PARENTAL INVOLVEMENT IN CHILD'S EDUCATION AND ITS IMPACT ON STEM EDUCATION AND VOCATIONAL STUDIES IN NIGER DELTA, NIGERIA

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Abstract

This study examines the extent of parental engagement on students' performance and interest in STEM and Vocational subjects across secondary schools in the Niger Delta region of Nigeria. The findings indicate that active parental involvement—through academic monitoring, provision of learning materials, encouragement, and collaboration with educators—positively influences students' performance and motivation in STEM and vocational fields. However, the study also reveals challenges such as economic hardship, educational background of parents, and limited awareness of the importance of parental roles in education, which hinder effective engagement. The research underscores the importance of bridging the gap between home and school environments to foster academic success, especially in science and skill-based disciplines that are vital for national development. It concludes that enhanced parental participation can increase students' interest, confidence, and achievement in STEM and vocational education.

Keywords: Parents, Involvement, STEM, Vocational Education and Niger Delta - Nigeria.

Introduction

Education is a powerful tool for individual and societal development as universally acknowledged in this recent time. Accordingly Ateş (2021) and Utami (2022), numerous factors influence educational outcomes, among which parental involvement stands out as an essential component that shapes students' academic achievement. The role of parents in supporting their children's academic journey cannot be over emphasized as it has become increasingly important particularly in the fields of STEM (Science, Technology, Engineering, and Mathematics) and Vocational Studies(Dede & Omodu, 2024).

Parental involvement encompasses a wide range of activities and responsibilities, from assisting with homework, attending school meetings, and providing learning materials to fostering a home environment that values education (Utami, 2022). According to Utami (2022), research has consistently shown that students benefit significantly when parents are engaged in their learning process. This engagement is particularly vital in STEM and vocational education, which are both pivotal for national development and economic competitiveness. In today's rapidly evolving of technological landscape, Jafarov & Nadirso (2024), stated that STEM education provides the foundation for innovation, problem-solving, and critical thinking skills. Hence, Vocational studies on the other hand cannot be emphasized, as it offer practical and technical skills that are essential for the workforce that involves the implementation of STEM education (Mathews & Savarimuthu, 2019). Therefore, Mathews and Savarimuthu (2019), opined that fostering students' interest and competence in these areas is not only

beneficial for individual career prospects but also for the broader goals of national progress and self-reliance.

Niger Delta region of Nigeria presents a diverse educational landscape influenced by various cultural, economic, and political factors (Oluwadele, et al., 2023). The region comprises several states, each with its unique challenges and opportunities in the education sector. Despite governmental efforts to enhance educational access and quality, many students in Niger Delta region of Nigeria continue to face obstacles such as inadequate infrastructure, limited access to qualified teachers, and socioeconomic hardships (Attama et al 2022). Notwithstanding, in such contexts, parental involvement becomes a compensatory mechanism that can mitigate some of these challenges and further support students in navigating through the educational system more effectively.

The importance of STEM and Vocational education in Nigeria cannot be overstated. As the country seeks to diversify its economy beyond oil and gas, there is an increasing emphasis on science and technology as drivers of sustainable development. The National Policy on Education highlights the need to promote STEM education and Technical and Vocational Education Training (TVET) to produce a skilled and adaptable workforce ((Dandaya, 2022). However, Udoudo (2023), observed that despite policy initiatives, the uptake and performance of students in STEM and vocational subjects remain sub-optimal. Accordingly, Motshusi, et al (2024), observed several factors that has been discovered to contribute to this situation, which includes lack of motivation, poor teaching methods, gender stereotypes, and inadequate parental support. Among these, parental involvement emerges as a modifiable factor with significant potential to influence educational outcomes positively.

Nevertheless, various studies have demonstrated that when parents show interest in their children's academic work, students are more likely to develop positive attitudes towards learning, exhibit higher levels of motivation, and achieve better academic result as observed by (Utami,2022). This observation is particularly true for subjects that are often perceived as difficult or less appealing, such as mathematics, physics, and technical subjects. Also, Utami (2022), suggested that Parental encouragement, provision of resources, and active communication with teachers can help demystify these subjects and make them more accessible and engaging for students. As postulated by Angwaomaodoko (2023) and Ahmad Shimi, et al (2024), students whose parents actively support their education tend to show improved academic performance, better school attendance, and more positive attitudes toward learning. Similarly, Olatoye, & Agbatogun, (2009), and Naite, (2021) research conducted reviewed that various parental encouragement and participation were linked with higher test scores in core subjects, including Mathematics and Science. However, challenges such as socioeconomic status, parental education level, and cultural factors often influence the degree of involvement. In Nigeria, low-income families may struggle with school fees, educational resources, and time availability, all of which limit active participation in their children's schooling (Patience et al., 2021).

STEM education has gained prominence globally due to its role in fostering innovation and preparing students for modern careers. In Nigeria, the push for STEM literacy is evident in national policies, yet enrolment and performance in STEM subjects remain subpar, mostly in the Niger Delta region. Research conducted by Siregar & Rosli (2024), shows that one of the barriers to STEM engagement is the lack of home-based support and encouragement, particularly for female students. Parents who understand the value of STEM are more likely to

provide learning materials, enroll their children in STEM enrichment programs, and motivate them to pursue science-related careers. Also, Ntibi and Ibok (2021) in Olofu et al (2025), argue that students whose parents promote inquiry-based learning at home perform better in subjects like Physics, Chemistry, and Mathematics. However, misconceptions and stereotypes persist while many Nigerian parents still view STEM careers as too difficult or unsuitable, especially for the female children. This perception affects children's self-efficacy and career aspirations. Addressing these attitudes through awareness and education can significantly improve STEM outcomes.

Vocational and technical education (TVET) plays a vital role in equipping students with practical skills for employment and entrepreneurship. In Nigeria, vocational education is often undervalued due to cultural bias in favor of white-collar professions. As observed by Ayub (2017), many parents discourage their children from pursuing vocational paths, believing them to be less prestigious or financially rewarding. Parental attitudes have a direct impact on students' willingness to pursue vocational education. Those whose parents value skill acquisition and hands-on training are more likely to enroll and excel in technical subjects. In contrast, negative perceptions of parents and parental indifference often lead to poor motivation and under-performance among students. Consequently, Schmid & Garrels (2021), also reveal that parents with vocational or trade backgrounds are more likely to encourage such paths for their children. Thus, parental occupation and experience shape their involvement and support for vocational studies.

Gender norms significantly influence parental involvement, particularly in STEM and vocational education. In many Nigerian households, male children are often encouraged to pursue technical and science-related careers, while girls are directed toward arts or caregiving roles. These biases are reinforced by parental expectations, media portrayal, and societal norms (Seluman et al., 2024). Nevertheless, various programs have been introduced to engage parents in challenging gender stereotypes have shown promise in increasing girls' participation in STEM and vocational training. For example, parent-focused workshops and community outreach initiatives by various Governmental and Non-governmental organization have led to increased awareness and support for girls in science in states like Lagos and Enugu (Cynthia & Scholar, 2020) and (Korgbe, 2025).

Furthermore, effective parental involvement is dependent on how schools engage with families. Research by Eden et al. (2024), emphasizes that when schools actively communicate, involve, and empower parents, students benefit academically and socially. However, in many Nigerian schools are lacking parent engagement strategies structured. Parent Teachers Association (PTA) meetings, when held, are often focused more on financial contributions rather than academic collaboration. Notwithstanding, many digital tools such as SMS alerts, parent portals, and WhatsApp groups have been found to improve communication between schools and homes, enhancing parental monitoring and support (Pontz, 2024) and (Tran, 2024). Teachers also play a critical role in encouraging parental involvement through regular feedback and inclusive classroom practices. In the light of these therefore, more research is needed to showcase further Parental involvement in Child's Education and its Impact on Stem Education and Vocational Studies in Niger Delta, Nigeria.
It on this background, that the researchers investigated Parental Involvement in Child's Education and its Impact on STEM Education and Vocational Studies In Niger Delta, Nigeria.

Problem Statement

In the rapidly evolving global economy, Science, Technology, Engineering, and Mathematics (STEM) education, alongside vocational studies, are increasingly recognized as critical pathways to national development and youth empowerment. However, in the Niger Delta region of Nigeria, student participation and performance in STEM subjects and vocational subjects remain below expectations. Several factors have been attributed to this trend, with parental involvement emerging as a key influence on students' academic choices and outcomes. Research has consistently shown that parental support, engagement, and attitudes significantly affect students' interest, motivation, and success in education. Yet, in the context, Niger Delta is characterized by socioeconomic challenges, environmental issues, and educational disparities, parental involvement in children's education often varies widely in form and intensity.

Despite the acknowledged importance of parental roles in shaping students' academic trajectories, there is a lack of focused research examining how these dynamics specifically affect engagement and performance in STEM and vocational education in the region. Therefore, this study aims to investigate the extent of parental involvement in their children's education and its impact on students' interest and performance in STEM and vocational studies in the Niger Delta, Nigeria. The findings are expected to provide insights that can guide educational policy, community engagement, and school-parent partnerships to strengthen science and technical education in the region.

Purpose of the Study

The study investigated parental involvement in education and its impact on stem education and vocational studies in Niger Delta, Nigeria. Specifically, the study seeks to:

1. Examine the impacts of parental involvement in their children's STEM subjects and vocational studies in Niger Delta Nigeria.
2. Find out the perceived barriers to parental involvement in their children's STEM education and vocational training in the context of Niger Delta, Nigeria.

Research Questions

1. What are the impacts of parental involvement in children's STEM subjects and vocational studies in Niger Delta Nigeria?
2. What are the perceived barriers to parental involvement in children's STEM education and vocational training in the context of Niger Delta Nigeria?

Methodology

This study employed a descriptive survey method. The population is 5000, consist parents in Niger Delta, Nigeria. A structured instrument tagged: Parental Involvement in Education Questionnaire (PIEQ) was used for data collection. likert type response format of strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD) was adopted. Using sample size calculator, 200 parents were sampled for the study. To ascertain the reliability of the instrument after modification, the instrument was administered on 50 respondents which were not part of the sample population using test- retest method. The overall reliability co-efficient using Cronbach alpha statistic yielded $r = 0.82$. Data collected for the study were analyzed using mean (x) and standard deviation SD).

Results

The results of the analysis are presented in the tables below:
Research Question 1: What are the various level of parental involvement in their children's STEM subjects and vocational studies in Niger Delta Nigeria?

Table 1: Academic Mentoring of Parental Involvement.

S/N	Statement	Mean	SD
1	I regularly monitor my child's academic progress in STEM and vocational subjects	2.70	1.09
2	I guide my child on how to manage time effectively for STEM and vocational studies	3.12	.64
3	I assist my child in setting academic goals in STEM or vocational areas	3.20	.79
4	I help my child understand difficult STEM or vocational concepts when needed	3.15	1.05
5	I engage my child in academic discussions related to their STEM or vocational interests	3.00	.98
	Grand Mean	**3.02**	**0.92**

Table 1 presents data on parental involvement in academic mentoring of their children, specifically in STEM (Science, Technology, Engineering, and Mathematics) and vocational subjects. The table reveals that parental involvement in academic mentoring for STEM and vocational studies is moderate with the ground mean of 3.02 and standard deviation of 0.92. It reflects how frequently or effectively parents support their children academically in STEM and vocational studies in Niger Delta, Nigeria.

Table 2: Provision of Learning Materials Involvement.

S/N	Statement	Mean	SD
10	I provide textbooks and reference materials for my child's STEM/vocational subjects.	2.0	.83
11	I ensure my child has access to digital learning tools (e.g., computer, internet) for STEM learning.	1.0	1.12
12	I purchase necessary tools or equipment for my child's vocational practice	2.10	.95
13	I invest in science kits or hands-on learning materials for STEM activities at home.	2.07	.76
14	I subscribe to educational platforms or resources to support my child's learning	0.80	.93
	Grand Mean	**1.99**	**0.62**

This table 2 presents data on parental involvement in their children's STEM and vocational studies specifically through the provision of learning materials**.** It reflects how much parents are supporting their children by supplying the necessary academic resources. The grand mean is 1.99**,** which is below the benchmark of 2.5 on a typical 5-point scale**.** This suggests that parental involvement through provision of learning materials is generally low**.** Meaning that many parents are not actively supplying essential resources for effective STEM and vocational learning of their wards. The lack of digital resources and educational subscriptions is especially concerning**,** given the increasing importance of technology in education in Niger Delta Nigeria

Table 3: Encouragement Involvement of Parents

S/N	Statement	Mean	SD
1	I encourage my child to develop an interest in STEM and vocational subjects.	2.82	1.10
2	I celebrate my child's academic achievements in STEM/vocational fields	2.72	1.03
3	I motivate my child to participate in STEM or vocational-related competitions or programs.	3.10	.87
4	I reinforce the value of STEM and vocational education in my child's future success	3.15	.89
5	I consistently show a positive attitude toward my child's efforts in STEM/vocational subjects	2.27	0.80
	Grand Mean	**2.83**	**1.93**

This table 3 summarizes parental involvement in encouraging their children (wards) in STEM and vocational studies. It focuses on how parents support their children emotionally and motivationally. The grand mean is 2.83 in the table which is above the benchmark of 2.5 on a typical 5-point scale**,** indicating a moderate level of parental encouragement in their children's STEM and vocational learning in Niger Delta, Nigeria.

Table 4: Parental Involvement through Collaboration

S/N	Statement	Mean	SD
6	I maintain regular communication with my child's STEM or vocational subject teachers.	3.25	.80
7	I participate in school-organized STEM or vocational events (e.g., exhibitions, open days).	3.35	.66
8	I collaborate with teachers to find solutions when my child struggles in STEM or vocational subjects	2.77	1.18
9	I engage with other parents or community groups to support STEM/vocational education initiatives.	3.00	.87
10	I take part in decision-making processes concerning my child's STEM or vocational learning path	3.47	.67
	Grand Mean	**3.17**	**0.84**

This table 4 provides insights into how parents collaborate with teachers, schools, other parents, and the broader community to support their children's learning in STEM (Science, Technology, Engineering, Mathematics**)** and vocational subjects**.** The grand mean is approximately 3.17, indicating a moderate active level of collaboration between parents and other stakeholders (teachers, schools, community) in their children's STEM and vocational education.

Research Question 2: What are the perceived barriers to parental involvement in their children's STEM education and vocational training in the context of Niger Delta Nigeria?

Table 5: challenges to parental involvement

S/N	Statement	Mean	SD
11	Poverty and Economic Hardship	3.97	.91
12	Low Educational Background of Parents	3.10	.87
13	Lack of Awareness of STEM/Vocational Opportunities	3.70	6.17
14	Limited Access to Educational Resources	3.17	.95

15	Insecurity and Militancy	2.67	.97
16	Poor School-Parent Communication	1.97	.99
17	Lack of Government or NGO Support Programs	3.00	.87
	Grand mean	**3.23**	**6.17**

This table 4 presents data on the challenges that limit parental involvement in their children's STEM (Science, Technology, Engineering, Mathematics) and vocational education**.** Each item identifies a potential obstacle, and the mean scores reflect how strongly parents agree that each factor is a significant challenge. Poverty and Economic Hardship **(**Mean = 3.97), Low Educational Background of Parents **(**Mean = 3.10), Lack of Awareness of STEM/Vocational Opportunities **(**Mean = 3.70), Limited Access to Educational Resources **(**Mean = 3.17**),** Insecurity and Militancy **(**Mean = 3.70), Poor School-Parent Communication (Mean = 1.97) and Lack of Government or NGO Support Programs **(**Mean = 3.00) respectively. The grand mean is 3.23 and standard deviation of 6.17 indicating that all the factors mentioned are potential barriers to parental involvement in their wards' STEM/Vocational education in Niger Delta, Nigeria.

Conclusion

This study has examined the relationship between parental involvement in a child's education and its impact on students' interest and performance in STEM (Science, Technology, Engineering, and Mathematics) education and vocational studies within the Niger Delta region of Nigeria. The findings underscore that active and consistent parental engagement through monitoring academic progress, provision of learning materials, moral support and parent-teacher collaboration, creating a conducive learning environment that significantly enhances students' academic achievement in STEM and vocational fields.

Furthermore, the study reveals that poverty challenges, limited awareness, low educational background of parents, insecurity among others among often hinder effective parental involvement in their children's education, particularly in rural and economically disadvantaged areas of the Niger Delta. These constraints contribute to the persistent low achievement of students in STEM and vocational programs in Niger Delta. Addressing these issues requires not only strengthening parental education and sensitization programs but also implementing school-parent collaboration and government policies that promote parental participation and support for STEM and vocational learning.

Conclusively, improving parental involvement is a vital strategy for building a generation of skilled, innovative, and employable youths in the Niger Delta. Encouraging collaboration among parents, schools, and government agencies will help bridge educational disparities, foster students' interest in science and technology, and contribute to sustainable development in the region. The future of STEM and vocational education in the Niger Delta largely depends on how effectively parents are empowered and engaged as partners in the educational process.

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