

The Effect of Covid – 19 on Gender and Achievement of Senior Secondary School Students in Mathematics

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Abstract

The effect of COVID – 19 pandemic on the academic achievement of senior secondary school students in the rural communities of Akwa Ibom state of Nigeria was studied. Five hundred (500) students were randomly selected from 2057 Senior Secondary School Class Two (SSC2) students. The sample were 250 males and 250 females. The scores of the students in Mathematics were collected from the terminal examination result broad sheets. Using causal comparative (ex- post facto) design, the analysis of data revealed that there existed significant differences in academic achievement of the male and female students before and after the COVID – 19 pandemic. Though the students' achievement declined during the pandemic, the female students' achievement was highly affected by COVID -19 and witness colossal decline due to the negative effect of the pandemic on learning and education in general. Students need palliatives and motivations to recover from shock cause by the COVID – 19.

Keywords: COVID – 19; Academic Achievement; Effect; Gender; Student; Pandemic; Palliative

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I. Background of the study

The advent of COVID -19 resulted in special distancing, leading to closure of schools during lock down and other measures that were used to ensure safety while learning. This phenomenon did not go down well with learners and teachers alike. Learning gaps were created during the pandemic which led to disruptions (common wealth, 2022) that resulted in drop in enrolment and marginalization, especially for girl children. Gonzalez *etal*(2020) carried out a study with 458 students from Universidad Autonoma de Madrid in Spain and discovered that there was a significant positive effect of COVID-19 on students' performance. In their finding they unveiled that students studied harder during the lock down which resulted in higher achievement.

Chertoff, Zarzour and Harvey (2020) decried the adverse effect of COVID - 19 on the education of trainees in radiology, admitting that social distancing lead to drop in patients volumes resulting in virtual lesson, causing disruption and shift in the mode of examination. Donnelly, Patrinos and Greshan(2021) complained that COVID-19 caused disruption in learning in Europe and measures adopted to support learning failed to yield desired effect.

eLearning Africa and Edtech Hub(2020) equally confirmed that COVID – 19 pandemic caused serious adverse effect on education which could not be mitigated. Human Right Watch(2020) pinpointed that COVID -19 pandemic resulted in inadequate and complete lack of education for children in rural communities in Africa, while Burges and Sievestsen (2020) advanced that there was serious negative of COVID-19 pandemic which lead to extended years of graduation for students thereby prolonging their period of graduation. In Nigeria the story was not different. The negative effect of COVID -19 could not even be remediated by introduction of e – learning (Eze, Sofethe, Onyishe and Ezeadi, 2021).

The variance in academic achievement of students in secondary schools in the rural communities due to COVID-19 is not clear but finding reveals that the pandemic had serious negative impact on learning worldwide. This study is conducted to determine the effect of the COVID-19 pandemic on academic achievement of secondary school students in the rural communities in Akwa Ibom State of Nigeria.

Statement of the problem

The wave of the pandemic that hit the world in 2019 led to closure of schools and restriction in movement. There was no direct teacher to student class lesson for of not less than three months. During the

period there were series of interventionist strategies that were introduced, including radio programme for primary and secondary school students. In some advanced countries zoom was introduced to promote learning. These strategies that were utilized during the lockdown were not accessible to school children in remote areas where radio signals and internet facilities were poor. Even when the schools resumed, there was social distancing and wearing of face mask which hinder interaction.

This raises doubt on the effectiveness of learning. It became pertinent to examine the effect of the pandemic and associated hindrances on achievement of male and female students in secondary schools in the rural areas. If any difference exists between the achievement of students before the pandemic and associated lockdown and after, when school resumed, in mathematics, is the focus of this study.

Hypotheses

There is no significant gender difference in the achievement of Senior Secondary school students in Mathematics before and after the COVID – 19 pandemics.

Purpose of the study

The purpose of the study is to determine the effect of COVID-19 on gender and achievement of students in mathematics.

It also determines whether the various strategies used to mitigate the effect of the lockdown on learning were successful in the rural communities with respect to gender and achievement in mathematics.

Significance of the study

The study reveals the impact created by the various measures taken by the government to ensure that school children learned notwithstanding the COVID-19 pandemic and its associated problems- such as lockdown, social distancing and wearing of face mask. It shows the gender differences in the achievement of students in mathematics before and after the COVID-19 pandemic thereby giving indication on the need for superior strategy for learning during emergencies like the pandemic.

Research design

The research is a causal comparative or ex – post facto study. It collected already existing data and analyzed to draw inference and conclusion.

Samples and sampling techniques

A total of 500 senior secondary class two (SS2) students comprising of 250 males and 250 females were used for the study. The subjects were randomly sampled from a total of 2057 students in SSS2 in 10 secondary schools in rural communities, purposively sampled from public secondary school in Eket senatorial district of Akwa Ibom state, which was randomly selected from the three senatorial districts of the State.

Instrumentation and data collection

The instrument for the collection of data for the study was terminal examination result sheets. The broad sheets for the first term results of the 2019/ 2020 session which was in December 2019 and the broad sheet of third term result which examination was taken in September 2020 after the lockdown were used to collect the data.

The scores of the 500 hundred students in mathematics, were randomly sampled and used for data analysis.

Data analysis procedure

The data were analyzed using by calculating the mean and standard deviation of the scores which were used to test the hypotheses. All the hypotheses were tested at 0.05 level of significance using t – test (t – ratio).

II. Data Analysis And Results

Hypothesis

There is no significant gender difference in the achievement of Senior Secondary school students in Mathematics before and after the COVID – 19 pandemics.

The result is shown in table 2 below:

Table 1: t – ratio of scores of students in Mathematics Before and After the COVID - 19

Pandemics

Term	Gender	Mean score	Standard Deviation	N	Degree of Freedom	t - ratio	Critical Value	Decision
Before COVID – 19 Pandemic	Male	76.3	7.5	250	498	31.4	1.96	Reject

	Female	52.7	9.2	250	498			
After COVID – 19 Pandemic	Male	68.4	11.3	250	498	30.2	1.96	Reject
	Female	41.8	8.1	250	498			

Table 2: t – ratio of scores of students Female Students in Mathematics Before and After the COVID - 19 Pandemics

Term	Mean score	Standard Deviation	N	Degree of Freedom	t - ratio	Critical Value	Decision
Before the COVID – 19 Pandemic	52.7	9.2	250	498	14.0	1.96	Reject
After the COVID – 19 Pandemic	41.8	8.0	250	498			

With the decline of the mean scores of female students from 52.7 and standard deviation of 9.2 before COVID-19 pandemics to 41.8 and standard deviation of 8.0 after the COVID-19 pandemics as against the male students mean scores of 76.3 and standard deviation of 7.5 before the COVID-19 and standard deviation of 11.6 after the COVID-19, shows that the female gender suffered the worst effect of the pandemics and had higher decline in achievement in mathematics.

III. Discussion

The result of the testing of the three hypotheses indicates that there existed significant gender differences in the achievement of senior secondary school students before and after the COVID – 19 pandemics, students’ achievement in Mathematics declined after the COVID – 19 pandemics. The result of the first term examination which was the last term before the out breaks were significantly higher. The second term took place during the COVID – 19 pandemics and it was obvious that the students could not do well because it was crashed.

The third term which was in September, 2020 in Akwa Ibom State and was the first term after the pandemics. The achievement scores of the students in mathematics were reasonably lower than the first term showing that the students did not recover from the pandemic. The COVID – 19 pandemic had serious impact in the achievement of the learners who did not recover even after one term. The effect was higher female students than male when mathematics achievement is considered.

There is need to provide incentives as well as remedial measures like after school and weekend lessons to help students cope with the effect of the lock down on learning. Government should introduce new books that would simplify the subject matter and make learning easy as well as others motivational strategies like introduction of palliatives such as free books, pens, mathematical sets, pencils and wears like polo shirts with inscriptions “good bye to COVID – 19 pandemics” to induce the learner and help them forget the harsh condition they went through during the pandemic was not friendly to learning and schooling.

The findings of the study however, agrees with Commonwealth (2002), Chertoff, Zarzour and Harvey (2020), Donnelly, Patrinos and Gresham (2021) as well as Eze, Sofothe, Onyishi and Ezeadi (2021) who decried the negative effect of COVID – 19 on learning and school programmes. That the effect was higher on the female students.

The findings differ strongly from that of Gonzelez *et al* (2020) which asserted that COVID – 19 had significant positive effect on the learners after university level, pinpointing that the students use the lockdown to study harder resulting in higher achievement. This may be one out of hundreds but could not be true for many situations due to fear of infections or losing family member to the pandemic as well as other distractions. Nevertheless, human right watch (2020), E – learning Africa and EdTech Hub (2020) as well as Barges and Sievestsen (2020) still confirm that COVID – 19 had negative effect on learning. They asserted that this was caused by lockdown and suggested that steps should be taken to mitigate the ugly effect on learners.

IV. Conclusion

The study revealed that COVID – 19 pandemic had serious negative effect on learning and achievement of students at the Senior Secondary School level in the rural communities in Akwa Ibom State. It is discovered that there exist significant differences in the achievement of learners in Mathematics, which is a compulsory subject. The achievement of students in mathematics declined after the COVID – 19, leading to lower achievement score than before the pandemic. The result shows that the decline in achievement in mathematics was more for female than male students. It is therefore essential to introduce palliative and other form motivation to enable learner recover from the shock created by the COVID – 19 pandemic that negatively affect their performance.

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