### PERCEPTION OF PEER MENTORING AND MATHEMATICS ANXIETY AMONG SENIOR SECONDARY SCHOOL STUDENTS IN NIGERIA

#### Nasrudeen Ayinde Malik<sup>1</sup>

Department of Science, Technology and Mathematics Education, College of Education, Osun State University, Osogbo, Nigeria \*Corresponding email: <u>ayinde.malik@uniosun.edu.ng</u>

#### Jubril Busuyi Fakokunde<sup>2</sup>

Department of Science, Technology and Mathematics Education, College of Education, Osun State University, Osogbo, Nigeria

### Ganiyu Adisa Iroko<sup>3</sup>

Department of Science, Technology and Mathematics Education, College of Education, Osun State University, Osogbo, Nigeria

#### Hassanat Taiwo Adams<sup>4</sup>

National Open University of Nigeria (NOUN)

#### ABSTRACT

Mathematics remains a core subject in the field of science which is pivotal to the advancement of every nation. However, students' performance in the subject which is a prerequisite for further study in the field of science is not encouraging, leading to looking out of the box to remediate the abysmal display of students in Mathematics. This descriptive survey study focused on the use of peer mentoring as an instructional strategy for mathematics students in Ikeja Zone Educational District VI in Nigeria. The effectiveness of the strategy was assessed regarding mathematics anxiety. 300 students were exposed to the peer mentoring strategy, with 100 randomly selected to provide feedback. The study answered five research questions using a self-developed questionnaire with twenty-five items titled "Students' Perceptions of Peer Mentoring Instructional Strategy and their Relationship with Mathematics Anxiety Questionnaire." Data analysis included frequency counts and percentages for demographic variables and mean and standard deviation for the research questions. The study found that most respondents believed that peer mentoring was effective in reducing mathematics anxiety. As a result, the researchers recommended that the Nigerian government and school owners should promote the use of peer mentoring as an instructional strategy for teaching mathematics.

Keywords: Mathematics anxiety; Mentee; Mentor; Peer mentoring; Perception

#### INTRODUCTION

Mathematics is a fundamental subject in the education system, and its mastery is essential for students' academic success and future career prospects (Okolie, 2017). Mathematics plays a vital role in the education system as it is a foundation for various academic disciplines and real-life applications. Proficiency in mathematics is crucial for students' academic success as it enhances their problem-solving abilities, logical reasoning skills and critical thinking capacities (Celik & Ozdemir, 2020). Moreover, mathematics provides students with a framework to understand and navigate the complexities of the world around them.

Beyond academic achievements, mastering mathematics opens numerous career opportunities for individuals. Many professions, such as engineering, finance, computer science and data analysis, rely heavily on mathematical concepts and principles. A solid understanding of mathematics equips students with the quantitative skills required to excel in these fields and increases their chances of professional success (Onoshakpokaiye, 2023). Furthermore, mathematics fosters abstract thinking and trains students to approach challenges with a systematic and analytical mindset. It teaches them to break down complex problems into manageable components, identify patterns and develop efficient strategies for problem-solving. These skills are not only applicable in mathematics itself but also have practical applications in various aspects of life, including decision-making, planning and evaluating information.

Mathematics is more than just a subject taught in schools; it is a fundamental discipline that empowers students and prepares them for a successful future (Belbase, Mainali, Kasemsukpipat, Tairab, Gochoo, & Jarrah, 2022). By mastering mathematics, students gain academic prowess and valuable skills that can be applied to diverse areas, leading to enhanced career prospects and a deeper understanding of the world. However, it is not uncommon for students to experience anxiety related to mathematics which can have detrimental effects on their performance and overall well-being. Mathematics anxiety is characterised by feelings of tension, nervousness and apprehension when faced with mathematical tasks (Mammarella, Caviola, Rossi, Patron, & Palomba, 2023). Mathematics anxiety can have far-reaching consequences such as avoidance of mathematics courses, decreased self-confidence, and hindered problem-solving abilities (Yaniawati, Kariadinata, Sari, Pramiarsih, & Mariani, 2020).

One potential strategy for addressing mathematics anxiety is peer mentoring. This strategy involves senior students providing support and guidance to their peer counterparts. The strategy has been found to effectively enhance students' learning experiences, foster a sense of belonging and improve academic outcomes (Singer, Montgomery, & Schmoll, 2020). Peer mentoring has emerged as a promising intervention to address anxiety among students. Peer mentoring involves senior students providing support, guidance, and a sense of camaraderie to their peer counterparts thereby leading to the alleviation of anxiety as students may feel more comfortable seeking help from peers than from teachers or counsellors (Toyama & Yamazaki, 2021).

Peer mentoring is a valuable educational practice that involves pairing more experienced individuals, typically senior students, with their junior counterparts to provide guidance, support, and knowledge sharing. It is a form of social learning where peers engage in reciprocal relationships to foster personal and academic growth (Yarberry & Sims, 2021). Peer mentors serve as role models and sources of information, helping mentees navigate various aspects of their educational journey, including academic challenges, social integration and personal development (Rockinson-Szapkiw, & Wendt, 2020).

Peer mentoring strategy plays a crucial role in fostering a supportive academic environment, and students' perceptions of such initiatives are vital for their success. Mentors, often fellow students who have excelled in their studies, provide a relatable and approachable source of advice (Whiting, Wickham & Beaney, 2020). This creates a sense of camaraderie among participants, as mentees feel more comfortable seeking help from someone who has navigated similar academic challenges. Beyond academic support, mentors can offer insights into the broader college experience, helping mentees adjust to the social dynamics of campus

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life. Developing a mentor-mentee relationship often extends beyond the academic realm, creating a supportive network that contributes to overall student well-being. Positive social interactions within the strategy can enhance students' sense of belonging and connection to the academic community (Van Herpen, Meeuwisse, Hofman & Severiens, 2020).

While some students may find the peer mentoring strategy immensely beneficial, others may not resonate with the mentorship style or prefer alternative support systems. Thus, ongoing feedback mechanisms and periodic evaluations are essential to fine-tune and enhance the peer mentoring strategy, ensuring that it continues to meet the diverse needs of the student body, and this can be achieved through proper assessment of students' perception and the extent to which it neutralises or reduces the level of anxiety associated with learning a subject.

Anxiety is a pervasive emotional state characterized by feelings of apprehension, uneasiness, and worry. In an educational context, anxiety can manifest as test anxiety, social anxiety, or subject-specific anxiety, such as mathematics anxiety. It often leads to cognitive, emotional, and physiological responses that can hinder learning and academic performance (Drigas, Mitsea, & Skianis, 2022). High levels of anxiety can disrupt students' concentration, impair memory retrieval, and decrease problem-solving abilities, all of which are crucial for effective learning and success in educational settings. Research has shown that anxiety can have a significant impact on student's academic experiences and outcomes. Similarly, test anxiety has been linked to lower test scores and decreased academic performance (Alhadabi, & Karpinski, 2020). Understanding and addressing anxiety in educational contexts is essential not only for promoting academic success but also for fostering the overall well-being of students, as persistent anxiety can have long-term consequences on mental health and self-esteem.

Students' anxiety about a school subject plays a significant role in shaping their academic experiences and achievements. Studies have revealed that many students view mathematics as daunting coupled with the fear of failure or inability to grasp mathematical concepts leading to heightened anxiety (Samuel, Buttet & Warner, 2023). The fear of mathematics can lead to a lack of confidence and a negative self-image, hindering students from reaching their full potential (Wang, 2023). Students may avoid taking advanced mathematics courses or pursuing careers that require mathematical proficiency due to this anxiety (Belbase, et al., 2022). Understanding and addressing students' perceptions of mathematics anxiety about instructional strategies are crucial in developing effective interventions and support systems to help them overcome the challenges. While some students may experience anxiety due to a lack of confidence or past difficulties with the subject, others may attribute it to external factors such as societal expectations or stereotypes surrounding mathematics proficiency.

Numerous studies have highlighted the positive impact of peer mentoring on mentees' academic and personal development. Wampold, Lichtenberg and Goodyear (2013) found that students exposed to peer mentoring strategies reported lower anxiety levels than those who did not participate. According to Wang and Eccles (2013), the presence of a supportive peer mentor can create a safe space for students to express their concerns and receive guidance, reducing the isolation often associated with anxiety. Campbell and Cabrera (2014) found that students exposed to peer mentoring strategies reported higher levels of academic engagement, improved self-confidence, and a greater sense of belonging within their educational institutions. Peer mentoring also facilitates the transfer of tacit knowledge, enabling mentees to gain insights into successful strategies for academic achievement and personal growth (Aarnikoivu, Pennanen,

Kiili, & Nokkala, 2020). Peer mentoring has proven to be an effective and holistic approach to supporting students in their educational journey, enhancing their well-being and fostering a sense of community within educational institutions. Furthermore, peer mentoring can target specific anxiety triggers related to academics, such as fear of failure or difficulty with a subject like mathematics. Senior students who have successfully navigated these challenges can provide valuable insights and strategies to help their junior peers cope with and overcome these anxieties (Malau-Aduli, Roche, Adu, Jones, Alele & Draandi, 2020).

Mathematics performance can be influenced by a myriad of factors, including individual aptitude, instructional methods, and socioeconomic background (Brezavšček, Jerebic, Rus, & Žnidaršič, 2020). However, effective teaching strategies, curriculum design and availability of educational resources play crucial roles in shaping students' performance in mathematics (National Research Council, 2001). Factors like mathematics anxiety and motivation can also impact performance, highlighting the complex interplay of psychological and instructional elements that contribute to student success in the subject (Chew & Cerbin, 2021).

Mathematics anxiety has been identified as a significant barrier to student success in the field of mathematics, impacting academic performance and contributing to a declined interest in Science, Technology, Engineering and Mathematics (STEM) disciplines (Beilock & Maloney, 2015). Despite the recognition of this issue, the effectiveness of interventions, particularly peer mentoring strategy in mitigating mathematics anxiety remains inadequately explored. While peer mentoring has been widely acknowledged for its positive influence on academic performance, little is known about its specific role in addressing the nuanced challenges associated with mathematics anxiety.

The scarcity of empirical evidence on students' experiences and perceptions within the context of peer mentoring strategy focused on mathematics education is a critical issue. This study examined the intersection of the peer mentoring strategy and mathematics anxiety, shedding light on the effectiveness of the strategy in not only fostering academic support but also in creating an environment conducive to reducing the apprehension associated with learning mathematics. By identifying the gaps in current knowledge, this study aims to provide valuable insights that can guide educators, administrators, and policymakers in the design and implementation of interventions to alleviate mathematics anxiety through a peer mentoring strategy.

### **Purpose of the Study**

The main purpose of this research is to investigate students' perceptions of peer mentoring strategy and their relationship with mathematics anxiety. The specific objectives of the study are as follows:

1. To explore students' experiences towards participating in peer mentoring.

2. To explore students' attitudes towards participating in peer mentoring.

3. To examine the effects of peer mentoring on students' mathematics anxiety levels.

4. To identify the factors that influence students' perception of peer mentoring about mathematics anxiety.

5. To investigate the role of socio-demographic factors, such as gender and academic performance, in influencing students' perceptions of peer mentoring.

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# **Research Questions**

The following research questions were answered in the study.

- 1. What are the students' experiences towards participating in peer mentoring?
- 2. What are the students' attitudes towards participating in peer mentoring?
- 3. What are the effects of peer mentoring on students' mathematics anxiety levels?
- 4. Do any factors influence students' perception of peer mentoring about mathematics anxiety?

5. What is the role of socio-demographic factors, such as gender and academic performance, in influencing students' perceptions of Peer Mentoring?

# METHODOLOGY

This study is a descriptive survey type. The population of the study consisted of all senior secondary school students in the Ikeja Zone of Education District VI, Lagos State, Nigeria who have been exposed to peer mentoring instructional strategy. A total number of one hundred secondary school students in Ikeja Zone Education District VI, Lagos State were sampled from the population using simple random sampling techniques which exposed the target population to an equal chance of being selected for the study. The instrument used for the study is a selfdeveloped questionnaire titled, "Students' Perceptions of Peer Mentoring Strategy and their Relationship with Mathematics Anxiety Questionnaire". This was designed to elicit relevant responses from the respondents. The questionnaire consisted of two sections (that is, sections A and B). Section A sought demographic information of the respondents such as sex and age, while Section B focused on the assessment of students' perceptions of peer mentoring programmes and their relationship with mathematics anxiety. It has 5 sub-sections with 5 items each. Therefore, the questionnaire has twenty-five items all together with a four (4) Likert-point scale. The research instrument was subjected to face and content validation by the supervisor and two experts on the mentoring strategy. Test re-test reliability was used for the consistency of the research instrument designed for the study. The instrument was administered to a sample of twenty students at an interval of one week who were not part of the sample for the study. The reliability index of 0.87 was obtained using Cronbach Alfa.

The researchers got permission from the principal of each of the schools before the administration of the instrument through the assistance of the school's mathematics teacher. Data collected were analysed using frequency counts and percentages for the demographic variables while mean and standard deviation were used for the research questions.

Т	able 1: Respondent Se	ex
Sex	Frequency	Per cent
Male	46	46%
Female	54	54%
Total	100	100.0

# RESULT Respondent Personal Data

Source: Field Survey, 2024

Table 1 shows that the respondents are made up of 46% male and 54% female. It also reveals that most of the participants are females which could be attributed to a higher population of females in the sampled schools.

Age	Frequency	Per cent
13-15years	39	39%
16-19years	58	58%
20years and above	3	3%
Total	100	100.0

Table 2 indicates that 39% of the respondents are between ages 12-15 years, 58% fall within 16-19 years and 3% are 20 years and above. However, most of the respondents fall between 16 and 19 years which is the average age expected of senior secondary school students.

**Research Question 1:** What are the students' experiences towards participating in peer mentoring?

**Table 3:** Response Analysis of the students' experiences towards participating in peer mentoring.

S/N	ITEMS	SA	Α	D	SD
1.	Engaging in the peer mentoring strategy was a transformative experience for me.	39 (39%)	46 (46%)	9 (9%)	6 (6%)
2.	Participating in the peer mentoring strategy provided me with a unique opportunity to learn from someone who had successfully navigated the challenges I was facing.	46 (46%)	51 (51%)	3 (3%)	-
3.	Being part of the peer mentoring initiative was a game-changer for me.	48 (48%)	52 (52%)	-	-
4.	The peer mentoring strategy exceeded my expectations regarding its impact on my academic journey.	34 (34%)	47 (47%)	13 (13%)	6 (6%)
5.	Participating in the peer mentoring strategy was a highlight of my school experience.	41 (41%)	59 (59%)	-	-

# Source: Field Survey, 2024

From Table 3 (Q1), most of the respondents 46 (46%) agree to the opinion that engaging in the peer mentoring programme was a transformative experience for them, 39 (39%) strongly

agreed, 9 (9%) disagreed while 6 (6%) strongly disagreed. In (Q2), most of the respondents 51 (51%) Agreed to the opinion that participating in the peer mentoring strategy provided them with a unique opportunity to learn from someone who had successfully navigated the challenges they were facing, 46 (46%) strongly agreed while the remaining 3 (3%) disagreed. In (Q3), 52 (52%) of the respondents agreed that being part of the peer mentoring strategy is a game-changer for them, while the remaining 48 (48%) of the respondents strongly agreed with the opinion.

In (Q4), most of the respondents 47 (47%) agreed to the opinion that the peer mentoring strategy exceeded their expectations in terms of its impact on their academic journey, 34 (34%) strongly agreed while 13 (13%) disagreed. In comparison, 6 (6%) strongly disagreed. In (Q5), 41(41%) of the respondents agreed that participating in the peer mentoring strategy was a highlight of their school experience while the remaining 59 (59%) of the respondents strongly agreed with the opinion.

**Research Question 2:** What are the students' attitudes towards participating in peer mentoring? **Table 4:** Response Analysis of the Student's Attitudes Towards Participating in Peer Mentoring.

S/N	ITEMS	SA	A	SD	D
1.	Engaging in peer mentoring not only enriched my academic experience but also positively shifted my attitude towards learning.	46 (46%)	54 (54%)	-	-
2.	Participating in peer mentoring completely transformed my attitude towards my studies.	41 (41%)	48 (48%)	-	3 (3%)
3.	Being a part of the peer mentoring was a game- changer for my attitude towards academics.	44 (44%)	56 (56%)	-	-
4.	Peer mentoring had a profound impact on my attitude towards education.	36 (36%)	62 (62%)	-	2 (2%)
5.	Participating in peer mentoring significantly improved my outlook on my academic journey.	48 (48%)	52 (52%)	-	-

### Source: Field Survey, 2024

From Table 4 (Q1), 54 (54%) of the respondents agreed that engaging in the peer mentoring strategy not only enriched their academic experience but also positively shifted their attitude towards learning. In comparison, the remaining 46 (46%) of the respondents strongly agreed with the opinion. In (Q2), most of the respondents 48 (48%) agreed with the opinion that participating in the peer mentoring programme completely transformed their attitude towards their studies, 46 (41%) strongly agreed while the remaining 3 (3%) disagreed.

In (Q3), 54 (56%) of the respondents agreed that being a part of the peer mentoring strategy was a game-changer for their attitude towards academics. In comparison, the remaining 46 (44%) of the respondents strongly agreed with the opinion. In (Q4), most of the respondents, 62 (62%) agreed with the opinion that mentoring had a profound impact on my attitude towards education, 36 (36%) strongly agreed while the remaining 2 (2%) disagreed. In (Q5), 52 (52%)

of the respondents agreed that participating in peer mentoring significantly improved their outlook on their academic journey, while the remaining 48 (48%) of the respondents strongly agreed with the opinion.

**Research Question 3:** What are the effects of peer mentoring on students' mathematics anxiety levels?

Table 5: Response Analysis on the Effects of Peer Mentoring on Students' Mathematics Anxiety	,
Levels.	

S/N	ITEMS	SA	Α	SD	D
1.	Engaging in peer mentoring had a remarkable effect on reducing my mathematics anxiety levels.	31 (31%)	42 (42%)	9 (9%)	16 (16%)
2.	Peer mentoring played a crucial role in positively impacting my mathematics anxiety.	36 (36%)	48 (48%)	5 (5%)	11 (11%)
3.	The positive impact extended beyond the academic realm, as my overall anxiety levels related to mathematics significantly decreased.	41 (41%)	47 (47%)	3 (3%)	9 (9%)
4.	The strategy focuses on building a supportive learning community that plays a key role in fostering a positive mindset towards mathematics.	45 (45%)	51 (51%)	-	(4%)
5.	The encouragement and guidance from my mentor helped me develop a more positive attitude towards math.	36 (36%)	64 (64%)	-	-

### Source: Field Survey, 2024

From Table 5 (Q1), most of the respondents 42 (42%) agree to the opinion that engaging in peer mentoring had a remarkable effect on reducing their mathematics anxiety levels, 31 (31%) strongly agreed, 16 (16%) disagreed while 9 (9%) strongly disagreed. In (Q2), most of the respondents 48 (48%) agreed to the opinion that the peer mentoring strategy played a crucial role in positively impacting their mathematics anxiety, 36 (36%) strongly agreed, 11 (11%) disagreed while 5 (5%) strongly disagreed.

In (Q3), most of the respondents 47 (47%) agreed to the opinion that the positive impact extended beyond the academic realm, as their overall anxiety levels related to mathematics significantly decreased, 41 (41%) strongly agreed, 9 (9%) disagreed while 3 (3%) strongly disagreed. In (Q4), most of the respondents 51 (51%) agreed to the opinion that the strategy's focus on building a supportive learning community played a key role in fostering a positive mindset towards mathematics, 45 (45%) Strongly Agreed while the remaining 4 (4%) disagreed. In (Q5), 64 (64%) of the respondents agreed that the encouragement and guidance from my mentor helped me develop a more positive attitude towards math while the remaining 36 (36%) of the respondents strongly agreed with the opinion.

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**Research Question 4:** Do any factors influence students' perception of peer mentoring about mathematics anxiety?

**Table 6:** Response Analysis on factors that influence students' perception of peer mentoring about mathematics anxiety.

S/N	ITEMS	SA	Α	SD	D
1.	The personalized attention and tailored support I received through the peer mentoring program significantly influenced my perception of mathematics anxiety.	43 (43%)	49 (49%)	-	(8%)
2.	The positive and inclusive atmosphere created within the peer mentoring program had a profound effect on my perception of mathematics anxiety.	33 (33%)	42 (42%)	9 (9%)	16 (16%)
3.	Effective communication and mentorship within the peer mentoring program were instrumental in shaping my perception of mathematics anxiety.	29 (29%)	43 (43%)	11 (11%)	17 (17%)
4.	The structured and well-designed nature of the peer mentoring program significantly impacted how I perceived mathematics anxiety.	27 (27%)	39 (39%)	14 (14%)	20 (20%)
5.	The positive role modelling by mentors in the peer mentoring program played a crucial role in shaping my perception of mathematics anxiety.	31 (31%)	46 (46%)	4 (4%)	19 (19%)

### Source: Field Survey, 2024

From Table 6 (Q1), most of the respondents 49 (49%) agreed to the opinion that the personalized attention and tailored support I received through the peer mentoring program significantly influenced their perception of mathematics anxiety, 43 (43%) strongly agreed while the remaining 8 (8%) disagreed. In (Q2), most of the respondents 42 (42%) agreed to the opinion that the positive and inclusive atmosphere created within the peer mentoring had a profound effect on my perception of mathematics anxiety, 33 (33%) strongly agreed, 16 (16%) disagreed while 9 (9%) strongly disagreed.

In (Q3), most of the respondents 43 (43%) agreed to the opinion that effective communication and mentorship within the peer mentoring programme were instrumental in shaping my perception of mathematics anxiety, 29 (29%) strongly agreed, 17 (17%) disagreed while 11 (11%) strongly disagreed. In (Q4), most of the respondents 39 (39%) agreed to the opinion that the structured and well-designed nature of the peer mentoring programme significantly impacted how I perceived mathematics anxiety, 27 (21%) strongly agreed, 20 (20%) disagreed while 14 (14%) strongly disagreed. On (Q5), most of the respondents 46 (46%) agreed the opinion that the positive role modelling by mentors in peer mentoring played a crucial role in shaping their perception of mathematics anxiety, 31 (31%) strongly agreed, 19 (19%) disagreed while 4 (4%) strongly disagreed.

**Research Question 5:** What is the role of sociodemographic factors, such as gender and academic performance, in influencing students' perceptions of Peer Mentoring?

**Table 7:** Response Analysis on the Role of Socio-demographic Factors, such as Gender and Academic Performance, in Influencing Students' Perceptions of Peer Mentoring.

S/N	ITEMS	SA	А	SD	D
1.	Peer mentoring has been instrumental in breaking down socio-demographic barriers since it was accessible to all.	47 (47%)	53 (53%)	-	-
2.	Participating in peer mentoring has highlighted the strategy's commitment to diversity and inclusivity.	42 (42%)	54 (54%)	-	4 (4%)
3.	The peer mentoring strategy's consideration of socio-demographic factors, such as gender and academic performance, has played a pivotal role in creating an inclusive environment.	39 (39%)	48 (48%)	4 (4%)	9 (9%)
4.	Its recognition of the diverse socio-demographic backgrounds of participants, including gender and academic performance, has been key to its success. Participating in Peer Mentoring has shown me that socio-demographic factors like gender and academic performance are not barriers but rather aspects that enrich the overall experience.	41 (41%)	59 (59%)	-	-
5.	Peer mentoring has been instrumental in breaking down socio-demographic barriers since it was accessible to all.	44 (44%)	53(53%)	-	3 (3%)

### Source: Field Survey, 2024

From Table 7 (Q1), 53 (53%) of the respondents agreed that peer mentoring strategy has been instrumental in breaking down socio-demographic barriers since it was where accessible to all, while the remaining 47 (47%) of the respondents strongly agreed with the opinion. In (Q2), most of the respondents 54 (54%) Agreed to the opinion that participating in peer mentoring has highlighted the state's commitment to diversity and inclusivity, 42 (42%) strongly agreed while the remaining 4 (4%) disagreed.

In (Q3), most of the respondents 48 (48%) agreed on the opinion that the peer mentoring's consideration of socio-demographic factors, such as gender and academic performance, has played a pivotal role in creating an inclusive environment, 39 (39%) strongly agreed, 9 (9%) disagreed while 4 (4%) strongly disagreed. In (Q4), 59 (59%) of the respondents agreed that recognition of the diverse socio-demographic backgrounds of participants, including gender and academic performance, has been key to its success. Participating in peer mentoring has shown them that socio-demographic factors like gender and academic performance are not barriers but rather aspects that enrich the overall experience while the remaining 41 (41%) of

the respondents strongly agreed with the opinion. On (Q5), most of the respondents 53 (53%) agreed to the opinion that peer mentoring has been instrumental in breaking down sociodemographic barriers since it was where accessible to all, 44 (44%) strongly agreed while the remaining 3 (3%) disagreed.

#### **DISCUSSIONS OF FINDINGS**

The findings from Table 3, which explores students' experiences in peer mentoring programs, reveal a generally positive impact on participants. A significant proportion of students strongly agreed or agreed that the programme was transformative (Item 1), provided unique learning opportunities (Item 2) and was a game-changer (Item 3) in their academic journeys. However, some students disagreed or strongly disagreed with the statement that the program exceeded expectations (Item 4), indicating varied experiences. Nevertheless, the majority viewed participation as a highlight of their school experience (Item 5). These findings align with existing literature by Colvin and Ashman (2010) which highlights the benefits of peer mentoring programs in academic settings, with varied individual experiences possibly influenced by programme design or personal expectations.

In Table 4, focusing on students' attitudes towards peer mentoring, a consistently positive trend emerges. Most students strongly agreed or agreed that participation positively transformed their attitudes toward academics and studies. The findings align with an established study by Zepke (2018) indicating that peer mentoring programmes contribute to fostering positive attitudes and engagement among students. While the limited disagreement by Yomtov, Plunkett, Efrat, and Marin, (2017) indicated overall satisfaction with the programme's impact on attitudes.

Table 5 delves into the effects of peer mentoring on students' mathematics anxiety levels, and the results indicate a positive impact. A substantial number of students strongly agreed or agreed that the program had a remarkable effect on reducing mathematics anxiety. This aligns with the research by Passolunghi, De Vita and Pellizzoni (2020) on the role of mentorship in mitigating anxiety. However, Petrut and Visu-Petra, L. (2019) in their study expressed disagreement, suggesting that individual experiences vary, and not all participants experienced a significant reduction in mathematics anxiety.

Table 6 investigates the factors influencing students' perceptions of peer mentoring programmes concerning mathematics anxiety. The results suggest that personalized attention, positive atmosphere, effective communication, structured design, and role modelling significantly influence students' perceptions. These findings align with existing literature by Li, Huang, and Li, (2021) emphasizing the importance of tailored support and positive learning environments in addressing anxiety. However, the finding is contrary to Shamir-Inbal and Blau (2021) which expressed disagreement, indicating that certain aspects may not have universally influenced perceptions.

Lastly, Table 7 explores the role of socio-demographic factors in shaping students' perceptions of peer mentoring strategy. Most students acknowledged the program's success in breaking down barriers and promoting inclusivity. However, a small percentage expressed disagreement, suggesting that despite efforts, some students may not perceive the strategy as

entirely inclusive. Scholars may explore these diverse perceptions, considering factors such as program accessibility, communication strategies and individual expectations to enhance inclusivity. Overall, the findings across tables provide valuable insights for improving and tailoring peer mentoring programmes to meet the diverse needs of students in academic settings.

# CONCLUSION

The study focused on assessing students' perception of the peer mentoring strategy and mathematics anxiety among senior secondary students in the Ikeja Zone of Education District VI, Lagos State. From the study, it was observed that there is a positive significant perception of students towards peer mentoring strategy and mathematics anxiety.

Furthermore, participating in the peer mentoring study provided the students with a unique opportunity to learn from someone who had successfully navigated the challenges they were facing. Also, participating in peer mentoring significantly improved their outlook on my academic journey. Moreover, the encouragement and guidance from the mentors helped the participants to develop a more positive attitude towards mathematics. In addition, the positive role modelling by mentors in the peer mentoring strategy played a crucial role in shaping the mathematics anxiety of the participants.

In conclusion, its recognition of the diverse socio-demographic backgrounds of participants, including gender and academic performance, has been the key to its success. Participating in the peer mentoring strategy has shown that socio-demographic factors like gender and academic performance are not barriers but rather aspects that enrich the overall experience.

### RECOMMENDATIONS

Based on the findings and conclusions of this study on students' perception of the peer mentoring programme and mathematics anxiety among senior secondary students in Ikeja Zone of Education District VI, Lagos State, the following recommendations are proposed:

1. Encouragement of the expansion and continuity of peer mentoring programmes in schools within Education District VI, Lagos state.

2. Providing comprehensive and continuous professional development training for mentors.

3. Incorporating specific modules or sessions within the mentoring strategy that focus on managing and reducing mathematics anxiety.

4. Establishing mechanisms for continuous evaluation and feedback from both mentors and mentees.

5. Encouraging collaboration among schools within the district to share best practices and resources related to peer mentoring programmes.

6. Involve educational policymakers, parents, and community stakeholders in discussions and initiatives aimed at addressing mathematics anxiety.

7. Explore the integration of technology-driven solutions or innovative teaching approaches within the peer mentoring programme.

# REFERENCES

- Aarnikoivu, M., Pennanen, M., Kiili, J., & Nokkala, T. (2020). Are multidisciplinary peermentoring are groups facilitating change? A critical educational praxis perspective. Learning and Teaching, 13(3), 18-40.
- Alhadabi, A., & Karpinski, A. C. (2020). Grit, self-efficacy, achievement orientation goals, and academic performance in university students. International Journal of Adolescence and Youth, 25(1), 519-535.
- Allen, J. (2004). Mentoring programs in schools and colleges: A review of the literature (Report No. 2004-21). National Education Dissemination and Improvement Program.
- Allport, G. W. (1935). The attitude concept in psychology. Psychological Review, 42(1), 43. Ashcraft, M. H. (2002 a). Math anxiety: Overcoming fear and improving math performance. Mahwah,NJ: Lawrence Erlbaum Associates.
- Ashcraft, M. H. (2002 b). Math anxiety: Personal, educational, and cognitive consequences. Current Directions in Psychological Science, 11(5), 181–185. https://doi.org/10.1111/1467-8721.00196
- Bayram, N., & Demir, A. (2015). Peer mentoring in mathematics: A randomized, controlled trial.Journal of Educational Research, 108(4), 377-390.
- Beilock, S. L., & Maloney, E. A. (2015). Math anxiety: A factor in math achievement not to be ignored. Policy Insights from the Behavioral and Brain Sciences, 2(1), 4-12.
- Belbase, S., Mainali, B. R., Kasemsukpipat, W., Tairab, H., Gochoo, M., & Jarrah, A. (2022). At the dawn of science, technology, engineering, arts, and mathematics (STEAM) education: Prospects, priorities, processes, and problems. International Journal of Mathematical Education in Science and Technology, 53(11), 2919-2955.
- Boaler, J., & Humphrey, S. (2008). Peer mentoring in mathematics: A review of the literature. Educational Psychologist, 43(4), 216-236.
- Bowen, W. G., Chingos, D. M., & McPherson, M. (2003). Crossing the divide: Widening the gap between the rich and the poor in American colleges and universities (Report No. CP-41). Princeton University, Center for Education Policy Analysis.
- Brezavšček, A., Jerebic, J., Rus, G., & Žnidaršič, A. (2020). Factors influencing mathematics achievement of university students of social sciences. Mathematics, 8(12), 2134.
- Brown, M., & Smith, K. (2018). Students' perceptions of peer mentoring in mathematics: A qualitative study. Educational Psychology, 44(1), 1-14.
- Brown, S. L., & Wilson, J. L. (2020). Peer mentoring programs: A comprehensive meta-analysis. Review of Educational Research, 90(4), 499–535. https://doi.org/10.3102/0034654320916256
- Campbell, A. R., & Cabrera, A. F. (2014). Mentoring in the college years: Implications for educational engagement and outcomes. In B. L. Pascarella & P. T. Terenzini (Eds.), How College Affects Students: Volume 3: 21st Century Evidence that Higher Education Works (pp. 113-145).Jossey-Bass.
- Celik, H. C., & Ozdemir, F. (2020). Mathematical Thinking as a Predictor of Critical Thinking Dispositions of Pre-Service Mathematics Teachers. International Journal of Progressive Education, 16(4), 81-98.
- Chew, S. L., & Cerbin, W. J. (2021). The cognitive challenges of effective teaching. The Journal of Economic Education, 52(1), 17-40.

Cohen, J. D., Kulik, J. A., & Kulik, C.-C. C. (2003). The effectiveness of peer tutoring in mathematics: A meta-analysis (1983-2001). Psychological Bulletin, 129(1), 323-347.

Colvin, J. W., & Ashman, M. (2010). Roles, risks, and benefits of peer mentoring relationships in higher education. Mentoring & tutoring: partnership in learning, 18(2), 121-134.

Drigas, A., Mitsea, E., & Skianis, C. (2022). Subliminal Training Techniques for Cognitive, Emotional and Behavioral Balance. The Role of Emerging Technologies. Technium Soc. Sci. J., 33, 164.

Eagly, A. H., & Chaiken, S. (1993). The psychology of attitudes. Harcourt Brace Jovanovich.

- Festinger, L. (1957). A theory of cognitive dissonance. Row, Peterson.
- Gersten, R., Baker, S. K., & Dendy, S. (2009). The impact of peer mentoring on mathematics achievement for students with learning disabilities. Learning Disability Quarterly, 33(4), 231-241.
- Gerstenberger, M., & Küchemann, S. (2019). Mathematics anxiety: A global issue. In I.Thompson, M. G. Thomas, & S. Lumby (Eds.), Mathematics anxiety: Research and applications (pp. 23-42). Cham: Springer.
- Hattie, J., & Yates, M. (2017). Peer mentoring in mathematics: A meta-analysis of randomized controlled trials. Review of Educational Research, 87(2), 271-319.
- Hembree, R. (1990). The nature, effects, and results of mathematics anxiety. Journal for Research in Mathematics Education, 21(1), 33–46. https://doi.org/10.2307/749455
- Johnson, D. W., Johnson, R. T., & Stanne, M. B. (2007). Peer mentoring: A powerful tool for promoting positive change in schools. National Association of Secondary School Principals, 91(1), 13-29.
- Johnson, D. W. (2017). Cooperative learning in 21st-century education. Annual Review of Education, Communication & Language Sciences, 14, 62–82. https://doi.org/10.3366/ecl.2017.0195
- Johnson, S. L., & Boswell, R. (2002). Students' perceptions of peer mentoring in mathematics. Journal of Educational Research, 95(5), 255-261.
- Jones, L., & Williams, C. (2019). Students' perceptions of peer mentoring in mathematics: A mixed-methods study. Journal of Educational Psychology, 111(3), 469-488.
- Kram, K. E. (1985). Mentoring at an early age: A critical role in professional development. In M. B. Feldman (Ed.), Mentoring: A new perspective (pp. 87-100). Jossey-Bass.
- Lee, J., & Chen, C. (2020). Students' perceptions of peer mentoring in mathematics: A crosscultural study. International Journal of Science and Mathematics Education, 18(1), 1-22.
- Li, C., Huang, J., & Li, B. (2021). The predictive effects of the classroom environment and trait emotional intelligence on foreign language enjoyment and anxiety. System, 96, 102393.
- Malau-Aduli, B. S., Roche, P., Adu, M., Jones, K., Alele, F., & Drovandi, A. (2020). Perceptions and processes influencing the transition of medical students from pre-clinical to clinical training. BMC Medical Education, 20(1), 1-13.
- Mammarella, I. C., Caviola, S., Rossi, S., Patron, E., & Palomba, D. (2023). Multidimensional components of (state) mathematics anxiety: Behavioral, cognitive, emotional, and psychophysiological consequences. Annals of the New York Academy of Sciences, 1523(1), 91-103.
- National Research Council. (2001). Adding it up: Helping children learn mathematics. National Academies Press.

- Okolie, U. C. (2017). Mathematics Anxiety among Senior Secondary School Students in Nigeria: Causes and Coping Strategies. International Journal of Secondary Education, 5(3), 39-45.
- Oliver, J., & Lynch, S. (2007). The impact of peer mentoring on students' self-efficacy in mathematics. Journal of Adolescent and Adult Literacy, 50(8), 606-613.
- Onoshakpokaiye, O. E. (2023). An overview of reasoning ability in mathematics and mathematics achievement of students in tertiary institutions. IJIET (International Journal of Indonesian Education and Teaching), 7(2), 309-318.
- Pascarella, E. T., & Terenzini, P. T. (2005). How college affects students: Vol. 2. A third decade of research. Jossey-Bass.
- Passolunghi, M. C., De Vita, C., & Pellizzoni, S. (2020). Math anxiety and math achievement: The effects of emotional and math strategy training. Developmental science, 23(6), e12964.
- Petruţ, A., & Visu-Petra, L. (2019). The efficiency of tutoring programs based on meditation in alleviating mathematics anxiety in primary school. Romanian Journal of School Psychology, 12(24), 27-39.
- Richardson, F. C., & Suinn, R. M. (1972). The Mathematics Anxiety Rating Scale: Psychometric data. Journal of Counseling Psychology, 19(6), 551–554. https://doi.org/10.1037/h0033456
- Rockinson-Szapkiw, A., & Wendt, J. L. (2020). The benefits and challenges of a blended peer mentoring program for women peer mentors in science, technology, engineering, and mathematics (STEM). International Journal of Mentoring and Coaching in Education, 10(1), 1-16.
- Samuel, T. S., Buttet, S., & Warner, J. (2023). "I Can do Math, too!": Reducing Math Anxiety in STEM-Related Courses Using a Combined Mindfulness and Growth Mindset Approach (MAGMA) in the Classroom. Community College Journal of Research and Practice, 47(10), 613-626.
- Shamir-Inbal, T., & Blau, I. (2021). Facilitating emergency remote K-12 teaching in computing -enhanced virtual learning environments during the COVID-19 pandemic or curse? Journal of Educational Computing Research, 59(7), 1243-1271.
- Singer, A., Montgomery, G., & Schmoll, S. (2020). How to foster the formation of STEM identity: studying diversity in an authentic learning environment. International Journal of STEM Education, 7(1), 1-12.
- Smith, S. V. (2019). Addressing mathematics anxiety: A review of strategies to improve performance in mathematics. International Journal of Science and Mathematics Education, 17(4), 651–670. https://doi.org/10.1007/s10763-018-9913-1
- Toyama, M., & Yamazaki, Y. (2021). Classroom interventions and foreign language anxiety: A systematic review with a narrative approach. Frontiers in Psychology, 12, 614184.
- Tracey, T. J., Wampold, B. E., Lichtenberg, J. W., & Goodyear, R. K. (2013). Expertise in psychotherapy: An elusive goal? American Psychologist, 68(3), 145-156.
- Valentine, D., & Todd, R. (2016). Peer mentoring in mathematics: A longitudinal study. Journal of Research in Mathematics Education, 47(1), 3-32.
- Van Herpen, S. G., Meeuwisse, M., Hofman, W. A., &Severiens, S. E. (2020). A head starts in higher education: the effect of a transition intervention on interaction, sense of belonging, and academic performance. Studies in Higher Education, 45(4), 862-877.

- Wang, M. T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. Learning and Instruction, 28, 12-23.
- Wang, Y. (2023). Examining the role of sense of belonging and formative assessment in reducing the negative impact of learning anxiety in mathematics. European Journal of Psychology of Education, 1-23.
- Whiting, J. R., Wickham, S., & Beaney, D. (2020). Medical student mentors in widening access to medicine programmes are lighting fires, not filling buckets. Widening Participation and Lifelong Learning, 22(2), 205-224.
- Wilson, M., & De Palma, M. (2006). The effects of peer mentoring on students' attitudes.
- Yaniawati, P., Kariadinata, R., Sari, N., Pramiarsih, E., & Mariani, M. (2020). Integration of elearning for mathematics on resource-based learning: Increasing mathematical creative thinking and self-confidence. International Journal of Emerging Technologies in Learning (iJET), 15(6), 60-78.
- Yarberry, S., & Sims, C. (2021). The impact of COVID-19-prompted virtual/remote work environments on employees' career development: Social learning theory, belongingness, and self-empowerment. Advances in Developing Human Resources, 23(3), 237-252.
- Yomtov, D., Plunkett, S. W., Efrat, R., & Marin, A. G. (2017). Can peer mentors improve the first-year experiences of university students? *Journal of College Student Retention: Research, Theory & Practice*, 19(1), 25-44.
- Zepke, N. (2018). Learning with peers, active citizenship, and student engagement in Enabling Education. *Student Success*, 9(1), 61-73.