

# E-Learning Curriculum Resources Accepted For Use Among Physics Teachers During Covid-19 Pandemic

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## Abstract:

Efforts of some secondary school Physics teachers in Imo State to use e-learning tools for teaching were major breakthroughs during the COVID-19 Pandemic. The problem of the study stems from the concerns of stakeholders of education on the most acceptable e-learning tools which can be adopted in the schools during and after the COVID-19 Pandemic to teach Physics effectively and efficiently in an inclusive curriculum. The study was Survey that involved 288 Physics teachers in both private and public secondary schools. Two Research Questions were posed. A four-point Likert-type rating scale was used to collect data. The reliability coefficient of the instrument was determined by using test-retest approach and coefficient index of 0.75 was obtained. Majority of the secondary school Physics teachers accepted the use of e-learning tools such as smart phones, laptops, television, zoom, cybernetics, and other WhatsApp platforms for teaching. Problem of accepting e-learning tools involved high cost of purchasing internet data, lack of access to durable smart phones, laptops, cybernetics and technical problems of which insufficient internet connectivity is included. It was therefore recommended that government intervention and collaboration with private companies should be enhanced to ensure improved access of users to e-learning tools and other services for teaching Physics in schools.

## **Introduction:**

COVID-19 was reported a pandemic by World Health Organization (WHO) in March 2020. In Nigeria and Imo State, the first set of cases of death as a result of the Corona virus was reported on April 14, 2020. It was because of the increase in the cases of people infected by the virus that government at the state and national levels took some rigid decisions of introducing some protocols such as the wearing of face mask and social distancing. For several months, primary, secondary and tertiary schools were shot down and this facilitated the adoption of online/distance or electronic teaching and learning. This mode of learning is called e-learning and it helped many schools to cope with teaching their students and sustaining the academic calendar which was about getting disrupted (Amalu, K. E. & Claravall, E. B. (2021).

The negative impact the tentative closure of schools could have had on the students and the educational system would have been quite disastrous but for the introduction of e-learning mode. This, according to Zalat et al (2021) made education agencies, teachers and other stakeholders in the educational system to start seeking alternative means of managing the difficult and ugly situation which eventually rendered many families to be poverty and hunger stricken! Many private schools cleverly seized this rare privilege to got themselves involved in finding out how best their schools could engage the students at home and other locations with online course contents, involve their students in distance/e-learning of what they could have learnt through the usual conventional processes, and at the end, gave worthwhile and credible assessments of the e-learning procedures. The pandemic crisis also made many public school teachers and stakeholders to accept the new technology devices which, before now, they found very difficult to adopt in their teaching and learning classroom-based interactions. The challenge was more pronounced on school teachers of science-based courses/subjects.

The corona pandemic actually made most teachers and parents realize that it is possible to assist our students to progress in their studies without necessarily writing classroom-confined and school-based summative examinations but could be accessed through the use of appropriate e-learning devices while they remain in their different locations and in their comfort zones. It,

according to Zalat et al (2021), made the education system to understand that thorough supervision by evaluation experts, schools can develop, organize and conduct their own standardized assessment and evaluation formats for national development. It was observed, therefore that, to be consistent with quality education, individual differences should be considered and how to use some highly sophisticated e-learning facilities should be enhanced to manage effectively the admission rates into schools. This, if realized, will grant schools and colleges autonomy to operate to enhance purpose-driven and quality education. It further has taught us to restructure the school curriculum to allow for more flexibility in the use of curriculum materials and choice of textbooks. However, the restructuring of the curriculum should be in such a way that the electronic devices for learning will be used to foster the students creativity skills. It must cultivate in the learners' scientific and humanistic spirit, environmental awareness, moral– ethic values, love of diverse cultural traditions, patriotism, collectivism, healthy lifestyles, good aesthetic taste and fitness, and democratic spirit with integrity. This explains why Zhao as cited by Unamma, et al (2021) states that today; we are facing the choice of facilities to use to enhance teaching and learning in the midst of inevitable circumstances and challenges. We face a choice of what we want: a diversity of talents by introducing various means of learning modes to all individuals learners who are passionate, curious, self-confident, and risk taking, or to continue to be a nation of excellent test takers, outstanding performers on Reading, Mathematics and other related subjects. At this time of globalization of the world economy, we should cease to waste our resources on the wrong path of chosen test scores in a limited subject areas in schools but engage learners in diversifying, creativity, critical and analytical thinking, developing individual learners interests and risk taking sports. Reformers of the 21<sup>st</sup> century education such as Ahtainen, Pulkkinen and Jahnukainen have advised that the above factors, when incorporated into the use of e-learning, have always helped to sustain a strong economy and a society, no matter the circumstances in which we find ourselves. It has changed the role of school teachers from being traditional, teacher-centric to student-centric model which is in vogue in applied schools curricular today.

E-learning devices, as Reimers, et al (2020) opine, are those online learning tools which can be used to impact on the individual learners those useful and positive learning experiences or activities, connecting students to internet facilities which are available either in synchronous or asynchronous environmental conditions. It is a tool which makes online/e-learning to have a

platform for zoom and which makes the process of education more student-centered and flexible (Zalat, et al, 2021). The e-learning tools which were used by teachers in form of software/apps like zoom, Google classroom and Microsoft Teams to take online courses including mobile phones, and laptop deliver courses during the COVID-19 pandemic are relatively cost-effective and easily accessible in all locations. These creative strategies enabled some teachers to organize virtual classes for their students to overcome the lockdown effects in the education sector during the COVID-19 pandemic. In many other schools, where teachers could not use the e-learning tools to teach their students, students lacked certain confidence in their teachers and lost interest in what the school could offer them.

The question is why did some teacher make use of the e-learning tools to deliver their lesson to their students while some other teachers could not do the same? This study therefore aimed at finding out the extent Physics teachers adopt e-learning as a tool for teaching and learning during COVID-19 pandemic. Further still, the study aimed at determining the factors which influenced Physics teachers' adopting e-learning in schools in Imo State, Nigeria as a tool for teaching. The outcome will help future policy makers to ensure that e-learning tools are not used in the implementation of school curricular by teachers during pandemic and also during non-pandemic situations only but throughout their teaching career.

### **Literature Review:**

School closures as a result of COVID-19 pandemic was not only associated with learning loss, but it is also brought about accelerated learning. The accelerated learning programmes were initiated by some schools, teachers, parents and learners through the use of some e-learning tools to enable the students/learners to cover core academic materials within a short time and support their catch-up efforts. School closures really affected mostly the social and emotional needs of learners since social isolation and quarantine are usually harmful to the mental health of learners (Carvalho, et al 2020).

Nevertheless, evidence abounds that through the use of some online electronic tools, loss of learning was recovered and formation of platforms for learners to have time to play certain games and socialize with their mates was enhanced. Some teachers in Imo State, especially those from private schools simplified the planned curriculum to enable cover one academic term of

three months' work in just one month or there about! In this way, they were able to support the recovery of lost learning periods in the schools syllabus. By using various e- learning techniques, they were able to get students back on track in the midst of COVID-19 Pandemic. It explains why Carvalho, et al (2020) asserted that the idea is not to cover more contents in a syllabus with less time but rather to facilitate quality catch up with a simplified curriculum of selected core components to cover thoroughly within the time available.

A robust body of evidence indicated that during the lockdown as a result of COVID-19 Pandemic, few teachers, through the use of various e- learning tools focused mainly on students' acquisition of foundational literacy, numeracy skills (Mathematics) and simple practical activities in science and technology at individual's levels attainment for one or two hours per day. There were evidences at this crisis period of some teachers setting up online learning platforms to provide focused opportunities for their learners in the process of mastering the above basic skills at an accelerated level, provided they continuously attended the "School in the Air" platforms. This approach even benefitted the marginalized learners who have missed school for a long period of time due to family low income, displacement and banditry effects, suicide bombers, kidnappers, herdsmen activities, and militant opposition activities which seen as anti-government activities by the government in power in Nigeria. This, however, explains why Cardona and Harris-Aikens (2021) advised that for any school to determine appropriate evidence-based intervention models for their students during the COVID-19 pandemic, the school should consider the extent and areas of the need for acceleration. They further went on to state that the school should consider available resources and staff to support the interventions, the family input, and existing partners such as community organizations that could support the intervention.

Many countries in Africa, including Nigeria and other parts of the world, as a result of the COVID-19 pandemic made impressive discoveries and progress in the use of zooms, WhatsApp, Google and Classroom) Quipper school, EdDojo/Class Dojo, Moodle, Seasaw, Metaverse Secondlife, Quizlet, Nearpad, FlipGrid, digital library, and smart phones. Others are TEDED Newsela, Scoilnet, Century Tech., Cybernetics, ESL listening Lab, BrainPop, Phet.Colorado.edu, KhanAcademy, esports, Ebooks/Ekitab, KEBS, alianzaeducative, True Plook Panya, Opec.go.th, Thamooc, pdst., Ncca, jct, moving MMORPG, Radio, VCD and Television broad

cast or laptop internet services. They made use of these curriculum resources in developing and implementing distance learning platforms during school closures to ensure students are subjected to regular instruction of learning in various subject areas such as STEAM, global skills, cognitive skills, interpersonal and intrapersonal skills. E-learning tools, therefore, simply means all those electronic devices which can help the teachers, students and parents facilitate learning at a distance the teaching and learning of some basic skills and knowledge. (Reimers, Schleicher, Saavedra and Tuominen, 2020).

We are aware that at the time of the pandemic, teachers were not in tune with all the available e-learning tools they can use to enhance teaching and learning of the STEAM subjects in schools. This is why UK EdTech Hub (2020) reported that overall, countries that reached agreements with telecom companies, used radio and TV effectively and other distributed materials seem to have been the most successful in ensuring the continuity of education. Algeria approved 12 TV channels for children from class I to XII in all subjects. This experience and arrangement actually indicated the importance of partnerships in the implementation of good policies and decisions of government. They further reported that in Nigeria, a teacher, Emmanuel stated that he and his colleagues were trained on how to use WhatsApp, Zoom and other apps to prepare and teach the learners. It was also observed that a teacher from Kenya known as Kiprono said that through small grouping and ensuring social distancing, he was able to reach to his students in his rural area to teach them how to use the smart phones and also how to learn using them. In Democratic Republic of Congo, Akuzwe said that the teachers in the Catholic University of Bukavk used moodles to implement e-learning during COVID-19 pandemic and that the students were satisfied. It is evidenced that the teachers who ought to use the e-learning tools during the COVID-19 pandemic have varied opinions or choice of the e-learning tools to use which may vary from the recommendation of government or policy makers. If varied choices of the two parties are not harmonized, it could serve as a hindrance in future in the implementation of e-learning policy and programmes in most countries, particularly in Nigeria. This is just the crux of the matter in this work in order to find out the actual e-learning tools accepted by teachers for use now and after the COVID-19 pandemic in teaching and learning STEAM subjects in schools. However, simply providing hardware smart phone, laptops, computers, radio, television, modules, and other internet accessories without carefully designing

the software in addition to ensure steady supply of affordable data and source of power is unlikely to enhance learning outcomes in our learners in schools.

This study was anchored on the Instructional Technology theory of constructionist learning theory and dual coding theory of information processing. Ike (2006:52) states that instructional Technology has provided solutions to problems by its form of instructional system components which are pre-structured in design, selection and utilization. It is a theory according to Mangal (2014) that uses technological means to support learning. The technological equipment, devices and materials normally used are interactive media or multimedia system, satchels, compact CD-Roms, Video or teleconferencing, print media, radio, television, mobile phones and other internet facilities. These technologies are relevant and very crucial to providing and improving on inside and outside classroom learning. This theory was relevant to this study because teachers had to choose, accept and use some technologies to deliver instructions to students during COVID-19 pandemic.

Constructivist learning theory was propounded by John Dewey (1916), Jerome Bruner (1966), Jean Piaget (1977) and Vytgosky (1978). They were of the opinion in this theory that learners learn by building their own understanding and making sense of information. Constructivism is a theory of knowledge which argues that humans generate knowledge and meaning from an interaction between their experiences and ideas, but focuses on preparing a learner to solve ambiguous problems, based on the understanding that every learner can construct his/her own perspective of the world. In other words, all learners are capable of constructing their own meaning from new information as they interact with reality or others including objects and subjects with different perspectives. The teacher plays a role of mentor, guidance and facilitator by asking students/learners some kind of probing questions at the start to allow the learners to come to their own conclusion instead of being told. It is a theory which suggests that teachers should choose and use technology most probably in a problem-solving environment. It is a theory which emphasizes that the learner should be made to embrace two key concepts namely; accommodation and assimilation in order to enable them individually construct new knowledge on their own. They really help the learners to incorporate new experiences into old experiences. It allows the learners to either at the early or later parts of their lives develop the skills and confidence and to analyze around them effectively. It makes the learners to keep

creating solutions or support for developing issues and then justifying their words and action while encouraging those around them to do the same and respecting the differences in opinions for the positive contributions they can make to the whole situations or issues. This theory applies to this study because the teachers simply guided the learners in learning some concepts and skills by using some technologies during COVID-19 pandemic.

Dual Code theory of information processing was propounded by Paivio in 1986. He states in this theory that human cognition is unique in that it has become specialized for dealing simultaneously with language and with non-verbal objects and events. Moreover, the language system is peculiar in that it deals directly with linguistic input and output (in the form of speech and writing) while at the same time, serving a symbolic function with respect to non-verbal objects events and behaviours. Thus, any representational theory or classroom interaction must accommodate this dual functionality. By following the above mentioned systems and pattern of organization, any information being given to the learner verbally and non-verbally will be processed appropriately by the individual learner for the desired learning outcomes to be attained. That is to say the learners must not be left alone by a teacher to engage in processing undesired information at any time. The teacher should help the learners by any means and in any situation to have their minds focused on the most important and detailed information and separating them from less vital information or information that is not the truth.

Dual Code Theory is of the view that teachers must continuously help the learners to get themselves connected between new information and old information they have acquired. The information being given to the learner must be aimed at making them understand the real meaning rather than just having a memorization of the information. It is a theory of the view that the learners' learning experiences should be organized in a clear systematic, attracting, interesting and sustainable ways. This theory is relevant to this study in the sense that even in the crisis of COVID-19 pandemic, teachers tried as much as possible to keep the learners busy in processing verbally and non-verbally useful information and gaining fruitful learning outcomes at last.

Physics is known to involve the study of everyday objects, their effects, principles and application. For example, when an object-bar magnet is moved in another object such as a coil of wire, it generated a current in the wire which can be measured with another object called



ammeter. This is a principle used in generators to provide in any environment electricity, which is simply known as physic. Physics is studied in our Senior Secondary Schools and it consists of basically five areas of specialization through which it imparts knowledge, skills and even attitude to its consumers.

### **Methods:**

A survey design was adopted by the researcher in the conduct of this study. In survey design, a representative number of individuals are usually the unit of analysis as they constitute the respondents to the questions asked in the instrument used to collect data. The study was conducted in 288 public and private secondary schools offering Physics as a subject in Imo State between the month of June and July, 2021.

The school teachers of Physics under 35 years and of less than 10 years of teaching experience were engaged in the development, selection and use of technological devices during the COVID-19 Pandemic to teach their students using online mode. However, some of the teachers who could not participate in the study due to one problem or the other such as sickness, years of teaching experience or annual leave of absence from duties were not included in the study.

The study was carried out in Imo State, Nigeria. Imo State is one of the states in the South-East Geo-political Zone of Nigeria having Owerri as its capital. The latitude and longitude of Imo State are 5.8877909 and 7.1063305 respectively. The state has a border in the east with Abia State, South with Rivers State, West with Delta State and in the North with Anambra State. It is a state that has twenty-seven Local Government Areas and six Education Zones. The workers are mainly civil servants with few people into farming, industrial works and business ventures.

The required sample size was calculated to be 305 secondary school Physics teachers as at the time of the study, out of a total number of 887 Physics teachers in the schools, representing 34% of them at a precision of 50% confidence interval or significance level.

The instrument used for data collection was a researcher developed rating scale titled “Senior Secondary School Physics Teachers Acceptance and Use of E-learning Tools Rating

Scale”. The instrument is of four-point questionnaire, put into clusters which has to do with the socio-demographic and occupational data, Physics teachers’ acceptance and choice of using mobile smart phone, laptop, television, radio as e-learning tools, Physics teachers’ experiences of using the tools for teaching and learning of the topics online and problems towards accepting the use of the tools in online learning during the COVID-19 Pandemic. The weightings for some of the items ranged from Strongly Disagree (SD)= 1 to Strongly Agree (SA)= 5 points for positive statements. Acceptance of the tool was categorized from ‘Accept’ to ‘Don’t Accept’ for use. Any score above 2.50 indicates ‘Acceptance’ while those scores below 2.50 indicates ‘Don’t accept’ for use.

Pearson Product Moment Correlation Coefficient was used to determine the reliability coefficient of the instrument and it was obtained at  $r = 0.75$  after two weeks of test-retest pilot study. The researcher solicited the assistance of some principals and teachers in the schools in the distribution and collection of the instrument. On the whole, 288 out of the 305 copies of the instrument were collected back and used for data analysis. Mean rating scores and standard deviation were used in answering the research questions.

### Results:

The researcher presents the results of data analysis of the study in line with the research questions.

### Research Question One

What is the mean rating scores of secondary school physics teachers on the acceptance of e-learning tools for teaching during COVID – 19 pandemic?

**Table 1: Mean Response Results of Secondary School Physics Teacher in Imo State on Acceptance of e-learning tools for teaching during COVID-19 Pandemic.**

S/N	Item statement	SA	A	D	SD	N	Mean	Decision
1.	I accept integrating mobile smart phone in teaching Physics in the future in all schools.	160	93	10	25	288	3.28	Agree
2.	I accept and recommend it to others using computer/laptop for e-learning of Physics by students in the future.	142	86	18	42	288	3.14	Agree
3.	I accept as satisfactory using television models as an e-learning	111	97	40	20	288	2.90	Agree

	tool for teaching Physics in the future.							
4.	E-learning tool simplifies the home work of students in Physics.	123	65	22	78	288	2.81	Agree
5.	I accept using radio as an e-learning tool for teaching Physics in the future frequently.	41	30	80	137	288	1.91	Disagree
6.	The e-learning tool use is easy to be skilled and applied in learning Physics in new situation	109	113	21	45	288	2,99	Agree
7.	E-learning tool is easy to use to solve problems in Physics	156	68	40	24	288	3.24	Agree
8.	E-learning tool is flexible and fits different Physics students ability level	114	73	51	50	288	2.84	Agree
9.	E-learning tool makes clearer the understanding of all Physics concepts	148	59	36	45	288	3.08	Agree
10.	E-learning tool accelerates the teaching and learning of Physics concepts and skills.	151	62	40	35	288	2.80	Agree
11.	E-learning increases students achievement and learning of practical skills	129	100	20	39	288	3.11	Agree
	<b>Grand mean</b>	<b>2.92</b>						<b>Agree</b>

The data in Table 1 above shows the responses of the secondary school Physics teachers to the eleven item statements in the rating scale provided to them. Ten items out of the eleven item statements have mean response scores ranging from between 2.80 and 3.28 implying a wide acceptability by the respondents on the various ten item statements and a disagreement by the respondents on the item statement that they accepted using radio as an e-learning tool for teaching physics in the future frequently. The reason for this rejection of radio as an e-learning tool for teaching physics online could be ascribed to the fact that physics requires practical sessions which ought to be seen and involves problems solving which cannot be done in an invisible manner. However, by the grand mean of 2.92 there is a total agreement by the respondents on the item statements for research question one which include among others accepting the use of e-learning tools as smart phone, laptop, zoom, watsApp and television, modules etcetera in teaching physics in schools regularly during COVID-19 pandemic.

## 2. Research Question Two

What are the mean rating scores of secondary school physics teachers in Imo State on their perception of problems which influence their acceptance of e-learning tools for teaching during and after COVID-19 pandemic?

**Table 2:** Mean response results of secondary school Physics teachers in Imo State on their perception of problems which influence their acceptance of e-learning tools for teaching during COVID-19 pandemic.

S/No	Item Statement	SA	A	D	SD	N	Mean	Decision
1	High cost of purchase of internet data	182	62	24	20	288	3.41	Agree
2	Insufficient/Unstable internet connectivity	191	43	30	24	288	3.39	Agree
3	Lack of access to desktop computers, laptops, smart phones, video, television, modules, cybernetics.	200	36	21	31	288	3.41	Agree
4	Lack of steady power supply	173	70	22	23	288	3.36	Agree
5	Occurrence of technical problems	171	57	29	31	288	3.28	Agree
6	Online courses in Physics involved heavy workload	104	90	44	50	288	2.86	Agree
7	School Physics teachers and students having limited technology devices use skills for teaching	118	83	42	45	288	2.95	Agree
8	Parents and staff negative attitude or resistance towards use of e-learning tools for teaching	124	81	53	30	288	3.04	Agree
9	Inadequate internet services: centres and computer laboratories willing to observe COVID-19 protocol	131	64	40	48	288	3.00	Agree
10	Lower level of interactions with students in online Physics courses compared to the conventional class	163	49	40	36	288	3.18	Agree
11	Takes longer time to prepare online Physics lessons	146	61	34	47	288	3.06	Agree
12	Difficult applying e-learning tool for practical sessions of Physics courses	152	55	37	44	288	3.09	Agree
13	Lack of national policy on integration of e-learning tools into the school daily activities	88	36	44	120	288	2.32	Disagree

14	Lack of protection of the teachers that developed e-learning materials on Physics teaching	109	89	42	48	288	2.91	Agree
15	Lack of suitable online learning environment at home with presence of the students and other required helpful family members or adults	117	80	48	43	288	2.94	Agree
16	Difficult assessing all areas of students learning in physics and receiving feedback in the online courses	166	66	26	30	288	3.35	Agree
17	Difficult motivating all students to participate in learning physics with the e-learning tools compared to the traditional setting class they are seen face-to-face	144	85	39	20	288	3.23	Agree
18	Non-payment of Physics teachers' incentives for delivering lessons online with their personally owned e-learning tool(s) outside the school	188	47	20	33	288	3.35	agree
19	Difficult putting the students into group platforms to work as a team in executing some tasks in Physics	119	72	47	50	288	2.90	Agree
<b>Grand Mean</b>							<b>3.13</b>	<b>Agree</b>

The result in table 2 shows the mean responses of the secondary school Physics teachers in Imo state on their perception of problems which influences their acceptance of e-learning tools for teaching during COVID-19 pandemic. The result showed that there is a high score of 3.41 of the Physics teachers who agreed that high cost of purchase of internet data and lack of access to smart phones, desktop computers, laptop, radio, television, modules, cybernetics were the major barriers, challenges, problems to their acceptance of e-learning tools for teaching during COVID-19 pandemic. These were followed by insufficient/unstable internet connectivity and lack of steady power supply in which the mean responses of the Physics teachers were 3.39 and 3.36 respectively. The least agreement of the Physics teachers was in the area of online courses in Physics involving heavy work. The respondents disagreed on lack of national policy on integration of e-learning tools into the school daily activities being a barrier to their acceptance of e-learning tools for teaching of which the mean response is 2.32.

## **Discussion:**

From the year 2020, WHO declared COVID-19 as a pandemic, leading to the closure of schools at all levels for months. Many public and private secondary schools abruptly shifted to the use of e-learning tools for teaching and learning of Physics and other subjects. This was because the future was quite uncertain when schools will return to normal life and to avoid or reduce the problems and death rate caused by the pandemic WHO recommended maximum dependency on e-learning at all levels of the school system. It became an urgent challenge to deliver face-to-face Physics online to the students who have stayed at home for a long time. Invariably, many schools managed to engage the teachers in assisting the students in using e-learning tools to deliver lessons online to the students. The problem was that the use of the e-learning tool was not evenly dispersed throughout the secondary schools in the state and nation at large. This led the researcher to investigating the e-learning tools for teaching Physics which are generally accepted by the teachers as a tool which can be effectively adopted in all secondary schools for teaching Physics during COVID-19 pandemic.

The study found out that most of the participants whose age were under 35 years old, with teaching experience not less than 10 years agreed and accepted the use of e-learning tools such as smart phone, zoom, WhatsApp laptops, television, modules VCD/Cybernetics, in teaching Physics during and after COVID-19 pandemic. It probably explains why Fischer, et al (2009) states that older school staff or teachers with long traditional teaching experience usually has limited acceptance, interaction with technology and lacking the development of their skill. Zalat et al (2021) also found out in their study that e-learning was implemented by some teachers with a high acceptance level of some technologies.

Another finding of the study revealed that there was high cost of purchasing internet data, inadequate/lack of access to smart phones, laptops, insufficient/unstable internet connectivity, lack of stable power supply and technical problems as the major challenges to teachers' acceptance of e-learning tools for the teaching of physics. This finding was supported by the finding of Kanwal and Rehman (2017) as they states that e-learning tools should be made to meet the users' requirement and demands in order to gain their trust and improve on their acceptance of e-learning. Assareh and Bidokht (2011) in their own study classified e-learning barriers into learners, teachers, curriculum, organizational and structural factors which needs

more collaboration for their solutions. This study which was carried out in secondary schools can be extended to other levels of the educational system.

## Conclusion

Despite the challenges in vogue in Imo State of Nigeria secondary school physics teachers acceptance of e-learning tools for teaching, they are of the opinion that smart phones, laptops, television, modules, zoom, cybernetics and other internet platforms like WhatsApp can still be adopted in schools to enhance the efficient teaching and learning of physics concepts or skills. There is need to collaborate with government in finding solution to the problems affecting teachers acceptance of e-learning tools for effective teaching of Physics in secondary schools in Imo State, Nigeria. In this way the society will view technology as a positive step or device for having strategic or better change, development, and sustainability of our educational system. E-learning resources if used well in schools will help to close the equity gap between the technology haves and have nots in inclusive curriculum.

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