TEACHERS' PERCEPTION OF TECHNOLOGY INTEGRATION ON ASSESSMENT OF KNOWLEDGE AND SKILLS AMONG ADOLESCENTS IN SOMOLU LOCAL GOVERNMENT AREA OF LAGOS STATE

Olubukola Olutosin AKANNI
Department of Educational Foundations, (With Educational Psychology), University of Lagos, Akoka, Nigeria, E-mail:oakanni@unilag.edu.ng or drakanni.olubukola@yahoo.com

Abstract: *Integration and adoption of technology in the classrooms of developing countries undergo several stages and challenges which then determine the case of how successful the integration has been in execution of teaching outcomes. It is against this background that this study investigated the impact of teachers' perception of technology integration on assessment of knowledge and skills among adolescents in Somolu Local Government Area in Lagos State. The descriptive survey research design was adopted for the study. The population for the study comprised of all teachers from public secondary schools in Somolu. The sample size of the study comprised 176 teachers selected from twelve (12) secondary schools using simple random sampling technique. The research instrument for the study was a self-structured questionnaire which was tagged "Teachers Perception of Technology on the Assessment of Knowledge and Skills among Adolescents Questionnaire (TPTAKSAQ)." The instrument has a reliability coefficient of 0.81 when tested during the pilot study. Three hypotheses were tested and all were rejected at 0.05 level of significance. Findings of this study revealed that there is a significant impact of teachers' perception of technology integration in the assessment of knowledge and skills among adolescents among others. Based on the findings, it was recommended, that teachers' technology integration knowledge abilities and skills should be enhanced by giving them workshops about effective technology integration into their teaching; and that government should provide teachers with state-of-the-art technology including hard and software.*

Keywords: Teachers' Perception, Technology Integration, Assessment of Knowledge and Skills.

INTRODUCTION

Teachers' perceptions of the adoption of instructional technology in schools for the purpose of teaching and learning cannot be over emphasized. Technology integration in schools has been a new trend which cannot be reckoned with, owing to lack of ICT facilities, dearth of manpower, lack of interest on the part of teachers, among others. There are four factors that might influence the teachers' perception of adoption of instructional technology in schools. These are teachers' attitudes, motivation ,perceptions of barriers and challenges and perceptions of their technology professional development needs towards the adoption and use of technology innovations in school. In the past 25 years, the Federal Ministry of Education, has aimed at establishing a platform that enables educators and individuals to be interested in technology of different types, suitable for enhancing students' knowledge and skills, to exchange ideas and collaborate efforts towards promoting the usage and application of various aspects of educational technology at every level in the educational system, from pre-school to higher education (Bello, 2014).

The dawn of 21st century ushered in technological advancement in all fields of sciences and education, which have rapidly expanded over the decade. Digital technologies and computers are now commonplace within average lives. Consequently, educational accountability all over the world is calling for practical research-based evidence to investigate the impact of these great evolutions on the performance of teachers as well as students. While the benefits of this improvement in technology is being explored all over the world, many secondary schools especially are very traditional in their approaches in relation to the assessment of knowledge and skills among adolescents. This depicts their perception in the school system, which is rooted in the fact that

many are not willing to follow the trend (Khadija, 2017).

Technology integration is defined as the use of technology to enhance and support the educational environment. It helps support classroom instruction by creating opportunities for students to complete assignments on the computer rather than with normal pencil and paper. It can also be seen as the use of technology resources -- computers, mobile devices like smartphones and tablets, digital cameras, social media platforms and networks, software applications, the Internet, etc. -- in daily classroom practices, and in the management of a school. When this is integrated into the curriculum, it revolutionizes the learning process. More and more studies show that technology integration in the curriculums thus improves students' learning processes and outcomes. Teachers, who recognize computers as problem-solving tools change the way they teach. Technology infuses classrooms with digital learning tools, such as computers and hand held devices; expands course offerings, experiences, and learning materials; supports learning 24 hours a day, 7 days a week; builds 21st century skills; increases student engagement. This enables children to adjust to their own pace of learning. Students who need extra time can spend more time going over exercises until they understand, whilst students who need less support can continue ahead. It also frees up the teacher to help students' who need more support on an individual level. It can be integrated in the classroom by using of power points and games., internet homework assignments, online grading systems, classroom tablets, listserv etc, This helps students with different learning styles, keeping students engaged and preparing them with life skills. It has numerous benefits in the classroom, these are: improves students' engagement. knowledge retention; encourages individual learning; encourages collaboration. Hence, students can learn useful life skills and also has benefits for teachers in reducing their workload.

Dangut and Sakiyo (2016) opines that there is a general consensus that computer is the most important innovation in the 21st century and has dramatically and irrevocably changed the way one thinks and lives. The educational sector is not left out of the computer revolution spreading every facet of human existence. The importance of computer education to students cannot be over-emphasized especially now that the world has been reduced to a global village by technology. The use of computer plays important role in all tiers of education and Computer Based Testing (CBT) is increasingly being used for assessment of students' knowledge and skills in many examinations. Technology today offers many new opportunities for innovation in educational assessment through rich assessment tasks and potentially powerful scoring, reporting and real-time feedback mechanisms. CBT has emerged as one of the recent "innovative" approaches to assessments, and examination bodies are moving from paper and pencil standardized testing to the electronic format in order to eliminate materials and provide more timely feedback, cheaper and speedier test delivery. CBT vastly expands testing possibilities beyond the limitations of traditional paper-and-pencil based tests. This indicates that in this era of computer, things are done faster than before and also human resources are saved as it reduces cost, time of conducting examinations and makes the students to think better.. The above fact gives a clarion call for everyone who wants to survive in this era to be computer literate, or else such an individual would be left behind.

Computer literacy as name implies is the ability to use computers to perform a variety of tasks and this is becoming fundamental to the teaching and learning process. Computer literacy is being able to handle a wide range of varying computer applications for various purposes. Dangut and Sakiyo (2016) considered computer literacy as an educators' belief about their computer knowledge and skills. There are two distinct components to computer literacy: awareness and competence. Awareness requires a person to have understanding of how computers impact their day to day life as well as the larger society while competence is the ability to handle various computer operations. Nigerian students' needs to be computer literate in order to acquire higher education

However, the low level of basic infrastructures in some schools did not allow the interventions to manifest as expected. Technology integration in the classroom is not reliant upon tools or interventions but upon how it can have a meaningful impact on student achievement. Despite the improved access to technology in schools, little research exists on the level of usage in rural schools, especially in developing countries. The ability of teachers to integrate it

activities to meet students' needs is important. However, many teachers find the change process of innovation, daunting and laborious. Considering their current teaching schedules, integrating it into classroom instruction and assessment was seen as a herculean task.

Integration and adoption of technology in the classrooms of developing countries undergo several stages and challenges which then determine the case of how successful this integration has been in the execution of learning outcomes. Nigeria has witnessed a fast-paced penetration of computers and internet in the personal lives of teachers and students, but the pace of integrating ICT in classrooms for learning purposes and assessment of knowledge and skills of adolescents is slow. It appears that the major decline in adopting it comes not from students only but mostly from teachers. Teachers are not only resistant to adopt technology but other factors such as lack of hardware and software, attitudes of teachers towards technology, lack of confidence and competence play a very pivotal role to undermine the effective integration of ICT in schools (Khokhar & Javaid, 2016).

Reports in the advanced worlds depict an ongoing struggle in the full implementation of technology in the assessment of knowledge and skills among adolescents. This is attested to in the assertion of Chi(2016) that it is useful initially to briefly consider the present situation concerning the use of ICT in Australian schools. In doing so, it is necessary to consider the ICT skills and knowledge that students require in their acquisition of twelve years of schooling in the primary and secondary schools.. It is crucial for schools to ensure that teachers have the attitudes and perceptions that is conducive in achieving these skills and knowledge. It is claimed that today's students are digital natives; they are switched on to a highly interconnected, networked digital universe. They increasingly use powerful tools to play, communicate, share support learning and solve problems. Does this mean these technologies should be employed in all aspects of teaching, including assessment? It is observed that advanced digital technologies are customized to different uses which have been progressively infused into work and life. This has impacted public administration and finance, including all sectors of industry, media and communications. Chi (2016) observed that students in Australian schools will need to be able to work and live in environments requiring competency in the usage of digital technology. Additionally, they would need the ability to adapt their skills, understand and respond to change. It seems obvious that students need to be able to obtain information from various sources, such as parents, teachers, books, television, the Internet, and then process information in various ways, with and without technological support, and finally communicate that information to others in a variety of forms, including written, verbal, and multimedia presentations.

It is noted in recent times that there is a need for paradigms shift in the integration of technology in the assessment of knowledge and skills of adolescents, Adedokun-Shittu and Shittu (2014) asserted that education technology has been confirmed to have great potentials that impact on teaching and learning. This is because, it's motivates and engages students to learn and helps broaden their skills, helps to simulate the workplace experiences, thereby preparing students for the challenges of the labour market. This revolutionizes the school environment, facilitates teaching by providing resourceful teaching aids for teachers, and connects the school to the outside world. Technology empowers teachers and learners, and also promotes the growth of skills necessary for the 21st century workplace.

However, some of the perceptions of technology in teaching and learning in the school system includes: technology changes the nature of student-teacher interaction, improves higher-order and critical thinking, improves quality education, transforms the learning environment into a learner-centered one, increases students' motivation and engagement, increases students' positive effects on learning, enhances students' assessment and independent learning, reduces both students and teachers' burden, facilitates learning and enhances performance. It is also seen as a tool for increased access to resourceful information, improved research output, resource-sharing and student-lecturer collaboration (Adedokun-Shittu & Shittu, 2014). Although, there are many prospects of integrating technology in the assessment of knowledge and skills among adolescents in the above assertions, the impact of teachers' perception of technology integration is very important in the school system (Hakkarainen, Ilomaki, Lipponen, Muukkonen, Rahikainen, Tuominen, Lakkala & Lehtinen,

2018). The relevance of Information Communication and Technology in the assessment of students in the school system calls for a study of this nature, which examines the impact of teachers' perception of technology integration on assessment of knowledge and skills among adolescents in Somolu Local Government Area of Lagos State.

Statement of the Problem

It is believed that Nigeria, being a developing country, faces the challenges of access to technology rich education. The Federal Ministry of Education (FME), Universal Service Provision Fund (USPF) and several private organizations have assisted many schools by providing various technology solutions, such as supplying personal computers, setting up computer laboratories and other facilities inclusive of Internet connection, as well as interactive whiteboards (IWBs) and projectors. However, there have been no means in place to ascertain the impact of these technologies on students' assessment, especially in rural schools in Nigeria which also experience lack of electricity, inadequate funding, infrastructural deficits, among other challenges. However, most of the existing research studies did not focus on rural schools, especially in developing countries. There is a need to move beyond student achievement to focus on the assessment of teachers' perceptions in technology integration efforts.

In addition, Information and Communication Technologies (ICTs) such as word processors, e-mail, CD-ROMs, digital video, and the Internet have changed the landscape of skills and competencies needed for literacy in profound ways. There had been little research on the ways in which pre-service teachers are taught to integrate technology with their literacy instruction and assessment. This is another of the many challenges faced by educators when attempting to integrate technology in the assessment of students' knowledge and skills. It has been observed also that the use of ICT in the Nigerian education system is lagging behind expectation and desire. Hence, the need to draw up and design learning process in the future taking cognizance of the role of ICT to support this process, with a focus on teachers' training. Apparently, there is the need for a powerful role of teachers' training in the process of educational innovation and the implementation of ICT in the assessment of knowledge and skills. The issues raised above initiated a clarion call for a study of this nature that investigates the impact of teachers' perception of technology integration on the assessment of knowledge and skills among adolescents in Somolu Local Government Area in Lagos State.

Purpose of the Study

The main thrust of this study is to examine the impact of teachers' perception of technology integration on assessment of knowledge and skills among adolescents in Somolu Local Government Area in Lagos State. Specifically, the study seeks to examine the:

1. Impact of teachers' perception of technology integration in the assessment of knowledge among adolescents.
2. Impact of teachers' perception of technology integration in the assessment skills among adolescents.
3. Relationship between assessment of knowledge and skills of adolescents as related to teachers' perception of technology integration in the assessment of knowledge and skills among adolescents.

LITERATURE REVIEW

The review of related literature on teachers' perception of technology integration on assessment of knowledge and skills among adolescents State was discussed under the following sub-headings:-

- Theoretical Framework-TPACK Framework
- Concept on Technology Integration
- Relationship between teachers' perception of technology integration on assessment of knowledge and skills among adolescents

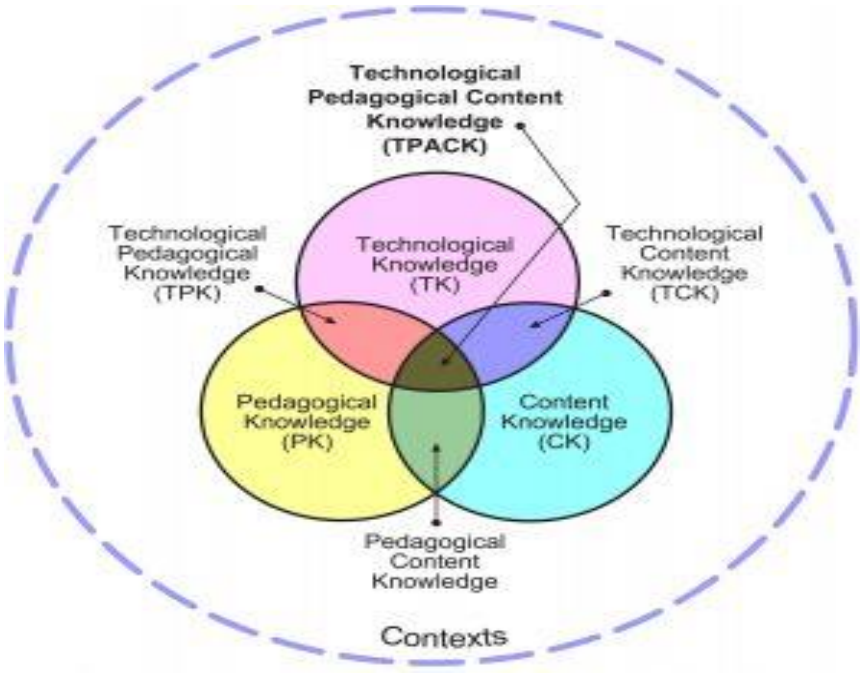
Theorectical Framework: Technological Pedagogical Content Knowledge Framework (TPACK).

Mishra and Koehler (2006) researchers from Michigan State University, developed TPACK to explain or guide effective educational technology (edtech) integration, research and professional development activities .

TPACK stands for Technological Pedagogical Content Knowledge. It is a theory that was developed to explain the set of knowledge that teachers need to effectively teach their students a subject with the use technology. The TPACK framework focuses on technological knowledge (TK), pedagogical knowledge (PK) and content knowledge (CK), offers a productive approach to many of the dilemmas that teachers face in implementing educational technology (edtech) in their classrooms. However, many teachers face difficulties in doing so. This is because cost, access, and time often form considerable barriers to classroom implementation, but another obstacle is the lack of knowledge regarding how technology can best be used to benefit students across diverse subject matter.

TPACK is an essential part of the education system today as it incorporates the growing demand on the use of technology in the classroom as well as continuing the focus on the content and how we teach it. Therefore it sets education, as well as setting up the students for their future. TPACK framework outlines how content (what is being taught) and pedagogy (how the teacher imparts that content) must form the foundation for any effective edtech integration. This order is important because the technology being implemented must communicate the content and support the pedagogy in order to enhance students' learning experience. According to the TPACK framework, specific technological tools (hardware, software, applications, associated information literacy practices, etc.) are best used to instruct and guide students toward a better, more robust understanding of the subject matter. The three types of knowledge – TK, PK, and CK – are thus combined and recombined in various ways within the TPACK framework.

Technological pedagogical knowledge **(TPK)** describes relationships and interactions between technological tools and specific pedagogical practices, while pedagogical content knowledge **(PCK**) describes the same between pedagogical practices and specific learning objectives; finally, technological content knowledge **(TCK)** describes relationships and intersections among technologies and learning objectives. These triangulated areas then constitute TPACK, which considers the relationships among all the three areas and acknowledges that educators are acting within this complex space.



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TPACK has an effective implementation of technology in the classroom, which requires acknowledgment of the dynamic, transactional relationship among content, pedagogy, and the incoming technology – all within the unique contexts of different schools, classrooms, and cultures. Factors such as the individual educator, the specific grade level, the class demographics, and more will mean that every situation will demand a slightly different approach to

educational technology (edtech) integration. No one monolithic combination of content, pedagogy. But, edtech will be applicable for every setting, and TPACK leaves room for researchers and practitioners to adapt its framework to different circumstances.

This adaptability can be seen in the various intersections and relationships already embodied in the TPACK acronym.

Content Knowledge (CK) – This describes teachers' own knowledge of the subject matter. CK may include knowledge of concepts, theories, evidence, and organizational frameworks within a particular subject matter; it may also include the field's best practices and established approaches to communicating this information to students. CK will also differ according to discipline and grade level – for example, middle-school science and history classes require less detail and scope than undergraduate or graduate courses, so their various instructors' CK may differ, or the CK that each class imparts to its students will differ.

Pedagogical Knowledge (PK) – This describes teachers' knowledge of the practices, processes, and methods regarding teaching and learning. As a generic form of knowledge, PK encompasses the purposes, values, and aims of education, and may apply to more specific areas including the understanding of student learning styles, classroom management skills, lesson planning, and assessments.

Technological Knowledge (TK) – This describes teachers' knowledge of, and ability to use, various technologies, technological tools, and associated resources. TK concerns understanding edtech, considering its possibilities for a specific subject area or classroom, learning to recognize when it will assist or impede learning, and continually learning and adapting to new technology offerings.

Pedagogical Content Knowledge (PCK) – This describes teachers' knowledge regarding foundational areas of teaching and learning, including curricula development, student assessment, and reporting results. PCK focuses on promoting learning and on tracing the links among pedagogy and its supportive practices (curriculum, assessment, etc.), and much like CK, will also differ according to grade level and subject matter. In all cases, though, PCK seeks to improve teaching practices by creating stronger connections between the content and the pedagogy used to communicate it.

Technological Content Knowledge (TCK) – This describes teachers' understanding of how technology and content can both influence and push against each other. TCK involves understanding how the subject matter can be communicated via different edtech offerings, and considering which specific tools best suited for specific subject matters or classrooms.

Technological Pedagogical Knowledge (TPK) – This describes teachers' understanding of how particular technologies can change both the teaching and learning experiences by introducing new pedagogical affordances and constraints. Another aspect of TPK concerns understanding how such tools can be deployed alongside pedagogy in ways that are appropriate to the discipline and the development of the lesson at hand.

TPACK is the end result of these various combinations and interests, drawing from them – and from the three larger underlying areas of content, pedagogy, and technology – in order to create an effective basis for teaching using educational technology. In order for teachers to make effective use of the TPACK framework, they should be open to certain key ideas, including:

1. Concepts from the content being taught can be represented,
2. Pedagogical techniques can communicate content in different ways,
3. Different content concepts require different skill levels from students, and edtech can help address some of these requirements,
4. Students come into the classroom with different backgrounds – including prior educational experience and exposure to technology – and lessons utilizing edtech should account for this possibility,
5. Educational technology can be used in tandem with students' existing knowledge, helping them either strengthen prior epistemologies or develop new ones.

Because it considers the different types of knowledge needed and how teachers themselves could cultivate this knowledge, the TPACK framework thus becomes a productive way to consider how teachers could integrate educational

technology into the classroom. TPACK can also serve as a measurement of instructor knowledge, potentially impacting both training and professional development offerings for teachers at all levels of experience. Finally, the TPACK framework is useful for the ways in which it explicates the types of knowledge most needed in order to make technology integration successful in the classroom. Teachers need not even be familiar with the entire TPACK framework as such in order to benefit from it: they simply need to understand that instructional practices are best shaped by content-driven, pedagogically-sound, and technologically-forward thinking knowledge.

Concept of Technology Integration

Technology integration is the use of technology resources -- computers, mobile devices like smartphones and tablets, digital cameras, social media platforms and networks, software applications, the Internet, etc. -- in daily classroom practices, and in the management of a school. Successful technology integration is achieved when the use of technology is: routine and transparent. Accessible & readily available for the task at hand and supporting the curricular goals, and helping the students to effectively reach their goals When technology integration is at its best, a child or a teacher doesn't stop to think that he or she is using a technology tool -- it is second nature and students are often more actively engaged in projects when technology tools are a seamless part of the learning process

Relationship between Teachers' Perception of Technology Integration on Assessment of Knowledge and Skills among Adolescents

Gorder (2008) examined the relationship between teacher training and the teachers' perception of their own level of technology integration. She found that even after attending a teacher academy on advanced technology, teachers reported that they used technology for professional activities or to deliver content, but did not use it as much for teaching and learning. When looking at the demographic characteristics of the teachers in the study, she noted that there was little difference in technology integration between males and females, but that teachers of grades 9-12 tended to integrate technology more often than teachers of either grades K-5 or 6-8. In later research, the use of technology in education remained superficial. Ruggiero & Mong (2015) conducted interviews of teachers about their experience in integrating technology, and concluded that although technology use was pervasive, the majority of teacher responses continued to involve teacher-centered use, such as posting assignments on an interactive board or using a document camera to show math problems.

To guide teachers and administrators in the practice of integrating technology, the Florida Center for Instructional Technology (FCIT) at the University of South Florida developed the Technology Integration Matrix (TIM). The TIM is based on the theory of social constructivism in which new learning occurs when students interact with each other to build new knowledge or gain new understanding (Allsopp, Hohlfeld, & Kemker, 2017). It also provides a common vocabulary for technology integration across content areas and grade levels (Harmes, Welsh, & Winkelman, 2016). Conceptualized in 2003, the TIM was field tested in 2005 by Allsopp et al. (20I7), and revised to its current version in 2011, after expert review and additional field tests in several Florida school districts (Harmes et al., 2016). The technology matrix describes technology integration over five levels and across five learning environments, for a total of 25 descriptors of technology use during a learning activity or lesson.

The TIM levels of technology integration were initially based on the work of Apple Classroom of Tomorrow (ACOT) (Harmes et al., 2016). According to the ACOT model, teachers progress through stages as they learn to implement technology in the classroom: Entry, Adoption, Adaptation, Appropriation, and Invention (Apple Computer, Inc., 2015). In developing the TIM, the ACOT levels formed the starting point, then expanded to the current levels used in the TIM: Entry, Adoption, Adaptation, Infusion, and Transformation (Harmes et al., 2016). Although the names of the first three levels were the same, Harmes et al. (2016) stated that the TIM represented a broader range of possible ways to enhance instruction. One significant difference between the TIM and the ACOT models is that, while the ACOT model focused on teacher development, the TIM levels focused on the pedagogy of a specific lesson. As described by the Florida Center for Instructional Technology (n.d.), the following are brief explanations of each level of the TIM.

Entry: In the entry level of the TIM, teachers begin to use technology in instruction, but technology is only used to deliver content to students. Students passively receive the content information, do not use technology in collaborative work or real-world settings, and are highly monitored through step-by-step instructions. The classroom setting is teacher-centered and the teacher is the main user of technology.

***Adoption*:** In adoption level, students begin to use technology in conventional or procedural ways. Students use technology to build knowledge through the conventional use of tools or exploration of some content in meaningful context. The classroom environment remains largely teacher-centered, but students have started using technology during the lesson.

***Adaptation*:** At adaptation, students explore technology independently, while the teacher facilitates student learning. Although the use of technology is still conventional, students have some choice options of which tool to use and how to explore content using the technology tool. Students are involved with the collaborative use of technology, using technology to build knowledge, and engaging in activities with technology that are connected to their lives. The classroom environment shifts toward being student-centered.

Infusion: At infusion level, the classroom environment is clearly student-centered, as the teacher provides the learning context, then allows the students to choose the technology needed to explore the content. Students are self-directed in using technology tools and are given choices regularly in what tool to use and how to approach authentic, collaborative, and meaningful tasks. Student use of technology tools to monitor their own progress toward goals is seamless and flexible.

Transformation: This final level of technology integration includes lessons and activities that are not possible to complete without the use of technology. The classroom environment is highly student-centered as the teacher encourages and facilitates student technology use that is innovative and unconventional. Use of technology is extensive and used for higher order, global, and collaborative learning activities.

In addition, the TIM website, www.mytechmatrix.org, provides classroom video examples of each TIM level in Active, Collaborative, Constructive, Authentic, and Goal-Directed learning environments (Harmes et al., 2016). For each environment, the degree to which technology is used and how it is implemented increases in amount and depth as the lesson moves from Entry to Transformation. Active learning environments are ones in which students actively discover, process, and apply learning using technology, rather than passively receiving content. In a Collaborative environment, technology is used for students to collaborate with peers and experts outside the classroom. During Constructive lessons, students use technology while building content knowledge and linking new information to prior knowledge. Authentic learning activities use technology to investigate real-world issues and may extend the learning beyond the classroom. Goal-Directed learning environments involve technology used for reflection and planning activities, such as setting goals, monitoring progress, and evaluating learning outcomes (Harmes et al., 2016). By choosing a classroom environment and TIM level on the online matrix, extended descriptors of the setting, what students and teachers do at the given level, and video examples of what technology integration looks like across several content areas in actual classroom lessons, become available (Florida Center for Instructional Technology, n.d.). Users can alternately go directly to content specific resources by selecting the website options of “Subject Area Index” or “Grade Level Index” in the site dropdown menu.

Furthermore, FCIT developed several evaluation tools that provide insight into classroom technology use (Harmes et al., 2016). Of the available tools, two will be used in this study, the TIM Observation Tool (TIM-O) and the Technology Uses and Perceptions Survey (TUPS). The TIM-O is a web-based classroom observation instrument that produces a technology integration profile of an observed lesson in terms of the TIM (Florida Center for Instructional Technology). The second tool, the TUPS, is used to gather information from teachers about their beliefs regarding the role of technology in the classroom (Harmes et al., 2016). It examines seven areas of teacher perceptions and use of technology: technology access and support, preparation for technology use, perceptions of technology use, confidence and comfort level,

teacher and student use, technology skills and usefulness, and technology integration (Florida Center for Instructional Technology.).

METHODOLOGY

Research Hypotheses

1. There is no significant impact of teachers' perception of technology integration in the assessment of knowledge among adolescents.
2. There is no significant impact of teachers' perception of technology integration in the assessment of skills among adolescents.
3. There is no significant relationship between assessment of knowledge and skills of adolescents in teachers' perception of technology integration.

Research Design

This study adopted descriptive survey design, this design is used when the researcher(s) decide to collect information on certain phenomena or examine a situation by describing relevance factors relating to attitude, behaviours, experiences and knowledge in order to establish specific parameters in a population as well as describe their collections (Kelly, Clark, Brown & Sitzia, 2013). The design is deemed the most appropriate because it will generate data for the purpose of describing and interpreting existing relationship between teachers' perception of technology integration on assessment of knowledge and skills among adolescents.

Population of the Study

The target population for this study comprised all teachers from public secondary schools in Somolu Local Government Area of Lagos State

Sample and Sampling Technique

Stratified and simple random sampling was used, since the researcher cannot cover up the entire population in Somolu Local Government Area. However, to ensure good representativeness of the research subjects, Somolu was divided into six (6) zones (Onipanu, Bariga, Palmgrove, Lady-lak, Pedro and Bajulaiye). One (1) senior secondary school and one (1) junior secondary school were later selected from each zone making it a total of twelve (12) secondary schools from the whole Somolu Local Government Area. In each school selected, fifteen (15) teachers were randomly selected, making it a total of 90 junior and 90 senior secondary school teachers. Hence, study sample size is 180 participants.

Research Instruments

The instrument used in the study for the collection of data from the respondents was a researcher-made questionnaire, titled: "Teachers Perception of Technology on the Assessment of Knowledge and Skills among Adolescents Questionnaire (TPTAKSAQ) Twenty (20) questions were structured in the questionnaire. The research instrument was given to experts in the field of measurement and evaluation. The experts helped to ascertain whether the items in the instruments were well structured to measure the variables of interest in the study, thereby ensuring the content validity of the research instruments. It has a high stability co-efficient of 0.81 when tested during the pilot study at 0.05 level of significance. One hundred and eighty (180) copies of the research instrument were distributed but only one hundred and seventy six 176) copies were returned and found usable.

RESULTS AND DISCUSSION

Table 1: Analysis of Demographic Data of the Respondents

Variable	Frequency	Percent
Gender		
Male	65	36.9%
Female	111	63.1%
Total	**176**	**100**
Highest Level of Qualification		

NCE	65	36.9%
B. Sc/B. Ed	97	55.1%
PGDE/M. Sc/M. Ed	14	8%
Total	**176**	**100**
Age Bracket		
25-30years	76	43.2%
31-40years	81	46%
41-50years	14	8%
51-60years	5	2.8%
Total	**176**	**100**
Teaching Experience		
1-5years	104	59.1%
6-10years	51	29%
11-15years	15	8.5%
16-20years	6	3.4%
Total	**176**	**100**

Hypotheses Testing and Results:

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Hypothesis 1: There is no significant impact of teachers' perception of technology integration in the assessment of knowledge among adolescents.

Table 2: Relationship (measured of impact) between teachers' perception of technology integration and assessment of knowledge among adolescents

Variables	**Mean**	**Std. Dev.**	**N**	***r*-calculated**	***Sig. (p) value***	***Remark***	***Decision***
Teachers' Perception of Technology Integration	14.08	0.97	176	0.269	0.000	Significant	H_o Rejected
Assessment of Adolescents Knowledge	15.78	1.98					

d.f = 174; p = 0.000< 0.05, r- calculated= 0.269; r--critical =0.159;

Numerical evidences from table 2 shows that the mean (average) teachers' perception of technology integration is 14.08, while the mean assessment of adolescents' knowledge is 15.78. More so, the *r-calculated (0.269)* implies that there is a positive relationship between teachers' perception of technology integration and assessment of knowledge among adolescents. This *r-calculated* was computed with a significant value of *(p-value* = 0.000*)* which is less than the statistical benchmark of 0.05. This implies that the null hypothesis needs a rejection. Hence, there is a significant impact of teachers' perception of technology integration in the assessment of knowledge among adolescents.

Hypothesis 2: There is no significant impact of teachers' perception of technology integration in the assessment of skills among adolescents.

Table 3: Relationship (measure of impact) between teachers' perception of technology integration in the assessment of skills among adolescents

Variables	Mean	Std. Dev.	N	*r*-calculated	*Sig. (p) value*	*Remark*	*Decision*
Teachers Perception of Technology Integration	14.08	0.97	176	0.335	0.000	Significant	H_o Rejected
Assessment of Adolescents Skills	14.06	2.50					

d.f = 174; p = 0.000< 0.05, r- calculated= 0.335; r--critical = 0.19;

Numerical evidences from table 3 shows that the mean (average) teachers' perception of technology integration is 14.08, while the mean assessment of adolescent skills is 14.06.

More so, the *r-calculated (0.335)* implies that there is a positive relationship between teachers' perception of technology integration and assessment of knowledge among adolescents. This *r-calculated* was computed with a significant value of *(p-value* = 0.000*)* which is less than the statistical benchmark of 0.05. This implies that the null hypothesis needs a rejection. Hence, there is a significant impact of teachers' perception of technology integration in the assessment of skills among adolescents.

Hypothesis 3: There is no significant relationship between assessment of knowledge and skills of adolescents.

Table 4: Relationship between assessment of knowledge and skills of adolescents

Variables	**Mean**	**Std. Dev.**	**N**	***r*-calculated**	***Sig. (p) Value***	***Remark***	***Decision***
Assessment of Adolescents Knowledge	15.78	1.98	176	0.568	0.011	Significant	H_o Rejected
Assessment of Adolescents Skills	14.06	2.50					

d.f = 174; p = 0.011< 0.05, r- calculated= 0.568; r--critical = 0.159;

Numerical evidences from table 4 shows that the mean (average) assessment of adolescents' knowledge is 15.78, while the mean assessment of adolescents' skills is 14.06.

More so, the *r-calculated (0.568)* implies that there is a positive relationship between assessment of knowledge and skills of adolescents. This *r-calculated* was computed with a significant value of *(p-value* = 0.011*)* which is less than the statistical benchmark of 0.05. This implies that the null hypothesis needs a rejection. Hence, there is a significant impact of teachers' perception of technology integration in the assessment of knowledge and skills among adolescents.

Discussion of Findings

Hypothesis one revealed that there is a significant impact of teachers' perception of technology integration in the assessment of knowledge among adolescents. Evidences from table 2 revealed the r-calculated as 0.269, p-value

(significant value) as 0.000<0.05. This implies that teachers' perception of technology integration immensely contributes to assessment of adolescent knowledge. This findings is in support of Lynette Gorder (2018) who examined the relationship between teacher' training and the teachers' perception of their own level of technology integration. She found that even after attending a teacher academy on advanced technology, teachers reported that they used technology for professional activities or to deliver content, but did not use it as much for teaching and learning. This result also agreed with Ruggiero and Mong (2015) who accentuated that teachers' perception of technology integration is a crucial factor to assessment of adolescent knowledge.

Hypothesis two revealed that that there is a significant impact of teachers' perception of technology integration in the assessment of skills among adolescents. Evidences from table 3 revealed the r-calculated as 0.335, p-value (significant value) as 0.000<0.05; though the associated r-critical value is 0.159 and degree of freedom is 174.This implies that teachers' perception of technology integration greatly influences their assessment of adolescent skills. This is in consonance with Masters (2013) finding that shows the significance of the knowledge about attitudes and perceptions towards ICT in assessing higher order thinking skills. The finding is also in conformity with Ainley, Hidi, & Berndorff (2012) as well as Atkin, Black, & Coffey (2011) when they affirmed that performance assessment (which is one of many assessment skills conducted by teachers) is an appropriate strategy for assessing students' concepts and skills in science, and that it prepares students for a productive future within a technologically complex world..

Hypothesis three revealed that there is a significant relationship between assessment of knowledge and skills of adolescents. Evidences from table 4 revealed the r-calculated as 0.568, p-value (significant value) as 0.159<0.05; though the associated r-critical value is 0.011 and degree of freedom is 174.This implies that assessment of knowledge is related to the skills of the adolescents. This is in line with Delgado, Wardlow, McKnight, and O'Malley (2015), that presentation valuation (as another assessment skills that could be conducted on the students by the teachers) was found to be an effective tool which improved students' higher order thinking skills in solving problems and served as students' meaningful way to acquire knowledge.

CONCLUSIONS

This study has revealed that teachers' perception of technology integration plays crucial role in the assessment of knowledge and skills among adolescents and therefore relevant to evaluating students' learning outcome in schools. The study vividly showed that teachers' impression and knowledge influence their level of evaluation of technology integration. This study has empirically confirmed that there is variance in teachers' perception of technology integration on the assessment of knowledge and skills among adolescents. Based on the findings of this study, this researcher concluded there is a significant impact of teachers' perception of technology integration on the assessment of knowledge and skills among adolescents and that there is a significant relationship between assessment of knowledge and skills of adolescents.

Recommendations

Based on the results of the findings, the following recommendations were proffered:

1. There is an immense need for professional development sessions and appropriate trainings which could bring the best out of teachers and give the best possible to the learners.
2. Teachers' technology integration abilities and skills should be enhanced by delivering workshops about effective technology integration.
3. Government should provide teachers with state-of-the-art technology, including hardware and software.
4. Government should provide teachers with incentives and awards for outstanding technology integration in their classrooms.
5. Government should create learning and sharing culture where there are opportunities for staff to develop their technological skill.
6. Government should run workshops organized as school but run by colleagues or students who are already at mastery or better level, to further support their development.

REFERENCES

Adedokun-Shittu, A. & Shittu, B. (2014). Toward technology integration in the schools: Why it isn't happening. Journal of Technology and Teacher Education, 13 (4), 519-546.

Ainley, K., Hidii, M., & Berndorff, W. (2012).Assessment of computer technology availability, accessibility and usage by Agricultural Education student teachers in secondary schools in Botswana. *Educational Research and Reviews, 9(17), 610-617,*

Alghazo, I. (2006). *Student attitudes toward web-enhanced instruction in an educational technology course. College Student Journal*, 40(3), 620-630.

Allsopp, J.E, Hohlfeld, B.I, & Kemker, M.M, (2007) Availability and utilization of ICT tools for effective instructional delivery in tertiary institutions in cross river state, Nigeria. *Global advanced research journal of educational research and review. 1(8), 190-195*

Anderson, T. (2016). *Theories for learning with emerging technologies. In G. Veletsianos (Ed.), Emergence and Innovation in Digital Learning: Foundations and Applications* (35-50). Edmonton, AB: Athabasca University Press.

Atkin, M., Black, B. & Coffey, J. (2001). Assessment and the graphics calculator. In
A. Richards (ed.) *FLAIR: Forging links and integrating resources*, Darwin, The Australian Association of Mathematics Teachers, 235-241.

Bello, A. (2014). A meta-analysis of the effects of computer technology on school students mathematics learning. *Educational Psychology Review, 22*(3), 215-243.

Gorder, M. M. (2018). *Just-in-time learning or learning communities.* Abu Dhabi: The Fourth Annual Conference of the Emirates Center for Strategic Studies and Research

Chi. A. (2016). Computers, gender bias, and young children. Information Technology III
Childhood Education Annual, January 1,263-274 .

Dangut,A.J. & Sakiyo,J. (2016). Assessment of computer literacy skills and computer based testing anxiety of secondary school students in Adamawa and Taraba States, Nigeria.

Delgado, K., Wardlow, S, McKnight, N., & O. Malley, S. (2015). Teacher representation of the successful use of computer based tools and resources in secondary school English, Mathematics and Science*: Teaching and Teacher Education 20(3), 259-275.*

Elton, R., & Johnston, L. (1999). Perceptions that may affect teachers intention to use technology in secondary mathematics classes. *Educational Studies in Mathematics, 71*(3), 299-317.

Hakkarainen, K., Ilomaki, L., Lipponen, L., Muukkonen, H., Rahikainen, M., Tuominen, T., Lakkala, R., & Lehtinen, E. (2018). Students' skills and practices of using ICT: Results of a national assessment in Finland. *Computers & Education*, *34*(2), 103-117.

Harmes, G., Welsh, K., & Winkelman, A.J, (2016). Accessibility and utilization of ICTs among secondary school teachers in Kenya. *Computers and education, 246-263*

Kelly, K., Clark, B., Brown, V. & Sitzia, J. (2013). Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care, 15*(3), 261—266.

Kennewell, S., Tanner, H., Jones, S., & Beauchamp, G. (2008). *Analyzing the use of interactive technology to implement interactive teaching. Journal of computer assisted learning*, 24(1), 61-73.

https://doi.org/10.1111/j.1365-2729.2007.00244.x

Khadija, A. (2017). Developing technological pedagogical content knowledge in pre-service mathematics teachers, through teacher design teams. Australasian Journal of Educational Technology, 28(4),547-564.

Khokhar, F. & Javaid, S. (2016). Pre service teachers' abilities, beliefs, and intentions regarding technology integration. Journal of Educational Computing Research, 37 (2), 151-172.

Kimbell, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2007). *Cyberbullying: Its nature and impact in secondary school pupils. Journal of Child Psychology and Psychiatry*, 49(4), 376-385.

Kurt, S. "TPACK(2006): Technological Pedagogical Content Knowledge Framework," in *Educational Technology*, May 12, 2018. Retrieved from https://educationaltechnology.net/technological-pedagogical-content-knowledge-tpack-framework/

Lim, M. K., Blume, G.W., Hollebrands, K., &

Piez. C. (2013). Computer Algebra Systems in Mathematics Instruction: Implications from Research..*The Mathematics Teacher*, *95*(8), 586-591.

Lin, A.,, & Dwyer, (2006) Educational technology: The development of a concept. Libraries Unlimited.

Lynette Gordon, N. (2018). The effect of teaching and learning with Texas Instruments handheld devices on student achievement in Algebra. *Journal of Computers in Mathematics and Science Teaching* , *30*(1), 5-35

Masters, G. N. (2013). *Reforming education assessment : imperatives, principles and challenges. Melbourne*. http://www.acer.edu.au/aer

Masters, G. N. (2014). *Towards a growth mindset in assessment. Partically Primary*, 19(2 Aug, 2014), 4-7.

McGaw, L. A. (2006). The role of assessment in a learning culture. *Educational Researcher, 29*(7), 4-14.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. Teachers College Record, 108 (6), 1017–1054

Pellegrino, J. W., Chudowsky, N., & Glaser, R. (Eds.) (2001). *Kno wing what students know: The science and design of educational assessment*. Washington, DC: National Academies Press.

Penney, N., & Hay, E. (2008). The nature and quality of talk in co-operative classrooms groups. Learning and Instruction J. 103-118.

Redecker, J. A., & Ademu, A. (2010). The challenges of information and communication technology for teaching —learning as perceived by Agricultural science teachers in secondary schools in Kogi State. *Journal of Educational Innovators.* 3(2),43-49.

Ridgway, M., & McCusker, K. (2008). From principles to practice: An embedded assessment system. *Applied Measurement in Education, 13*, 181-208.

Rosenberg, H., &Asterhan, C. S. (2018). *"WhatSapp, Teacher?"-Student perspectives on teacher-student WhatsApp interactions in secondary schools. Journal of Information Technology Education-Research*, 17, 205-226.

Rueda, L., Benitez, J., & Braojos, J.(2017). *From traditional education technologies to*

student satisfaction in Management education: A theory of the role of social media applications. Information & Management, 54(8),

Ruggiero, S.M., & Mong, S.R. (2015). *Computer based instruction, methods and development.* New York: Englewood Cliffs, Prentice Hall.

Shaw, P., & Marlow, M. J. (1999). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017-1054

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