Effect of ICTs on Pedagogical Practices in the Teaching of Technical Courses in Nigerian Technical and Vocational Institutions

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ABSTRACT
This study intends to explore and understand influence of ICTs on pedagogical practices in the teaching of Technical courses in Nigerian Technical vocational education and training institutions (TVET). A qualitative multiple case study was carefully chosen to achieve the broad aim of this study with the guidance of activity theoratical framework. Three TVET institutions and twenty participants were selected using maximum variation and homogeneous purposive sampling strategies respectively. During institutions visit, classroom observation was carried out and also both official and personal document was reviewed for triangulation purpose, a semi-structured interview was carriedout as primary data collection method. At data analysis stage, two strategies of grounded theory as open and axial coding were employed to manage the data collected through the use of an inherent feature of NVivo10. The interview transcripts and observation Field notes was analysed moving between Inductive and deductive mode of analysis. The findings revealed that despite numerous positive influence of ICTs on teacher's pedagogical activity, ICTs has an adverse effect on student learning. The paper recomended that policy makers and educational stakeholders have to put in place appropriate strategies for improving pedagogical skills of the teachers.
Keywords: ICT Tools, Pedagogical Practices, and Technical courses

INTRODUCTION
Due to rapid technological development in the 21st century, new challenges emerges, thus, established educational institutions are expected to keep up with the emerging new challenges. Indeed, governments of various nations around the world have made substantial investments in information technology to support teaching and students learning (Alenezi, 2019). Considering ICTs as an important tool for achieving excellence in teaching and learning process (Atuahene, 2019), it can be argued that stakeholders efforts was geared toward enhancing quality education. It was evident that Nigeria as a developing country has been making considerable effort to transforming their schools with the use of ICTs as a pedagogical tool. Among other efforts made by Nigerian government were through the leadership of SchoolNet which was started since 2006, SchoolNet Nigeria continues to deploy and use ICTs in teaching and learning (Adomi, 2010). Nigerian National Policy on Education (FRN, 2013) stressed the urgent need to integrate ICT into teacher education in recognition of it role in advancing knowledge and skills necessary for the present world of work.

The policies focus on the country education system which include TVET institutions, in an effort to ensure schools across Nigeria effectively utilize the inherent power of ICTs (Oyenike, 2010). Thus, Nigerian TVET system has been criticized for institutions lagging behind in the use of ICTs as pedagogical tool (Abubakar 2016). Among other reasons for the institutions lagging behind remained lack of knowledge and expertise in the utilization of new technologies as pedagogical tools. Thus, it is in line

to state that significant effort made by federal government of Nigeria toward successful utilization of ICT in Nigerian TVET institutions was in vein. As the introduction of ICT in education plays a role in shifting responsibility for learning from teacher to students, ICT does not invalidate related traditional teacher's practices and that it should be incorporated in the art of teaching and learning (Akpan, Udofia and Thomas, 2016). Acquisition of ICT knowledge, skills regarding its utilization as pedagogical tool in the teaching remain the future ambition of Nigerian TVET teachers. Thus, in an effort to encourage lecturer's to utilised ICTs, the recommendations of National Policy on Education and that of schoolNet on the use of ICT tools in instructional delivery should be re-emphasized (Akpan, & Itighise, 2019).

Hence the need to refocus on ICT utilization as pedagogical tool in Nigerian TVET institutions as there are little researches in such area. In this regard, the current study intends to understand how teacher's utilization of ICTs influences their pedagogical practice in Nigerian TVET institutions, for the purpose of making the current study convenient and manageable, this study involves only teachers usig ICTs in teaching of TVET courses, while ICTs is restricted to computers, MS-excel, LCD projectors, simulation software's, power point presentation, videos, and the Internet.

Research question

The following research question guided the study.

1. How does utilization of ICTs enhance teacher's pedagogical practice in teaching Technical courses toward improving their professional practices?

Theoretical Framework

Activity theory was use as a theoretical lens for this study as its provide insights into the changes in pedagogical practices (Murphy & Rodriguez, 2008). According to Mlambo, (2007) activity theory is one way to understand how ICT influence teaching and student learning environment. The activity theory is the work of Vygotsky and Leont'ev (1978). And the fundamental principle of the activity theory is that ICTs does not exist in isolation but rather intertwined with the rest of the tools and the participant in the learning environment. The activity theory was use in this study as a guide in developing research question. Finally activity theoratical framework was revisited at the analysis stage.

Litreture Review

Pedagogy refers to any conscious activity designed by one person to bring about learning in another and capable of providing motivation (Hardman, 2008). It is a structured process whereby a more experienced teacher uses helpful tools to mediate and guide learners. However, teachers' beliefs, attitudes, confidence and their competence with ICT remain relevant in the pedagogical adoption of ICT (Victoria, 2011). Inevitably, style of pedagogy change as technology changes (Beetham & Sharpe, 2013), The application of ICT makes institutions to be more efficient and increase their productivity, then causing a variety of ICT tools to enhance and facilitate teacher's pedagogical activities (Akpan, & Itighise, 2019), and that ICTs helps teachers to take care of their student's individual ability through the use of different methods of teaching and learning. It is possible for a student to develop better skills in ICT use, and most of the teachers perceived ICT as beneficial as it makes teaching process and student learning easier.

The new technologies generate a different kind of relationship between the teacher, the leaner and what is to be learned. Indeed, research findings by Abubakar, (2016) indicated that the use of ICT motivate both students and teachers in the teaching process, such facilities help teachers clarify difficult concepts, easily convince students to understand abstract concepts, save time, and make students active in the learning process. According to Jaji (2020), ICTs change how ideas and practices are being communicated to students in the teaching and learning process but ICTs does not change individual learning ability, ICTs creates opportunities for learners to have access to libraries and databases of other universities around the world, its improves attitude and confidence of both student and their teachers.

RESEARCH METHODOLOGY

In effort toward addressing the outlined research questions, this research adopted qualitative case study methodology as it is the best to reveal and provides a rich description of activities under the study (Merriam, 1998). Multiple case study was choosen as it allows the researcher to generalize the findings (Merriam, 2009). Maximum variation and Homogenous of purposive sampling was used to select case to be examined and participant to be interviwed respectively, the sampling were used as two levels of sampling strategy are usually very essential in qualitative case studies (Merriam, 1998). Semi-structured interview and observation were use for data collection, while at analysis stage, open and axial coding system of grounded theory methodology was employed to manage data as it allows for analysis of emerging data (Strauss & Corbin, 1990). Moreover, data from the interview was analysed inductively, and data obtain from observation was analysed in a slight shift to deductive mode of analysis, the researcher checked to ensure whether themes and categories that emerged from initial coding process exist in subsequent data (Merriam, 2009). This process was maintained until the data appeared to be repetitive.

DISCUSSION OF FINDINGS

This section present and discusses the summary of the findings obtained from three case studied.

Influence of ICT Utilization on teacher's pedagogy in the Teaching of Technical courses in Nigerian TVET Institutions
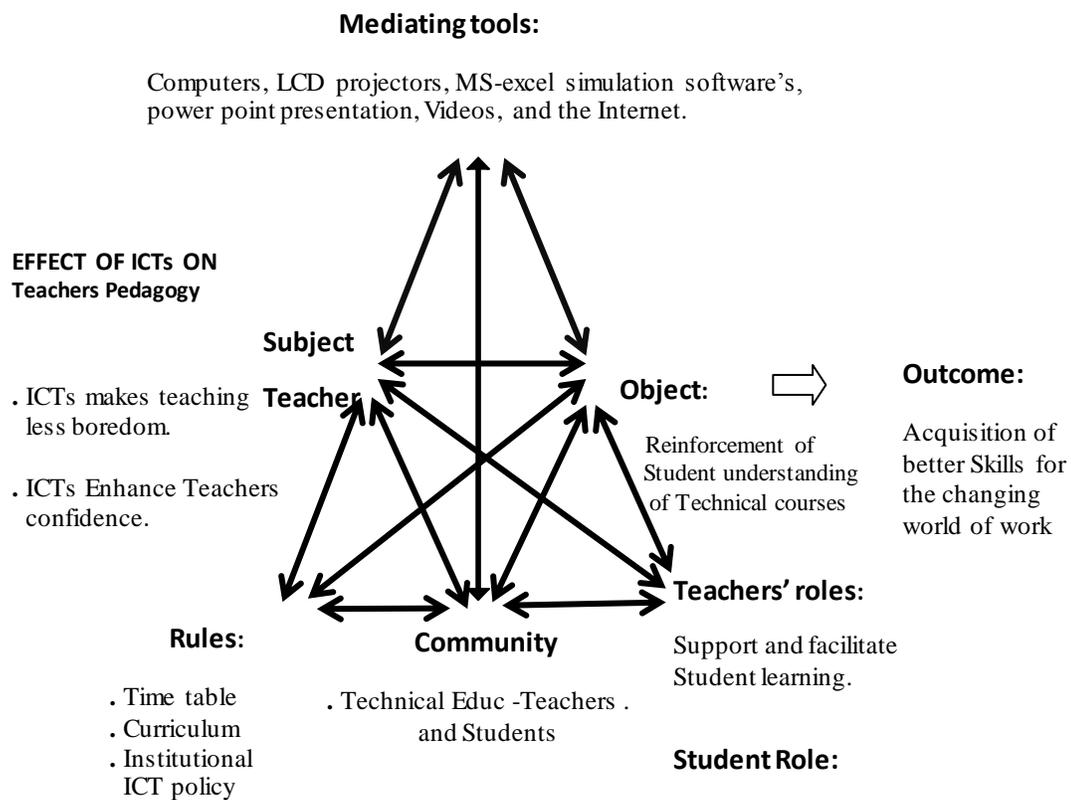
The findings revealed that ICTs make teachers' practices less boredom, enhance their confidence. It also enables teachers to explain abstract content more clearly for their students to understand easily. The current finding concurs with research findings by Jaji, Abubakar & Wakili (2015) ICTs does not change individual learning ability but ICTs creates opportunities for learners to have access to libraries and databases of other universities, and also improves attitude and confidence of both student and teachers. The current finding is further supported with a rearch findings by Abubakar (2016) which revealed that use of ICTs motivate both students and teachers in the teaching and learning process, such facilities help teachers clarify difficult concepts, The current findings reveal that Automobile teachers were found using videos to teach student abstract concepts such as car transmission system and how engine combustion takes place within a combustion chamber while electrical/electronic teachers was found using MS-Excel to design electronic logic gates while teaching students. and research participants revealed that they use simulation softwares such as multism to design an electronic circuit. The current findings is further supported with a reseach findings by Jaji (2020) which pointed out that using new technologies will enable teachers to easily convince students to understand abstract concepts, and make students active in the learning process. Thus, one of the Automobile teachers was quoted saying:

Before the time I get these videos, I find it difficult to explain how a car operates, especially when I want to convince students how reciprocating movement of the piston occur, rotating movement of crankshaft and how gears meshes (AUDU)

The participant share with the researcher that the use ICTs enable them to cover a wider area of the course content more than when they were not using it. They emphasise that thier students understand abstract concept so easily and they are able to see everything with detail explanation. some participant revealed that most teachers perceived ICT as beneficial tool in the teaching and learning process, its encourages both students and teachers to play an active role in the classroom and it also widen teacher's horizon beyond books. The finding further supported by Jaji (2020), that ICTs changes how ideas and practices are being communicated to students in the learning process, but these ICTs does not change individual learning ability. Another paticipant was quoted saying:

ICT especially simulation software and power point are making our lesson more interesting, easy and enjoyable. ICT has made the teaching to be less boredom, and I can present abstract content to my student in less time, also both students and our self we are free to access New information at any time anywhere [Musa]

The interview participant further clarifies that ICTs offers them better access to relevant materials that can be utilized conveniently, organized teaching materials, and ICTs enhance their pedagogy. The current finding concured with research findings by jaji (2020) that ICTs creates opportunities for learners to have access to libraries and databases of other universities around the world, its improves attitude and confidence of both student and teachers, the current findings is supported by (Akpan, & Itighise, 2019), that ICTs helps teachers to take care of their student's individual ability through the use of different methods of teaching and learning. It is possible for a student to develop better skills in ICT use, and most of the teachers perceived ICT as beneficial as it makes teaching process and student learning easier. According to the participating teachers, some of the ICT facilities in their institutions were monopolised by computer science department as part of the challeges they toward ICT utilization as pedagogical tool.

An activity system in figure 1.1 below was revisited to summarize the findings obtained from this study as it helps the researcher to provide clear picture of ICT influence on teacher's pedagogical practices in the teaching of Technical courses.

Mediating tools:

Computers, LCD projectors, MS-excel simulation software's, power point presentation, Videos, and the Internet.

EFFECT OF ICTs ON Teachers Pedagogy

. ICTs makes teaching less boredom.

. ICTs Enhance Teachers confidence.

Subject

Teacher

Object:

Reinforcement of Student understanding of Technical courses

Outcome:

Acquisition of better Skills for the changing world of work

Teachers' roles:

Support and facilitate Student learning.

Rules:

. Time table
. Curriculum
. Institutional ICT policy

Community

. Technical Educ -Teachers . and Students

Student Role:

Figure: 1.1: pedagogical activity System

The findings revealed that Nigerian technical and vocational institutions advocate ICT utilization as pedagogical tool, these can be achieved with the use of curriculum and Institutional ICT policy as rules guiding Teachers pedagogical activity. However, the absence of institutional ICT policy, as well as curriculum that specify the use of ICTs as pedagogical tool is reported as a fracture in the activity system. It is also evident from the current findings that some participating teachers were found not using ICTs as pedagogical tool but they were using ICTs to prepare only lecture notes.

CONCLUSION AND RECOMMENDATIONS

As part of research contribution, it was revealed and highlighted that using ICTs enable teachers cover wider course content within a limited time possible, ICTs enable teachers gain extra time to discuss with

their students as these depart from existing literature. Policy makers and educational stakeholders have to put in place appropriate institutional ICT policy as the current research reported its absence. ICT utilization as pedagogical tool should also be integrated in Nigerian TVET curriculum. These efforts will serve as strategies for improving teacher's pedagogy which will in turn enhance teacher's professional knowledge and skills. Consistent studies in this area are highly suggested so that stakeholders would be fully aware of new development regarding best practices in using ICT as pedagogical tool, and to be aware of challenges ahead.

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