Investigating the Causes of Poor Performance in Mathematics in Senior School Certificate Examination in Owan East Local Government Area of Edo State

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Abstract

The performance of student in Senior Secondary Certificate Examination has remained an issue of concern to all stakeholders. The supposition that nations with more educated individuals should prosper hinges on the nations that better educated individuals are socialized in ways that increase their productivity and their economics standing. In the pursuance of sustainable development through education, learners and other stakeholders from the community need to reflect critically on their community and identify the causes of poor performance in mathematics. It is on this background that this study aims at examining the causes of poor performance in mathematics in Owan Local Government Areas. The population of the study consists of all the SS2 students in the public senior secondary schools in Owan Local Government Areas of Edo State, a total of 2,300 students. The simple random technique was used to obtain one hundred and fifty (120) senior secondary school students used in the study. The study employed the descriptive research design. The study was guided by five questionnaires and four hypotheses. The instrument used for the analysis was simple percentage and Chi-square statistic. The result indicated that students' negative attitude, mathematics phobia, students home environment, teachers' methods and so on were discovered as the causes of poor performance. At the end, recommendations were made.

Keywords: Poor performance, Teachers' teaching Methods, students home environment and students' beliefs

Introduction

Education occupies a central portion in our personal and national development. Education is the process by which the individuals helped to develop physically, mentally, morally, spiritually and emotionally through the provision of suitable environment and teaching him new knowledge, attitude and skills so that he may be useful to himself and the society in which he lives. Itedjere as cited in Umoh (2006) stated that education is the greatest device man has created for his own continued improvement. It trains his head hand and heart and has placed him in the position of leadership on earth. Education gives man understanding and skills as well as his attitude to environment. When the issue of poor performance in mathematics or other subjects in senior certificate examination today is raised, the first sets of reasons for poor performance that comes to mind are declined in standard of education, deterioration of facilities, examination malpractices, mass promotion syndrome lack of qualified teachers and the like before any other thing else. This call for an in-depth study and analysis aimed at tutoring each and every stakeholder in the education system and how their

action and inaction have individually and collectively contributed to the poor performance of students in the Senior School Certificate Examination. According to Asikhai (2010), education at secondary school level is supposed to be the bedrock and the foundation towards higher knowledge in tertiary institutions. It is an investment and an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in a country. It is rather unfortunately that the secondary schools are not measuring up to the standards expected of them. There have been public out cried over the persistently poor performance of secondary school students in public examination.

According to Nwokocha and Amadike (2005), academic performance of students is the yardstick for testing the educational quality of a nation. Hence it is expedient to maintain a high performance in internal and mostly external examinations. For some years now report on the pages of newspaper and research finding have shown the abysmal performance of students of secondary schools in senior school certificate examination. Ajayi 2002, Nwokocha and Amadika (2005). The punch newspaper (September 27, 2008, Adeyemi (2008) and Asikhia (2010), have all shown the extent of poor performance of students in the public examination. According to National Bureau of Statistics (2024) , there have been an improvement in students' performance since 2021 till date as analyzed in the table below.

Table 1: Performance of students in Mathematics and English language from 2020 -2024

Years	Enrolment	% of those that passed mathematics and English
2020	1.53 million	39.82%
2021	1.58 million	81.7%
2022	1.6million	76.36%
2023	1.3 million	79.81%
2024	1.8 million	72.12%

Source: National Breweries Statistics, 2024

Though the table shows a fluctuating performance since the last few years. The improvement may have been as a result of various research recommendations. So, to maintain steady performance in Mathematics and English language in our exit EXAMINATION research recommendations to implement. From the table above only the students that passed only the students that had five credits with English language and Mathematics are eligible to proceed to higher institutions. This is not only frustrating to the students and the parents. Its effects are equally grievous on the society and technology. It is because without secondary school products, it is obvious that the basis for any future academics, study cannot be laid.

Odili (2001) defines mathematics as a body of knowledge a collection of techniques and methods, the product of human activities for solving problem mathematics as seen by Ambali (2011) in his address entitled "Mathematics Education for Sustainable Development" , state that " mathematics is important in shaping our everyday life and development " stressing that the subject is critical to the survival of the world today world today and the future generations. He also noted that " mathematics skills are no doubt relevant to a wide range of analytical technological, scientific, security, political and economic applications and there is no doubt that a solid foundation in mathematics prepares one for other educational and professional challenges.

Omo-Ojugbo (2007) states that education is fundamental in development. He further stated that no country can achieve sustainable development without substantial investment in human capital. Education enriches people's understanding of themselves and the world. Yusuf

(2000) also states that within societies the expansion of educational opportunities enables individuals to improve their economic circumstance. The supposition that nations with more educated individuals should prosper, hinges on the notion that better educated individuals are socialized in ways that increases their productivity and the economic standing.

Objectives of the Study

The general purpose of the study is to investigate the causes of poor performance in mathematics in Senior secondary schools in Owan East Local Government Area.
The specific objectives of the study were to determine;

1. If the teachers teaching methods /strategies have effect on the students' performance in mathematics
2. The method/strategies to be adopted to improve students' performance in mathematics
3. If Students home environment influence his/her performance in Mathematics
4. If students/parents' beliefs about Mathematics influence students' performance in Mathematics
5. If educational background of parent Influence student performance in mathematics

Hypotheses

The following hypotheses were formulated for test at 0.05 level of significant.

1. There is no significant difference between teachers' method of teaching and student performance
2. There is no significant difference between parents/Students' beliefs and poor performance
3. There is no significant relationship between students' home environment and students' poor performance
4. There is no significant difference between parents' educational background and student poor performance

Review of Related Literature

The literature review was carried out under the following headings:

1. Concept of poor performance
2. Causes of poor performance

i. Teachers' methodology: -
ii. Learner environment
iii. Educational background of parents
iv. Students' home environment

Concept of Poor Performance

Poor performance is most simply defined as a consistent failure to meet specified standards and levels of performance following a period sustained support, development and investigation. The term poor academic performance has no one accepted definitions based on the broad venture of it. According to Okoye (2005), poor academic performance in individuals or candidates in learning situations refers to one who fails to attain a set standard performance in a given evaluation exercise such as test, examination or series of continuous assessment. This means that standard could be based on a number of stipulated subjects and other school activities. A candidate who scores less or below a given standard is regarded as performing poor academically.

In general, the term poor academic performance is a familiar phenomenon and a social problem which is common among students whose parents are not well balanced to provide the materials needed to achieve good education.

Teachers Methodology

Teaching Method is a set of principles and methods used by teachers to enable students learning Persaud (2019). A teaching Method effective for one teacher may not necessarily be useful for another because every method uses different tools and techniques for achieving common educational goals. That's why many teachers try to extract some ideas from different approaches, mixing and incorporating them into one unique teaching approach depending on the students' and school's needs and other circumstances. According to Persuad (2019) pedagogy is all encompassing. According to Persuard (2019), the instructors regard pedagogy as an essential part of the teaching-learning methods and instructional strategies. Having a well-thought out pedagogy can bring about improvements in the quality of life of teaching and the way the students can learn. When the students get enrolled in educational institutions and pursue academic programs, it is apparent that certain concepts will be new to them and they will be needing help in understanding them. Being aware in terms of the methods one can teach and facilitate student learning can contribute effectively in acquiring an understanding in terms of importance of pedagogy. Pedagogy is regarded as an academic discipline. It is the study of how knowledge and competencies are imparted in the educational framework. Leaning cannot take place in seclusion, it is indispensable for the individuals to interact with each other and form cordial terms and relationships. The educators need to be understanding in terms of needs and requirements of the students, whereas, the students too need to obey their instructors and follow the rules and instructions. Therefore, when these factors are put into practice in an effectual manner, the importance of pedagogy is recognized.

Pedagogy is the act of teaching. In the past, the instructors made use of traditional methods in imparting knowledge and understanding to the students in terms of lesson plans and academic concepts. But with the advent of technologies, they are making use of technologies and other modern and innovative methods in facilitating learning. Apart from utilization of technologies, the instructors are making use of modern, scientific and innovative methods in facilitating learning. The examples of these methods are charts, graphs, images, pictures, diagrams, articles, models, and so forth. There are various factors that are needed to be taken into consideration in the implementation of these methods in an efficacious manner. These are, needs and requirements of the students, their age groups and grade levels, academic subjects and lesson plans and overall system of education. The students should take pleasure and develop motivation among themselves in facilitating learning. Therefore, it is well-understood, when the utilization of these methods proves to be advantageous and meaningful to the students and facilitate the achievement of academic goals, the individuals are able to understand the importance of pedagogy.

Conclusively, when the pedagogical methods are put into operation in teaching and learning processes, they are not merely referred to imparting knowledge and understanding to the students in terms of lesson plans and academic concepts, but they take into account other factors as well.

Students Home Environment and Mathematics Education

The home environment consists of various motivational variables, but the most relevant one is the parental involvement in their children learning. The home is the first place of learning for the child. The quality of home environment goes a long way in determining the eventual personality and achievement of the child. Psychology had classified the factors that affect learning into broad categories namely, nature and nurture. It has been discovered that the two categories play complementary roles. As nature determines the level of intelligence and inherited abilities of the child, nurture helps to maximize these innate abilities. According to Elkinne (2000), nurture involves the home, the school, the environment and peer groups to which the learner belongs. The home has far reaching influence on the child.

Students Beliefs and their Mathematics Education

Beliefs such as mathematics is a static body of knowledge, people either have mathematics ability or not and people who are good at mathematics are really smart interfere with the process of attaining equity in mathematics education, according to Allexsaht-Suider and Hart (2001). A belief that mathematics ability is an inherited "talent" with which you are born is popular among the students' population and it is generally deemed more acceptable to fail in these areas than in other curriculum areas. In the same vein, Akanksha (2015) concluded after an in-depth study on the students' attitude toward the teaching and learning of mathematics in secondary schools, that students' beliefs influence the teaching and learning of mathematics significantly.

Educational Background of Parents and Mathematics Education

The level of educational attainment of parents could influence the academic achievement of their children. According to European Union Monitoring Report (2013) in Schools those students whose parents have a tertiary level of education perform on average, significantly better in tests of science, reading and mathematical ability than those whose parents have only basic schooling. In a family where both the father and mother are educated, their children are always taken good care in their academic activities. Such parents know the importance of getting educational materials for their children, checking their exercise books after school, or even employing a private teacher to teach them after school. By doing, their academic performance will be improved; whereas in the case of illiterate family, the need to supervise the children's exercise books is not there, hence their children's low academic performance in school. Educated parents may also have library at home, stocked with mathematics books, novels, encyclopedia and other educational books and educational audio-visual tapes. When children make use of these materials it will enhance their intellect. Educated parents give early independence training and achievement. Atkinson (2004) argued that successful parents tend to provide early independence training which is necessary in the development of achievement motivation. In independence training, parents insist on the child's self-reliance and autonomy in decision making situations. While in achievement the training, they insist on high achievement through imposing high standard of excellence in tasks, setting high goals for the child and expecting the child to show competence in doing tasks well.

The Population of the study

The population of the study consists of all the senior secondary 2 students of the forty-five (42) public senior secondary schools in Owan East Local Government Area of Edo State during the 2023/24 academic session. According to the Department of Planning, Research and Statistics, Post Primary Board, Benin, the population of students stood at 2000.Sample and Sample Techniques. One hundred and twenty (120) students were randomly selected from the two thousand (2000) senior secondary students which was used for the study. Research Instrument The instrument used was the questionnaire. The instrument was used to collect data for this study. The questionnaire was administered on the one hundred and twenty students and twenty teachers that was sampled for the study. The data collected were analyzed using percentage and chi-square statistic

Data Presentation

Table 1: Analysis of teacher's methodology of teaching

Items	**Response**		**Percentage**	
	Yes	**No**	**Yes**	**No**
1	15	5	75	25

The table 1 above shows that 20 Mathematics teachers participated in the study. Of this number 15 (75%) agreed that they pedagogy principles form the bases of their teaching Method while 5(25%) could not ascertain the method they are using.

Table 2: Influence of students' belief About Mathematics on their performance

Items	Response		Percentage	
	Yes	No	Yes	No
1	72	48	60	40
2	64	56	53	47

In table 2 above, 2 items were used and 120 students participated in the study. In item 1, seventy-two (72) students responded that Mathematics inherited while thirty-eight (38) disbelief that. in item 2, 64(58%) of this opine that they got ideas from their parents while 46(42.8%) of the number do not.

Table 3: Analysis of students' home environment

Items	Response		Percentage	
	Yes	No	Yes	No
1	70	50	58	42
2	75	45	63	37

In table 3, 2 items were used and one hundred and twenty students responded to the questionnaire. In item one, seventy (70) responded that their home was suitable for learning mathematics is while fifty (50) oppose that. In item two (2) seventy-five (75) agreed that, their parents normally assist them in their study while forty-five (45) state clearly that they don't any assistance.

Table 4: Analysis of parents' educational background

Items	Response		Percentage	
	Yes	No	Yes	No
1	50	70	42	58
2	80	40	67	33
3	58	62	48	52

In table 4, three items were used and one hundred and twenty students responded to the items. In item one, 50(42%) responded that they assist their children while 70(58%) are not. In item 2 80(67%) stated that they are educated whiled 40(33%) said that they are not. In item 3,, fifty eight students (58) responded that relevant Mathematics books were purchased for them by their parents . While sixty-two (62) oblique to that.

Testing of Research Hypothesis

Table 5: Summary table of chi-square analysis showing influence of teachers' methodology on the performance of students

S/no	Research Hypothesis		X^2cal	X^2crit	Remark
1.0	There is no significant difference between teachers teaching method and student performance	1	20	3.84of	Significant

From the table above, the χ^2-cal of 20 is greater than χ^2 -critical of 3.84. Therefore, null hypothesis was rejected. This implies that, there is a significant influence of teacher's teaching Method on students' performance.

Table 6: Summary table of chi-square analysis showing students environment on student's performance

S/no	Research Hypothesis	Df	X^2cal	X^2crit	Remark
2.o	There is no significant difference between student's belief and poor performance	3	15.0	7.82	Significant

From the table above, the χ^2 -Cal of 15.0 is greater than χ^2 -critical of 7.82. We therefore reject the null hypothesis, implying that, student's belief About Mathematics influence their performance.

Table 7: Summary Table of Chi-square Showing Influence of student's home environment on their performance.

S/no	Research Hypothesis	Df	X^2cal	X^2crit	Remark
3.0	There is no significant difference between students' home environment on their performance	3	10.9	7.82	Significant

From the table above, the χ2 -cal of 10.7 is greater than χ2 -critical of 7.82 We therefore reject the null hypothesis, implying that students home environment influences their performance.

Table 8: Summary Table of Chi-square Showing Influence of parents' Educational background on their performance

S/no	Research Hypothesis	Df	X^2cal	X^2crit	Remark
4.0	There is no significant difference between parents' Educational background on their performance	5	16.94	11.07	Significant

From the table above, the χ2 -Cal of 16.94 is greater than χ2 -critical of 11.07. We therefore reject the null hypothesis, implying that, parents Educational background influence students' performance.

Discussion of Findings

Teachers methods and student's performance

The analysis of data on the influence of teachers teaching Methods on students' performance in Mathematics, revealed that, there is significant relationship between teachers teaching Methods and students performance. The X^2 calculated was 20 and was greater than χ2 -critical of 3.82. This indicates that teachers teaching Methods have a significant impact on students' performance. This is in line with Persaud (2019) study on effects of teaching Method on students' performance and the study reveals that teaching Method have significant impact.

Home Environment and Children Mathematics Education

The analysis of the data on the influence of home environment on the role of parents in the teaching and learning of mathematics of their children, revealed that there is a significant influence of home environment on parents' role in their children mathematics education. The

χ^2 -calculated was 10.7and was higher than the critical value of 7.82. Thus, indicating that home environment had significant impact on parents' role in their children mathematics education. This is in line with the finding of Ndirangu (2007), which stated that home environment was found to be an important factor in determining academic performance of students.

Influence of Students Beliefs on their performance in Mathematics.

In this study, the computed χ^2 -value of 15.0 on the influence of Students on their performance in Mathematics was greater than the χ^2 -critical of 7.82. This signifies that students beliefs had a significant influence on their performance mathematics. This result is in line with Akansha (2015), who concluded after an in-depth study on the impact of students' beliefs about mathematics, that it has influence significantly.

Educational Background of Parents and Mathematics Education

From the analysis of the data, there was a significant influence of educational background of parents on their children performance in mathematics. This is because the calculated χ^2 value of 16.94 was greater than the χ^2 -critical value of 11.07. The null hypothesis was consequently rejected. This means that, parents educational background had significant influence on students' performance in mathematics. This is in line with the European union monitoring report (2013), that those students whose parents have tertiary level of education performed an average, significantly better in tests of science, reading and mathematics activities than those whose parents have only basis schooling. To further enhance its usefulness of good education, Muola (2010), after examining the role of parents' educational background on the education of their children, stated that "Education background of parents is a determinant of their educational role on their children. He also revealed that it helps the parents to adopt constructively to the various educational or mathematics activities.

Major Findings

The result presented in table 1 - 8 reveal the following

i. There was significant influence of teachers teaching methods on students' performance
ii. There was significant influence of home environment on the role of parents towards the teaching and learning of mathematics
iii. There was significant influence of Students Beliefs on their performance in mathematics
iv. There was significant influence of the educational background of parents on the students' performance in mathematics.

Conclusion

Based on the findings of this study, the researcher drew the following conclusions;

i. That only 40 (36%) of 110 parents used for the study were actually assisting their children in mathematics activities
ii. That home environment significantly influences parent's role towards the teaching and learning of mathematics
iii. That parent's belief significantly influences parent's role towards the teaching and learning of mathematics
iv. That parent's educational background influences their role towards the teaching and learning of mathematics.

Implication of the Study

The findings of this study have implications for the Edo state government, school administrations, educational planners and inspectors of education.

With the aid of information got in this study, the Edo state government should carry out an awareness programme to inform parents on their important contribution to the teaching and learning of mathematics in secondary schools. It will help them to wake up and carry out their important role. With the aid of information got from this study, it is evident that educational background of parents influences their role. So, parents should enroll for higher programmes like NCE in NTI to upgrade themselves. Also, from the findings, it is evident that necessary education materials are not available in most homes, so parents should endeavor to provide them to enhance the teaching and learning of mathematics. Again, from these findings, head teachers through proper awareness should encourage the students to disregard the beliefs that Mathematics is inherent.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. Teachers, educationist and leaders should try to create awareness in parents on the importance of the home environment on the children's academic performance. Parents need to be informed that that they should create enabling environment for their children education
2 Head teachers of schools should discuss the importance of materials in learning with parents at Parents Teachers Association (PTA) meetings.
4. The government should organize in service training for teachers to review their teaching Methods
5. Teachers and parents are to discourage the wrong beliefs in students that Mathematics is inherent
6. Parents should endeavor to encourage their children to read and do their homework at home rather than spending their time on things that will not benefit them academically.

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