DETERMINANT OF PERFORMANCE AND FAILURE RATE AMONG MATHEMATICS STUDENTS IN JUNIOR SECONDARY SCHOOLS CERTIFICATE EXAMINATION IN KWARA STATE

BY

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Abstract
The deplorable in the rate of performance among the junior school students in Mathematics has raised concern among the stakeholders in Nigeria. This study thereby aimed to investigate the determinant of performance and failure rate among mathematics students in Junior Secondary Schools Certificate Examination in Kwara State. The specific objectives sought to find out: the attitude of students towards mathematics in junior secondary school certificate examination; performance of students in mathematics in junior secondary school certificate examination; the rate of failure in mathematics in junior secondary school certificate examination; and the determinants of students' performance in mathematics in junior secondary school certificate examination. The method adopted to accomplish the objectives involved the use of a structured questionnaire and a proforma containing the Basic Education Certificate Result from 2015-2019. The population consist of junior secondary school students from three (3) private and public secondary school in Ilorin West LGA of Kwara State. A two-stage sampling was used to select a sample of 25 students across six(6) schools. The findings revealed that there is an upward trend in performance of students in mathematics based on pass rate from 2015 to 2019. Highest rate of failure in mathematics was recorded in 2015 while the lowest rate was recorded in year 2017. Findings also indicated that the greatest determinant of students' performance in mathematics in Junior Secondary School were student factor with mean score of 16.37 while there was a significant difference in the attitude of students towards mathematics in junior secondary school based on gender (t=9.19; $\rho<$ 0.05). Based on the findings, it was recommended that government at all levels (Federal, State and Local) should ensure that basic educational facilities such as learning materials, libraries, standard classroom blocks and laboratories are provided for schools so as to enhance teaching and learning. Also, Mathematics teachers should encourage students on how to learn mathematics by reinforcing them when necessary.
Keywords: Determinant, Performance, Failure, Attitude, Trend, JSSCE

Introduction

Mathematics is the language without which science, commerce, industry, the internet, and the entire global economic infrastructure are struck dumb. In order to function in a mathematically literate way in the future, students must have a strong foundation in Mathematics. A strong foundation involves much more than the rote application of procedural knowledge. Thus, Mathematics plays a crucial role in human life. Mathematics prepares one for the future world. Makondo and Davison (2020) posit that Mathematics provides an effective way of building mental discipline and encourages logical reasoning. Consequently, many nations take Mathematics as a compulsory subject at O'level since it is a fundamental subject for human life. A child must obtain a minimum of five credits at two sittings including English Language and Mathematics to be able to proceed to the tertiary level of the educational system. Mathematics is made compulsory for all students to offer and pass at the senior secondary certificate examination and also a basic requirement for admission into any higher institution of learning in Nigeria (FRN, 2013). Therefore, the Performance in Mathematics in this National Examinations determines who would transit from one cycle to the next cycle of education.

Hassan and Bello (2022) while studying students' achievement in Mathematics as a prediction of their scores in Physics and English language proficiency stated that Mathematics is virtually the soul of all fields of studies either Mathematical or Non-Mathematical. The researchers concluded that there is significant influence of the individual independent variables to physics achievement that is Mathematical ability and English proficiency. This shows that Mathematics is the language of Science and Technology, because it is the tool for solving problems in science subjects

like Physics and Chemistry. It is common belief of educationists that no one can make progress in any field until he/she has the basic knowledge of Mathematics. Mathematics plays its vital role in all the multi disciplines of societal development and can be seen as 'the queen of science' the main driving force behind all scientific discoveries (Ameen & Salman, 2016).

However, it is disappointing to note that the students' performance in Mathematics at internal and external examination has remained considerably poor despite the relative importance of Mathematics in the modern world today. It was noted that some factors led to this were lack of quality education, qualified teachers and poor learning environment. Abdullahi et al. (2022) argued that students' performance at the junior school certificate examination (JSCE) conducted by West African Examination Council have consistently remain poor over the years. Measuring of academic performance of students is challenging since student performance is an outcome of socio-economic, psychological and environmental factors. Mathematics is not only important for acquiring academic qualifications, but also prepares students for the future. Thus, a group of students who fail in Mathematics face learning difficulties in Mathematics and related courses in higher levels particularly science, engineering and other business-related courses. Hence, the nation will lack skilled people in the areas of technology, health, engineering, agriculture and related fields (Daniel & Mugiraneza, 2023). Consequently, the country will lag behind in the technological endeavors due to lack of skilled individuals.

Tanko et.al (2022) highlighted that without Mathematics, there is no science, without science, there is no modern technology and without modern technology, there is no modern society. Thus, all the stakeholders in education must emphasize on building capacity in Mathematics skills to foster development in science and technology for competitiveness and agricultural development of the country. Researchers, government and non-governmental organizations have tried to identify factors behind students' performance in Mathematics at all levels of education in Nigeria. Many stated that the high failure rates have been attributed to, amongst other factors, the absence of competent teachers; inadequate teaching/learning resources such as books, teaching aids and understaffing in most schools (Mazana, Montero & Casmir, 2020). Higher failure rates are also associated with low level of motivation among teachers, teachers' attitude towards students and Mathematics, poor instructional strategies, teachers' weak content knowledge (Mazana et al., 2019; Ameen & Salman, 2016), teachers emotions in the classroom (Frenzel et al., 2021; Alrajeh, & Shindel, 2020). Other factors include, examination setting, poor preparation of teachers in the implementation of the curriculum, and ability grouping (Ogar & Aniefiok, 2023). Some researchers have even grouped these effects into different variables in relation to the stakeholders involved in the field of education. These vary from Government related variables, parents related variables, student related variables, teachers related variables, examination body related variables, curriculum related variables, test related variables, textbook related variables, home-related variables and student related variables.

Literature Review

Curriculum is a vital component of any educational environment. It is central to education at all levels in the world. The term curriculum therefore can be said to be the total environment and which education takes place. Thus, According to Vinnervik (2022), curriculum embraces the child, the teacher, the subject, the content, the methodology of teaching and evaluating. School academic activity is governed by the national curriculum and teachers are recognized as key driver in implementing the curriculum (Braun et.al. 2012). Junior secondary level is the first three years in secondary before the completion of the last level of education in secondary school. At this stage, the students will be exposed to five compulsory cross cutting subjects and four distinct fields of study of which Mathematics is prominent in all as a compulsory subject. Now, considering the importance of Mathematics and its position in the national curriculum, there is a great need for the emphasis on its preparation/organization and effective communication of the subject. Experience with the teaching of Mathematics in most Nigerian secondary schools showed that many Mathematics teachers employ poor or insufficient motivation and support for inclusive practices in mathematics classrooms which could bring about poor understanding of the concepts taught (Bista, 2023).

Baird, Isaacs, Johnson, Stobart, Sprague and Daugherty (2011) opined that there is a global focus on Mathematics attainment as a gateway to economic progress, with the leaders of many Western nations anxious to see improved results in international performance indicators such as the Programme for International Student Assessment (PISA)

or Trends in International Mathematics and Science Study (TIMSS). The objective of Mathematics includes Mathematical ideas progress from concrete to abstract; grow from particular to general and it knowledge is conceptual as well as procedural. Similarly, in Mathematics we come across 'definitions' that describe concepts, 'examples' to illustrate procedures, 'theorems' to state valid results, 'conjecture' that talks about Mathematical statements for which proofs are to be worked out but which seem plausible and 'counter example' to disprove statements. The scope of Mathematics provides effective way of building mental discipline and encourages logical reason and mental vigor. Mathematics touches all aspects of life. According to Greek philosophers, the whole life is synonymous to Mathematics.

Dada (2012) affirmed the fact that teaching of mathematics in secondary education after independence did not in any significant way different from what it used to be before the independence. It was such lives and cries that forced the government to organize a national conference on curriculum development in Lagos between September 8-12, 1969. The conference on curriculum was sponsored by the Nigerian Educational Research Development Council (NERDC) and was saddled with the onerous responsibility of reviewing the nation's educational system with particular emphasis on the objectives of education and the content of the curriculum in the light of the peoples' needs; both as individuals and as a nation (Dada, 2012).

Students' attitude towards mathematics is given various definitions in the literature. For example, Kibrislioglu et. al (2016) defines attitude towards mathematics as liking or disliking of the subject; a tendency to engage in or avoid mathematical activities; a belief that one is good or bad at mathematics; and a belief that mathematics is useful or useless. Several studies have demonstrated that attitudes towards mathematics are directly and significantly associated with students' performance. For instance, Mensah and Kurancie (2013) conducted a study in Ghana and found a significant positive correlation between students' attitude and performance. The Trends in International Mathematics and Science Survey (TIMSS) results of 2007 reported in Gonzales, et al. (2008) also indicate that 4th grade and 8th grade students with a more positive attitude had higher average achievement in mathematics as compared to those with less positive attitudes. In a more recent study, Ngussa and Mbuti (2017) conducted a study in Arusha, Tanzania, involving secondary school students. They established a moderate relationship between student's attitude and performance when teachers use humour as a teaching strategy. They concluded that the enhancement of students' positive attitude can boost students' performance in mathematics. However, Joseph (2013) in his study of community secondary school students in Kagera, Tanzania found that the majority of students (55%) had a general negative attitude towards mathematics, with a positive and significant correlation between attitude and performance ($r = 0.33$).

The literature shows that students' attitude is affected by numerous factors. They include such factors as the school, peer students, home environment and society (Yang & Land, 2013). Yılmaz, Altun, and Olkun (2010) identify factors that include connecting mathematics with real life, using instructional materials, teachers' personality, teachers' content area knowledge, bad instructional practices, lack of commitment by students' and teachers' classroom management. Other factors include teachers' emotional support (Blazar & Kraft, 2017), teachers' affective support (Sakiz, Pape, & Hoy, 2012), class activities, subject content and amount of work, scarcity of teachers and inadequate resources (Joseph, 2013; Sakiz, Enu et al., 2015), peer and parental influence. Furthermore, in line with Simmers et.al (2011) the factors also include, creating insecurities in students' mathematics ability and teacher failure to provide explanations for the mathematical concepts being taught. Researchers (Mata, Monteiro, & Peixoto, 2012; Mulala, 2015; Moussa & Saali, 2022) have identified important factors that contribute to students' attitudes towards learning mathematics. These include the students themselves, the school, the teachers' beliefs and attitudes and their teaching methods. The teachers' teaching method has a major influence on students' attitudes (Moussa & Saali, 2022; Mensah et al., 2013). Teachers can do many things to facilitate the classroom learning to alleviate students' engagement level and confidence in learning mathematics (Mulala, 2015; Mazana, et.al 2020). This can enable the learners to become confident in using mathematics to analyze and solve practical problems in real-life situations.

Based on gender difference in the attitude of students towards mathematics, Abdullahi (2016) in a study of gender differences in secondary school students' attitudes towards learning mathematics and the resulting implications on their performance indicated that there were significant gender differences in students' attitudes towards learning

mathematics and in their performance in the subject both in favour of male students. The researcher also observed that male students show more positive attitudes towards learning mathematics than their female counterpart. This study further examine the gender differences in terms of hypothesis testing. The reviewed studies established the definition of students' attitude to learning mathematics, its influence on student performance and also showed a number of factors influencing students' liking or disliking of mathematics. Examination is a measure of academic achievement and performance in education. When a student's academic performance falls below the expected standard, failure is said to have occurred. Ononye and Obiakor (2020) opined that the high rates of failure recorded yearly in public examinations are only a symptom of a pervasive national failure syndrome. On this, pointed out that despite the investment on secondary school education in Nigeria, students are not still performing well. According to some researchers, factor that determines how students performs in mathematics and other related subject can be grouped under the following listed sub-heads: School factor, Psycho-social factor, Government factor, Home factor, Student factor, Teacher-related factor etc.

The school environment or organizational characteristics have been considered in other research. Studies indicate student feelings of alienation may be greater in tertiary institutions. Students who lived in hostel were shown to have a greater sense of comitment and higher retention rate in their studies. Braxton et.al., (2023) showed that institutional communication, fairness in policy and decision making, and participation was positively related to social integration and had significant indirect effects on student retention as well as their performances in mathematics. Others believed that the quality of a students' experience in the classroom was central to their retention and performances (Tinto 2017; Ritschel 2015). It is equally observed that a good educational policy will definitely tell on the performances of students (Fitriana et. al., 2023). Various studies had shown that successful performances of candidates in public mathematics examinations may be hindered by some psycho-social factors such as emotional disposition of candidates prior to and during examinations, poverty, ignorance, poor self-concept, ill-health or sudden sickness and poor study habit. Students' creative tendency and routine tendency help them to explore the unknown and to invent something new or to consolidate what they have already known. When such tendencies are disturbed or upset, they arouse emotions of anger and hostility in them (Oladele et al, 2022). In the same vein, when a candidate is suffering from colds, toothache, constipation, indigestion, poor eye-sight or hearing, mal-nutrition and other ailments that affect children, his level of concentration may be thwarted by the resulting annoyance and outburst of temper leading to academic performance. Children who have low intelligence have been shown to have less control of their emotions. They are less sensitive to danger and cannot foresee consequences of their actions and also have narrow range of interest and desire to satisfy (Oladele et al, 2022). Other behavioural symptoms that can indirectly affect the performances of candidates include restlessness, un-paired concentration, and examination phobia (Oladele et al, 2022).

Nigeria government has not done well for Nigerian teachers by not paying them well to serve as motivation for them. According to Inuwa, (2021), the general condition in Nigeria public secondary school is bad and teaching and learning are operating at the lower ebb. These authors concluded that teachers are left with no alternative than to work in a poor condition which has adverse effect on students' academic performance There is lack of recognition, motivation in term of salary and other incentive and nobody want to be a teacher; no new qualified teacher want to teach again, the old ones are going away. The resultant effect of this is lack of commitment and ineffectiveness of teachers (Kola & Opeyemi, 2021). Government plays crucial roles in the management of educational system in terms of policy formulation, programmes' implementation, funding, administration, supervision among others. The extent to which government is committed to these roles could make or mar the educational system. It is therefore not out of place to blame government for the mass failure of students in mathematics. Studies have shown that the causes of poor academic performance of students attributed to the government were instability of educational policy, leadership problems, job losses (Bashar, & Yasin, 2020), inadequate poor supervision of instruction, inadequate funding of education (Agbofa, 2023). Others include irregular payment of teachers' salaries. Parents play significant roles in the education of their children and wards. Apart from the fact they pay school fees and other levies, they buy textbooks, uniforms and other materials required by their children and wards. In addition to this, they are expected to supervise their academic works and give them good moral training. They are also expected to visit schools from time to time to find out how their children and wards are behaving with a view to taking corrective measures where and when

necessary. However, the failure of parents to play these roles could negatively affect the academic performance of the students Bashar, & Yasin, 2020). Some parents are over protective and over anxious about their children performances. This attitude on the part of the parents can disturb the smooth emotional development of their children.

Similarly, parents who spoil their wards and refuse to make them grow are also breathing emotional instability in them. This may result in the children becoming antisocial or aggressive hence, such children attention would be diverted from studying to antisocial behaviours such as smoking and drinking to mention but a few. Similarly, social economic status of the family to a greater extent affects academic performance of children. Many parents in Nigeria cannot afford to send their children to the well-established schools where relevant skills can be acquired. Attwood et. al (2019) in his study on causes of students' failure in mathematics concluded that parental attitude hindered students' performance in mathematics. Considerable research evidences abound to show that students are responsible for their academic performance either negative or positive. Aremu & Sokan (2013) found out that the students' factors of poor academic performance were poor study habits, psychological adjustment problems, lack of interest in school programme, low retention, association with wrong peers, low achievement motivation and emotional problems. Other studies (Ollennu & Etsey, 2015); Karande & Kulkarni, 2015; Ajayi & Osalusi, 2013) have shown that students' lack of financial support, absenteeism, truancy, use of local language in the classroom, lack of interest and joy in teachers' lessons and learning disability cause poor academic performance of students. Other causes include low cognitive ability, gender prematurity, medical problems and inability of students to understand examination questions.

According to Boyd, Landford, Loeb, Rockoff, & Wyckoff, (2018) and Aaronson, Barrow and Sander (2017), the most important educational resources is teacher because he/she is at the centre of learning and it can significantly influence the students' achievement. Okemakinde, Alabi, and Adewuyi, (2013) were of the opinion that teachers have an important role to play by adequately preparing the young age for their roles in the community in order to achieve the set national objectives. Nigerian teachers are doing well but there are some areas where they need restructure so as to be able to cope with the current demand of excellent performance of students in WASCE because students' failure is the tantamount to teachers' failure and incompetence. Teachers' self-efficacy is a key factor in teacher's effectiveness which both government, researchers and other stakeholders in the field of education must pay attention to.

According to Aremu and Sokan (2013), the various causes of poor academic performance of students in mathematics which can be traced to the teachers were non-use of verbal reinforcement strategy and lateness to school, poor interpersonal relationships. Therefore, Nigeria education needs teacher who knows that there is no aspect of his or her work subject too difficult to teach neither is there any student who cannot be taught. Bandura (2013) also stated that many teachers do not cover their syllabus at the right time because they felt there is an area of the subject they are not very good. Teacher who don't trust his or her efficacy will try to avoid dealing with academic problems and instead turn his or her effort inward to relieve his or her emotional distress. Gogo and Nduka (2017) carried out a comparative analysis of student mathematics achievement in Junior Secondary Certificate Examination in Nigeria. The study adopted survey design of the expost-facto research type with a sample of 24,661,758 students in Nigeria who sat for the August/September JSSCE in general mathematics between 1991 and 2014 years, Findings from the study showed that the population of students that sat for JSSCE in general mathematics increased by 147.76% after a period of 13years and that improvement in achievement was significant with time. Longjohn & Audu (2020) carried out a survey to investigate the academic performance of students in school-based assessment and two external examinations organized by the Junior Secondary School Examination Council (JSSC). Three core subjects were chosen for comparativeanalysis namely Mathematics, English Language, and Civic Education.The study adopted the ex-post factoresearch design with a sample of 684 students drawn from secondary schools in Obio-Akpor Local Government Area of Rivers State. A proforma was used for data collection, while mean and standarddeviation were used to answer the research questions, with repeated measure analysis of variance used totest the corresponding null hypotheses at 0.05 level of significancethe result showed that with theexception of civic education, students performed better in Mathematics.

In the research carried out by Udofia and Udoh (2017) on the performance of secondary school students in JSSCE from 2004 to 2006, they discovered that the students were not performing as expected. In addition, Obasi and Ugo

(2018) carried on Predicting Growth Rate of Students' Achievement in Mathematics using Mathematical Growth Model, a developmental survey design was employed where students' JSSC mathematics achievement results from 1991-2016 were collected from the Development Division, Junior Secondary School Examination Council (JSSC) Lagos, Nigeria. Onyeka and Arokoyu (2018) researched on comparative analysis of student Mathematics achievement in Junior Secondary Certificate Examination in Nigeria. The study adopted a survey research design of the expost-factor and the findings showed that the population of students that sat for JSSCE in Mathematics increased and there was improvement over the year of the study. Onanuga and Saka (2018) investigated the trends of performance of students in selected Science, Technology, Engineering, and Mathematics (STEM) subjects in the Basic Education Certificate Examination (BECE) conducted by Ogun State Ministry of Education, Science and Technology, Nigeria The study adopted an ex post facto research design to carry out the trend analysis of students' results in the examination from 2011 to 2015. All the students that enrolled and sat for the BECE examinations constituted the target population while the students that sat for the selected STEM subjects (Mathematics, Basic Science, and Basic Technology) within the years under review constituted the sample for the study. The results of these students were collected and analyzed using Microsoft Excel with its in-built trend line capabilities. The results showed that students performed well in the selected STEM subjects in the years under review. Furthermore, the study revealed that while performance in other subjects will continue to improve steadily, performance in mathematics will dwindle between 2016 and 2018 and then will begin to steadily improve from 2019 to 2020. It further observed that the Nigeria vision 20:2020 might not be realized as planned unless urgent steps are taken to improve performance in Mathematics. A comprehensive literature review has shown that there are number of factors that hindered student's performance in Mathematics for the certificate examinations. Some observed factors as submitted by researchers include; government, parents, students, teachers, materials among other problem. There have been series of studies on the performance of students in Mathematics and science related subjects at various academic levels.

According to Oranga et.al. (2023), parental involvement in the academic performance of their children includes communicate with child to boost up good values in them, meeting with teachers regularly regarding child's progress, general surveillance of children's learning activities, supporting and guiding the child about school activities, helping the child to develop reading habits, involve in homework; attending school meetings and events, discussing school/class activities at home; spending quality time with the child, working on child's strengths and weaknesses, etc. All these activities of parents show a positive effect on academic performance of a child. Attwood (2014) in his study on causes of students' failure in Mathematics concluded that parental attitude hindered students' performance in Mathematics. Studies also revealed that parents that are not financially buoyant can cause academic disturbance for learners. Shortage of instructional materials in mathematics also caused low performance of students in junior secondary examination.

Moreover, Komakech (2015) found that there is a positive relationship between students' attendance to school and academic performance in Mathematics. Using correlational approach to assess attendance on academic performance in Nigeria, Oghuvbu (2022) had the same result as Komakech. He found that there is a positive correlation between class attendance and academic performance in Mathematics. Udonsa (2015) investigated the trend on students' performance in Mathematics at senior secondary certificate educations in Nigeria. The researched looked at the factors that contributed to the consistent poor performance of students in SSCE Mathematics by analyzing the trend and rates of failure in Mathematics. Hypotheses were formulated and tested based on the factors that seemed to be the major challenge. The findings showed that inadequate teaching materials, unqualified teachers and large class size are the major factors responsible for poor students' performance in Mathematics in SSCE examination. Ameen and Salman (2016) found out that fear of Mathematics, inadequate qualified teachers and inadequate teaching materials were some of the causes of poor performance in Mathematics and concluded that developing positive attitude, motivation and proper guidance toward mathematics and provision of relevant teaching materials could make students perform better in mathematics. Furthermore, the study of Suleiman and Hammed (2019) on perceived causes of students' failure in mathematics, the findings revealed that students' failure in mathematics could be cause by insufficient number of qualified teachers in mathematics, lack of teaching aids, frequent transfer of mathematics teachers from one school to another, poor ocio-economic background of the student, and poor teaching methodology used by the teachers. It was concluded that students' negative attitude

toward mathematics, anxiety and fear of mathematics are caused by inadequate qualified teachers, poor teaching methods, inadequate teaching materials, overcrowded classes etc which brings about poor performance in mathematics in Junior secondary schools in Kwara state, Nigeria. Jega et.al. (2019) examined the causes of students' mass failure in high schools and found that causes of students' failure includes poor socio-economic background and lack of qualified Mathematics teachers and concluded that there is a general impression that Mathematics is difficult by its very nature.

Research Questions
i. What is the attitude of students toward mathematics in Junior Secondary School in Ilorin west local government area?
ii. What is the trend of students' performance in mathematics in JSS examination in Kwara state from 2015-2019?
iii. What is the rate of failure in mathematics in Junior Secondary School Certificate Examination in Kwara state from 2015- 2019?

Research Hypothesis
H_{01}: There is no significant difference in the attitude of students' towards mathematics in Junior Secondary School based on gender.

Methodology

The study adopted descriptive survey design since the variables in the study include variables to measure parental factor, teacher's factor and student's factor. The population for the study comprised of all junior secondary school students offering Mathematics while the target population included all mathematics students in junior secondary school in the six selected junior secondary schools in Ilorin west local government. The sample consisted of 150 junior secondary school students selected from six public junior secondary school in Ilorin west LGA of Kwara state. Two stage sampling was used to select the respondents for the study. The first stage purposively selected six junior secondary school from Ilorin West LGA while the simple random sampling technique was used to select twenty-five (25) junior secondary school students from the six schools selected. Both the primary and secondary data was collected on students' performance from schools and Ministry of Education between 2015 and 2019. First, the record of the total number of students who registered and those passed with A to P for JSSCE during the said years was obtained from Ministry of Education.

The proforma of record was used to evaluate the trend and failure rate among mathematics students that sat junior secondary certificate examinations within 2015-2019. Secondly, the structured questionnaire was designed to obtain information from the students on their attitude towards mathematics as well as major determinants of their performance. The questionnaire was used to elicit relevant information concerning attitude of students and determinants of students' performance in Mathematics in Junior Secondary School in the study area. The questionnaire contained three sections. Section A of the questionnaire deals with personal data of the respondents, such as school type, gender, age bracket and arm qualification of the parent. Section B contains information used to elicit responses from the respondents on the attitude of students towards mathematics in Junior secondary school while Section C elicited responses based on the determinant of students' performance in mathematics in junior secondary school in the study area. To show the extent to which the respondents agree or disagree, the instrument was structured in the modified Likert Fashion, on a 4- point Scale, ranging from "Strongly Agree" (SA), through "Agree" (A), "Disagree" (D) to "Strongly Disagree" (SD). Subjects are then instructed to respond to their degree of agreement with the statements contain in the instrument.

The questionnaire designed for the study was subjected to a validation process for face and content validity. Having validated the questionnaire, a pilot testing was carried out on the instrument using 15 questionnaires administered to students from a junior secondary school in Ilorin East LGA but not among the selected junior secondary school for the study.This was done to see whether the item is clear enough to be easily understood by the respondents and to also help to determine the workability of the proposed method of data analysis for the study. The Cronbach's Alpha method

of testing for reliability was used to test for the consistency of the instrument and the questionnaires were reviewed instantly at the point of collection to ascertain that no question(s) was left unattended. The data collected on the field were coded and analysed. The Statistical Package for Social Science (SPSS) was used for analysis. Descriptive statistics and t-test was used to analyse both the primary and the secondary data collected. Descriptive Statistics like tables, percentage and graph were used to observe the trend of students' performance as well as failure rate. Also, frequency count and percentage were used for the demographic section of Primary data while the Section B and Cof the questionnaire were analysed using mean score rating and ranking. On the other hand, t-test statistical technique was used to test the null hypotheses formulated in the study, examine the difference in attitude of students towards mathematics based on gender and examine the difference in determinant of students' performance in mathematics in Junior Secondary school based on school type. T-test assesses whether the means of two groups are statistically different from each other. All these hypotheses were tested at 5% level of significance. The data collected were analyzed using both descriptive and inferential statistics. For the demographic data and some research questions, frequency counts, percentages, tables, charts, mean rating score and ranking were employed while t-test statistical tool was employed to analyze the hypotheses at 0.05 level of significant.

Results

Presentation of Tables and Interpretation

Table 1:

Demographic Information of the Respondents

Variable	Frequency	Percent %
Gender		
Male	68	46.6
Female	78	53.4
Age Bracket		
<10years	3	2.0
10-14 years	96	65.8
15-19 years	47	32.2
> 19years	0	0
Total	**146**	**100**

Table 1 showed demographic information of the respondents' students. Based on gender of the respondents, 46.6% of the respondents' students are male while 53.4% were female. This indicates that there is higher percentage of female junior secondary school students that gave response to the questionnaire than male junior secondary school students in the study area. Lastly, in terms of age bracket of the respondents, the study further revealed that 2.0% of the respondents' students surveyed were below 10years, 65.8% were within 10-14years, 32.2% were within 15-19years and while none was above 19years. This indicate that majority of the students in the junior secondary school were within 10-14years of age.

Research Question One: *What is the attitude of students toward mathematics in Junior Secondary School in Ilorin west LGA?*

Table 2:

Mean and Rank Order on the Attitude of Students toward Mathematics in Junior Secondary School in Ilorin west LGA

S/N	Attitudes	Mean	SD	Rank
1	I sees mathematics as nature	3.47	0.8	1st

2	I have a low capability to assimilate during mathematics class	3.30	0.86	2nd
3	I have no interest in mathematics because it requires hard work	3.15	0.88	3rd
4	I often develop phobia when learning mathematics	3.12	0.95	4th
5	I dislike learning mathematics	2.97	0.94	5th
	Grand	**3.20**	**0.89**	

Table 2 shows that Items 4, 3 and 4 which states that "I sees mathematics as nature; I have a low capability to assimilate during mathematics class; and I have no interest in mathematics because it requires hard work" have mean scores of 3.47, 3.30 and 3.15 ranked 1st, 2nd and 3rd respectively while Item 2 and 1 which states that "I often develop phobia when learning mathematics; and I dislike learning mathematics" with a mean score of 3.12 and 2.97 ranked 4th and 5th respectively. All of the five items have mean scores that is above the mid-mean score of 2.50, then it can be said that majority of the respondents affirmed to the stated items and the result also shows that the junior secondary school students in Ilorin West LGA have negative attitude towards mathematics.

Research Question Two: *What is the trend of students' performance in mathematics in kwara state from 2015-2019?*

Table 3:
Student Performance in Mathematics in Basic Education Certificate Examination

	% of No present with Grade			
Year	**A**	**C**	**P**	**Pass Rate %**
2015	24.86	30.24	24.01	79.11
2016	16.75	40.82	28.21	85.78
2017	11.00	46.00	34.00	91.00
2018	10.37	45.98	34.14	90.49
2019	10.00	45.82	35.02	90.84

Source: Kwara State Ministry of Education
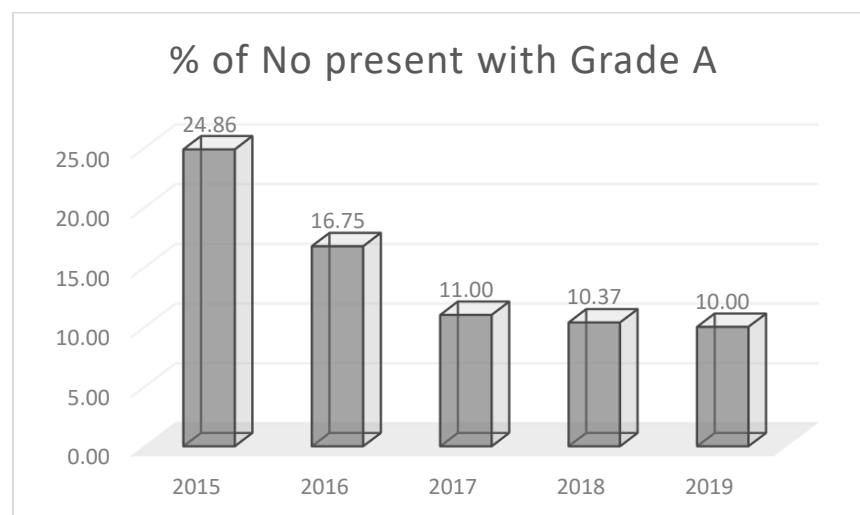**Keys:** *A- Distinction; C-Credit; P-Pass*

Figure 1: Bar Chart Showing the trend of Percentage of Candidates with Distinction (Grade A) in Mathematics

Figure 1 showed a steady decrease in the number of junior secondary school students that sat for the basic certificate examination and obtained Distinction (Grade A) in mathematics from 2015 to 2019. Year 2015 recorded the highest distinction in mathematics with 24.86% of those who validly sat for the examination, followed by year 2016 with 16.75%, then year 2017 with 11%, year 2018 with 10.37% and year 2019 with 10%. This implies that there is downward trend in performance of students in mathematics based on Distinction (Grade A) in mathematics from 2015 to 2019.
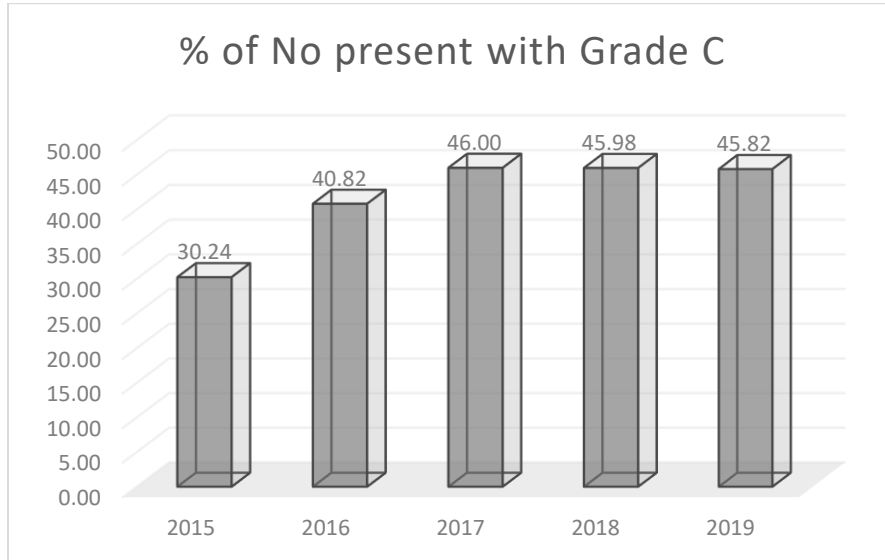

Figure 2: Bar Chart Showing the trend of Percentage of Candidates with Credit (Grade C) in Mathematics

Figure 2 showed an increase in the number of junior secondary school students that sat for the basic certificate examination and obtained Credit (Grade C) in mathematics from 2015 to 2019. Year 2015 recorded the lowest credit with 30.24% of those who validly sat for the examination, then increases in year 2016 to 40.82%, while year 2017 to 2019 had approximately 46%. This implies that there is an upward trend in performance of students in mathematics based on Credit (Grade C).
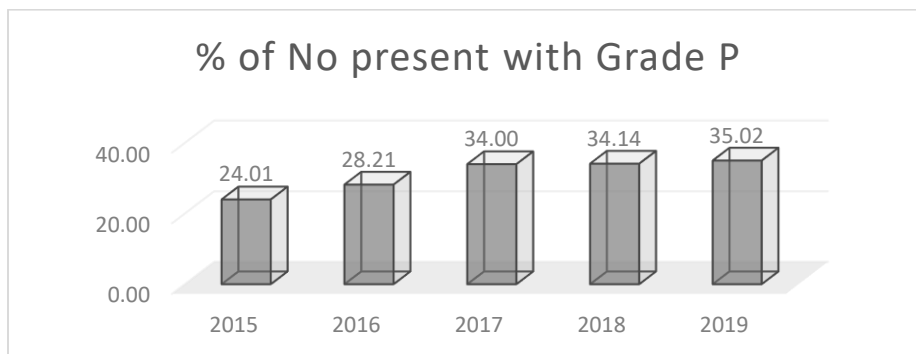

Figure 3: Bar Chart showing the trend of Percentage of Candidates with Pass (Grade P) in Mathematics

Figure 3 showed a steady increase in the number of junior secondary school students that sat for the basic certificate examination and obtained Pass (Grade P) in mathematics from 2015 to 2019. Year 2015 recorded the lowest Pass in mathematics with 24.01% of those who validly sat for the examination, then increase to 28.21% in year 2016, then to 34% in year 2017, then to 34.14% in year 2018 and then to 35.02% in year 2019. This implies that there is an upward trend in performance of students in mathematics based on Pass (Grade P) in mathematics from 2015 to 2019.
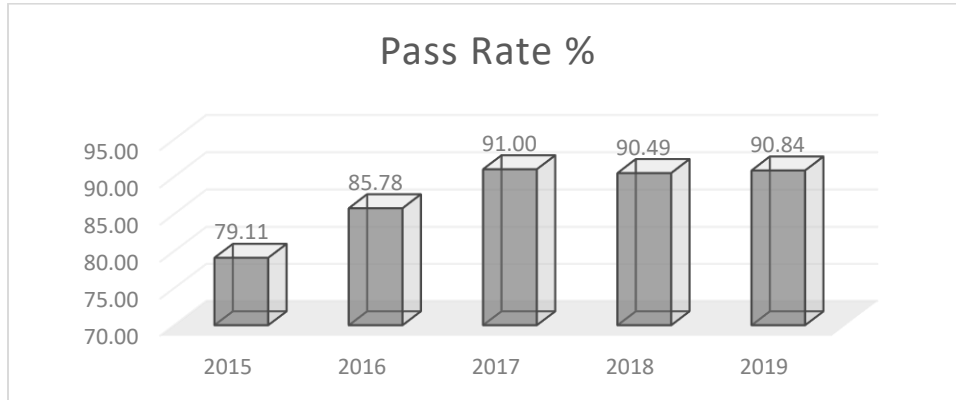

Figure 4: Bar Chart showing the trend of Percentage of Pass Rate in Mathematics

Figure 4 above showed an increase in the pass rate of junior secondary school students that sat for the basic certificate examination in mathematics from 2015 to 2019. Year 2015 recorded the lowest pass rate with 79.11% of those who validly sat for the examination, then increases in year 2016 to 85.78%, while year 2017 to 2019 had approximately 91%. This implies that there is an upward trend in performance of students in mathematics based on pass rate from 2015 to 2019. In summary, there is downward trend in performance of students in mathematics based on Distinction (Grade A), an upward trend in performance of students in mathematics based on Credit (Grade C), an upward trend in performance of students in mathematics based on Pass (Grade P) in mathematics from 2015 to 2019. On overall, there is an upward trend in performance of students in mathematics based on pass rate from 2015 to 2019.

Research Question Three: *What is the rate of failure in mathematics in Junior Secondary School in kwara state from 2015- 2019?*

    Table 4:

Percentage Distribution of Rate of Failure in Mathematics in Certificate Examination

Year	No Present	Failure Rate %
2015	41,153	20.00
2016	41,721	14.28
2017	43,430	9.00

2018	44,155	9.52
2019	43548	9.17

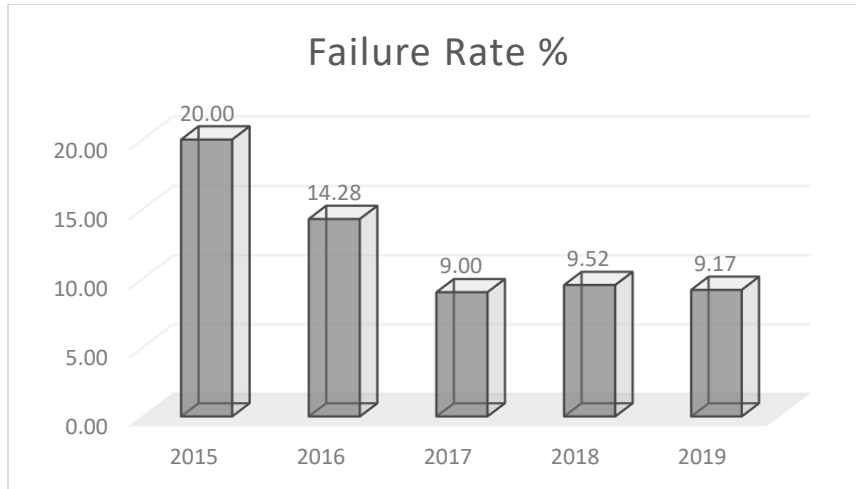Source: Kwara State Ministry of Education

Figure 5 above showed that the highest rate of failure among Junior secondary school students in certificate examination in mathematics was recorded in year 2015 with 20%, followed by year 2016 with 14.28%, then year 2018 with 9.52%, then year 2019 with 9.17% and then 9% in year 2017. This implies that the 2015 recorded the highest rate of failure in mathematics while the lowest rate was recorded in year 2017.

Hypotheses Testing

H_{01}: *There is no significant difference in the attitude of students towards mathematics in Junior Secondary School based on gender.*

Table 6: Mean, Standard Deviation and t-test Analysis of Difference in the Attitude of Students towards Mathematics in Junior Secondary School Based on Gender

Gender	No	Mean	Std.	df	Cal.t-Value	Sig. (2-tailed)	Decision
Male	68	3.68	.10				H_{01}
				144	9.19	<0.001	**Rejected**
Female	78	2.79	.77				

$\rho > 0.05$

As shown on Table 6, male students had mean score of 3.68 with standard deviation 0.10, while female students had mean score of 2.79 with standard deviation of 0.77, the calculated t-valuewas 9.19 while its calculated significance value is<0.001 at alpha level of 0.05. On this basis, null hypothesis one was therefore rejected. This means that there was significant difference in the attitude of students towards mathematics in junior secondary school based on gender. The reason was that the calculated significance value (<0.001) was lower than 0.05 alpha level ($\rho < 0.05$).

Discussion

The study investigated the determinants of performance and failure rate of students in mathematics in junior secondary school in Ilorin West LGA of Kwara State. From the analysis presented in the previous chapter, the following discussions of findings were made. Findings revealed that majority of junior secondary school students in Ilorin West LGA have negative attitude towards mathematics. Attitude towards mathematics have been defined by Kibrislioglu (2023) as liking or disliking of the subject; a tendency to engage in or avoid mathematical activities; a belief that one is good or bad at mathematics. The finding of the present study which revealed students' negative attitude towards mathematics is in line with Joseph (2013) in his study of community secondary school students in Kagera, Tanzania where he also found that majority of students had a general negative attitude towards mathematics. Another finding revealed an upward trend in performance of students in mathematics in junior secondary certificate examination based on pass rate from 2015 to 2019. The breakdown of this performance indicate that a downward trend in performance of students in mathematics based on Distinction (Grade A); an upward trend in performance of students in mathematics based on Credit (Grade C); and then an upward trend in performance of students in mathematics based on Pass (Grade P) in mathematics from 2015 to 2019. The performance of the students in mathematics have improved over time. The study of Gogo and Nduka (2017) is in consonance with the present findings where they found out that there was an improvement in achievement of students that sat for WASSCE in general mathematics. Implication of the progress on performance in mathematics correlates with the study of Ameen and Salman that excellence in the knowledge and use of Mathematics is an essential factor in the development program of any nation that wants to have respectable status among other nations of the world. At such, mathematics as a subject cannot be divorced from the world of technologies which is a key to progress and development.

Further findings revealed that the highest rate of failure in mathematics by junior secondary school students in Kwara state was recorded in 2015 while the lowest rate was recorded in year 2017. The poor record in 2015 is in agreement with Ononye and Obiakor (2020) who recorded high rates of failure in public examinations.It is also in disagreement with the study of Gogo and Nduka (2017) worked on comparative analysis of student mathematics achievement in Junior Secondary Certificate Examination in Nigeria who recorded better performance in mathematics after a period of 13years. The trends of students' performance in International Mathematics competitions using comparability of TIMSS 2015 mathematics tests in relation to the raw-score and May/June West African Senior Secondary Certificate Examination (WASSCE) in general Mathematics in Nigeria from 2010 to 2015 it was found out that mathematics performance in Nigeria has been persistently poor over the years, as less than 50% of the candidates passed at credit. Also, a decreasing trend in rate of failure among students in mathematics was observed in the present study. This shows an improvement which is in line with Kibrislioglu et.al (2023) and Gogo & Nduka (2017) research on comparative analysis of student Mathematics achievement in West Africa Senior Secondary Certificate Examination in Nigeria. Meanwhile, his study revealed that there was improvement over the year of the study.

Based on the hypotheses tested, it was revealed that there was significant difference in the attitude of students towards mathematics in junior secondary school based on gender (t=9.19; $\rho< 0.05$). The mean value in our present study implies that male are more positive of mathematics than female. This is in line with Abdullahi (2016) in a study of gender differences in secondary school students' attitudes towards learning mathematics and the resulting implications on their performance which indicated that there were significant gender differences in students' attitudes towards learning mathematics and in their performance in the subject both in favour of male students. It also agrees with Montero and Casmir (2019) study that a significant relationship between attitude and achievement was established depicting stronger relationships in boys than in girls.

Conclusion

Based on the findings of the study, it was concluded that the junior secondary school students in Ilorin West LGA have negative attitude towards mathematics. Such negative attitude have been established to be caused by many factors ranging from students factor, to school factor, teacher factor, socio-economic factor and so on which subsequently affect academic performance in mathematics. Also, there is an improvement in the performance of students in mathematics in junior secondary school in Kwara state which subsequently reduces failure rate in certificate

examination. And again, students factor is the greatest determinant to performance of the students. Meanwhile, the study further concluded that attitude of students towards mathematics differs between gender as male students were acknowledged to have more positive relationship with mathematics than female.

Recommendations

In view of what the research study discovered and the situation of determinant of performance and failure rate of students in mathematics in Ilorin West LGA of Kwara State, the following recommendations were made;

i. Government at all levels (Federal, State and Local) should ensure that basic educational facilities such as learning materials, libraries, standard classroom blocks and laboratories are provided for schools so as to enhance teaching and learning.

ii. Mathematics teachers should be given regular training and retraining programmes (such as conferences, seminars and workshops that are related to mathematics) in order to be more innovative in there method of teaching mathematics so as to stimulate students' interest in mathematics

iii. Mathematics teachers should encourage students on how to learn mathematics by reinforcing them when necessary so as to discourage negative attitude toward Mathematics.

iv. Conducive classroom for the teaching of mathematics should be created and over-population of students in classroom should be discouraged.

v. Adequate period should be allocated for mathematics class so as to reduce rate of failure in Mathematics.

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