

EXPLORATION AND EVALUATION OF TEACHING APPROACHES TO ENCOURAGE STUDENTS' MIND-SET IN MATHEMATICS FOR ECONOMICS

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ABSTRACT

This paper explores the significance of fostering a growth mindset and evaluates teaching approaches within the context of FCT College of Education Zuba, Nigeria. Mathematics is foundational in economics education, yet students often face challenges due to self-doubt and anxiety. By examining mindset-related issues and the effectiveness of teaching strategies, this research aims to provide insights into enhancing students' attitudes, self-perceptions, and performance in mathematics for economics. The study employs a survey research design with a sample size of 600 students. Findings reveal a lack of confidence among students, along with difficulties in understanding mathematical concepts and applying them to economic scenarios. Effective teaching approaches such as encouraging perseverance, providing constructive feedback, and promoting collaborative learning are identified. Recommendations include addressing confidence issues, implementing interventions, and adopting diverse teaching strategies to foster a growth mindset among economics students. Collaboration among educators, policymakers, and stakeholders is essential to develop comprehensive interventions for improving students' interest and proficiency in mathematics for economics.

Keywords: Growth mindset, Mathematics for economics, Teaching approaches, Student attitudes, Academic performance.

1. INTRODUCTION

In the realm of higher education, the quest to nurture a growth mind-set among students embarking on the research of mathematics for economics is an aspiration that resonates universally. Mathematics, is an integral component of economics education, where students often encounter formidable mathematical concepts and problem-solving scenarios. Encouraging a growth mind-set within this context can prove to be a transformative endeavour, reshaping how students' approach, engage with, and ultimately excel in mathematical studies for economics.

Mathematics is a fundamental pillar of economics. Thus, the link between mathematics and economics is undeniable, with the former serving as the fundamental language and toolset for the latter. The intersection of mathematics and economics is not only foundational but also emblematic of the contemporary academic landscape. Mathematics provides the analytical framework necessary for comprehending economic theories, formulating models, and solving real-world economic problems. It provides the language and tools necessary for economists to analyze complex phenomena, make predictions, and formulate policies. For students aspiring to excel in economics, mathematical proficiency is not a mere complement but an imperative. However, this pursuit is not without its challenges. Mathematics often poses a formidable barrier, and students' attitudes toward this discipline can significantly impact their learning outcomes.

However, the pathway to mastery in mathematics, especially for students researching economics, is often fraught with trepidation, self-doubt, and a fixed mind-set that suggests some individuals possess innate mathematical abilities while others do not. For many students, mathematics can be a daunting and intimidating subject. The anxiety and fear associated with math often hinder students' ability to grasp its concepts and apply them effectively to economic problem-solving. It is within this context that the concept of a growth mind-set acquires paramount importance.

In today's rapidly evolving educational landscape, fostering a growth mind-set among students is a paramount goal for educators. The importance of cultivating a growth mind-set in students researching mathematics for economics cannot be overstated. When students develop a growth mindset, they become more resilient, adaptable, and open to learning. They are more willing to take risks, seek help when needed, and view mistakes as opportunities for growth. Consequently, fostering a growth mind-set among economics students can lead to improved performance, increased confidence, and a deeper understanding of mathematical concepts.

Recognizing the challenges students face in developing mathematical proficiency and the potential impact of a fixed mind-set on their performance, educators and researchers have sought innovative teaching approaches to instill a growth mind-set in students.

Located in the Federal Capital Territory (FCT) of Nigeria, FCT College of Education Zuba stands as an exemplar of academic excellence and progressive pedagogy. Renowned for its commitment to fostering a vibrant and intellectually stimulating learning environment, this institution plays a pivotal role in shaping the educational landscape of the region. Within this dynamic setting, the research of mathematics for economics holds particular significance, given its pivotal role in equipping students with the quantitative and analytical skills essential for understanding economic theories and navigating the complexities of real-world economic challenges.

In this scholarly exploration, we undertake an in-depth analysis of teaching approaches within the unique context of FCT College of Education Zuba. This research aims to address the pressing need for effective teaching approaches that encourage a growth mind-set in students researching mathematics for economics. While the concept of a growth mind-set has gained recognition in the field of education, its practical implementation in mathematics instruction for economics remains underexplored. This paper undertakes the task of analyzing these teaching approaches and their implications within the context of mathematics education for economics students. By investigating the efficacy of these strategies, we aim to shed light on the role educators can play in cultivating a growth mind-set among their students, ultimately enhancing their mathematical skills, confidence, and overall academic performance.

The rationale for this research is twofold. First, there is a growing concern about declining mathematics proficiency among economics students, which can limit their ability to excel in their coursework and future careers. Second, the well-established benefits of a growth mindset, such as increased motivation, resilience, and learning engagement, make it a valuable target for educational interventions.

In this exploration, this paper will delve into the theoretical underpinnings of growth mind-set theory and its relevance to mathematics education. It also examines various teaching methodologies and interventions designed to promote a growth mind-set among students researching mathematics for economics. Through a critical analysis of empirical studies and practical implementation experiences, we aim to provide insights into the advantages and challenges of these strategies, offering educators and institutions valuable guidance in fostering a growth mind-set culture within their classrooms.

As we embark on this journey to understand the impact of teaching approaches on students' mind-set in the realm of mathematics for economics, we invite readers to join us in reimagining the potential of education to inspire confidence, resilience, and a lifelong love for learning in the minds of our students. In doing so, we hope to contribute to the ongoing dialogue on educational innovation and the pursuit of academic excellence in the field of economics, one that is firmly rooted in the belief that every student can thrive and grow in their mathematical endeavors.

Statement of the problem

The pursuit of a growth mind-set among students in the field of mathematics for economics is a topic of growing interest in education. The application of teaching approaches aimed at cultivating a growth mind-set has the potential to reshape students' attitudes and abilities in mathematics, a critical component of economics education. To understand the significance of these teaching approaches at FCT College of Education Zuba, it is essential to explore the existing literature on growth mindset, mathematics education, and pedagogical strategies.

In the field of economics education, the research of mathematics plays a foundational role, equipping students with the quantitative skills necessary to comprehend economic theories, formulate models, and tackle real-world economic challenges. However, this intersection of mathematics and economics frequently presents a formidable barrier for students, with many grappling with self-doubt and anxiety, and holding fixed beliefs about their mathematical abilities (Boaler, 2013).

How can the introduction of teaching approaches that encourages growth mind-set impact student researching mathematics for economics, specifically within the context of FCT College of Education Zuba? And, what are the potential implications for their mathematical performance and overall learning experience? This is the crux of this research. By addressing these research questions, this research seeks to contribute to the ongoing dialogue on effective mathematics education strategies, particularly within the domain of economics studies, and provide practical insights into the potential benefits and challenges of fostering a growth mind-set among students.

Objectives of the Research

The primary objectives of this research are as follows:

1. To investigate the existing attitudes and beliefs about mathematics among students studying mathematics for economics at FCT College of Education Zuba.
2. To identify and analyze the specific challenges and barriers that students researching mathematics for economics face, with a focus on mindset-related issues.
3. To explore and evaluate various teaching strategies and interventions that have the potential to foster a growth mind-set in mathematics for economics students.
4. How can teaching approaches that promote a growth mind-set be effectively introduced into the mathematics curriculum for economics students in FCT College of Education Zuba and Nigerian Colleges of Education in general.
5. To establish the potential effects of new teaching approaches on students' attitudes, self-perceptions, and performance in mathematics for economics?

Research Questions

The primary objectives of this research are as follows:

1. To discover existing attitudes and beliefs among students studying mathematics for economics in FCT College of Education Zuba?

2. To examine if economics students in FCT College of Education Zuba are facing any challenges and barriers while studying mathematics for economics with a focus on mindset-related issues.
3. To explore and evaluate various teaching strategies and interventions that have the potential to foster a growth mind-set in economics students.
4. To investigate those teaching approaches that promote a growth mind-set and how they can be effectively introduced into the mathematics curriculum for economics students at
5. What are the potential effects of these teaching approaches on students' attitudes, self-perceptions, and performance in mathematics for economics?

Research assumptions

In the research to be undertaking, it is assumed that;

1. Economics students' attitudes and beliefs about mathematics while studying mathematics for economics at FCT College of Education Zuba is horrifying?
2. Economics students' at FCT College of Education Zuba face some challenges and barriers while studying mathematics for economics.
3. There are some teaching strategies and interventions that have the potential to foster a growth mind-set in economics students.
4. How can teaching approaches that promote a growth mind-set be effectively introduced into the mathematics curriculum for economics students at FCT College of Education Zuba
5. New teaching approaches will generate much potential effects on students' attitudes, self-perceptions, and performance in mathematics for economics at FCT College of Education Zuba?

Significance of the Research

The significance of this research problem is underscored by the critical importance of mathematics in economics education and the potential of a growth mind-set to transform students' attitudes and abilities in mathematics for economics. A growth mind-set can empower students to approach mathematical challenges with resilience, view mistakes as opportunities for learning, and ultimately, enhance their academic performance in mathematics.

Furthermore, the specific context of FCT College of Education Zuba a layer of relevance and uniqueness to this research problem. Understanding how the introduction of teaching approaches tailored to encourage a growth mind-set impacts students within this institution can provide valuable insights for educators, policymakers, and institutions seeking to enhance mathematics education and student success in economics programs.

In mathematics education, fostering a growth mind-set is crucial due to the subject's reputation for being challenging and intimidating. Students often perceive mathematics as a domain reserved for the inherently talented. However, research has shown that incorporating growth mind-set principles into mathematics instruction can lead to improved outcomes. Boaler's work on mathematical mindsets emphasizes the importance of creating a classroom culture that promotes risk-taking and emphasizes the process of learning over fixed ability (Boaler, 2016).

By undertaking this research, we aim to contribute to the ongoing discourse on mathematics education in economics and provide valuable insights into how to cultivate a growth mind-set among students, ultimately empowering them to excel in their academic pursuits and future careers.

Scope of the Research

This research will primarily focus on undergraduate and postgraduate students researching economics who are required to take mathematics courses as part of their curriculum. The analysis will encompass various mathematical topics relevant to economics, including calculus, statistics, linear algebra, and differential equations.

2. LITERATURE REVIEW

The fostering of a growth mind-set among students researching mathematics for economics is essential for their academic success and long-term learning outcomes. A growth mindset, as posited by Dweck (2006), is the belief that intelligence and abilities can be developed through dedication and hard work. In contrast, a fixed mind-set assumes that abilities are fixed traits.

Numerous studies have examined the relationship between a growth mind-set and mathematics achievement. Yeager and Dweck (2012) found that students who were taught about the malleability of intelligence demonstrated a significant increase in math scores, especially among lower-achieving students. These findings emphasize the role of mind-set interventions in improving mathematics performance.

Encouraging a growth mind-set is particularly relevant in mathematics education, where self-doubt and anxiety often hinder learning (Boaler, 2013). Boaler's research on mathematical mindsets underscores the importance of creating classroom environments that promote a growth mind-set (Boaler, 2013). In such environments, students are encouraged to take risks, engage in collaborative problem-solving, and develop a deeper understanding of mathematical concepts. Boaler's work provides insights into pedagogical practices that can be integrated into mathematics instruction to foster a growth mindset.

As the field of economics increasingly relies on quantitative analysis, fostering a growth mind-set in students researching mathematics for economics is imperative (Blackwell et al., 2007). A growth mind-set can empower students to approach mathematical challenges with resilience, view mistakes as opportunities for learning, and ultimately, enhance their academic performance in mathematics (Yeager & Dweck, 2012).

Several pedagogical approaches have been proposed to encourage a growth mind-set in mathematics education. One effective strategy is formative assessment and feedback, which helps students see mistakes as opportunities for learning (Hattie & Timperley, 2007). Providing constructive feedback that highlights effort, progress, and strategies can contribute to the development of a growth mindset. Problem-based learning (PBL) is another pedagogical approach that aligns with the principles of a growth mindset. PBL emphasizes active engagement, critical thinking, and real-world problem-solving. By tackling complex, authentic mathematical challenges, students can develop a deeper understanding of mathematics and increase their confidence in their problem-solving abilities (Polya, 1957).

In the context of economics education, mathematics serves as the foundational language for understanding economic theories and models. Therefore, fostering a growth mind-set in mathematics is particularly relevant for economics students. Research by Blackwell et al. (2007) demonstrated that mind-set interventions can lead to improved academic outcomes in mathematics, highlighting the potential impact of these strategies on economics students' performance.

Within the specific context of FCT College of Education Zuba, the literature on growth mind-set interventions in Nigerian educational institutions is limited. However, research in similar contexts has shown promise. For instance, a research in Nigerian secondary schools found that students

who received growth mind-set interventions demonstrated increased motivation and achievement in mathematics (Ogunleye & Aluede, 2015). This suggests that tailored approaches within the Nigerian educational system can be effective in promoting a growth mindset.

In conclusion, the literature reviewed here highlights the importance of promoting a growth mind-set in students researching mathematics for economics. Drawing from the theoretical foundations of mind-set theory, empirical evidence from related studies, and effective pedagogical approaches, educators have a rich array of tools at their disposal to encourage a growth mindset. By incorporating these strategies into their teaching practices, educators can empower students to approach mathematical challenges with confidence and resilience, ultimately enhancing their success in economics studies.

Theoretical Foundation.

The concept of a growth mindset, as introduced by Dweck (2006), posits that abilities can be developed through effort and learning, offering a potential solution to these challenges. Dweck's ground breaking work on mind-set theory has laid the theoretical foundation for understanding the concept of a growth mindset. In her research, she highlights that individuals with a growth mind-set are more likely to embrace challenges, persist through difficulties, and view failures as opportunities for learning (Dweck, 2006). This shift in mind-set can be transformative in mathematics education, where students often face complex problem-solving tasks and mathematical concepts.

The concept of mind-set can be broadly categorized into two types: fixed mind-set and growth mindset. In a fixed mindset, individuals believe their abilities are innate and unchangeable, leading to a fear of failure and a tendency to avoid challenges. On the other hand, a growth mind-set is characterized by the belief that abilities can be developed through dedication and hard work. Students with a growth mind-set are more likely to embrace challenges and persevere in the face of setbacks.

2. METHODOLOGY

This research methodology aims to provide a holistic investigation into the introduction of teaching approaches to encourage a growth mind-set among mathematics for economics students across the selected colleges of education. It uses quantitative research method to yield a comprehensive analysis of the research problem.

Research Design

The research design for this research is a survey reach design.

Sample Size and Techniques

The population for this research comprises 600 students comprising of all students of Department of Economics, FCT College of Education Zuba, Abuja. To ensure a representative sample, a stratified random sampling technique was employed. The sample size is determined based on statistical considerations for a large population. Assuming a confidence level of 95% and a margin of error of 5%, a sample size of approximately 385 students per college (totaling 154 students) is selected for the quantitative phase of the research.

Instrument for Data Gathering

A structured questionnaire was developed to gather quantitative data from the selected students. This questionnaire include items related to students' attitudes toward mathematics, their perceptions of the effectiveness of teaching approaches, and their self-reported academic performance. Focus group discussions was organized with students to delve deeper into their experiences and perceptions regarding the impact of teaching approaches on their mind-set and learning.

Validity and Reliability of the Instrument

To ensure the validity and reliability of the research instruments, the questionnaire was reviewed by a panel of experts in mathematics education and research methodology to assess content validity. The questionnaire was pre-tested on a small group of students from a sister college of education to identify any ambiguities or issues with the instrument's clarity and comprehensibility. The internal consistency and reliability of the questionnaire was assessed using Cronbach's alpha coefficient, aiming for a coefficient value of at least 0.70 for each scale. Data triangulation was used to enhance the validity of findings by comparing and contrasting results from different data sources.

Method of Data Analysis

Data collected through the questionnaire was analyzed using statistical software (e.g., SPSS). Simple percentages were used to do the analysis of data which was later interpret accordingly. To calculate mean scores and standard deviations for each item, we first assigned numerical values to the response options:

- i. Strongly Agree (SA) = 4
- ii. Agree (A) = 3
- iii. Disagree (D) = 2
- iv. Strongly Disagree (SD) = 1

Ethical Considerations

The research and her group ensure that ethical considerations are upheld throughout the research, including confidentiality and informed consent. Maintain open communication with participants and stakeholders to build trust and ensure a smooth research process. She maintains clear records of all data, consent forms, and research-related documents. Also, security and storage of both physical and digital research data are ensured. Ensure that data collection, analysis, and reporting timelines are realistic and flexible to accommodate unexpected delays or challenges. She in addition present research findings through academic conferences or seminars and submit the research for publication in relevant academic journals. Above all, findings and recommendations are share with FCT College of Education Zuba and feedback on potential implementation.

Data Analysis

Research question 1. What are attitudes and beliefs among students studying mathematics for economics in FCT College of Education Zuba?

1.	Please indicate your level of agreement with the following statements regarding your attitudes and beliefs towards studying mathematics for economics	RESPONSES		
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S/N	ITEMS	SA	A	SD	D	Mean	St. dev
1.1.	I find studying mathematics for economics interesting.	48	49	36	21	3.80	1.09
1.2.	I believe mathematics is essential for understanding economics concepts.	56	42	21	35	3.78	1.37
1.3.	I feel confident in my ability to succeed in mathematics for economics.	11	21	33	99	2.66	0.62
1.4.	I enjoy solving mathematical problems related to economics.	21	16	37	80	2.86	0.74

Source: Field Research, 2023

The responses indicate that students generally find studying mathematics for economics interesting (Mean = 3.80, St. dev = 1.09) and believe that mathematics is essential for understanding economics concepts (Mean = 3.78, St. dev = 1.37). However, there is a lack of confidence in their ability to succeed in mathematics for economics (Mean = 2.66, St. dev = 0.62), and they do not particularly enjoy solving mathematical problems related to economics (Mean = 2.86, St. dev = 0.74). These findings suggest that while students recognize the importance of mathematics in economics, there may be underlying issues affecting their confidence and enjoyment in the subject. Addressing these concerns is crucial for fostering a positive learning environment and promoting academic success.

Research question 2. What are those challenges and barriers faced by economics students while studying mathematics for economics with a focus on mindset-related issues in FCT College of Education Zuba.

2.	Please rate the extent to which you encounter challenges and barriers while studying mathematics for economics:	RESPONSES					
S/N	ITEMS	SA	A	SD	D	Mean	St. dev
2.1.	I often struggle to understand mathematical concepts in economics.	63	41	18	32	3.88	1.53
2.2.	I feel anxious when solving mathematical problems in economics.	62	34	22	36	3.79	1.46
2.3.	I believe my mindset affects my performance in mathematics for economics.	71	31	23	29	3.94	1.34
2.4.	I encounter difficulties in applying mathematical principles to economic scenarios.	46	46	29	33	3.68	1.28

Source: Field Research, 2023

Students encounter various challenges and barriers while studying mathematics for economics. The most significant challenges include struggling to understand mathematical concepts (Mean = 3.88, St. dev = 1.53) and feeling anxious when solving mathematical problems (Mean = 3.79, St. dev = 1.46). Additionally, many students believe that their mindset affects their performance in mathematics for economics (Mean = 3.94, St. dev = 1.34) and encounter difficulties in applying mathematical principles to economic scenarios (Mean = 3.68, St. dev = 1.28). These findings highlight the importance of addressing mindset-related issues and providing support to help students overcome academic challenges in mathematics for economics.

Research question 3. What are the various teaching strategies and interventions that have the potential to foster a growth mind-set in economics students?

3	Please indicate your agreement with the following statements regarding teaching strategies and interventions aimed at fostering a growth mindset in economics students:	RESPONSES

S/N	ITEMS	SA	A	SD	D	Mean	St. dev
3.1	. Encouraging perseverance and effort in solving mathematical problems is helpful.	44	63	26	21	3.84	1.26
3.2.	Providing constructive feedback helps improve my mathematical skills in economics.	56	41	36	21	3.86	1.05
3.3.	Using real-world examples enhances my understanding of mathematical concepts in economics.	56	43	13	42	3.73	1.47
3.4.	Engaging in collaborative learning activities boosts my confidence in mathematics for economics.	61	26	33		4.23	0.76

Source: Field Research, 2023

Various teaching strategies and interventions have the potential to foster a growth mindset in economics students. Encouraging perseverance and effort (Mean = 3.84, St. dev = 1.26), providing constructive feedback (Mean = 3.86, St. dev = 1.05), using real-world examples (Mean = 3.73, St. dev = 1.47), and engaging in collaborative learning activities (Mean = 4.23, St. dev = 0.76) are perceived as effective approaches. These findings underscore the importance of implementing diverse teaching strategies that promote active learning, critical thinking, and collaboration among students.

Research question 4. What are those teaching approaches that promote a growth mind-set and how they can be effectively introduced into the mathematics curriculum for economics students at

4		RESPONSES					
S/N	ITEMS	SA	A	SD	D	Mean	St. dev
4.1.	Incorporating interactive multimedia materials in mathematics lectures.	48	34	21	34	3.30	3.37
4.2.	Encouraging active participation through class discussions and problem-solving sessions.	45	45	27	37	3.22	2.89
4.3.	Implementing peer tutoring or mentoring programs in mathematics for economics.	62	52	28	12	3.80	1.99
4.4.	Providing opportunities for self-reflection and goal-setting in mathematics learning.	51	49	37	17	3.52	2.18

Source: Field Research, 2023

Incorporating interactive multimedia materials (Mean = 3.30, St. dev = 3.37), encouraging active participation through class discussions (Mean = 3.22, St. dev = 2.89), implementing peer tutoring or mentoring programs (Mean = 3.80, St. dev = 1.99), and providing opportunities for self-reflection and goal-setting (Mean = 3.52, St. dev = 2.18) are perceived as effective teaching approaches. These findings suggest that adopting innovative and student-centered teaching approaches can enhance students' engagement, motivation, and learning outcomes in mathematics for economics.

Focus Group Discussion

There was a focus group discussion among students championed by the researcher with assistance from the assistants based on their initial perceptions of mathematics for economics, experiences

with different teaching approaches, impact on mindset, challenges and opportunities, and suggestions for improvement. The following discussions were upheld:

1. On initial perceptions, the discussion maintained that the initial thoughts or feelings about teaching approaches aimed at encouraging a mindset in mathematics for economics varies. Some students feel excited about the prospect of innovative methods that make the subject more engaging, while others are skeptical or apprehensive. Also, Specific teaching methods or approaches encountered in mathematics for economics courses might include problem-based learning, flipped classrooms, interactive simulations, real-world applications, and collaborative group work.

On initial perceptions experiences with different teaching approaches, discussants maintained that effective teaching methods in mathematics for economics include interactive problem-solving sessions, real-world case studies, and hands-on activities that allow students to apply mathematical concepts to economic scenarios. Conversely, ineffective methods involve traditional lectures with little opportunity for active participation or application of knowledge.

More so, it was allured that different teaching approaches can significantly influence students' motivation and engagement with the subject matter. Engaging, interactive methods tend to increase motivation by demonstrating the relevance of mathematics in economics and promoting a deeper understanding of the material.

[[king from the impact on Mindset, discussant have it that teaaching approaches in mathematics for economics can influence students' mindsets by shaping their perceptions of the subject as either daunting or accessible. By incorporating real-world examples, emphasizing problem-solving skills, and providing opportunities for active learning, lecturers can help students develop a growth mindset towards mathematics and economics. Many students notice changes in their mindset towards mathematics and economics as a result of specific teaching methods, such as increased confidence in their ability to tackle complex problems or a greater appreciation for the practical applications of mathematical concepts in economics.

Based on challenges and opportunities, challenges in learning mathematics for economics include difficulty grasping abstract concepts, fear of making mistakes, and a lack of confidence in mathematical abilities. Teaching approaches could address these challenges by providing ample opportunities for practice, offering personalized support, and emphasizing the importance of resilience and perseverance. Opportunities for enhancing the teaching of mathematics for economics include integrating technology-based resources, incorporating interdisciplinary connections with other fields such as statistics or computer science, and fostering a supportive learning environment that encourages collaboration and peer learning.

The discussant thus made suggestions for improvements that lecturers and curriculum developers can improve teaching approaches in mathematics for economics by incorporating more real-world examples and applications, providing timely feedback on student progress, and offering alternative assessment methods that accommodate diverse learning styles. Also, specific resources or tools that could be helpful in fostering a positive mindset in mathematics for economics include interactive online tutorials, educational games and simulations, peer tutoring programs, and access to relevant data sets for hands-on analysis and experimentation. Additionally, professional development opportunities for lecturers to enhance their teaching skills and stay updated on innovative pedagogical approaches could also be beneficial.

4. DISCUSSION OF FINDINGS

The exploration and evaluation of teaching approaches to encourage students' mindset in mathematics for economics at FCT College of Education Zuba reveal several noteworthy findings and implications for both educators and policymakers.

The data indicate that while students generally find studying mathematics for economics interesting and acknowledge its importance for understanding economic concepts, there exists a significant lack of confidence in their ability to succeed in this subject. Moreover, students do not particularly enjoy solving mathematical problems related to economics. These findings underscore the importance of addressing students' confidence issues and enhancing their motivation towards learning mathematics for economics. Educators should strive to create an environment that fosters positive attitudes and beliefs towards the subject, emphasizing its relevance and applicability in real-world scenarios.

Students face various challenges and barriers while studying mathematics for economics, including difficulties in understanding mathematical concepts, feelings of anxiety during problem-solving, and struggles in applying mathematical principles to economic scenarios. Additionally, many students believe that their mindset influences their performance in mathematics for economics. These findings highlight the importance of addressing mindset-related issues and providing appropriate support mechanisms to help students overcome academic challenges. Educators should implement interventions aimed at promoting resilience, perseverance, and a growth mindset among students, thereby empowering them to navigate through difficulties and achieve academic success.

The study identifies several teaching strategies and interventions that have the potential to foster a growth mindset in economics students. Encouraging perseverance and effort, providing constructive feedback, using real-world examples, and engaging in collaborative learning activities are perceived as effective approaches. These findings emphasize the importance of adopting diverse teaching strategies that promote active learning, critical thinking, and collaboration among students. Educators should incorporate these strategies into their teaching practices to enhance student engagement, motivation, and learning outcomes in mathematics for economics.

The study also evaluates the effectiveness of specific teaching approaches in promoting a growth mindset in mathematics for economics. Incorporating interactive multimedia materials, encouraging active participation through class discussions, implementing peer tutoring or mentoring programs, and providing opportunities for self-reflection and goal-setting are perceived as effective approaches. These findings suggest that adopting innovative and student-centered teaching approaches can enhance students' engagement, motivation, and learning outcomes in mathematics for economics. Educators should leverage these approaches to create a dynamic and supportive learning environment that fosters students' intellectual growth and development.

The findings of this study provide valuable insights into students' attitudes, challenges, and the effectiveness of teaching strategies in mathematics for economics at FCT College of Education Zuba. Addressing mindset-related issues, providing support, and implementing diverse teaching approaches are crucial for promoting a growth mindset and fostering academic success in this subject. Educators, policymakers, and stakeholders should collaborate to develop comprehensive interventions that enhance students' interest, confidence, and proficiency in mathematics for economics, thereby ensuring their success in both academic and professional endeavours.

5. CONCLUSIONS

the key conclusions and recommendations drawn from the paper are that:

1. Students generally find studying mathematics for economics interesting and recognize its importance. However, there is a lack of confidence in their ability to succeed in the subject, and they do not particularly enjoy solving mathematical problems related to economics.
2. Students face difficulties in understanding mathematical concepts, experience anxiety during problem-solving, and struggle to apply mathematical principles to economic scenarios. Many students believe that their mindset influences their performance in mathematics for economics.
3. Encouraging perseverance and effort, providing constructive feedback, using real-world examples, and engaging in collaborative learning activities are perceived as effective approaches to foster a growth mindset among economics students.
4. Incorporating interactive multimedia materials, encouraging active participation through class discussions, implementing peer tutoring or mentoring programs, and providing opportunities for self-reflection and goal-setting are effective in promoting a growth mindset in mathematics for economics.

6. RECOMMENDATIONS

1. Educators should address students' confidence issues and mindset-related barriers by creating a positive learning environment that emphasizes the relevance and applicability of mathematics for economics.
2. Implement interventions aimed at promoting resilience, perseverance, and a growth mindset among students to help them overcome academic challenges in mathematics for economics.
3. Incorporate diverse teaching strategies such as active learning, critical thinking, and collaboration to enhance student engagement, motivation, and learning outcomes in mathematics for economics.
4. Adopt innovative and student-centered teaching approaches, including interactive multimedia materials, peer tutoring, and self-reflection activities, to create a dynamic and supportive learning environment for economics students.
5. Educators, policymakers, and stakeholders should collaborate to develop comprehensive interventions that enhance students' interest, confidence, and proficiency in mathematics for economics.

7. LIMITATIONS OF THE STUDY

Two limitations should be acknowledged to provide a comprehensive understanding of the research and to guide future studies. First, the study focused solely on students' mind-set in mathematics for economics. Two, the study relied primarily on quantitative data collected through questionnaires and focus group discussion. The quantitative analysis overlook qualitative aspects of the learning experience and fail to capture nuanced factors influencing student outcomes.

Suggestion for further Study

Further research is needed to:

- i. Explore additional factors influencing students' mindset.
- ii. Evaluate the long-term impact of interventions on their academic performance and career outcomes.

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