

PERCEIVED IMPACT OF THE COVID-19 PANDEMIC ON ELEMENTARY PUPILS' SCIENCE ACHIEVEMENT IN NIGERIA

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Abstract

The study investigated perceived impact of the COVID-19 pandemic on elementary pupils' science achievement. Five research questions and five hypotheses guided the study. The study made use of the survey research design. The research was done in Awka South Local Government Area of Anambra State. The sample of the study constituted of 300 primary six pupils. The instrument titled "Perceived Impact of the COVID-19 Pandemic Lockdown Questionnaire (PICPLQ)" was used for data collection. The statistical mean and standard deviation was used for answering the research questions while the independent t-test at 0.05 level of significance was used for testing the hypotheses. The major findings from the study showed that the COVID-19 pandemic impacted the primary school pupils in the area of the time spent in learning, learning motivation and parental support but had no impact on their pressure/stress signs and ways of interaction. Also, the differences in the perceived impact of the COVID-19 pandemic on male and female primary school pupils in the discussed areas were found not to be significant except for their pressure/stress signs. It was recommended among other things that government should provide training for both the teachers and the pupils of primary schools on the proper and effective use of online learning media/platforms in case of another lockdown/outbreak of any disease.

Keywords: Covid-19 pandemic, time spent in learning, learning motivation, parental support, pressure/stress signs, ways of interaction.

Introduction

The year 2019 was a very significant year in the history of the world as it saw the outbreak of SARS-CoV-2 (COVID-19) corona virus in Wuhan, China which was later declared by the World Health Organization (WHO) as a global pandemic (Zhao et al., 2020) and this led to a total lockdown in major countries of the world, Nigeria inclusive. In an effort to contain the spread of the virus, Nigeria, with the announcement by the Minister for Health on the 27th of March 2020 shut down all her educational institutions in the country resulting in the abrupt cutting shut of the second term of the 2019/2020 academic session which lasted for several months before the eventual reopening of schools. This shut-down of her educational institutions just like most countries of the world, led to the temporal suspension of the face-to-face classroom instruction (Oyinloye, 2020). She then advocated for a change in classroom teaching and learning involving face-to-face classroom interaction to online teaching and learning which necessitated pupils to take their classes from environments other than the normal classrooms. Literature (Huber & Helm, 2020; Oyinloye, 2020; Sonnemann & Goss, 2020) further posited that this change to online classes forced pupils to adapt to new environmental, technological and psychological learning conditions which impacted the pupils in the following ways; time spent in learning, pressure/stress signs, ways of pupils' interaction, learning motivation and parental support amongst others.

Huber and Helm (2020) observed that during the pandemic, pupils spent lesser amount of time in learning while using online learning platforms because the pandemic took the control of active learning time from the teachers and handed it over to the learners as well as their parents. The learners now as well as their parents determined the amount of time spent in learning during online classes since they could join or exit the online classes at will. Sonnemann and Goss (2020) also asserted that students learnt very little during the pandemic's disruption of the normal face-to-face teacher-student interaction which occasioned online learning. They further asserted that the disadvantaged students who could not access online learning platforms suffered most from the loss of learning/study time. Oyinloye (2020) asserted that for Nigeria with a less developed e-learning platforms for schools, her students tend to suffer most from the loss of learning hours. With respect to pressure/stress signs, Sprang and Silman (2013) showed in their work that children who were isolated or quarantined during pandemic diseases are more likely to suffer from acute stress disorder, adjustment disorder, and grief; Steele and Kuban (2011) maintained that such adverse psychological factors may affect learners and the learning process. Oyinloye posited that the COVID-19 pandemic necessitated an unprepared and forceful lockdown, isolation and quarantining as part of measure to curb the much "dreaded disease". The exertion of this measure cuts across all ages and levels of education but primary school pupils could actually be the ones most hit

by these measures considering their tenderness and their low tendency to adjust and adapt to new conditions in the environment.

As regarding ways of pupils' interaction, Huber and Helm (2020) posited that the pandemic limited teacher-student as well as student-student interactions in the classroom but allowed only a limited form of interaction with the online learning facilities. Considering the role classroom interactions play in students' learning according to Goodman et al. (2015), the primary school pupils are considered most vulnerable to any form of limitations in these interactions and they also tend to lose the social skills which these interactions provide for their future personal and professional growth. Sacerdote (2011) also observed that the school environment influences achievement through peer effects since being in a classroom provides students the opportunity to interact with their classmates and thus produce important positive externalities. Peer effects may operate through many different channels like students teaching each other and getting improvement together, classmates' high achievements may motivate the student (through competition or social influence) to work harder and the student can also develop an interest in their studies. But the isolation/social distancing as emphasized in some of the protocols for containing the COVID-19 disease may not have provided such opportunities for primary school pupils.

As touching the condition of learning motivation, Elikai and Schuhmann (2010) concluded from their work that grades can motivate pupils to learn since pupils may be more externally motivated to learn if they know that their learning will be assessed but considering Nigeria's less developed e-learning platforms (Oyinloye, 2020), proper and effective assessment of pupils' learning using these platforms may not be feasible and this could actually discourage pupils' learning as they realize their learning would not be assessed. With respect to the condition of parental support, Anger and Heineck (2010) correlated students' cognitive skills to parental support and this goes to show that parental support both cognitively and otherwise (Holmund et al. 2008; Vigdor et al. 2014) is essential for improved pupils' learning. But with the economic hardship brought upon the greater Nigerian population as observed by Oyinloye (2020), parents especially from the low class families spent lesser time with their children at home regardless of the lockdown, as they sought for other means of survival and sustenance of the family after their means of livelihood was halted by the lockdown and government's incentives to cushion the adverse effect of the pandemic was not forth-coming. They also were not able to provide some of the educational resources needed for their children's participation in online learning. The perceived impact of the COVID-19 pandemic on primary school pupils may vary based on pupils' gender.

Okeke (2011) defined gender as the social or cultural construct, characteristics, behaviours and roles which society ascribes to males and females. It is also defined by Ezech (2013) as the personality traits, attitudes, behaviours, values, relative power, influence, roles and expectation that society ascribes to

the two sexes (male and female) on a differential basis. The perceived impact of the COVID-19 pandemic on primary school pupils' time spent in learning, pressure/stress symptoms, ways of pupils' interaction, learning motivation and parental support may vary and this could be as a result of the stereotyped responsibilities assigned to the male and female children in the home (Onyeizugbo, 2003).

Although several researchers from around the world have carried out studies on COVID-19 pandemic as it relates the educational sector, this study is an attempt to however, cover the literature gap on the perceived impact of the COVID-19 pandemic on primary school pupils in Awka South, Anambra State, Nigeria.

Purpose of the Study

The main purpose of this study was to determine the perceived impact of the COVID-19 pandemic on primary school pupils in Awka South. Specifically, the study seeks to find out:

1. the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' time spent in learning in Awka South
2. the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' pressure and stress signs in Awka South
3. the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' ways of interaction in Awka South
4. the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' learning motivation in Awka South
5. the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' parental support in Awka South

Research Questions

The following research questions guided the study:

1. What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' time spent in learning in Awka South?
2. What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' pressure and stress signs in Awka South?
3. What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' ways of interaction in Awka South?
4. What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' learning motivation in Awka South?
5. What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' parental support in Awka South?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' time spent in learning in Awka South.
2. There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' pressure/stress signs in Awka South.
3. There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' ways of interaction in Awka South.
4. There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' learning motivation in Awka South.
5. There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' parental support in Awka South.

Method

The study adopted the survey research design. This type of design (Anikweze, 2013) involves a detailed and critical examination of a topic or situation with a view of finding out what is and how it is.

The target population of the study comprised of all the 4,225 primary five and six pupils in Awka South LGA of Anambra State. The choice of primary five and six pupils was based on the fact that the pupils have been sufficiently exposed to primary education and they are expected to have attained certain level of intellectual ability to be able to answer raised questions bothering on the impact the COVID-19 pandemic had on them. Simple random sampling technique was used in constituting a sample of 300 primary school pupils for the study.

A self constructed instrument by the researchers titled "Perceived Impact of the COVID-19 Pandemic Questionnaire (PICPQ)" was used for collecting data. The PICPQ was developed with a four-point rating scale of strongly agree (SA), agree (A), disagree (D) and strongly disagree. The statistical mean was used for answering the research questions while the independent t-test at 0.05 level of significance was used for testing the hypotheses.

Results and Discussion

Research question 1: What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ time spent in learning in Awka South?

Table 1: Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils’ Time Spent In Learning in Awka South.

		Male				Female			
		N	Mean	Std	Remark	N	Mean	Std	Remark
1	I was not involved in any online classes	159	2.97	.97	A	141	2.90	.82	A
2	I spent much time playing	159	2.79	1.04	A	141	2.76	1.00	A
3	I spent much time in online classes	159	2.76	1.08	A	141	3.05	1.06	A
4	I could not concentrate during online classes	159	2.83	1.13	A	141	2.89	.99	A
5	I enjoyed online classes	159	2.03	1.01	D	141	1.84	1.02	D
6	I spent most of my time watching television	159	2.69	1.05	A	141	2.78	.97	A
7	I could not use teaching and learning facilities for online classes	159	2.65	1.07	A	141	2.60	1.15	A
8	I had no access to facilities for online classes	159	3.03	.90	A	141	2.71	.54	A
	Time spent in learning	159	2.74	.54	A	141	2.73	.54	A

Result on table 1 shows the mean and standard deviations of respondents on the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ time spent in learning in Awka south Local Government Area. The result shows that all the items except item 5 for both male and female pupils’ had mean ratings above 2.50 set as criterion level. This shows that both male and female primary school pupils have the same perception on the impact of the COVID-19 pandemic on primary school pupils’ time spent in learning. The respondents agreed in overall that the COVID-19 pandemic had some impact on the time they spent in learning thus corroborating the studies of Huber and Helm (2020) Oyinloye (2020) and Sonnemann & Goss (2020). This observed finding could be as a result of the transition from face-to-face teaching and learning to online teaching and learning which in Nigeria is still less developed and lacks proper, sufficient and efficient resources for its actualization.

Research question 2: What is the perceived impact of the COVID-19 pandemic on the Male and Female Primary School Pupils’ Pressure and Stress Signs in Awka South?

Table 2: Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils’ Pressure and Stress Signs in Awka South.

		Male				Female			
		N	Mean	Std	Remark	N	Mean	Std	Remark
1	My parents never allowed me to play	159	2.87	1.00	A	141	2.68	1.03	A
2	My parents engaged me with excess academic work	159	2.03	1.02	D	141	1.99	1.07	D
3	Being indoor most of the time made life unbearable	159	2.08	1.09	D	141	1.69	.95	D
4	I was overburdened with house chores	159	2.42	1.09	D	141	2.24	1.16	D
5	I felt bored and unhappy	159	2.43	1.06	D	141	2.17	1.23	D
6	My private home teacher gave me much assignments	159	2.69	1.05	A	141	2.64	1.10	A
7	Online classes was very stressful	159	2.60	1.09	A	141	2.48	1.16	A
8	Online classes presented excess workload to me	159	2.32	1.08	D	141	2.27	1.145	D
	Pressure and Stress Signs	159	2.43	.53	D	141	2.27	.59	D

Result on table 2 shows the mean and standard deviations of respondents on the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ pressure/stress signs in Awka south Local Government Area. The result shows that items 1, 6 and 7 for both male and female pupils’ had mean ratings above 2.50 set as criterion point, while both also disagreed on the statements in items 2, 3, 4, 5 and 8 because their mean scores are less than 2.50. In overall, the pupils disagreed that the COVID-19 pandemic impacted their pressure and stress signs. The unprepared and forceful lockdown, isolation and quarantining caused by the COVID-19 pandemic as also observed by Oyinloye

(2020) did not actually cause any pressure/stress signs in pupils as was proposed by Sprang and Silman (2013) and Steele and Kuban (2011). This contradicting finding could be as a result of their exposure to other productive activities such as online classes, home lesson amongst others even under lockdown.

Research question 3: What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ ways of interaction in Awka South?

Table 3: Perceived Impact of the COVID-19 Pandemic on the male and female Primary School Pupils’ ways of Interaction in Awka South.

S/N		Male				Female			
		N	Mean	Std	Remark	N	Mean	Std	Remark
1	I could not see most of my friends	159	1.63	.76	D	141	1.48	.85	D
2	I spent most of my time indoor	159	1.74	.94	D	141	1.60	.93	D
3	My parents restricted my movement	159	1.91	1.00	D	141	1.85	1.08	D
4	I was always sad because I was not allowed to play with my friends	159	2.22	1.18	D	141	2.04	1.05	D
5	Staying indoors made me read more	159	2.99	1.04	A	141	3.22	.99	A
6	I had sufficient time interacting with my family	159	3.16	.92	A	141	3.31	.96	A
7	Reading/learning bored me	159	2.69	.98	A	141	2.74	.99	A
8	I enjoyed interacting with my books	159	2.85	.99	A	141	2.74	.98	A
Ways of Interaction		159	2.39	.39	D	141	2.36	.40	D

Result on table 3 shows the mean and standard deviations of respondents on the perceived impact of the COVID-19 pandemic on primary school pupils’ ways of interaction in Awka south Local Government Area. The result shows that both male and female primary school pupils’ had the same perception of agree on items 5, 6, 7, and 8 as their mean ratings on the items are above 2.50 set as criterion point and disagreed on items 1, 2, 3 and 4 since their mean scores are below 2.50 criterion point. Overall, the respondents disagreed that the COVID-19 pandemic impacted on their ways of interaction. This finding is in contradiction to the findings of Huber and Helm (2020). The respondents

maintained that their ways of interaction remained the same regardless of the COVID-19 pandemic.

Research question 4: What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ learning motivation in Awka South?

Table 4: Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils’ Learning Motivation in Awka South.

S/N	Male						Female			
	N	Mean	Std	Remark	N	Mean	Std	Remark		
1	My parents motivated me to learn	159	3.06	1.09	A	141	3.13	1.19	A	
2	Online teaching made learning difficulty	159	2.50	1.09	A	141	2.47	1.03	D	
3	I enjoyed online classes	159	2.89	1.12	A	141	2.94	1.09	A	
4	Online teaching and learning is boring	159	2.83	.98	A	141	2.74	.969	A	
5	I found online teaching and learning very exciting	159	2.85	1.11	A	141	2.76	1.12	A	
6	I saw online classes as a waste of time, money and effort	159	2.81	.92	A	141	2.60	.916	A	
7	Lack of proper planning made online classes uninteresting	159	2.31	1.11	D	141	2.53	1.00	D	
8	I lacked motivation for online classes	159	2.67	1.08	A	141	2.72	.936	A	
	Learning Motivation	159	2.74	.56	A	141	2.74	.576	A	

Result on table 4 shows the mean and standard deviations of respondents on the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ learning motivation in Awka South. Result shows that the male and female primary school pupils shared the same opinion as touching every item except item 7 where the female primary school pupils disagreed with their male counterparts over online classes making learning difficult. In overall, the pupils agreed that the COVID-19 pandemic had some impact on their learning motivation. The inability for a proper and efficient assessment of pupils’ learning due to Nigeria’s less developed e-learning platforms as observed by Oyinloye

(2020) could have discouraged the pupils from learning as they realize that their learning may not be assessed.

Research question 5: What is the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ parental support in Awka South?

Table 5: Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils’ Parental Support in Awka South.

S/N		Male				Female			
		N	Mean	Std	Remark	N	Mean	Std	Remark
1	My parents showed no care about my academics	159	3.11	.44	A	141	2.94	.60	A
2	My parents provided facilities to enable me join online classes	159	3.32	.98	A	141	3.43	.95	A
3	My parents were too busy for me	159	2.65	.92	A	141	2.57	.97	A
4	My parents could not afford to get me facilities for online classes	159	2.99	.75	A	141	3.05	.66	A
5	My parents guided me on how to use facilities for online classes	159	3.26	.91	A	141	3.37	.96	A
6	My parents motivated me to learn/read my books	159	3.55	.79	A	141	3.61	.69	A
7	My parents engaged on my behalf the services of a private home teacher	159	2.55	1.06	A	141	2.74	1.09	A
8	My parents regulated the time for my play.	159	3.17	.95	A	141	3.26	.79	A
	Parental Support	159	3.07	.37	A	141	3.12	.37	A

Result on table 5 shows the mean and standard deviations of respondents on the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ parental support. The result shows that both male and female pupils’ agreed on all items because their mean rating scores are above 2.50 set as criterion level. Overall, the pupils agreed that the COVID-19 pandemic

impacted on their parent’s support towards their academics. This finding corroborated the findings of Oyinloye (2020) and Moroni et al. (2020) and this could be as the untold hardship the pandemic brought upon the teeming masses or low class families.

Hypothesis testing

Hypothesis 1: There is no significant difference in the Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils’ Time Spent in Learning in Awka South.

Table 6: t-test Comparison of the Mean Ratings of Male and Female Pupils’ response on the Perceived Impact of the COVID-19 Pandemic on Primary School Pupils’ Time Spent in Learning.

Source variation	N	Mean	SD	df	t-value	p-value	Decision
Male	159	2.75	0.54	298	.286	.775	Not significant
Female	141	2.72	0.54				

The result in table 6 shows that there is no statistical significant difference between male and female primary school pupils on the perceived impact of COVID-19 pandemic on primary school pupils time spent in learning. This is because the p-value .775 is greater than the level of significance at 0.05. Therefore the null hypothesis was not rejected. This finding goes to show that regardless of gender, primary school pupils were given the same time and opportunity to be involved in the online teaching and learning sessions.

Hypothesis 2: There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils’ pressure/stress signs in Awka South

Table 7: t-test Comparison of the Mean Ratings of Male and Female Pupils’ response on the Perceived Impact of the COVID-19 Pandemic on Primary School Pupils’ Pressure/Stress Signs in Learning.

Source variation	N	Mean	SD	df	t-value	p-value	Sig
Male	159	2.42	0.53	298	2.47	.014	Significant
Female	141	2.27	0.59				

The result in table 7 shows that there is a statistical significant difference in the male and female primary school pupils’ perception on the impact of the COVID-19 pandemic on their pressure/stress signs. This is because the p-value

.014 is less than the level of significance at 0.05. Therefore the null hypothesis was rejected. This finding corroborated the study of Onyeizugbo (2003) who posited that the stereotyped responsibilities assigned to male and female students at home, cause them to differ by certain factors.

Hypothesis 3: There is no significant difference in the Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils' Ways of Interaction in Awka South.

Table 8: t-test comparison of the Mean Ratings of Male and Female Pupils' response on the Perceived Impact of the COVID-19 Pandemic on the Primary School Pupils' Ways of Interaction in Learning.

Source variation	N	Mean	SD	df	t-value	p-value	Sig
Male	159	2.39	.39	298	.701	.484	Not significant
Female	141	2.37	.40				

The result in table 8 shows that there is no statistical significant difference between male and female primary school pupils on the perceived impact of COVID-19 pandemic on primary school pupils' ways of interaction in learning. This is because the p-value .484 is greater than the level of significance at 0.05. Therefore the null hypothesis was not rejected. This finding goes to show that regardless of gender, primary school pupils shared similar interaction patterns even during the lockdown.

Hypothesis 4: There is no significant difference in the perceived impact of the COVID-19 pandemic on the male and female primary school pupils' learning motivation in Awka South.

Table 9: t-test Comparison of the Mean Ratings of Male and Female Pupils' on the Perceived Impact of the COVID-19 Pandemic on Primary School Pupils' Learning Motivation.

Source variation	N	Mean	SD	df	t-value	p-value	Sig
Male	159	2.74	.56	298	.059	.953	Not significant
Female	141	2.74	.58				

The result in table 9 shows that there is no statistical significant difference between male and female primary school pupils on the perceived impact of COVID-19 pandemic on primary school pupils learning motivation. This is because the p-value .953 is greater than the level of significance at 0.05. Therefore

the null hypothesis was not rejected. The findings showed that both male and female primary pupils had the same or similar learning motivation while using the online learning platforms for the teaching and learning process.

Hypothesis 5: There is no significant difference in the Perceived Impact of the COVID-19 Pandemic on the Male and Female Primary School Pupils' Parental Support in Awka South.

Table 10: t-test Comparison of the Mean Ratings of Male and Female Pupils' on the Perceived Impact of the COVID-19 Pandemic on Primary School Pupils' Parental Support.

Source variation	N	Mean	SD	df	t-value	p-value	Sig
Male	159	3.07	.37	298	-1.095	.275	Not significant
Female	141	3.11	.37				

The result in table 10 shows that there is no statistical significant difference between male and female primary school pupils on the perceived impact of COVID-19 pandemic on primary school pupils' parental support. This is because the p-value .275 is greater than the level of significance at 0.05. Therefore the null hypothesis was not rejected. This finding shows that the parents to these pupils gave them the same kind of support during the pandemic regardless of their gender.

Conclusion

The study thus concludes that the COVID-19 pandemic impacted the primary school pupils in the area of the time spent in learning, learning motivation and parental support but had no impact on their pressure/stress signs and ways of interaction. The differences in the perceived impact of the COVID-19 pandemic on male and female primary school pupils in the discussed areas are not significant except for their pressure/stress signs.

Recommendations

1. Government should provide the necessary resources to be deployed for effective online teaching and learning.
2. Government should provide training for both the teachers and the pupils of primary schools on the proper and effective use of online learning media/platforms in case of another lockdown/outbreak of any disease.
3. Parents should provide maximum support in any way possible to help the pupils adjust effectively and recover lost grounds occasioned by the COVID-19 pandemic
4. Proper and effective assessment should be incorporated in online learning platforms.

5. Gender equality should be considered in the assignment of responsibilities to pupils both at home and in school.

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