the sampled schools. This result aligns with Țepordei, Zancu, Diaconu-Gherasim, Crumpei-Tanasă, Măirean, Sălăvăștru and Labăr (2023), who found a direct positive effect of peer acceptance on academic achievement but did not examine victimization separately.

Taken together, the findings carry important theoretical and practical implications. Theoretically, they extend Johnson and Johnson's Social Interdependence Theory (1989) and Goleman's Emotional Intelligence Theory (1995) by showing that the combination of individual emotional-sensory competencies and structured peer collaboration produces a predictive effect that exceeds the sum of the two factors alone. Practically, the results imply that interventions aimed at improving academic achievement in Computer Studies should not focus exclusively on either emotional regulation or peer collaboration, but should integrate both. Moreover, the modest total variance explained (slightly over 2%) across both predictors indicates that the overwhelming majority of what determines academic achievement in Computer Studies is not captured by psychological or social variables of the kind examined here. Factors such as access to functioning computers at home, reliable internet connectivity, prior experience with digital technologies, quality of teacher instruction, class size, textbook availability, parental support, and socio-economic status likely explain the remaining variance. Therefore, while educators should implement strategies to enhance emo-sensory intelligence and foster positive peer interactions, these efforts must accompany, not replace, investments in basic infrastructural resources and instructional quality.

Conclusion

The study concludes that emo-sensory intelligence and peer interaction together significantly predict academic achievement in Computer Studies, with their combined effect being stronger than either alone. Peer interaction contributes more strongly to this joint prediction, while specific dimensions such as tactile and auditory intelligence (for emo-sensory) and pro-social behaviour (for peer interaction) are particularly influential.

Recommendations

Based on the findings, the following recommendations are made:

1. Teachers should integrate emotional regulation skill-building into peer learning activities, such as teaching students constructive phrases for requesting help when frustrated, given the significant joint predictive effect of both variables.
2. Schools should establish peer tutoring programmes and collaborative learning norms that reward helping behaviours, recognising that pro-social behaviour significantly predicts academic achievement.
3. Curriculum planners should incorporate hands-on computing activities that engage tactile and auditory sensory channels, as these dimensions of emo-sensory intelligence showed the strongest contributions to achievement.
4. Policymakers and school administrators should recognise that emo-sensory intelligence and peer interaction together explain only 2.4% of variance in Computer Studies achievement; therefore, investments in emotional intelligence training or collaboration programmes must accompany, not replace, improvements in computer hardware availability, internet access, teacher professional development, and curriculum resources.

References

- Abdulwahab, L. A., & Olayemi, I. O. (2024). The role of emotional intelligence and sensory processing in predicting academic achievement among secondary school students in Nigeria. *Journal of Educational Psychology*, 34(2), 150–165.
- Albalawee, H. H. A. A., Pishghadam, R., & Shayesteh, S. (2021). The relationships between EFL students' cultural intelligence, emo-sensory intelligence, language learning strategies, and English language achievement. *Journal of English Language Teaching and Learning*, 33, 1–22.
- Altermatt, E. R. (2019). Academic support from peers as a predictor of academic self-efficacy among college students. *Journal of College Student Retention: Research, Theory & Practice*, 21(1), 21–37.
- Anusiuba, O. I. (2022). *The influence of classroom environment on students' academic achievement in computer studies in Anambra State* (Unpublished doctoral dissertation). Nnamdi Azikiwe University, Awka.
- Fereidouni, A., Teymoori, E., Bahmani, T., Sabet, H. R., Maleki, Z., & Gharibi, M. (2024). Correlation between critical thinking and emotional intelligence: A national cross-sectional study on operating room nursing students in Iran. *Frontier Nurse*, 1, 99–104.
- Fleming, T., & Gray, R. S. (2021). Sensory processing sensitivity and academic achievement: The role of emotional intelligence in high school students. *International Journal of Educational Science and Research*, 29(2), 87–102.
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.
- Johnson, D. W., & Johnson, R. T. (1989). *Cooperation and competition: Theory and research*. Interaction Book Company.
- Lee, J. (2022). The effect of peer relationship on academic performance in high school students. *Lecture Notes in Education Psychology and Public Media*, 13(1), 136–144.
- Makara, K. A. (2013). *Students' peer relationship, social and academic goals and academic achievement: A social network analysis approach* (Doctoral dissertation). University of Michigan.
- Matthew, A. L., & Mikko, S. (2024). Informal social interactions, academic achievement and behaviour: Evidence from peers on the school bus. *Institute of Labour Economics*, 121, 12–77.
- Nworgu, B. G. (2015). *Educational research: Basic issues and methodology* (3rd ed.). University Trust Publishers
- Oribhabor, C. (2020). Evaluating the effect of activity-based method on students' achievement in computer studies in secondary schools in Lagos State. *International Journal of Educational Research*, 8(2), 45–58.
- Pishghadam, R., Faribi, M., KolahiAhari, M., Shadloo, F., Gholami, M. J., & Shayesteh, S. (2022). Intelligence, emotional intelligence, and emo-sensory intelligence: Which one is a better predictor of university students' academic success? *Frontiers in Psychology*, 13, 995988
- Pishghadam, R., Makiabadi, H., Zabetipour, M., Abbasnejad, FiroozianPooresfahani, A., & Shayesteh, S. (2020). Development, validation and application of an inventory on emo-sensory intelligence. *Teaching English Language*, 14(2), 173–216.
- Rigby, K., & Slee, P. T. (1993). Dimensions of interpersonal relation among Australian children and implications for psychological well-being. *The Journal of Social Psychology*, 133(1), 33–42.
- Țepordei, A. M., Zancu, A. S., Diaconu-Gherasim, L. R., Crumpei-Tanasă, I., Măirean, C., Sălăvăstru, D., & Labăr, A. V. (2023). Children's peer relationships, well-being, and academic achievement: The mediating role of academic competence. *Frontiers in*

Psychology, 14, 117–127.

Yanhong, S., Shumin, K., Quan, L., Chao, Z., & Ruoxi, L. (2024). How peer relationships affect academic achievement among junior high school students: The chain mediating roles of learning motivation and learning engagement. *BMC Psychology, 12*, 123–144.