Original Research Article

The Use of Information and Communication Technology to Teach: Assessment of Secondary School Students' Perceptions

Abstract

In today's society, technology has become a vital aspect of economic and social development; as a result, the 21st-century student should try to be more innovative by utilizing a variety of information and communication technology (ICT) facilities. The goal of this study was to find out the views of secondary school students about using information and communication technology in economics classrooms. Three research questions led the investigation. The study used a descriptive research design. The study's population consists of 1675 senior secondary students studying economics in Onitsha metropolis, Anambra State, Nigeria. Multi-stage sampling procedure was used to draw a sample of 432 senior secondary two (SS2) students, with 238 (55 percent) from public and 194 (45 percent) from private secondary schools. Data was collected using a 27-item structured questionnaire. Analysis of data was through descriptive and inferential statistics. A p-value that is greater or equal to 0.05 was taken as significant. The findings revealed that the students agreed that the ICT facilities listed could be used to teach economics, though the frequency of use by economics teachers was poor, especially in public schools since the result showed a significant difference in favour of the private schools. On the whole, the economics students were of the view that ICT facilities should be employed in teaching economics as it makes learning of the concepts easier and the topics become clearer. Some recommendations were made based on the findings.

KEYWORDS: Information and communication technology, economics education, teaching, secondary school, students

Introduction

The importance of technology can no longer be undermined especially in this 21st century. All nations of the world have caught the technological bug and any nation that is poor in modern technology can never find its feet in the current scenario. This is because technology makes almost all manual work automated; resulting in easier, more convenient and more efficient outputs (Metu et al, 2021). Information and communication technology

(ICT) as described by Shittu, 2013 include all forms of new technologies that facilitate the collection, processing, storage, retrieval, usage, transfer or sharing of information, ideas and viewpoints. These could be done through digital resources like computers, televisions, projectors, recording software, digital cameras, the internet and other applications. In the educational sector, ICT means using computer modelling, multimedia materials, web technology, collaborative learning, and other technology tools for teaching, learning and assessment (Eleje, Esomonu & Ufearoh, 2019). Teaching has grown more participatory because of the use of technology in education: students' thirst for knowledge has increased, and daily collaboration with their peers inside and outside their zone of residency has expanded. ICT use is defined by Katz and Becker (2010) as classroom activities that make astoundingly rich and varied use of the internet to promote student-teacher interactions and Web-based student debates. In all fields of study, these exchanges involve switching from traditional note taking to virtual or online learning and sending out notes via WhatsApp and teachers' email. This, according to Bhattacharjee and Deb (2016) is to make the teaching-learning process successful and entertaining for both students and teachers. This implies that ICT facilities could be employed in economics.

Economics is a social science that studies how people, governments, organizations, and countries manage limited resources to suit their seemingly endless needs. It is concerned with the study of human behaviour, such as how people earn a living and select options to fulfil their needs. Thus, the guiding principle of the Comparative Education Study and Adaptation Centre (CESAC) (1985) for secondary school curriculum, which was reviewed by the Nigeria Educational Research and Development Council (NERDC) in 2008, is to furnish senior secondary school leavers with core information and abilities needed to better comprehend the nature of economic challenges in any culture. In light of this attitude, the defined objectives for economics course are to equip students with the basic economic principles required for useful life and in higher education; to prepare and encourage students to be judicious and efficient in the management of finite economic resources; to instil in students a sense of the dignity of labour and an understanding of economic, social, and political systems; and to enable students gain information for the practical solution of society's economic issues in Nigeria, other developing countries, and the world at large. To be able to achieve these objectives in the 21st century, secondary schools and secondary school students must keep abreast with the rest of the world by learning economics through ICT media. In Anambra state Nigeria, secondary schools are divided between public and private institutions. Private

schools are those owned and operated by missions and private persons, whereas public schools are those owned and managed by the state government. The two school settings are located side by side in Onitsha metropolis and every other community in Anambra state, Nigeria.

Studies on applying technology in economics education have revealed that it empowers students and allows them to gain a deeper understanding of the subject (Adelabu & Abu, 2015; Tijani, 2015). Rafaei (2015) argues that incorporating ICT into secondary school economics teaching and learning improves collaboration and creates a rich network of students. This means that ICT can help students learn by reinforcing their enthusiasm and providing them with a variety of creative practical tools. According to Arthur and Kaku (2020), when ICT facilities like computers, software for presentation, and projectors were used in the teaching of economics, students showed a positive attitude toward their studies. Shawn (2014) opined that the twenty-first century goals of education include mastery of information, engrained knowledge and comprehension, as well as the progressive use of technology in society. This suggests that adopting modern technology in economics classes has a number of advantages, including enhanced memory, retention, and motivation to learn. The question now is: What are economics students' perceptions on suitable ICT facilities for teaching economics? How often do teachers make use of available ICT facilities to teach economics? What are students' standpoint concerning their experiences when taught economics with digital resources?

Studies in Nigeria concerning the use of ICT tools for teaching were mostly carried out in tertiary institutions across different subject areas (Ejinkonye & Usoroh, 2016, Etonyeka, 2018, Ikwuka et al, Ohiwere, Azih & Okoli, 2013; Okolocha, Nwadiani & Onaiho, 2015). A study carried out by Nji and Idika, 2018) about the use of ICT to teach economics was in the Nsukka education zone in Enugu state, Nigeria. Another study by Arthur and Kaku (2020) on the views of economics students on the use of ICT to teach economics in Ghanaian high schools investigated whether there exists a significant difference in senior high school

economics students' views based on gender. The present study is set to ascertain economics students' standpoint about the use of ICT facilities to teach economics and whether there is nature-of-school (school-type) gap between the variables of the study. The aim of this study therefore is to assess the perceptions of students about the use of ICT in teaching economics.

Research questions

The study was guided by the following research questions

1. What are the kinds of ICT facilities that can be used to teach economics in secondary schools?
2. How often do secondary school teachers make use of available ICT facilities to teach economics?
3. What are the students' perceptions when ICT is used to teach economics?

Hypotheses

The following hypotheses were tested at .05 level of significance

1. There is no significant difference in the mean ratings of students' perceptions on teachers' frequency in using available ICT facilities to teach economics, based on the nature of school.
2. There is no significant difference in the mean ratings of students' perceptions on the use of ICT facilities in the teaching of economics, based on nature of school.

Method

The study adopted a descriptive survey approach. This is to allow an in-depth description of the students' views about the use of digital facilities to teach economics. This study was conducted in the Onitsha metropolis of Anambra state, Nigeria. Onitsha is densely populated and one of the biggest commercial cities in Nigeria. The town is well known for its famous "Onitsha Main Market" which is arguably the largest market in West Africa. Apart from businesses, education flourishes in Onitsha too as there are 24 public and 90 private secondary schools in Onitsha metropolis. Population of this study consisted of 1675 students offering economics in both public and private secondary schools in Onitsha metropolis. A sample of 432 senior secondary two (SS2) students offering economics (238 {55%}) from public and (194 {45%}) from private secondary schools was got through a multi-stage sampling procedure. The researchers created a 27-item structured questionnaire as the data gathering instrument. The respondents' personal information was the focus of Section A. Section B consisted of nine (9) items for students to respond "Yes" or "No" on facilities that can be used to teach economics, section C was made up of nine (9) items to respond "Never",

"Occasionally", "Often" or "Very often", coded 1, 2, 3, 4 respectively on the frequency at which teachers use ICT facilities in teaching economics while section D was made up of nine (9) items on a 4-point scale: "Strongly agree", "Agree", "Disagree", "Strongly disagree" which were coded 4, 3, 2, 1 respectively, when items are positively cued, to get the students, perception when ICT is employed in economics lessons. The researchers adopted direct delivery approach in sharing and collating the instrument. This resulted in 100% return of the distributed questionnaires. The instrument when tried out yielded 0.83, 0.89 and 0.91 as reliability for sections B, C, and D respectively. Analysis of the data obtained was through the use of descriptive and inferential statistics. For research question 1, a percentage above 50 was taken as "agreed", while that below 50 was taken as "disagreed". For research question 2 and 3, mean ratings of 2.5 and above were taken as "more frequently used" and "Agreed" while mean ratings below 2.5 were taken as "less frequently used" and "Disagreed" respectively. When the P-value is less than 0.05, it was taken to be significant.

Results

Data was analyzed in this section using the research questions as guide.

Research Question 1: What are the kinds of ICT facilities that can be used to teach economics in secondary schools?

Table 1: ICT Facilities Suitable to Teach Economics (Overall / Nature of School) N = 432. Public = 238, Private = 194

S/N	Items	Overall		Public		Private	
		Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
1	Word processing devices	382(88.4)	50(11.6)	210(88.2)	28(11.8)	172(88.7)	22(11.3)
2	Computers	385(89.1)	47(10.9)	213(89.5)	25(10.5)	168(86.6)	26(13.4)
3	Television	369(85.5)	63(14.6)	188(79.0)	50(21.0)	181(93.3)	13(6.7)
4	WhatsApp platforms	355(82.2)	77(17.8)	191(80.3)	47(19.7)	164(84.5)	30(15.5)

5	Emails	350(81.0)	82(19)	188(79.0)	50(21.0)	162(83.5)	32(16.5)
6	Blogs	204(47.2)	228(52.8)	97(40.8)	141(59.2)	90(46.4)	104(53.6)
7	Phone Audio recording	397(91.9)	35(8.1)	217(91.2)	21(8.8)	180(92.8)	14(7.2)
8	Radios	381(88.2)	51(11.8)	209(87.8)	29(12.2)	172(88.7)	22(11.3)
9	Videos	378(87.5)	54(12.5)	208(87.4)	30(12.6)	170(87.6)	24(12.4)
	Total	**(82.3%)**	**(17.7%)**	**(80.4%)**	**(19.6%)**	**(83.6%)**	**(16.4%)**

Table 1 shows the result for the kind of ICT facilities that could be used to teach economics in secondary schools. The responses of the economics students are presented in frequencies and percentages. The result indicated that the students agreed that all the listed ICT facilities could be used in teaching economics except for item 6 (Blogs) which only 204 students accepted as a good tool with a percentage of 47.2 which is below 50%. In total, 82.3% of the students agreed that the tools listed could be used to teach economics while 17.7% did not agree. Looking at the result based on the nature of school, 80.4% and 83.6% of the students from both public and private secondary schools respectively perceive that the listed ICT tools are good for teaching economics.

Research Question 2: How often do secondary school teachers use available ICT facilities to teach economics?

Table 2: Mean Ratings of Economics Students' Views on Frequency of Using ICT Facilities to Teach Economics (Overall and by Nature of School)

S/N	Items	Overall Mean (X)	SD	Public Mean (X)	SD Public	Private Mean (X)	SD Private
1	Word processing devices	2.30	.76	2.29	.77	2.92	.76
2	Computers	2.11	.82	1.56	.51	2.80	.57
3	Television	2.18	.89	1.54	.52	2.95	.56
4	WhatsApp	2.13	.83	1.55	.51	2.82	.57

	platforms						
5	Emails	2.46	.70	2.29	.76	2.65	.54
6	Blogs	1.68	.49	1.66	.47	1.70	.50
7	Phone Audio recording	2.00	.77	1.50	.52	2.60	.53
8	Radios	2.07	.74	1.60	.54	2.05	.51
9	Videos	2.01	.75	1.56	.53	2.53	.59
Total	**Cluster total**	**18.94**	**6.75**	**15.55**	**5.13**	**23.02**	**5.13**
	Cluster mean	**2.10**	**.57**	**1.73**	**.57**	**2.56**	**.57**

Table 2 shows summary of the results of mean ratings of economics students' views on the frequency with which teachers use the listed ICT facilities to teach economics. For the overall mean ratings, none of the ICT facilities had mean ratings greater or equal to 2.5 which is the benchmark. However, item 6 (Blogs) had the lowest mean rating (1.68). The overall cluster mean of 2.10 shows that the listed facilities are not frequently used in teaching economics in Onitsha metropolis. The corresponding pooled standard deviation of .57 reveals that respondents are close to the mean and to each other in their responses. Looking at the mean ratings based on the nature of school, it was observed that students from public schools are of the opinion that none of the ICT facilities listed is frequently used to teach them economics as the means are not up to 2.5 for the 9 items. On the other hand, the responses of students from the private schools showed that only items; 6 and 8 with mean ratings of 1.70 and 2.05 respectively are below the benchmark of 2.5. This means that for the students in private schools, items 1, 2, 3, 4, 5, 7, and 9 are frequently used to teach them economics.

Table 3: t-test of the Difference in Mean Ratings of Students' Views on the Frequency of ICT facilities' use in Teaching Economics, Based on Nature of School

Nature of School	**N**	**Mean (X)**	**SD**	**Df**	**T**	**P**	**Decision**

Public	238	1.66	.57	430	20.48	.000	Sig.
Private	194	2.60					

The t-test result of difference in mean ratings of students from public and private schools for frequency of ICT use in teaching economics is shown in the table above. The t-test value of 20.48 is significant at 0.000, according to the table. The null hypothesis is rejected because (0.000) is less than the 0.05 level of significance at which it was tested. As a result, the frequency with which teachers use ICT facilities in teaching economics differs significantly across private and public secondary schools.

Table 4: Mean ratings of Students' Perceptions on the use of ICT Facilities in Teaching Economics (Overall and by Nature of School)

S/N	With the use of ICT	Overall Mean (X)	SD	Public Mean (X)	SD Public	Private Mean (X)	SD Private
1	Economics lessons become more practical	2.99	.51	2.72	.52	3.01	.51
2	Economics lessons become more exciting	2.97	.53	3.00	.49	2.93	.57
3	I am more attentive and focused	3.05	.53	2.68	.48	3.11	.57
4	I think critically about economic problems	2.80	.63	2.66	.56	2.59	.66
5	I become more creative	3.01	.52	2.52	.51	3.02	.55
6	Most topics become clearer	3.02	.51	2.94	.54	3.04	.48
7	My attainment level improves	2.96	.55	2.78	.53	2.92	.57

8	I learn Economics concepts better	2.68	.74	2.97	.58	2.54	.77
9	I show more interest in graph plotting	2.94	.54	2.62	.53	2.85	.54
	Cluster total	**26.35**	**5.06**	**24.89**	**4.47**	**26.01**	**5.22**
	Cluster mean	**2.93**	**0.56**	**2.77**	**0.53**	**2.89**	**0.58**

The above table showed mean ratings of economics students' views on the use of ICT facilities to teach economics. A look at the overall mean ratings showed that all the nine items have mean ratings above the benchmark. The item with the lowest mean rating was item 8 *(I learn economics concepts better)*. The cluster mean for overall perceptions on the use of ICT facilities to teach economics was 2.93. This means that the students are of the opinion that they learn better when ICT facilities are used in teaching economics. Looking at the mean ratings based on the nature of the school, the cluster means for public and private schools are 2.77 and 2.89 respectively. This revealed that the group of students from both public and private schools agree that ICT resources when used for teaching help them to understand better. The low pooled standard deviation of 0.56 showed that the students' responses were not far from the mean and from each other.

Table 5: t-test of the Difference in the Mean Rating on Students' Perceptions on the use of ICT Facilities in Teaching Economics

Nature of School	N	Mean (X)	SD	df	T	P	Decision
Public	238	2.51		430	-1.356	0.176	Not Sig.

Private	194	2.58	.55

To check if the difference in mean ratings between students from public and private schools concerning their views on the usage of ICT facilities to teach economics is significant, a t-test was utilized. The t-test value of -1.356 is not significant at 0.176, according to the table. The null hypothesis was supported because the p-value of (0.176) was greater than the 0.05 significance level. As a result, there is no significant difference in economics students' perceptions of the use of ICT to teach economics.

Discussion

Globally, digital resources have greatly aided in the facilitation of learning process. The main objective of this research study was to find out how economics students felt about the usage of ICT in the classroom. In assessing students' opinion on the kinds of ICT tools to be used in teaching economics, the result revealed that students from both public and private schools agreed that the ICT facilities listed could be used. The above result is in agreement with a study by Authur and Kaku (2020) which proved that computers, presentation software, and projectors can all be utilized to teach and learn economics. However, students from both public and private schools did not agree that "Blogs" could be used to teach or learn economics. This may be attributed to lack of exposure to blogs as a digital resource for teaching in the area under investigation.

On the frequency with which teachers use ICT facilities to teach economics, the highest score (2.46) for "WhatsApp" may be attributed to the use of the facility by teachers in Anambra state for sending out notes to students during the Covid-19 pandemic (Elekwa, 2020). The cluster mean of 2.10 clearly shows that all the listed ICT facilities were not frequently used by teachers. This result again corroborates that of Authur and Kaku (2020) which discovered that teachers rarely employ accessible technology in their classrooms. However, a look at the result from nature of school point revealed that although students from public schools are of the view that their teachers do not frequently use the ICT facilities to teach (cluster mean of 1.73), those from the private schools revealed that they are frequently taught with the available digital resources (cluster mean of 2.56). This may be as a result of lack of funding for ICT facilities in public schools or may be attributed to teachers from public schools having low motivation / satisfaction with their jobs which translates to not putting much effort in their teaching by using the digital resources provided (Metu, 2020). It

could also be that private schools' proprietors and managers have imbibed the use of new technology and are harnessing it to make teaching and learning pedagogy more productive. A comparison of the mean ratings of students' opinions about the frequency of use of ICT facilities in public and private schools reveals a significant difference in the mean ratings in favour of students in private schools. The result also agrees with that of Nji and Idika (2018), who discovered in their study that teachers do not often employ digital facilities in teaching economics; students in secondary schools in Nsukka education zone do not frequently use ICT in economics classes. However, Nji and Idika did not compare what obtains in public and private schools in the area. Okolocha and Nwadiani (2015) found that in higher education, lecturers make minimal or no usage of ICT tools to teach business education courses, which is consistent with the current findings. Furthermore, the findings of this research revealed that students from both public and private schools are of the view that ICT facilities when used, improve the learning of economics. The study by Arthur and Kaku (2020) above corroborates this result as they discovered that high school economics students in Ghana exhibit a positive attitude to their studies when technology is used to teach economics. The finding above is also in harmony with the findings of Rampersand (2011) who emphasised that the use of technology in teaching arouses interest of students. On the issue of nature of school, the result did not reveal any significant difference in the mean responses as secondary school students from both public and private schools are of the same view that ICT facilities enhance learning of economics. The null hypothesis was therefore affirmed. What this means in effect is that students in both public and private schools believe that ICT facilities help them learn more effectively, and that more ICT resources should be provided and utilized in their respective schools.

Conclusion

It was concluded that economics students in Onitsha Metropolis agreed that most of the listed ICT facilities could be used for teaching economics. The students also agree that the use of ICT facilities make them learn economics topics better and the concepts become clearer to them. However, teachers in the public school system rarely use the technological resources to teach their students; quite unlike those from the private schools who attested that their teachers often use ICT facilities for teaching economics; with significant difference in their favour.

Recommendations of the study

The researchers made these recommendations based on their findings:

1. Government and non-governmental agencies in Anambra state should intensify effort in organising workshops and seminars for teachers of public secondary schools on use of ICT facilities during instruction and also make out time to monitor the usage by teachers.

2. The state's Ministry of Education should provide more ICT facilities for schools.
3. Principals, school administrators and other stakeholders in education should encourage more utilisation or frequency of use of ICT facilities by providing an enabling school climate.

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