

Learning of Biology Concepts in a New World Order in a Nigerian Tertiary Institution

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ABSTRACT: *A new order crept into all walks of lives during the Covid-19 pandemic with its enduring impacts on modes of learning. Consequently, the conventional four-walled learning was pulled down, hence, the utilisation of various e-social platforms traditionally meant for social networking. Thus, this study adopts ex-post factor research design to ascertain the utilisation of some e-social platforms by students during and post Covid-19 lockdown. A questionnaire on utilisation of e-social platforms for learning of biology concepts (Q_{Ue-SPLBC}) was administered on 80 randomly sampled 300 level biology education students who were in 100 level shortly prior the lockdown in the year 2020. The findings showed that unlike what the e-social platforms were used for prior the lockdown, students have integrated these platforms into their learning process. Hence, this study implies that biology lecturers (science educators alike) should brace up for the challenges in the e-social platforms in order to harness the inherent opportunities therein to further enhance learning beyond the four walls*

KEYWORDS: e-social platforms, new world order, biology concepts

INTRODUCTION

The lockdown brought on by the Covid-19 outbreak was the most recent example of disruption of all facets of life that may have occurred. To the point where caged animals could be seen encroaching on human streets, the entire globe was imprisoned. According to Liudmila (2021), the Covid-19 epidemic not only had negative effects on people's health but also destroyed their aspirations, altered their family and work relationships, and threatened their economic stability. It is important to note that the teaching-learning process and the educational sector were not excluded since 91% of the world's educational institutions were shut down (UNESCO, 2021).

The creation of the teaching process, instructional delivery strategies, and conceptual framework for teaching all required alterations as a result of the aforementioned. As proposed by Jose, Antonio, Rafaela, and Alajandro (2021), this results in a paradigm shift from the face-to-face teaching-learning process to the online instructional model. According to Lourduraj and Malika (2020), the internet and social media have significantly changed not only the types of media but also how students and other learners choose to learn. Previously, only radio, television, advertising, and film were considered to be media forms. Although Oladosu et al. (2015) reported that students had a high level of awareness of different social media platforms, research revealed that students mostly used these sites to engage with friends and family and very infrequently for studying. In a separate research, Oladosu (2020) found that students were very interested and prepared to use social media to promote learning outside of the classroom, particularly during the lockdown brought on by the Covid-19 epidemic. favourable interest in an activity tends to be accompanied with a favourable attitude towards partaking in the activity and, by extension, towards the activity's facilities.

Regardless of the various hypotheses put forth by the Social Learning Theories regarding how students learn, such as those of Vygotsky (1978), as reviewed by Mcleod (2023), which emphasise interaction with more knowledgeable people, or those of Piaget (1977), as reviewed by Crossland (2015), which emphasise cognitive conflict arising from peer interaction, the common denominator is that students learn through interaction in a socially similar way. In essence, this is what modern students have access to thanks to technology and, indirectly, social media sites. According to Lourduraj and Malika (2020), "a person adopts a technology when they are affected by it." In other words, people select and use technology platforms based on their own value and utility. The adoption and use of various social media platforms during the Covid-19 shutdown highlights how essential they are to the process of teaching and learning.

Hence, this study, premised on the research questions thereon, intends to find out the utilisation level of some common social media platform during and post Covid-19 lockdown for learning process

The research questions were:

- What is the utilisation level of e-social platforms for learning of biology concepts during Covid-19 lockdown?
- What is the utilisation level of e-social platforms for learning of biology concepts post-covid-19 lockdown?

Further to the above questions, two hypotheses were tested at 0.05 level of significance.

Ho1: There is no significant difference in the utilisation level of e-social media for learning biology concepts during and post Covid-19 lockdown.

Ho2: There is no significant gender difference in the utilisation level of e-social platforms for learning biology concepts by undergraduates.

METHODOLOGY

The study adopts ex post facto type of research design. The sample consisted of 80 randomly selected biology education students in 300 level who were in 100 level during the Covid-19 lockdown. A self-developed “Questionnaire on Utilisation of e-social platforms for Learning Biology Concepts” was administered on the sampled population having obtained 0.76 reliability index using Cronbach alpha. The instrument was also validated by other two lecturers from the department of Science Education of the University. The questionnaire was administered by the researchers who in turn retrieved on the spot.

Data Analysis

This section presents data analyzes and interpretation of the results. The results are presented by employing descriptive analysis and hypotheses such as frequency count, percentages, and t-test statistic. While frequency count and percentages proffer answers to the items of the questionnaires given to the respondents in the field, t-test statistic was used to test the two hypotheses formulated at the 0.05 level of significance.

Respondents' Demographic Characteristics

Students' responses to the items of the questionnaire were analyzed descriptively. The variables of consideration include students' gender, and utilisation level of e-social platforms.

Table 1: Frequency and Percentage of students' Gender

Gender	Frequency	Percentage
Male	36	45.0
Female	44	55.0
Total	80	100

Table 1 above shows the frequency and percentage of Biology students' gender in University of Nigeria Nsukka, Ikere-Ekiti campus selected for study. The table indicates that 36 (45.0%) male students and 44 (55.0%) female students participated in the study. The level of utilisation of e-social platforms for learning of biology concepts during covid-19 lockdown is measured using student's social media usage including live learning, assignment, group discussion with lecturers and group discussion among peers as presented hereunder.

Table 2: Utilisation of e-social platform during covid-19 lockdown

	E-social platform	WhatsApp				Google Meet				Zoom			
		FU	SU	SeU	NU	FU	SU	SeU	NU	FU	SU	SeU	NU
1.	Usage level												
1.	Live learning	63	17	0	0	57	12	9	2	55	20	5	0
2.	Assignment	71	9	0	0	62	10	5	3	40	15	5	20
3.	Group discussion with lecturer	72	8	0	0	66	4	5	5	42	12	14	12
4.	Group discussion among peers	76	4	0	0	60	12	8	0	38	20	12	10

FU = Frequently Used, SU = Sometimes Used, SeU = Seldomly Used, NU = Not Used.

In Table 2, respondents indicated their level of utilisation of e-social platform during covid-19 lockdown for learning biology. The table revealed that 63 (78.7%) students frequently use their WhatsApp account for live learning in biology, 17 (21.3%) students sometime use their WhatsApp platform for live learning in biology, 0 (0.0%) students seldomly use WhatsApp for live learning while 0 (0.0%) students do not use WhatsApp for live learning in biology. The table revealed that 71 (88.7%) students frequently use their WhatsApp account for biology assignments, 9 (11.3%)

students sometime use their WhatsApp platform for biology assignments, 0 (0.0%) students seldomly use WhatsApp for Biology assignments while 0 (0.0%) students do not use WhatsApp for biology assignment. In addition, the table revealed that 72 (90.0%) students frequently use their WhatsApp account for group discussion with biology lecturer, 8 (10.0%) students sometime use their WhatsApp platform for group discussion with biology lecturer, 0 (0.0%) students seldomly use WhatsApp for group discussion with biology lecturer while 0 (0.0%) students do not use WhatsApp for group discussion with biology lecturer. Lastly, the table revealed that 76 (95.0%) students frequently use their WhatsApp account for group discussion among peers, 4 (5.0%) students sometime use their WhatsApp platform for group discussion among peers, 0 (0.0%) students seldomly use WhatsApp for group discussion among peers while 0 (0.0%) students do not use WhatsApp for group discussion among peers.

Similarly, in Table 2, respondents indicated their level of utilisation of e-social platform during covid-19 lockdown for learning biology. The table revealed that 57 (71.3%) students frequently use their Google meet account for live learning in biology, 12 (15.0%) students sometime use their Google meet platform for live learning in biology, 9 (11.2%) students seldomly use Google meet for live learning while 2 (2.5%) students do not use Google meet for live learning in biology. The table revealed that 62 (77.5%) students frequently use their Google meet account for biology assignments, 10 (12.5%) students sometime use their Google meet platform for biology assignments, 5 (6.3%) students seldomly use Google meet for Biology assignments while 3 (3.7%) students do not use Google meet for biology assignment. In addition, the table revealed that 66 (82.5%) students frequently use their Google meet account for group discussion with biology lecturer, 4 (5.0%) students sometime use their Google meet platform for group discussion with biology lecturer, 5 (6.25%) students seldomly use Google meet for group discussion with biology lecturer while 5 (6.25%) students do not use Google meet for group discussion with biology lecturer. Lastly, the table revealed that 60 (75.0%) students frequently use their Google meet account for group discussion among peers, 12 (15.0%) students sometime use their Google meet platform for group discussion among peers, 8 (10.0%) students seldomly use Google meet for group discussion among peers while 0 (0.0%) students do not use Google meet for group discussion among peers.

Furthermore, in Table 2, respondents indicated their level of utilisation of e-social platform in post covid-19 lockdown for learning biology. The table revealed that 55 (68.7%) students frequently use their Zoom account for live learning in biology, 20 (25.0%) students sometime use their Zoom platform for live learning in biology, 5 (6.25%) students seldomly use WhatsApp for live learning while 0 (0.0%) students do not use Zoom for live learning in biology. The table revealed that 40 (50.0%) students frequently use their Zoom account for biology assignments, 15 (18.7%) students sometime use their Zoom platform for biology assignments, 5 (6.25%) students seldomly use Zoom for Biology assignments while 20 (25.0%) students do not use Zoom for biology assignment. In addition, the table revealed that 35 (43.7%) students frequently use their Zoom

account for group discussion with biology lecturer, 21 (26.3%) students sometime use their Zoom platform for group discussion with biology lecturer, 15 (18.7%) students seldomly use Zoom for group discussion with biology lecturer while 9 (11.3%) students do not use Zoom for group discussion with biology lecturer. Lastly, the table revealed that 38 (47.5%) students frequently use their Zoom account for group discussion among peers, 20 (25.0%) students sometime use their Zoom platform for group discussion among peers, 12(15.0%) students seldomly use Zoom for group discussion among peers while 10 (12.5%) students do not use Zoom for group discussion among peers.

Research Question 2: What is the utilisation level of e-social platforms for learning of biology concepts post-covid-19 lockdown?

The level of utilisation of e-social platforms for learning of biology concepts post-covid-19 lockdown is measured using student's social media usage including live learning, assignment, group discussion with lecturers and group discussion among peer as presented hereunder.

Table 3: Utilisation of e-social platform in post covid-19 lockdown

	E-social platform	WhatsApp				Google Meet				Zoom			
		FU	SU	SeU	NU	FU	SU	SeU	NU	FU	SU	SeU	NU
1.	Live learning	37	17	11	15	31	26	13	10	25	23	18	14
2.	Assignment	41	20	10	9	40	17	12	11	32	20	15	13
3.	Group discussion with lecturer	35	21	15	9	31	23	16	10	23	25	14	18
4.	Group discussion among peers	52	13	8	7	48	15	8	9	35	19	18	8

FU = Frequently Used, SU = Sometimes Used, SeU = Seldomly Used, NU = Not Used.

In Table 3, respondents indicated their level of utilisation of e-social platform in post covid-19 lockdown for learning biology. The table revealed that 37 (46.3%) students frequently use their WhatsApp account for live learning in biology, 17 (21.3%) students sometime use their WhatsApp platform for live learning in biology, 11 (13.7%) students seldomly use WhatsApp for live learning while 15 (18.7%) students do not use WhatsApp for live learning in biology. The table revealed that 41 (51.2%) students frequently use their WhatsApp account for biology assignments, 20 (25.0%) students sometime use their WhatsApp platform for biology assignments, 10 (12.5%) students seldomly use WhatsApp for Biology assignments while 9 (11.3%) students do not use WhatsApp for biology assignment. In addition, the table revealed that 35 (43.7%) students frequently use their WhatsApp account for group discussion with biology lecturer, 21 (26.3%)

students sometime use their WhatsApp platform for group discussion with biology lecturer, 15 (18.7%) students seldomly use WhatsApp for group discussion with biology lecturer while 9 (11.3%) students do not use WhatsApp for group discussion with biology lecturer. Lastly, the table revealed that 52 (65.0%) students frequently use their WhatsApp account for group discussion among peers, 13 (16.3%) students sometime use their WhatsApp platform for group discussion among peers, 8 (10.0%) students seldomly use WhatsApp for group discussion among peers while 7 (8.7%) students do not use WhatsApp for group discussion among peers.

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Test of Hypotheses

Hypothesis 1: There is no significant difference in the utilisation level of e-social media for learning biology concepts during and post Covid-19 lockdown.

Table 4: t-test analysis of students' response

Variable	N	Mean	SD	df	t _{cal.}	t _{tab.}	Decision
During Covid-19 lockdown	80	3.70	1.66	158	2.08	1.96	Not significant
Post Covid-19 lockdown	80	3.09	1.39				

P < 0.05 significance level

Table 4 shows the result of analysis of the utilisation level of e-social platform for learning biology concepts during and post Covid-19 lockdown. The table revealed that mean rating for students' usage during Covid-19 lockdown (3.70) was greater than the mean rating for students' usage in post Covid-19 lockdown (3.09) with a mean difference of (0.61). The t-test revealed that t-calculated (2.08) greater than the critical t-value (1.96) at the 0.05 significance level. Hence, the null hypothesis was not upheld. This means that there is a significant difference in the utilisation level of e-social media for learning biology concepts during and post Covid-19 lockdown.

Hypothesis 2: There is no significant gender difference in the utilisation level of e-social platforms for learning biology concepts by undergraduates.

Table 5: t-test analysis of students' response

Variable	N	Mean	SD	df	t _{cal.}	t _{tab.}	Decision
Male Utilisation	36	3.15	1.37	78	0.63	1.96	Not significant
Female Utilisation	44	3.23	1.56				

P < 0.05 significance level

Table 5 shows the result of analysis of the utilisation level of e-social platforms for learning biology concepts by male and female undergraduates. The table revealed that mean rating for male students (3.15) was less than the mean rating for female students (3.23) with a mean difference of (0.80). The t-test revealed that t-calculated (0.63) was less than the critical t-value (1.96) at the 0.05 significance level. Hence, the null hypothesis was upheld. This means that there is no gender difference in the utilisation level of e-social platforms for learning biology concepts by undergraduates.

Implication of the Study

This present study is an eye opener to the fact that social media platforms enhance the teaching and learning of biology during Covid 19 pandemic and this was also brought fore to the post-Covid era. Though, the utilisation of the e-social platforms was significantly higher during the lockdown, nevertheless, findings from this study show that students still utilize them for learning post-Covid. In another view, this present study in trying to ascertain the gender digital gap found that both gender did make use of the e-social platforms during and post-Covid 19 lockdown. This is an indication that the gender digital gap is being bridged. The continual quest in closing gender digital divide remains a focal goal in the Sustainable Development Goal (SDG) 5. This, was also captured during the “African Union –European Union” Intergenerational Panel Discussion (2023), held at the United Nations Headquarters. From the findings above, it is imperative to submit that biology lecturers and science educators should be alive to inevitable challenges that will permeate classrooms as a result of the utilisation of these e-social media platforms by biology students. Needless to say is that, the opportunities are immense, nevertheless, the challenges are daunting.

REFERENCES

- African Union (2023). Rethinking how to bridge the gender digital: Intergenerational Panel Discussion. UN HQ. https://www.ecas.europa.eu/delegation/un-new-york/rethinking-how-bridge-gender-digital-divide_en
- Crossland, J. (2015). Is Piaget wrong? *Journal of Association for Science Education Primary Science*. 137, 1.
https://www.researchgate.net/publication/273513058_is_Piaget_wrong/citation/download
- Jose, A., Antonio, R., Rafaela, C. and Alejandro, S. (2021). The effect of Covid-19 in the learning process of primary school students. A systematic review. *Journal of Education Sciences*. 11, 1. Doi: 10.3390/educsci11100654
- Liudmila, L. (2021). How has your life been affected by over a year living with the Covid-19 pandemic? ISGlobal. <https://www.isglobal.org/en/healthisglobal>
- Lourduraj, I. and Mallika, V.K. (2022). Undergraduates students' use of social media during the Covid-19 pandemic in the content of online learning at higher education institutions. *Journal of Critical Reviews*. 7,1. Doi: 10.31838/JCR.07.11.624

- Lourduraj, I. and Mallika, V.K. (2020). Theories of social media and learning: A study on the use of social media by undergraduate's students. *Journal of Critical Reviews*. 5, 1. Doi: 10.4018/978-1-7998-3464-9-ch017
- Mcleed, S. (2023). Vygotsky's sociocultural theory of cognitive development. *SimplyPsychology*. <https://www.simplypsychology.org.vygotsky.html>
- Oladosu, A.T. (2020). Pre-service teachers' interest and readiness of utilisation of social media for learning during a pandemic outbreak. *Journal of Research in Science Education*. 4, 1.
- Oladosu, A. T., Akinwumi, I.O., and Orubuloye, J.O. (2015). Awareness and utilisation of social media for improved learning among biology students in a Nigeria tertiary institution. *International Journal of Issues on African Development*. 10, 1. 195-216
- UNESCO (2021). Education: From school closure to recovery. <https://www.unesco.org/en/covid19/education-response>