INFLUENCE OF FAMILY BACKGROUND, STUDY HABITS, PEER GROUP AND SOCIAL MEDIA ON STUDENTS' ACADEMIC ACHIEVEMENT IN MATHEMATICS

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Abstract

Achievement in Mathematics by students has persistently been poor. This study sought to investigate the influence of family background, peer group, study habits and social media on students' academic achievement in Mathematics in Abeokuta, Nigeria. Descriptive survey research design was adopted for the study. The population comprised all senior secondary school students in Abeokuta, Nigeria. The sample consisted of 200 students who were selected using simple random sampling technique.A questionnaire was prepared for data collection. The data collected were analyzed using percentage and chi-square statistics.The findings of the study revealed that family background, study habits, peer group and social media have significant influenceon students' academic achievement in Mathematics.Based on the findings, it was recommended amongst others that: parents should provide enabling home environment for their children's education; and the school administrators should design a friendly Information and Communication Technology environment in the school, where the students will be exposed to the positive use of social media to improve their academic achievement.

Keywords: Mathematics, Achievement, Family Background,Study Habits,Peer Group, Social Media

Introduction

There is a general perception among secondary school students that Mathematics is a very difficult subject. As much as possible the students tend to avoid taking Mathematics courses at higher institution of learning. Avoiding Mathematics courses severely restricts the fields a student can study and the jobs one can find. Nowadays however, many have realized the importance of Mathematics, not only from the point of view of getting an academic qualification at the university or college, but is also a subject that prepares one for the future, irrespective of which walk of life one chooses to be a part of (Shamim, 2013). Mathematics is seen by society as the foundation of scientific and technological knowledge that is vital in social economic development of a nation. It is in realization of the importance and vast applications of Mathematics that madeEnu, Agyman and Nkum (2015) posited that a disciplined and ordered pattern of life can only be achieved through the culture of Mathematics. Unfortunately, the West African Examinations Council (WAEC) Chief Examiner's Report indicated that students' achievement in this important subject over the years has been unsatisfactory at the secondary school level of education in Nigeria.

According to Nwadinigu and Azuka-Obieke (2012), unsatisfactory academic achievement is an achievement thatis adjudged by the examiners as falling below an expected standard. It is when a student's performance is belowhis actual ability. It could be as a result of several factors such as poor teaching, psychological factors,student factors, family factors,

environmental factors, location of schools and the evaluationprocess.Mathematics been the chief corner stone in the sciences is not left out in this issue.

In the course of finding ways to improve students' achievement in Mathematics, researchers have long been interested in exploring variables (factors) contributing effectively for quality of achievement of students in secondary school Mathematics. These variables (factors) are inside or outside school and affect students' quality of academic achievement. These factors may be termed as student factors (study habit and attitude), family factors (family background factors), school factors, peer factors and social media (Enu, Agyman & Nkum, 2015).

Researchers such as Comber (2007) and Oginni (2018) revealed that students' family background influenced their academic achievement in Mathematics. On the other hand, the study habit is one of the factors that could also largely influence students' performance. Findings revealed that it influenced students' academic achievement. If this is not given attention by the persons concerned, its effect could become more damaging to students' performance (Ebele & Olofu, 2017). Students need to possess good study habits to excel in life because it is the study habits of the students that aid in obtaining relevant and applicable knowledge. Thus, the absence of these skills would lead the students to poor performance in school (Kaur & Pathania, 2015).

Moreover, researchers such asFilade, Bello, Uwaoma, Anwanane, and Nwangburuka (2019) revealed that, peer group has significant influence on academic achievement. In additon, Tetteh, Agyei and Ashong (2018) andOlisam, Areelu and Akudo (2018) revealedthat social media has significant influence on students' learning ability in Mathematics.It is therefore an irrefutable fact that the successfulness of teaching and learning of Mathematicsis contingent on myriad of factors which include student factors, family factors, school factors and peer factors. All these factors impinge on the learning of Mathematics (Enu, Agyman & Nkum, 2017). It is against this background that the present study seeks to analyze the influence of family background, study habits, peer group and social media on students' academic achievement in Mathematics in Abeokuta, Nigeria.

Statement of the Problem

The alarming rate of unsatisfactory academic achievement in secondary school Mathematics in Nigeria today constitutes a greater concern for all. The unsatisfactory academic achievementrepresents great waste on the part of students, parents and government. The researchers observed that many students in Nigeria secondary schools are in greater risk of poor academic achievement in Mathematics both in internal and external examinations. Government, parents, teachers and students blame one another for students' poor academic achievement in Mathematics. Parents blame Mathematics teachers for lack of dedication to duties. The teacher blame government for poor salaries hence they are poorly motivated, parents also accuse government for not equipping the schools with learning materials, government blame parents for not doing good homework and students are blamed for lack of discipline and dedication to study of Mathematics. The researchers equally observed that students' family background, study habits, peer group and social media could be detrimental to their academic achievement in Mathematics.Onabanro and Odunlami (2017) noted that only a small proportion of secondary school studentsare qualified to proceed to university in Nigeria. The proportions of students who successfully completed and passed to the next level constitute a meager percentage. Academic achievements in both internal and external Mathematics examinations have been consistently unsatisfactory.

Research studies such as Grissmer (2003) and Teese (2004); Odili (2015) and Parvinder (2015); Omotere (2011); Hamid, Chang and Kurnia, (2011) and Khan (2009) revealed the influence offamily background, study habits, peer group and social media respectively on students' achievement in Mathematics. It was revealed that family background, study habits, peer group and social media affect students' academic achievement in Mathematics.

There are few studies however which mainly focused on analysis of the influenceof family background, study habits, peer group and social media on students' academic achievement in Mathematics,despite the fact that these variables have been identified in the literature as problems on the academic achievement of students in Mathematics. Almost all of the studies did not jointly consider these variables. Only one or two of the variables were jointly considered by each of the studies. The conducted studies were mostly not in Nigeria. None was specifically conducted in Abeokuta. Thus, it is necessary to find out the influence of family background, study habits, peer group and social media on students' academic achievement in Mathematics in Abeokuta, Nigeria.

Research Questions

In this study answers were sought to the following research questions:

(i) Does family background influence students' academic achievement in Mathematics?
(ii) Do students' study habitsinfluence their academic achievement in Mathematics?
(iii) Do peer groups influence students' academic achievement in Mathematics?
(iv) Do social media influence the academic achievement of students in Mathematics?

Research Hypotheses

The following research hypotheses were formulated and tested.

HO_1: Students' study habits have no significant influence on their academic achievement in Mathematics.

HO_2: Social media have no significant influence on the academic achievement of students in Mathematics.

Methodology

The study was a descriptive research of the survey design. The descriptive survey research design was considered as the appropriate method because the study was directed towards people's views, opinions and behaviour. It involved administration of questionnaire to the respondents to collect data.The population of this study comprised all the Senior Secondary School students in Abeokuta North Local Government, Abeokuta, Ogun State, Nigeria. A total of 198 secondary school students were selected as sample through simple random sampling technique.The instrument used for this study was a researcher designed questionnaire. The questionnaire consisted of three sections, namely: the biographical and occupational data section, the perceptions section and the performance section. Responses to each of the items were rated with anchors: STRONGLY AGREE (SA), AGREE (A), NEUTRAL (N), DISAGREE (D) and STRONGLY DISAGREE (SD) rated as 1, 2, 3, 4, and 5 respectively.

The questionnaire was given to three experts in Mathematics Education who are lecturers in the department of Science Education, University of Ilorin, Ilorin, Nigeria to determine the face and content validity of the instrument. For reliability test, the instrument was administered on 20 Senior Secondary School Mathematics students who did not participate in the main research but similar in characteristics. A test-retest method was used to ensure that the instrument is reliable. The reliability index of the instrument was found to be 0.72 using spearman rank correlation.

The researchers administered the questionnaire to students in the five selected schools. Research ethics was strictly adhered to. Each item on the questionnaire was explained to the students. The administrations of the questionnaire were done by the researchers to ensure prompt response and were collected immediately for data analysis.The data obtained from the questionnaire was analyzed using frequency, percentage and chi-square analysis. The generated null hypotheses were tested at .05 level of significance.

Results

This section is presented in two categories namely: Demographic data of respondents and Presentation of results.

Demographic Data of Respondents

Table 1: Demographic Information of the Respondents

Gender	Frequency	Percentage
Male	75	37.9%
Female	123	62.1%
Total	198	100.0%

The demographic information of the respondents is presented in Table 1 based on gender, where 37.9% (75 respondents) were males and 62.1% (123 respondents) were females. This implies that majority of the respondents were female as they have the highest percentage.

Research Question 1: Does family background influence students' achievement in Mathematics?

Table 2: A Chi-square Analysis of the Influence of Family Background on Students'Achievement in Mathematics

Family Background	Observed Frequency	Expected Frequency	df	x^2	P	Remark
1. Students perform well in school if they live with their parents.						
Agree	147					
Neutral	40	66	197	155.48[a]	.000	Significant
Disagree	11					
2. Student parents' financial status affects their academic performance.						
Agree	129					
Neutral	23	66	197	94.21[a]	.000	Significant
Disagree	46					
3. Students cannot comprehend well in the class if they do not take their breakfast before going to school.						
Agree	117					
Neutral	32	66	197	61.30[a]	.000	Significant
Disagree	49					
4. Students do well academically if they live with one of their parents.						
Agree	44					
Neutral	69	66	197	12.94[a]	.000	Significant
Disagree	85					
5. Students' educational attainment could suffer if their tuition fees are not paid						

promptly.

Agree	174					
Neutral	13	66	197	265.12[a]	.000	Significant
Disagree	11					

Table 2 shows results of Chi – square statistics on influence of family background on students' achievement in Mathematics with Chi – square average value [$x^2_{(197)} = 108.70$; p = 0.00]. The results shows significant influence across all the questions in Table 2 as the p – values of each question was less than 0.05 significant level. This implies that students' family background influenced their achievement in Mathematics.

Research Question 2: Does students' study habits influence their achievement in Mathematics?

H_{01}: Students' study habits have no significant influence on their academic achievement in Mathematics.

Table 3: A Chi-square Analysis of the Influence of Students' Study Habits on their Achievement Mathematics

Study Habits	Observed Frequency	Expected Frequency	df	x^2	P	Remark
1. Students who review their class notes within one day after the class in which they were taken understand what they were taught better.						
Agree	167					
Neutral	18	66	197	232.03[a]	.000	Significant
Disagree	13					
2. Students who carefully plan their study schedule for the week at the start of each week assimilate better in the class.						
Agree	178					
Neutral	15	66	197	285.85[a]	.000	Significant
Disagree	05					
3. Preparing ahead of class help students to understand more concepts in Mathematics.						
Agree	183					
Neutral	11	66	197	311.48[a]	.000	Significant
Disagree	04					
4. Students who study their Mathematics notes only when having test or exam always perform better.						
Agree	34					
Neutral	67	66	197	30.09[a]	.00	Significant
Disagree	97					
5. Students who study their Mathematics notes and text books always perform better.						
Agree	185					
Neutral	11	99	197	320.53[a]	.00	Significant
Disagree	03					

Table 3 clearly revealed that significant influence exists in the students' study Habits and their achievement in Mathematics, with the Chi – square calculated average value of X^2_{cal} = 235.997 and Chi – square tabulated value at alpha 0.05 level of significance and degree of freedom 197. (i.e. $X^2_{0.05,\ 197}$ = 230.746). Since, X^2_{cal} = 235.997 > $X^2_{0.05,\ 197}$ = 230.746, so, H_{01} is rejected. Therefore, students' study habits significantly influenced their academic achievement in Mathematics.

Research Question 3: Does peer groups influence students' achievement in Mathematics?

Table 4: A Chi-square Analysis of the Influence of Peer Group on Students' Achievement in Mathematics

Peer Group	Observed Frequency	Expected Frequency	df	x^2	P	Remark
1. Students who do not like studying with their mates perform better in Mathematics.						
Agree	48					
Neutral	67	66	197	9.30[a]	.00	Significant
Disagree	83					
2. Students who study Mathematics whenever their friends study perform better.						
Agree	110					
Neutral	63	66	197	54.94[a]	.00	Significant
Disagree	25					
3. Students who do not like going for Mathematics lessons always perform well in Mathematics.						
Agree	20					
Neutral	32	66	197	146.55[a]	.00	Significant
Disagree	146					
4. Students who keep brilliant friends in Mathematics perform better in Mathematics.						
Agree	160					
Neutral	25	66	197	201.91[a]	.00	Significant
Disagree	13					
5. Students who spend most of their time chatting with friends without reading perform better in Mathematics.						
Agree	07					
Neutral	16	66	197	270.64[a]	.00	Significant
Disagree	175					
6. Students' interactive sections always aid their improvement in Mathematics.						
Agree	129					
Neutral	34	66	197	90.21[a]	.00	Significant
Disagree	35					
7. Students who work actively when given assignments with their peers perform better						
Agree	182					
Neutral	14	66	197	306.91[a]	.00	Significant
Disagree	02					

Table 4 shows results of Chi – square statistics on influence of Peer Group on students'achievement in Mathematics with Chi – square average value [$x^2(197) = 154.351$; p = 0.00]. The results shows significant influence across all the items in table 4 as the p – values of each question was less than 0.05 significant level. This implies that students' peer group influenced their achievement in Mathematics.

Research Question 4: Do social media influence the achievement of students in Mathematics?

H_{02}: Social media have no significant influence on the academic achievement of students in Mathematics.

Table 5: A Chi-square Analysis of the Influence of Social Media on Students' Achievementin Mathematics

Social Media	Observed Frequency	Expected Frequency	df	x^2	P	Remark
1. The use of ICT gadget (mobile phone) affects students' academic performance.						
Agree	123					
Neutral	48	66	197	77.18[a]	.00	Significant
Disagree	27					
2. The use of ICT gadget (mobile phone) improves students' academic performance.						
Agree	55					
Neutral	88	66	197	11.00[a]	.00	Significant
Disagree	55					
3. Yahoo boys are sound academically in school.						
Agree	21					
Neutral	41	66	197	114.39[a]	.00	Significant
Disagree	136					
4. Students can benefit from chatting with other students, teachers and external sources to acquire knowledge.						
Agree	167					
Neutral	17	66	197	231.91[a]	.00	Significant
Disagree	14					
8. Facebook can facilitate informal learning of students.						
Agree	112					
Neutral	46	66	197	48.36[a]	.00	Significant
Disagree	40					
9. Students that are addicted to social media gain more vocabulary and improved their writing, reduced their spelling mistakes.						
Agree	85					
Neutral	48	66	197	10.39[a]	.00	Significant
Disagree	65					
10. Facebook has a bad influence on students engagement in learning, due to time spent by student is on non-academic activities.						
Agree	141					
Neutral	32	66	197	128.21[a]	.00	Significant
Disagree	25					
11. Students spent more time on Facebook resulted in lower performance.						
Agree	155					

Neutral	22	66	197	180.03[a]	.00	Significant
Disagree	21					
12. Students spending time on fun and social activities of Facebook will influence their academic performance.						
Agree	132					
Neutral	32	66	197	99.03[a]	.00	Significant
Disagree	34					

Table 5 shows results of Chi – square statistics on the influence of social media on the performance of students in Mathematics with Chi – square average value [$x^2_{(197)} = 90.057$; p = 0.00]. The results show significant influence across all the questions in Table 5 as the p – values of each question was less than 0.05 significant level. Therefore, social media influenced the academic achievement of students in Mathematics.

Discussion of Findings

Findings of the study revealed that students' family background influenced their academic achievement in Mathematics. This could be as a result of their parents' level of education and socio-economic status. This finding is in line with the finding of Grissmer (2003) and Teese (2004), Comber (2007) and Oginni (2018) that students' family background influenced their academic achievement in Mathematics. Findings of the study also revealed that students' study habits influenced their academic achievement in Mathematics. This may be as a result negative perception students have about Mathematics. This is in line with the findings of Odili (2015) and Parvinder (2015) and Ebele and Olofu, (2017) that students' study habits influenced their academic achievement.

Another finding of the study revealed that students' peer group influenced their academic achievement in Mathematics. This may probably be as a result of the fact student with positive study habits will love to peer with another with similar positive study habits and vice-visa. This result is in agreement with the report of Omotere (2011) andFilade, Bello, Uwaoma, Anwanane, and Nwangburuka (2019) who stated that students' peer group influenced their academicachievement.The result showed that social media influenced the academic achievement of students in Mathematics. This could be as a result of students' exposure to social media. This finding is in line with the report Hamid, Chang, and Kurnia, (2011), Tetteh, Agyei and Ashong (2018) and Olisam, Areelu and Akudo (2018) and Khan (2009) that social media influenced the achievement of students in Mathematics.

Conclusion

The study concluded thatfamily background, study habits,peer groups and social media influenced students' academic achievement in Mathematics. It was also concluded that study habitssignificantly influenced the academic achievement of students in Mathematics. The study further concluded that social media significantlyinfluenced the academic achievement of students in Mathematics.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are considered relevant:

(i) Parents should provide enabling home environment for their children's academics. The Parents Teachers Association (PTA) meetings should be made mandatory by the school administrators for all parents to attend to discuss issues bothering on their children's academic achievement.

(ii) The schools should from time to time organize developmental programmes and educational activities such as quiz, debates, competitions that will enable students build efficient and effective study habits.

(iii) The educational planners and school authorities should include seminars, workshops and career day as part of the school activities so as to sensitize students on the negative effects of bad peer group association such as smoking, drugs, robbery, cultism, prostitution, to mention but a few.

(iv) The school administrators should design a friendly Information and Communication Technology environment in the school, where the students will be exposed to the positive use of social media to improve their academic achievement.

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