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Principals' Technology Leadership Practices as a Correlates of Teachers' Technology Integration in Classroom Instruction in Secondary Schools in Anambra State

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Abstract

The study determined principals' technology leadership practices as a correlates of teachers' technology integration in classroom instruction in secondary schools in Anambra State**.** The study was guided by two research questions and two hypotheses were tested at 0.05 level of significance. Correlation research design was utilized for the study. The population of the study consisted of all the 5,286 teachers in public secondary schools in Anambra State, Nigeria. Multi-stage sampling procedure was used to draw 1,057 teachers as the sample for the study. Two sets of researchers-developed instruments titled "Principals' Technology Leadership Practices Questionnaire (PTLPQ) and Teachers' Technology Integration in Classroom Instruction Questionnaire (TTICIQ) were used for data collection. The instruments were face validated by three experts and subjected to reliability test using Cronbach alpha which yielded 0.78, and 0.75 for Clusters A and B of PTLPQ respectively and the reliability index of 0.74 was obtained for TTICIQ. Data analysis was done using Pearson' Product Moment Co-efficient for answering the research questions and t-test to test the hypotheses. The findings of the study indicated among others that there is a high relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State. Based on the findings, it was recommended among others that Ministry of Education should develop a handbook for principals to guide them in exhibiting digital citizenship behaviour that will bring improvement on teachers' technology integration in teaching and learning.

Keywords: ***Principals, Technology Leadership, Teachers, Technology Integration, Classroom Instruction.***

1. Introduction

Education is very crucial in inculcation of the right values, skills and attitude to individuals. It enables individuals to acquire requisite literacy, build their confidence and develop their potentials to promote active participation in development of the society. Technological advancement has brought rapid changes in education system. Raman, Thannimalai and Ismail (2019) stressed that in an environment where technology and social media are more relevant for keeping up with 21st Century classroom pedagogy, school principals have to undertake imminent paradigm shifts pertaining to their roles that require them to be come technology leaders so that they can spearhead the embracing of the inevitable and ever - transforming digital era. Raman et al added that school leaders in the 21st century have an important role in ensuring the integration of ICT (Information and Communication Technology) into teaching and learning pedagogy, as well as in their management and leadership. School principals could influence the use of ICT in teaching through technology leadership.

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Technology leadership is the act of influencing, persuading, guiding and assisting the teachers to use modern devices to improve instructional delivery in the classroom. Mohd, Faridah and Azlin (2016) defined technology leadership as an aspect of the administrator role involving planning and implementing activities related to technology. Okeke (2019) defined technological leadership as a process of providing support for teachers to use computers to make teaching and learning meaningful and productive. Technology leadership involves the combination of various styles, strategies, techniques and skills to influence the use of electronic devices in the school system. These skills are the ability to articulate clear vision statements for ICT use, planning for effective ICT integration in schools, organising staff development programmes for staff; providing support for technology infrastructure in schools, evaluating the outcome of ICT usage in schools and researching on recent technology advancements (Okeke, 2019).

The notion of technology leadership involves leading teachers in acquiring computer competencies and knowledge which influence their integrating of ICT in lesson presentation. Afshari cited in Okeke (2019) asserted that the school leaders in their effort to be technology leaders should first inspire staff to jointly create a vision of technology with them; model effective use of ICT in the areas of teaching and learning; work towards incorporating ICT in the management and operation of their schools and finally be part of the assessment and evaluation of ICT in their schools. A technology leader assesses the available ICT facilities, procure required ones, upgrade and maintain the available facilities to support ICT usage in the school. School administrators who are technology leaders also hire technical support staff to guide and assist teachers in use of electronic devices in lesson presentation. A technological leader in school system support teachers' professional development in the use of ICT through seminars, workshops and conferences.

There are many components of technology leadership practices. Thannimalai and Raman (2018) identified technology leadership practices as visionary leadership, digital age learning cultures excellences in professional practices, digital citizenship and systematic improvement. The study centred on visionary leadership and digital citizenship components of technological leadership because they are all-encompassing and also core areas.

Visionary leadership is the process of articulating and formulating action plans for the change and innovation in the school system. Visionary leadership is act of developing long term and sustainable blue print for futuristic improvement of the school system. Principals who lead their schools with a vision are not afraid to say: ''This is what I strongly believe; this something could be completed by school in one year, five years and ten years'' (Tasrim, 2017). According to Hsin-Hao and Abbott (2019) visionary leadership involves integration of values and beliefs to construct a shared school vision, empower and encourage members of staff to take action towards achieving the vision. A visionary principal assesses the internal and external environment of the school to gather information to develop vision in consideration of the school philosophies and values, translate the vision to activities, empower teachers to implement the plan and also put in place feedback mechanism for modification and improvement. In vision making the technology leaders first develop their personal visions on ICT use, then merge it with the visions of their staff (Okeke, 2019). The ideas and opinions of members of staff are required in order to set a clear and realistic future direction in the use of technological devices in teaching-learning process.

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Visionary leaders involve subordinates in developing plan in line with the mission of the school, communicate the plan to members of staff, implement and provide feedback for modification. Being visionary leader is associated with the administrator's capacity to consolidate with his/her collaborating team in bringing reforms, changes and new paradigms that respond to the future projection and also the capacity to motivate them in the development of their competences (Oscar, 2018). The principals could motivate subordinates in development of professional competences in technology integration through training programmes. Mupa (2015) averred that visionary leadership holds skills of motivating employees, creating long-term partnerships with others and procure appropriate resources for use to desirable changes. The technology leadership of principals motivates teachers to utilize ICT facilities to bring desirable changes in instructional delivery. Thannimalai and Raman (2018) noted that technology leadership of school leaders is important as a catalyst to inspire teachers to integrate technology in classroom.

Digital citizenship is a person who uses technological tools in line with prescribed standard and norms. Aslan (2016) defined digital citizenship as a person who can effectively and efficiently use digital tools through advanced communication technology and respect moral rules and individual rights and freedoms in a virtual environment and also use technological tools responsibly. According to Oxley cited in Ghamrawi (2018), digital citizenship is the norms of appropriate, responsible behaviour with regard to technology use. Digital citizenship entails having adequate knowledge of legal and ethical related issues regarding the integration of technology in the school system. The elements of digital citizenship behaviour identified by Suson (2019) include; communication, literacy, etiquette, law, rights and responsibilities, health and wellness, security (self-protection). School administrators that have incorporated digital citizenship into their learning environments are proving success in building healthy physical and digital cultures for their teachers and students (Shipley cited in Ghamrawi, 2018). Digital citizenship of principals could inspire teachers to integrate technology in teaching and learning processes. Isman and Gungoren (2014) noted that school administrators who are digital citizens must have extensive internet and technology skills and knowledge to guide the teachers and students to be digital citizens. Digital citizenship of principals stimulates their participation in the process of providing, educating and assisting teachers to use technology in the classroom pedagogy. Dedebali and Dasdemir (2019) posited that each administrator turns into a digital citizen when they act responsibly to communicate and seek information through using the internet.

Technology integration is the use of modern devices such as computer, internet, projectors, videos and other information and communication technology (ICT) facilities in instructional delivery. According to Ghavifekr and Rosdy (2015), technology integration in classroom generally means technology-based teaching and learning process that closely relates to the utilization of learning technologies in schools. Technology integration in classroom lesson delivery appeals the senses of sight and hearing which makes instruction more real and meaningful to students. Technology integration in classroom instruction serves as aid to teachers in illustrating a concept through animation and sound. It also helps teachers to design their lesson plans in an effective, creative and interesting approach that would result in students' active learning (Ghavifekr & Rosdy, 2015). Technology integration in classroom pedagogical aspects motivates, captivate and enhance students' retention and academic achievement. It also creates

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and sustains students' interest during lesson and also promotes active participation of learners in lesson.

The technology leadership of principals and the readiness of teachers to integrate technology in classroom instructional delivery could make learning interesting to students. Raman and Shariff (2017) averred that without an important role played by principals as a technology leader in school as well as accessible ICT, teachers that posses high ICT competences could find it difficult to integrate technology in classroom instructional delivery. Teachers require the support school administrators with technology leadership skills to harness their full potentials in promoting teaching and learning through the use of ICT facilities. The available ICT facilities in secondary schools in Anambra State are under-utilized by teachers. This may be attributed to the fact that secondary school principals in Anambra State have not adequately provided the technology leadership that prepare and encourage teachers to use these facilities. Okeke (2019) observed that schools in the developed countries have being practising technological leadership, but in Nigeria, most school leaders are not familiar with the term. This may account for unsatisfactory use of ICT facilities in classroom instruction in the school system. It is against this background that the researchers investigated into principals' technology leadership practices as a correlates of teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

1.1 Purpose of the Study

The main purpose of the study is to determine principals' technology leadership practices as a correlates of teachers' integration of technology in classroom instruction in secondary schools in Anambra State. Specifically, the study sought to find out:

1. Principals' visionary leadership practices as a correlates of teachers' integration of technology in classroom instruction in secondary schools in Anambra State.
2. Principals' digital citizenship practices as a correlates of teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

1.2 Research Questions

The following research questions guided the study

1. What is the relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State?
2. What is the relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State?

1.3 Hypotheses

The following hypotheses were tested at 0.05 level of significance

1. There is no significant relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

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2. There is no significant relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

2. Method

Correlation research design was utilized for the study. The area of the study was secondary schools in Anambra State. The State is located in south-east of Nigeria and is bounded by Enugu State in the East, Delta State in the West, Kogi State in the North and Imo State in the South. There are 21 local government areas in the state. The state has six education zones namely: Aguata, Awka, Nnewi, Ogidi, Onitsha and Otuocha. The population of the study consisted of all the 5,286 public secondary school teachers in Anambra State. Multi-stage sampling procedure which involved proportionate stratified and simple random sampling techniques were utilized to draw a sample size of 1, 057 teachers for the study.

Two sets of researchers-developed instruments titled "Principals' Technology Leadership Practices Questionnaire (PTLPQ) and Teachers' Technology Integration in Classroom Instruction Questionnaire (TTICIQ) were used for data collection. The instrument was developed based on extensive review of related literature and consultation of experts in educational management. PTLPQ had two clusters of BI and BII with 12 and 11 items respectively. PTLPQ therefore contains a total of 23 items. On the other hand, TTICIQ contains 15 items. The two sets of instrument were structured on four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D); Strongly Disagree (SD) and weighted 4, 3, 2 and 1 respectively.

The instruments were subjected to face validation by three experts, two in the Department of Educational Management and Policy, and one in Measurement and Evaluation in the Department of Educational Foundations, all in the Faculty of Education, Nnamdi Azikiwe University. The reliability tests of the instruments were determined using Cronbach alpha method which involved single administration of 30 copies of the instrument to 30 teachers in secondary schools in Enugu State. The choice of Enugu state was because Anambra and Enugu States share similar characteristics in terms of school management. The data obtained were subjected to test for internal consistency using Cronbach alpha which yielded 0.78 and 0.75 for Clusters A and B of PTLPQ respectively and the reliability index of 0.74 was obtained for TTICIQ.

The researchers together with four research assistants who are secondary school teachers in the area of study administered copies of the questionnaire directly to the respondents. The research assistants were briefed on the nature of the study and what to do. A total of 1,057 copies of the questionnaire were administered to the respondents and 998 copies were properly completed and successfully retrieved, indicating 94% percent return. Data analysis was done using Pearson' Product Moment Co-efficient for answering the research questions and t-test to test the hypotheses. For decisions on the research questions, the coefficient (r) and the size of the relationship was interpreted using the interpretation of correlation coefficient by Downie and Heath cited in Nworgu (2015) as shown: 0.80 and above for high, above 0.30-below 0.80 for moderate and 0.30 and below for low respectively. For decisions on the hypotheses, if t-calculated is equal to or greater than t-critical at 0.05 level of significance, the null hypothesis is rejected, but if otherwise, it is not rejected.

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3. Results

Research Question 1: What is the relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State?

Table 1: Pearson's Correlation between principals' visionary leadership practices and teachers' integration of technology in classroom instruction

	N	Visionary Leadership Practices	Technology Integration	Decision
Visionary Leadership Practices	998	1	.832	High
Technology Integration	998	.832	1	

The result presented on Table 1 shows that the Pearson's Correlation Coefficient, r. (998) = .832. This is an indication that there is a high relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

Research Question 2: What is the relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State?

Table 2: Pearson's Correlation between principals' digital citizenship practices *and teachers' integration of technology in classroom instruction*

	N	Digital Citizenship Practices	Technology Integration	Decision
Digital Citizenship Practices	998	1	.856	High
Technology Integration	998	.856	1	

Table 2 shows that the Pearson's Correlation Coefficient, r. (998) = .856. This is an indication that there is a high relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

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Ho 1: There is no significant relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

Table 3: *t-test analysis of no significant relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction*

	N	Visionary Leadership Practices	Technology Integration	*t-cal.*	*t-crit.*	*Remark*
Visionary Leadership Practices	998	1	.832			
				2.02	1.96	Rejected
Technology Integration	998	.832	1			

The result presented on Table 3, the t-calculated value of 2.02 is greater than t-critical value of 1.96 at 0.05 level of significance and 996 degree of freedom. Thus, the null hypothesis is rejected. Thus, there is significant relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

Ho 2: There is no significant relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

Table 4: *t-test analysis of no significant relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction*

	N	Digital Citizenship Practices	Technology Integration	*t-cal.*	*t-crit.*	*Remark*
Digital Citizenship Practices	998	1	.856			
				2.06	1.96	Rejected
Technology Integration	998	.856	1			

As shown on Table 4, the t-calculated value of 2.06 is greater than t-critical value of 1.96 at 0.05 level of significance and 996 degree of freedom. Thus, the null hypothesis is rejected. Thus, there is significant relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State.

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4. Discussion

The finding of the study indicated that there is a high relationship between principals' visionary leadership practices and teachers' technology integration in classroom instruction in secondary schools in Anambra State. This is in line with Raman and Shariff (2017) reported that there was a positive relationship between technology leadership and teachers use of ICT in teaching. The agreement between the two findings could be due to the fact that the studies were conducted at secondary school level and within time span of three years major changes might not occur in research findings. The possible reason for this finding could be due to the fact that visionary school leaders are change agents who are eager to move past the traditional instructional method to technological driven approaches. School leaders with vision of growing innovative trends of teaching inspire teacher to really around a shared dreams of integrating technology in classroom instruction. They are optimistic about the present and future change in instruction processes which make them to guide teachers on approaches of using technology to deliver instruction to students. It was also reported that there is significant relationship between principals' visionary leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State. This is in disagreement with the findings of Raman, Thannimalai and Ismail (2019); Thannimalai and Raman (2018) who reported that there was no significant relationship between principals' visionary leadership practices and teachers' technology integration in the classroom. The difference in geographical location could account for the disagreement between the two studies. Visionary school leaders are innovative, creative and technological driven individuals. They envisaged the growing trends of teaching; make long-term future plan and strive to gain deep insight into ways to utilize technology to promote teaching. The teachers that work with visionary school leaders are energized and stimulated to strive to achieve new heights in integrating technology in teaching the students.

It was also found there is a high relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State. One possible explanation for this finding is fact that technological advancement in education has made digital citizenship imperative to promote technology integration in classroom teaching and learning process. The school principals who exhibit digital citizenship practices regularly and effectively emphasize on the need to integrate digital devices in learning process and this may also account for this result. School administrators who are digital citizens teach and assist teachers to integrate technology in teaching the students. They establish standard and guideline to help teachers infuse technology in classroom instruction. It was also revealed that there is significant relationship between principals' digital citizenship practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State. This is in line with the finding of Thannimalai and Raman (2018) which indicated that there was significant relationship between principals' digital citizenship practices and teachers' technology integration in the classroom The similarity in the two findings is not surprising as a result of time span, within two years reward practices might still remain the same. Raman, Thannimalai and Ismail (2019) reported that there was no significant relationship between principals' digital citizenship practices and teachers' technology integration. This contradiction in the findings of the two results may be attributed to difference in geographical location. The difference in

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geographical location indicated dissimilarity in educational policy, programme, funding and participants who might hold varied views on technology leadership practices and technology integration in classroom in their various countries. The school administrators who are digital citizens possess the skills to observe, advise and guide teachers on how best to use modern devices in teaching the students.

5. Conclusion

Based on the findings, it was concluded that there is significant relationship between principals' technology leadership practices and teachers' integration of technology in classroom instruction in secondary schools in Anambra State. Principals' visionary and digital citizenship practices have positive and significanr relationship with teachers' integration of technology in classroom instruction. Thus, the rate technological advancement and innovation in education system demands school administrators who can provide technological leadership that promote technology integration in classroom instructional delivery. Technology leadership is exhibited through guiding and influencing the teachers to use computer, video visual devices, audio devices, internet and other digital devices to improve teaching and learning.

6. Recommendations

1. Ministry of Education should develop a handbook for principals to guide them in exhibiting digital citizenship behaviour that will bring improvement on teachers' technology integration in teaching and learning.
2. The three tiers of government and education stakeholders should give topmost priority to training of principals in annually budgetary allocation to enable principals up-grade their skills and knowledge that will enhance their technological leadership practices.
3. School principals should assess and determine teachers training needs and organise seminars, workshops and conferences that will build their competencies on integration of technology in classroom instruction.
4. The State Ministry of Education should recruit competent and qualified information and communication technology technicians and post them to schools to guide and assist teachers integrate technology in classroom instruction.

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