FFECT(S) OF USE/UTILIZATION OF MODERN TECHNOLOGIES ON TEACHERS' PROFESSIONAL DEVELOPMENT INABIA STATE SCHOOL SYSTEM.

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Abstract
The study examined the effects of use/utilization of modern technologies on teachers' professional development in Abia State School System. It took a descriptive survey research design with four research questions and one hypothesis. A sample size of 350 respondents was used for the study and the analysis too. A rating scale of 45 question items validated by experts was used to elicit information titled "Effect of Modern Technologies on Teachers' Professional Development (EMTTPD)". Mean scores and standard deviations were used to answer research questions while z test analysis was used to test the hypothesis at 0.05 level of significance. Findings of the study revealed that modern technologies were not available in schools e.g laptop, desktop, cables, disk, printers, worldwide web, etc. Effects of modern technologies on teachers professional development include among others assisting team teachers transfer of old/new knowledge and skills, assist in record keeping, upgrade teachers research, reflection, feedback and competitiveness, etc. Recommendations made include among others that state government should provide enough fund for purchase and maintenance of these facilities, provide regular training programme(s) on the use of these modern technologies to keep teachers abreast of its use in delivering their responsibilities in secondary schools in Abia State.

Introduction
Education is basically the totality of the teaching and learning process which usually takes place at home, school, college or university (Mbu 2017). In every society, the growth and development rallies on the level of educational advancement in all aspects involved in the practice. This may be in the use of modern technologies, quality and quantity of staff, use of

instructional materials, supervision, pedagogies, environment class size ratio, staff welfare and incentives, political instability, funding, diversion, poor communication, etc Udechukwu, Ukegbu and Obih (2017) posited that that Nigerian educational challenges and setbacks have always hinged on variables such as faulty curriculum engineering, instructors professional standing, curriculum content to be taught and learnt, pedagogical processes, unfriendly teaching – learning environment, facility and resource inadequacy, poor wages associated with the teaching profession, learners personality factors and social economy, level of teachers commitment and methodological approach.

Teaching must start by arousing learner's interest and affection which induce cognition and application to get things in the physical so as to personally compare the ideal and the real worlds. The classroom being made up of learners of different psychologies, physiological, mental and social background, makes it imperative for the teacher whose major task is to achieve meaningful and effectives communication with the learners' needs. Some vital aids to meet up with this great demanding task of achieving educational objectives makes for the availability and effective use of educational media or restructure is of great concern (Efedi 2008).

Modern technology worldwide has been noted for a tremendous and immense contribution towards the teachers/students advancement of knowledge and skills. Anyanwu (2009) called for an urgent integration of modern technologies in education and its curriculum implementation process. Efedi (2009) in support of the above suggested that the curriculum developers and implementers (teachers, administrators) have an enormous and very big global challenge in this new global world of information and knowledge and to increasingly become more functionally efficient in all their intellectual and service delivery efforts. Continuing that, it is only through modern technology such as information communication technology (ICT) that information can be provided within the shortest possible time if free from all its attendant problems.

The whole world has been turned into a global village, as data and information can be exchanged globally by people and organizations within a few seconds. New educational responsibilities therefore involves training students to become global citizens, otherwise the education system will be a failure if it does not prepare both teachers and students to face the challenges of this modern or post modern world (Akinboye 2003; Indireson, 2006).

Modern technology is the technology which supports activities involving the creation, storage, manipulation, and communication of information, together with their related methods, management and application. Stantion (2012) asserts that modern technology implies using modern

equipment in processing, storing, recalling, solving, and disseminating information based on the fact that the world has been reduced to a global village. The workplace in the field of medicine, education, transportation, manufacturing and entertainment are embracing technology in order to stay current and be relevant. It's clear that society is rapidly transforming into one which is based on information, require its citizens to be familiar with and at ease with information based resources and their manipulations. Thus, for a Nigerian learner or teacher not to be left out in what is happening in the world he/she has to cue into the use and application of this modern technologies which has to start from the foundation of education right through to the tertiary level (Bamidele 2006; Abimbade, Aremu & Adedoja 2003).

Okemakinde (2010) states that, most education management problems (such as teaching) in Nigeria might be traced to lack of poor management of information. A good management information system is therefore needed in all educational institutions to handle more efficiency such administrative matters as providing government reports, justification and accountability, student's records and timely release of results. Educational institutions today need to pay more attention to the management of their data and information for efficiency and effectiveness because information reduces uncertainties and facilitates decision making.

Modern technologies is use in educational institutions for effective teaching – learning processes include computers, laptops, CD – Rom, websites, E-mail, audio-visuals, scanning machines, video conferencing, digital camera, overhead projectors, fax machines, bomb dictator, intruder dictators, uninterrupted power supply (UPS), stabilizers, internet, satellites/cables, DVD/CD Rom players, disks, flash device, local area networks [LAN), monitors, video cassette players, power point, printers, diskettes, etc.

Technology use in education has become more necessary these days as there have been developments in technological hard and soft ware which will aid instructional processes. The use of modern technology in education opens a new area of knowledge and offers a tool that has a potential to change some of traditional and ineffective educational methods Akpan and Ita (2015). It is currently considered as crucial to "modernize educational system on the basis of modern technology (e.g ICT), as globalization and transformation to the information society". (Alumode 2013), Odeh and Tyokyaa (2014) citing Iparen identified common ICT facilities used in secondary school management to include desktop computer, Laptop, computer Library, computer networking machines, photocopy machines, internet, satellite disc for global information, e-mail service, internet phone, school cyber café, school world wide web

(www), school visual Library, digital satellite television (DSTV), fax-mail machine, public address system, audio tape player, digital camera, electronic classroom, examination scoring machine, counting machine and so on. The use of these modern technologies in the day to day school management functions (primary, secondary and tertiary) enhances efficiency, productivity, creativity and improve both teachers and students technological/manipulative skills and as such help to realize the school stipulated (set) goals and objectives.

Use of modern technologies in education has been continuously linked to higher efficiency, higher productivity and higher educational outcomes, including the quality of cognitive, creative, and innovative thinking of the teachers. It is on this background that the federal republic of Nigeria (FRN) 2004 made plans for providing necessary infrastructure and training for the integration of ICT for effective functioning in this modern era. Ugwu and Oboegbulem (2010) said ICT can increase school efficiency and reduce necessary bureaucratic bottlenecks in education management. They further stressed that the availability and utilization of modern technologies (e.g ICT Facilities) are therefore important factors to consider if there must be any meaningful benefit in using them for the management of schools.

It has been observed by educational stakeholders in the educational zones in Abia State that the use of modern technologies has tremendous impacts in the smooth running of schools. Governments (state) have been supporting/approved the procurement, installation and utilization of modern technologies (ICT) in secondary schools administration but till now not up to 10% of the schools has been provided with ICT facilities (both teachers and students use). Even the very few schools given, the number available is nothing to compare to the students number and also no power supply, to generate energy for the use of the available ones. (Ukaegbu 2019) observed that administrators, teachers, parents and other stakeholders cannot get any meaningful information since the ICT facilities are not available and appropriately utilized in schools. Again, most teachers in the ICT provided schools lack the capability, ability and manipulative skills to operate on them for instructional processes. Thus, the question(s) are why has this situation been like this? And to what extent are these modern technologies available and utilized in the day to day running of secondary schools? Are these teachers not trained in the use of these modern technologies in secondary schools in Abia State?

Generally, the study sets to investigate the effects of use of modern technologies for instructional processes in secondary schools in Abia State.
Specifically, it intends to;

- identify the various types of modern technologies available in public secondary schools in Abia State.
- ascertain the effects of use of modern technologies (e.g ICT) in teachers professional development
- determine constraints to provision/utilization of modern technologies in public secondary schools
- identify strategies for effective and efficient use of modern technologies in public secondary schools in Abia State.

The following research question and hypothesis guided the study

- What are the available modern technologies in public secondary schools in Abia State?
- What are the effects of use/utilization of modern technologies on teachers professional development in public secondary schools in Abia State?
- What are the perceived constraints to the use/utilization of modern technologies in public secondary schools in Abia State?
- What are the suggested strategies for an effective and efficient use of modern technologies in public secondary schools in Abia State?
- There is no significant difference in the mean rating scores of principles and SEMB supervisors on the effects of use/utilization of modern technologies in public secondary schools in Abia State.[$p<0.05$]

Method

This study adopted the descriptive survey research design having a total population of 453, out which 350 were sampled (250 principals & 100 SEMB Supervisor) using proportional random technique. Four (4) research questions and one hypothesis guided the study. A rating scale was used as instrument for data collections. The instrument was subjected and tested for its reliability and internal consistency using Cronbach Alpha and a 0.82 value was got. A four point rating scale of strongly agree (SA) 4 points, agree (A) 3 points, disagree (DA) 2 points, and strongly disagree (SD) 1 point was adopted. The instrument has 45 items with 2.50 as decision point. The data was analyzed using mean scores, standard deviations and z test statistics.

Results

Table 1: Mean Rating Scores of Principals and SEMB (supervisors) on the available modern technologies in public secondary schools in Abia State.

		Principals			SEMB Supervisors		
s/n	Item statement	X	SD	Dec	X	SD	Dec
1	Desktop computers	1.44	0.61	D	1.41	0.66	D
2	Laptops	1.56	0.75	D	1.72	0.58	D
3	E-mail services/schools world wide web machines	1.83	0.64	D	1.99	0.45	D
4	Scanning/photocopying machines	1.98	0.57	D	2.02	0.58	D
5	Overhead projectors	1.65	0.61	D	1.72	0.59	D
6	Uninterrupted power supply [UPS]	1.97	0.71	D	2.11	0.91	D
7	Stabilizers	2.21	0.32	D	2.12	0.34	D
8	Internet	1.77	0.71	D	1.90	0.65	D
9	Digital satellites/cables	1.38	0.66	D	1.41	0.74	D
10	Disks/flash drives	1.56	0.91	D	1.61	0.60	D
11	Local Area Networks [LAN]	1.28	0.82	D	1.09	0.59	D
12	Monitors/printers	2.00	0.61	D	1.99	0.74	D
13	Power points	1.88	0.48	D	1.69	0.45	D
14	Diskettes	1.95	0.82	D	1.98	0.72	D
15	Electronic classroom/examination scoring machine	1.33	0.77	D	1.41	0.61	D
	Total Mean	**1.72**	**0.57**	**D**	**1.75**	**0.61**	**D**

Table (1) revealed that both respondents agreement in their opinion on the available modern technologies in secondary schools with mean scores and standard deviations of 1.72 and 0.57 for principals while 1.75 and 0.61 for SEMB supervisors. These mean scores are below the criterion mean point of 2.50. Therefore, both respondents agreed that those modern technologies in table 1 were not available in public secondary schools in Abia State.

Table 2 Mean Rating Scores of Principals and SEMB Supervisors on the Effects of Use of Modern Technologies on Teacher's Professional Development

		Principal		SEMB supervisor		
s/n	Item statement	X	SD	X	SD	Dec
1	Use of modern technologies can: Assist the transfer of knowledge and information between project teams and teachers in schools	3.81	1.02	3.22	1.01	A

2	Enable teachers development of new knowledge for innovation	3.26	0.92	2.98	0.36	A
3	Creates in teachers the potential to redefine the management and control of innovation through removal of barriers such as time and distance	3.16	0.49	3.33	0.89	A
4	Facilitate teachers with an effective architecture, bringing appropriate knowledge to a point of action during the moment of need	3.01	0.88	3.12	0.71	A
5	Provide a comprehensive knowledge base that is speedily accessed, interactive and of immediate value to the user.	3.45	0.75	3.57	0.71	A
6	Reduce teachers uncertainties and facilitates decision making	2.29	0.90	3.33	0.66	A
7	Help teachers to complete in the rapidly–evolving world of technology, remaining up-to-date with at least basic information	3.09	0.68	3.00	0.72	A
8	Help teachers to provide reports to their heads, government, justify and account, record students information and timely release of results	3.62	0.69	3.74	0.88	A
9	Enable keeping records of teachers' performance activities and progress in their different areas of specialty so as to identify their areas of needs.	3.44	0.87	3.27	0.95	A
10	Help teachers keeping school records such as events, visits, allocations, transactions and donations.	3.20	0.71	3.22	0.57	A
11	Promote teachers knowledge of concept by bringing clearer views of ideas with very wide illustrations and views of authorities on the area of concern.	2.99	0.86	3.03	0.92	A
12	Provide teacher – teacher learning time for feedback and reflection and networking within and between schools and experts	3.19	0.55	3.27	0.48	A
13	Provide teachers with good effective and efficient manipulative/creative skills since it is practice-oriented.	3.37	0.74	3.45	0.61	
	Total Mean	3.30	0.78	3.27	0.73	A

Table (2) indicates that the principals and SEMB supervisors mean scores were above 2.50 (criterion Mean). Their mean scores were 3.30 and 3.27 while their standard deviations were 0.78 and 0.73 respectively. This values show that both respondents agreed on the items in table (2) as effects of use/utilization of modern technologies on teachers professional development.

Table 3: Mean Rating Scores and Standard Deviations of Principals and SEMB Supervisors on the perceived constraints to the use/utilization of modern technologies in public secondary schools in Abia State.

		Principals			SEMB Supervisor		
s/n	Item statement	X	SD	Dec	X	SD	Dec
	Constraints to use/utilization of modern technologies in schools include						
1	Inadequacy of funds provided by the state government for the procurement/purchase of these technologies	3.81	0.62		3.69	0.75	A
2	Epileptic and non-reliable electric power supply to power these technologies	3.72	0.59		3.66	0.60	A
3	Limited number of modern technologies provided in schools which do not go round the teachers/students	3.59	0.66		3.41	0.95	A
4	Poor incentive that supervisors are not motivated to visit the few schools who have few modern technologies	3.35	0.44		3.29	0.72	A
5	Most teachers whose schools have these modern technologies do not have the training to manipulate/use them	3.87	0.97		3.58	0.64	A
6	Most school heads/principals do not bring these technologies out for use rather they are packed in their offices and stores	2.92	0.82		3.32	0.78	A
7	No good maintenance culture by principals. Those available ones are not maintained or repaired for use	2.65	0.71		3.18	0.89	A
8	Cost of purchase of these modern technologies are high in the market	3.04	0.63		3.09	0.59	A
9	Limited access to the internet services in schools (teachers and students)	3.49	0.82		3.39	0.79	A
	Total Mean	3.38	0.70		3.41	0.74	

Table (3) shows the responses of principals and SEMB Supervisors on the received constraints to the use/utilization of modern technologies in schools. The principals and SEMB Supervisors mean scores are 3.38 and 3.41 while their standard deviations are 0.70 and 0.74 respectively. Their mean scores were above the criterion mean of 2.50 and, therefore indicate respondents are in agreement to the items in table (3) as constraints to use/utilization of modern technologies in schools.

Table (4) Strategies for Efficient Use/Utilization of Modern Technologies in Public Secondary Schools in Abia State

		Principals		SEMB Supervisor		
s/no	Item statement	$\overline{X}$	SD	$\overline{X}$	SD	Dec
1	Adequate fund allocation for the purchase/procurement of modern technologies to ground round the staff/students for effectiveness and efficiency	3.61	0.71	3.72	0.85	A
2	Government/Education Boards should provide enough monitoring measures to see that these technologies are brought out for staff/students use	3.58	0.58	3.64	0.71	A
3	Provision of adequate and regular power supply to schools to power these facilities for educational process	3.41	0.88	3.21	0.71	A
4	Secondary school teachers should adhere and to adjust to new trends in life	3.36	0.71	3.29	0.65	A
5	Adequate and needful training programmes to educate teachers on the manipulative skills periodically to meet with challenging demand of these 5modern technologies.	3.78	0.41	3.81	0.55	A
6	Principals should be monitored by employers (SEMB, SUBEB, etc) on maintenance culture for these modern technologies	3.55	0.92	3.59	0.88	A
7	PTA/Stakeholders should also strongly partake in the purchase, procurement and maintenance of these modern technologies in schools	3.66	0.77	3.69	0.61	A
8	Provision of regular/unlimited internet facilities to schools by the state government	3.45	0.63	3.51	0.78	A
	Total Mean	3.55	0.70	3.58	0.73	A

Table (4) indicates the mean rating scores of principals and SEMB Supervisors on the strategies for efficient use/utilization of modern technologies in public secondary schools in Abia State. Their mean scores and standard deviations are 3.55 and 0.70 for principals; and 3.58 and 0.73 for SEMB Supervisors. These mean scores 3.55 and 3.58 are above the criterion mean value of 2.50 and therefore accepted. This indicates that both principals and SEMB Supervisors were in agreement that the items in table (4) are strategies for efficient use/utilization of modern technologies in public secondary schools in Abia State.

Table (5) Showing Z –Test Analysis of Principals and SEMB Supervisors on the Effect of Use/Utilization of Modern Technologies on Teachers' Professional Development

Source of variation	N	$\overline{X}$	SD	Df	$\overline{Z}$cal	$\overline{Z}$tab	Decision
Principals	250	3.30	0.78	348	0.34	1.96	Accept
SEMB Supervisors	100	3.27	0.73				

Data from table 5 indicates that Z test analysis of the mean rating scores of principals and SEMB Supervisors on the effect of use/utilization of modern technologies on teacher professional development is 0.34 which is less than the Z tabulated of 1.96. Therefore, the hypothesis is accepted that there is no significant difference between the mean rating scores of principals and SEMB Supervisors on the effect of use/utilization of modern technologies on teachers professional development in Abia State school system.

Discussion

Findings of this study revealed that the principals and SEMB Supervisors disagreed that the following modern technologies were not available in public secondary schools in Abia State viz desktops, laptops, scanning/photocopying machines, e-mail services, school world wide web, overhead projects, UPS, stabilizers, internet, DSTV/Cables, disks, flash drives, LAN, monitors, printers, power points, diskettes and electronic scoring machine classroom examination.

Use/Utilization of modern technologies assist transfer of knowledge between team teachers, develops new knowledge for innovation by teachers, creates teachers potential to redefine barriers, reduce teachers uncertainty, upgrade teachers competiveness, enables record keeping and effective information feedback, reflection and networking, provides teachers with expect manipulative and creative skills etc. However, constraints to effective

use/utilization of modern technologies include lack of fund, epileptic/non reliable power supply, limited number of the modern technologies, poor incentive, lack of experience (training to use them, no good maintenance and inability of principals to bring it out for use by teachers and students, high cost of purchase of these modern technologies, and limited access to internet.

Strategies for efficient use and utilization of modern technologies include adequate fund, enough monitoring measures, adequate/regular power supply and internet facilities to schools, teachers acceptance to new change (use) of modern technologies in classroom teaching, adequate training programmes for teachers, principals should imbibe the attitude of maintenance culture, PTA should partake in the provision and procurement of these modern technologies in schools as rated and responded by principals and SEMB Supervisors in Abia State. Lastly, the z test analysis showed that principals and SEMB Supervisors were in agreement to the effects of use/utilization of modern technologies on teachers' professional development.

Conclusion

Having seen the available modern technologies in public secondary schools, its constraints, effects and strategies, it becomes pertinent to see its use/utilization as a wise venture to adopt in schools. However, responses from principals and SEMB Supervisors revealed that there is a positive relationship between the use of modern technologies and teachers professional development in the public secondary schools in Abia State school system.

Recommendations

Based on the findings of the study, the researchers recommended the following:

1. That the state government should endeavor to create a space in the state allocation (adequate fund) for the year for procurement of modern technologies in Abia State school system.
2. Teachers in the Abia State schools system should be given adequate and needful technological training to be effective in manipulating these technologies
3. Adequate teachers incentives to raise morale
4. Enough serious and goal oriented supervision to be able to monitor the utilization of these
   modern technologies
5. Regular power supply and internet facilities to use these modern technologies

6. Principals should bring these available ones for teachers/students use and send them for repair and maintenance if spoilt.
7. PTA enjoining to the issue of purchase, procurement and maintenance of these technologies.

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