



# **Impact Of Ultra-Modern Micro-Teaching Laboratory On Pre-Service Teachers' Teaching Skills In The 21<sup>ST</sup> Century Classroom**

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## **ABSTRACT**

This research investigated the Impact of Ultra-Modern Micro-Teaching Laboratory on Pre-service Teachers' Teaching skills in the 21<sup>st</sup> Century Classroom in Umar Suleiman College of Education Gashua, Yobe State. The research work adopted quasi-experimental as its design. With the 30:30 intact class pre-service teachers used as sample for the study, they consist of NCE II students in the Umar Suleiman College of Education (USCOEGA) Yobe State. The two null hypotheses were raised and analyzed using t-test at 0.05 level of significance. And the findings revealed that; The mean score of pre-service teachers teaching skills for experimental and control group is significantly different with  $t(59) = 35.34$  and  $P = 0.001, < 0.05$ . And that the mean difference of experimental group is 40.55 while the mean difference of the control group is 37.91. This shows that experimental group exposed to Ultra-modern microteaching laboratory developed appropriate teaching skills better than those exposed to traditional microteaching approach since 0.001 is less than 0.05, therefore the null hypothesis one is thereby rejected. The second hypothesis revealed the mean score of pre-service teachers in the use Ultra-modern Micro-teaching Laboratory for experimental and control group differ significantly with  $t(29) = 4.20$  and  $P = 0.001, < 0.05$  of 21<sup>st</sup> century interactive classroom skills 0.05 with mean difference of experimental group as 6.13 and 9.07 for the experimental group. This indicates that pre-service teachers in the experimental group exposed to Ultra-modern Micro-teaching Laboratory acquired ICT manipulative skills and techniques/strategies of technology integration better than their counterparts in control group, since 0.001 is less than 0.05, therefore Ultra-modern Micro-teaching Laboratory was presumed to be better approach in improving pre-service teachers 21<sup>st</sup> century skill prior to teaching practice than their counterpart. Ultra-modern microteaching laboratory improved pre-service teachers' ICT manipulative skills prior to teaching practice and the pre-service teachers' ability to manipulate ICT-gadgets in the laboratory were positively appreciated which determines the presence of 21<sup>st</sup> century classroom skills. And that the null hypothesis two is thereby rejected.

**Keywords:** Micro-Teaching Laboratory, Pre-service Teachers, interactive classroom skills

## **INTRODUCTION**

Micro-teaching is a system of controlled practice that concentrate on specific teaching behaviours and to practice teaching under controlled encounter. It is a scaled down in terms of time, number of students, concept taught and the teaching skills used. It encompasses the use of simulation techniques to break down the teaching process in to smaller and more easily understood units for practice. It is often an integral component of methods classes in a preparatory programme where the various and behaviours addressed are practice. The 21<sup>st</sup> century teaching and learning technologies are so flexible and inclusive that teachers need to wake up from their slumber and embrace these technologies if they want to be relevant in this era of Information and Communication Technology. Despite the facilities provided, school teachers are unable to integrate ICT in their educational practices and pedagogy (Adeyemi and Olaye 2010; Yusuf, 2005). Teachers ought to avail themselves with the appropriate technological disposition for the utilization of technologically driven ideas that will transform the teaching from the popularly acclaimed traditional method of teaching that is largely oratory to activity based instruction. What is of utmost importance to any education system is what learners are able to learn and not just what teachers are required to teach (NCCE Minimum Standard, 2020). Learners need to engaged actively in the learning process and their learning must be supported and monitored explicitly. Learning only becomes meaningful if it is centred on the learner and on the development of the learner's ever growing and challenging understanding and application of professional content knowledge, skills and attitudes. The new teacher education programmes aimed at producing professional teachers, from this perspective, it is essential that student teachers are also provided with opportunities to acquire the skills and the use of conventional teaching strategies and word's unfolding ICT in the generation and imparting of knowledge, attitudes, values and skills.

### **Statement of the Problem**

One of fundamental problems facing school system is how to achieve effective teaching and learning, specialized teachers are always very energetic, conscious and take interest in a lesson by examining himself and his method. Therefore, good teachers master the science of teaching and blend the skills required into his natural capabilities and that the skills are systematically learned through practice-oriented programme such as micro- teaching. Micro-teaching as a reknown concept in the teacher preparatory programme where a trainee teaches a small class of students usually drawn from his classmates a short lesson with specific instructional objectives and emphasizing a limited micro-teaching skills. Micro-teaching is one of innovations to improve teacher education, it entails reduction in class size, duration of the lesson, objectives of the subject matter and number of skills to be acquired Lawal (2018). Prominent scholars/educationist proffered view on how micro-teaching being a cardinal and essential aspect of the teacher education curriculum helps in modelling the students-teacher as well as developing the in-service teachers in training session and updating their knowledge in ensuring effective acquisition of new skills/methods for efficiency. Fernandez (2007) the Ultra-Modern Micro-teaching Laboratory offer access or laboratory procedure which aimed at simplifying the complexities of regular teaching-learning processes. The system has the strength to used and raised the level of teachers' competencies under a controlled laboratory setting practice Michael (2004). Today with massive and advances made by information and communication technology (ICT) there are many visible manifestation of changes in the Ultra-modern Micro-teaching Laboratory which exposes the student teachers to the variety of gadgets and equipment that pave way for more inclusion and integration of such gadgets during the micro-teaching exercise they include multimedia teaching, approaches, greated detail on the uses of video technology, camcorders and even tendency for chalkboard to replace by overhead or multimedia projectors, marker board, Gnee board, Visualizers, Duplicators, Screen Boards and the emphasis on interpersonal skills domain using innovative strategies. Therefore this study will embark on an investigation into the Impact of Ultra-Modern Micro-Teaching Laboratory on Pre-Service Teachers' Teaching Skills in The 21<sup>st</sup> Century Classroom.

### **Objectives of the Study**

- To determine the effectiveness of ultra-modern micro-teaching laboratory in influencing student teachers' teaching skills.
- To Examine the strength of 21<sup>st</sup> century interactive classroom in busting student teachers' teaching skills in ultra-modern micro-teaching laboratory.

### **Research Questions**

- Do ultra-modern micro-teaching laboratory influences student teachers' teaching skills.
- Do 21<sup>st</sup> century interactive classroom effective to bust student teachers' teaching skills in ultra-modern micro-teaching laboratory.

### **Hypotheses**

- There is no significant relationship between ultra-modern micro-teaching laboratory student teachers' teaching skills.
- There is no significant relationship between 21<sup>st</sup> century interactive classroom and student teachers' teaching skills in ultra-modern micro-teaching laboratory.

### **Literature Review**

Microteaching is a scaled down teaching encounter. This is because it entails reduction in class size, duration of the lesson, objectives of the subject matter and number of skills to be acquired. The student teachers are expected to teach between 5-10 minutes. Every time they practice, their learning continues. The practices are used in microteaching especially in feedback and teach re-teach cycle which enhances effective teaching practice. Student teacher teaches 10 students instead of 40-50 students in a normal class, spending 5-10 minutes for the micro-lesson instead of 35-40 minutes in a normal class, practice only one skill at a time instead of using many integrated skills in the normal lesson and having only one or two objectives from the content instead of having about four or five objectives for a normal lesson. There is reduction in the length of time, class size, task to be accomplished and skills to be employed. Ajibola (2013) defined microteaching as a component skill approach to teachers' preparation and training. Without adequate acquisition of teaching skills, learning process cannot be effective. McKnight (2003) viewed microteaching as laboratory training procedure for simplification of the complexities of teaching-learning process. In the attempt to define the concept of Micro-teaching, Abifarin (2004) cited by Ajibola 2013 examined the two words involved: Micro and teaching. Micro means something that is small while teaching means the art of giving instruction. When the two words are joined together, it becomes micro-teaching, which means giving instruction on a smaller scale. In agreement with Abifarin and Ajayi (2006) described micro-teaching as a system of controlled practice that makes it possible for student teachers to concentrate on specific teaching behaviors.

In addition, Yusuf (2006) described microteaching as the practical training technique which gives the students and the teacher the opportunity to master the skills inherent in teaching in a laboratory environment before actual class experience. Adewoyin (2007) defined micro-teaching as an instructional method employed in the professional training of teachers. Aggarwal (2007) described microteaching as a training procedure that aims at simplifying the complexities of the regular teaching procedure. The student teacher engages in a scaled down teaching situation in terms of time, class size, content of the subject matter and teaching tasks. Tega (2007) defined microteaching as a process whereby student teacher learns to acquire the rudiments of teaching in the classroom. Microteaching prepares student teachers on what they need to master before going to the field for teaching practice. Microteaching is a course or practical experience which prepares the student teachers ahead of the challenges that await them in their future teaching career as educators. Patel and Mohasina (2011) described microteaching as an organized practice teaching which aims at giving instructors confidence, support and feedback. It is a quick, proven and fun way of helping teachers get off to a strong start. It is designed for the training of both of both pre-service and in-service teachers.

Furthermore, Egunjobi, Nwaboku and Salawu (2011) described microteaching as a program that prepares student teachers for the main teaching practice. They explained that microteaching is an indispensable course for student teachers. This is because they need to observe and acquire for teaching tasks. Isa and

Jusoff (2011) considered microteaching as the ultimate sessions where the undergraduates put into practice theories. Also, Singh (2011) described microteaching as a safe practice, a vehicle for continuous training and a new approach to supervision. In addition, Konstantinos (2012) defined microteaching as a method of teacher training that is current and effective for acquisition of specific teaching skills. It is considered as a training technique for prospective teachers in Universities and Colleges of Education. It is considered as a precondition for the improvement of the quality of school education. In addition, Saxena and Khajanchee (2012) explained that microteaching is a teacher training technique which helps the student teachers to master the skills of teaching. Recently, Tidwell (2013) viewed microteaching as a session of practice teaching that is videotaped for the teacher to watch. Microteaching is suitable for potential, new and existing teachers to review their teaching techniques and receive feedback from fellow teachers and administrators. The feedback received is used for making corrections to their teaching style accordingly. As every human activity or behavior is geared towards achieving a purpose so also, microteaching has aim, goals and objectives. Micro-teaching as an innovation in education has intention of training pre-service teachers in skills acquisition so as to make them effective and professional.

All human endeavors are traceable to their origins. The historical development of microteaching started from demonstration lessons. According to Ijaiya (2013), between 1950s and 1960s, there was low, unsatisfactory and poor performance of pupils in America. Teachers were held responsible and accountable for the poor condition of education by the society. Teachers were blamed for poor teaching methods and they too claimed that they were not properly equipped with the necessary teaching skills to perform to societal expectations. This called for experiments on the experiences which might be relevant for teaching in terms of innovative teacher education program by educators through series of innovations which were supported by substantial funding from Foundations and Governments. Examples of such foundations were Ford and Kettering. One of the microteaching. Prior to the development of microteaching, demonstration teaching was used traditionally. It was the immediate predecessor of microteaching in Stanford University. During the time of demonstration teaching for teachers' training, a student teacher presented a lesson to a small group of fellow students while the rest of the class looked on. It was the demonstration lesson that developed and resulted to microteaching in 1963. Fayaz (2011) gave a full record of microteaching historical development. Microteaching was named for the first time at Stanford University in United States of America when an experimental project on the identification of teaching skills was in progress under the guidance and supervision of the Faculty members in persons of Bush, Allen, McDonald and Acheson. The team of experts was assigned the development of testing and evaluation of tools to measure the attainment of teaching experiences which might be relevant to teaching interns in an innovative teacher education program. The team launched a new laboratory experience and approach in the preparation of teachers under the auspices of the Secondary Teacher Education Program (STEP).

The programme was initially referred to as 'Demonstration Teaching'. While developing the approach, those things that could make an effective teacher were identified through field activities and research work by Allen and his team as well as other group of individuals over the years. Those things identified were considered teachable, learnable and could bring desired change in behavior. That was how the concept of 'Teaching Skills' evolved. The problem and the search to find better ways of teaching these identified skills and making the teachers imbibe them with the objects of enhancing teacher competence and effectiveness brought about the whole idea of micro-teaching. In the process, Keith Acheson who was a Doctoral student and a Researcher discovered a newspaper article about a German Scientist who invented a portable video tape recorder. Acheson was investigating the utility of the video tape recorder in technical teaching skills' development. With the support of Allen, Bush and McDonald, Acheson explained several different uses of the portable videotape recorder and its potential and modifying channeling interns' behaviors toward desired objectives and for examining alternative approaches for students' teaching experiences. It was detected that videotape recorder could be used for recording the class interaction accurately. This led to the development of systematic and accurate method of giving

student teachers feedback. As a result, there was formulation and development of microteaching technique of Plan---Teach---Feedback---Re-plan---Re-teach---Re-feedback (Singh,2011).

Ideally, the micro-teaching environment is supposed to be equipped with closed circuit television (CCTV) system that have camcorders staged at different angles to pick different behaviors of the trainees and the learners. On the alternative, a simple video camera with television monitor could equally serve for the recording, especially because of the economic requirement of the ideal situation. Teacher-based education format, like the Stanford Teacher Competency Appraisal Guide, and Flanders Interaction Analysis System, have been found adaptable and useful in scoring performance. All the devices are beneficial because of the comprehensive audio-visual coverage they provide from all angles of the clinic, the trainee and the learners behaviors. Modifications in micro-teaching have been made in the basic training protocol which tends to affect from the effectiveness of microteaching training, especially when constraint of resources and other factors that could lead to the use classrooms are on the ground.

### **Micro-Teaching Recording Equipment**

Micro-teaching equipment are devices used by a student-teacher in order to make teaching useful. The use of audio, visual, audio-visual, artificial, natural, evaluative, fixing devices, etc makes the learner to learn the context in an interesting and worthwhile manner There are two major types of audio-visual equipment for recording. These are:

- i. The close circuit television system
- ii. The video-tape recording system (Akinmoyewain Akin-Mosorun 2009).

### **The Closed Circuit Television System**

A television has the capability to show movements or actions and sound or speeches that accompany such movements. It is the most potentially powerful of all known educational broadcasting Medias. Television programme could be divided into two major types; open broadcast and closed-circuit type. The closed circuit television system has all the necessary items for a television broadcast but all signals are passed by cable. Furthermore, there is closed reception, in that, the audience and the utilization are controlled. The open broadcast television system is without cable. To set up a closed television studio, the following items are needed:

- i. Camera(s)
- ii. Vision mixer
- iii. Recorder or playback machine
- iv. Monitors
- v. Microphones (Akinmoyewa in Akin-Monsorun 2009).

### **Closed-Circuit Items**

A camera is one of the key items in any television. It is the main object that picks the action and by simple technology converts the images of the actions caught into electrical energy. The electrical energy then passes through the camera cable to the mixers (vision and sound). Television cameras have lens by means of which pictures or actions are caught. These could be wide-angle lens which are mostly 40-25 degrees, narrow angel lens or 300mm lens. Wide angle lens are recommended because of the potential advantages of been able to focus properly even in right studio and they are very useful when movement of the camera is necessary. There are many brands of television cameras. Modern cameras are portable and are equipped with microphones. They are powerful and very effective. The vision and sound mixers are the machines that control vision and sound transmitted by the cameras and microphones respectively. In a television studio where there are three cameras, there will be a monitor for each of these cameras. By means of the vision mixer, the camera transmitting the most needed picture of an action is tuned to. The sound mixer controls the audio aspect. The machine makes the audio output to be controlled. After exercising all types of controls by the macho to make a good television program, the programme is finally passed through a recorder and the terminal point is the viewing monitor.

### **Video Tape Recording (VTR) System**

The video tape recording system has three major components. These are:

- i The camera

- ii. The video recorder
- iii. The television monitor

Video tape system is much simpler than the closed circuit television system in that the three items are connected directly; that is, a cable connects the camera to the video recorder, and another cable connects the video recorder to the television monitor. A television is sometimes used to achieve educational aims. One of such achievements is in the area of effective micro-teaching. The two systems (closed circuit and video tape) are very useful during micro-teaching. By means of any of the two, microteaching presentations are recorded for different micro-teaching groups or micro-teachers. The recorded cassettes are played back for the participants during critique session. It is worthy of note that the camera is only useful when the micro-teaching session is going on. After recording, the video recorder/player does other jobs especially when it is time to view the recorded teaching.

### **Good Quality Recording**

For micro-teaching to be effective, there must be a good recording of all the teachings. Good quality recording requires proper planning, good environment, good equipment and effective resource people (Akinmoyewa in Aggarwal 2009; Hixon, 2009). The implementation of learning in the 21st century is very different from previous times. Learning strategies are starting to move from the classroom to the digital space. Learning is not only limited to classrooms and schools but also includes spaces for online learning applications such as Classrooms, Edmodo, Ruang Guru, Zenius, Cisco Webex Google for Education, etc. Learning resources are not only from modules or handbooks but also various learning resources are available from the internet and online learning resources. The interaction between teachers and students is not only face-to-face but can be done through virtual meetings. A combination of face-to-face learning and online meeting learning has even been developed, known as Blended Learning. In teaching and learning activities teachers and students begin to shift to the use of technology such as tabs and smartphones to support the achievement of learning goals. Teachers nowadays should be aware of the 4IR demands, hence the need to change their way of teaching in 21st century classrooms. The methods of teaching need to move towards Education 4.0, a term that emerges following the 4<sup>th</sup> Industrial Revolution. "Education 4.0 is a response to the needs of IR4.0 where human and technology are aligned to enable new possibilities" (Anealka, 2018, p.92). The most recent technology like artificial intelligence, robotics, and the Internet of Things (IoT) will replace some human jobs in the future, therefore it is crucial for the students today to possess skills that will not be replaceable by the technology. This is where the 21st century skills take place in today's education. In order for students to be and stay relevant at the workplace, teachers and educators have to train them with the 21<sup>st</sup> century skills demanded in the 4IR. However, students would not be able to develop those skills if the teachers themselves have insufficient knowledge in training those skills to the students. Teachers do not only have to be subject matter experts, but they also need to know the pedagogy of teaching as emphasized by Shulman (1986) in his Pedagogical Content Knowledge (PCK) framework. Meanwhile in the 21st century, it is essential for teachers to be well-versed in integrating technology into teaching. Therefore, they need to have knowledge on technology, as proposed by Koehler, M. J. and Mishra, P., (2006) in their Technological Pedagogical Content Knowledge (TPACK) framework. Teaching in 21st century is no longer the same, as the priority of teaching has shifted. To ensure that students are able to develop, practice and apply the 21st century skills, teachers need to be knowledgeable and competent in teaching and training the 21st century skills to the students.

In general, when it comes to integrating technology in education, previous studies investigating teachers' perspectives have shown that there are both positive and negative perspectives towards the integration of technology in the classroom. A study conducted by Ghavifekr and Wan Athirah (2016) revealed that most teachers are aware that ICT and digital technology are very useful in teaching, and these technologies help teachers to obtain more updated materials which improves their teaching skills. On top of that, Abu Bakar (2013) stated that the positive aspects of digital technology such as its attraction, convenience, multimodality, relevance, interactivity, and importance provide teachers with a lot of advantages in teaching. With these advantages that the digital technologies are providing, teachers are supposed to be

able to integrate them successfully in the teaching and learning process. However, the effectiveness of the technology integration depends on the teachers' level of TPACK as well. The educators' technological skills and knowledge will determine the success of ICT integration. 21st century skills demanded in the 4IR. However, students would not be able to develop those skills if the teachers themselves have insufficient knowledge in training those skills to the students. Teachers do not only have to be subject matter experts, but they also need to know the pedagogy of teaching as emphasized by Shulman (1986) in his Pedagogical Content Knowledge (PCK) framework. Meanwhile in the 21st century, it is essential for teachers to be well-versed in integrating technology into teaching. Therefore, they need to have knowledge on technology, as proposed by Mishra and Koehler (2006) in their Technological Pedagogical Content Knowledge (TPACK) framework. Teaching in 21st century is no longer the same, as the priority of teaching has shifted. To ensure that students are able to develop, practice and apply the 21st century skills, teachers need to be knowledgeable and competent in teaching and training the 21st century skills to the students. In general, when it comes to integrating technology in education, previous studies investigating teachers' perspectives have shown that there are both positive and negative perspectives towards the integration of technology in the classroom. A study conducted by Ghavifekr and Wan Athirah (2015) revealed that most teachers are aware that ICT and digital technology are very useful in teaching, and these technologies help teachers to obtain more updated materials which improves their teaching skills. On top of that, Abu Bakar (2013) stated that the positive aspects of digital technology such as its attraction, convenience, multimodality, relevance, interactivity, and importance provide teachers with a lot of advantages in teaching. With these advantages that the digital technologies are providing, teachers are supposed to be able to integrate them successfully in the teaching and learning process. However, the effectiveness of the technology integration depends on the teachers' level of TPACK as well. The educators' technological skills and knowledge will determine the success of ICT integration.

Hidayu Shafie *et al.* (2019) asserted that the use of technology in learning provides opportunities for students to build their personal skills, and the various levels of tasks that students could do with technology allows the students to work by themselves at their own pace. As the lessons designed with technology integration are essentially more interesting and engaging, it is proven that students' learning could be fostered and students are able to learn better and more effectively (Ghavifekr & Wan Athirah, 2016). Digital technology has allowed students to explore more by themselves, and it helps them to be more resourceful than before. Therefore, teachers need to be more creative and shift their roles in teaching, since they are no longer the sole provider of information and content. It was found that teachers today are more motivated and interested to learn about technology integration, due to its flexibility and autonomy (Delgado, 2016).

Meanwhile in 21st century education, teachers are required to teach and train students with 21st century skills. Anagün (2018) found that there is a positive relationship between teachers' perspectives of their 21st century skills and the constructivist learning in classroom. This finding indicates that as teachers' 21st century skills increase, they are more likely to conduct constructivist learning in their classroom which reflects the 21st century education. In addition, Norazlin (2018) also reported that teachers are highly ready to implement 21st century learning in the classroom but their perspectives and readiness regarding 21st century learning are not always executed well. This is proven in a study by Vail (2010), who stated that the school teachers involved in the study did not practice the 21st century standards and their implementation of 21<sup>st</sup> century learning in the classroom is very little, even though they have a strong belief towards the standards. The teaching profession in the 21st century has undergone major and significant changes. Teachers must develop professionalism so that they are not outdated and eliminated. Teaching skills in the 21st century need professional teachers. New skill in the 21st century that teachers should have is digital literacy. The TPACK idea developed by Kohler and Mishra is important in supporting the implementation of learning in the 21st century. In simple terms, TPACK can be implemented as a framework that integrates the relationship between technology, pedagogy, and content components. This means that a professional material teacher who is only able to deliver material with an attractive method, not also a master teacher. Professional teachers are also not teachers who have

pedagogical competence and material content. Professional teachers within the TPACK framework are teachers who have three components of knowledge consisting of technology, pedagogy, and content.

### METHODOLOGY

The research design is quasi-experimental. 60 Pre-service teachers were selected in the ratio of 30:30 intact class were used as sample who were exposed to the ultra-modern micro-teaching laboratory for presentation of mini lesson using the appropriate gadgets available in the laboratory in order to achieve the realities of 21<sup>st</sup> century interactive classroom. A student teacher were exposed to the use and integration of the said gadgets during lesson presentation, to achieve that each presenter (student-teacher) has to manipulate and used the gadgets in the presentation of the mini-lesson in the ultra-modern micro-teaching laboratory and to display a specific teaching skills simultaneously. The specific teaching skills displayed by the student teacher were automatically observed and recorded in the Ultra-modern Microteaching Laboratory Checklist (UMLC). The checklists were well designed and structured to measure the extent of mastery in the display of specific teaching skills and manipulation of the ICT-gadgets. The level of measurement are as follows; 4- most appropriate, 3-appropriate, 2-less appropriate, 1-Non relevant at all. The data were analyzed using t-test and tested the two null hypotheses at 0.05 level of significance using SPSS version 23.

### Result Presentation

**Table 1: t-test Analysis of Mean Score of Pre-service Teachers' Teaching Skills for Experimental and Control Groups (Posttest) in the Ultra-Modern Micro-teaching Laboratory**

Variable	N	X	SD	df	t	p	Remarks
Experimental	30	40.55	5.94	59	35.34	0.001	Significant
Control	30	37.91	8.31				

Table 1 shows that the mean score of pre-service teachers teaching skills for experimental and control group is significantly different with  $t(59) = 35.34$  and  $P = 0.001$ ,  $<0.05$ . And that the mean difference of experimental group is 40.55 while the mean difference of the control group is 37.91. This shows that experimental group exposed to Ultra-modern microteaching laboratory developed showcase appropriate teaching skills better than those exposed to traditional microteaching approach since 0.001 is less than 0.05, therefore the null hypothesis one is thereby rejected.

### DISCUSSION

The findings in the table shows a significant relationship between ultra-modern micro-teaching laboratory and student teachers' teaching skills this is in line with the Fernandez, (2007) who believed that the Ultra-Modern Micro-teaching Laboratory offer access or laboratory procedure which aimed at simplifying the complexities of regular teaching-learning processes. The system has the strength to used and raised the level of teachers' competencies under a controlled laboratory setting practice Michael (2004). Today with massive and advances made by information and communication technology (ICT) there are many visible manifestation of changes in the Ultra-modern Micro-teaching Laboratory which exposes the pre-service teachers to the variety of gadgets and equipment that pave way for more inclusion and integration of such gadgets during the micro-teaching exercise they include multimedia teaching, approaches, greated detail on the uses of video technology, camcorders and even tendency for chalkboard to replace by overhead or multimedia projectors, marker board, Gnee board, Visualizers, Duplicators, Screen Boards and the emphasis on interpersonal skills domain using innovative strategies. Preparing pre-service teachers to use ICT in teaching is the best solution to making teaching policies and future plans effective such as those involved with ICT. The development of quality teachers begins with the effectiveness of ICT integration Hazniza, (2014). It also differentiates methods of instruction as it can contribute to universal access to education, delivery of quality learning and teaching, equity in education, teachers' professional development and more efficient educational management, governance and



administration (UNESCO, 2017; Loretta and Julfa, 2018). Saverinus, (2008) sees ICT as a strategy that help students through their blogs to create and write something like an article, poem, news, short stories. They can also express their opinion by online forum provided in the internet as well as sharing their experiences to other people all over the world. Students can also create innovation in web design that may be out of formal curriculum content but useful for their future. The role of ICT, especially in the process of empowering technology into the educational activities can help to anticipate and eliminate the negative impact of ICTs and increase the students' knowledge for better comprehension and development of skills. Integrating Information and Communication Technologies (ICT) into classroom teaching and learning is challenging for many pre-service service teachers Herring, Koehler, and Mishra, (2016)

**Table 2 t-test Analysis of 21<sup>st</sup> Century Interactive Classroom and Pre-service teachers' Teaching Skills for Experimental and Control Groups in Ultra-modern Micro-teaching Laboratory.**

Variable	N	X	SD	df	t	p	Remarks
Posttest (Males)	30	6.13	2.6	29	4.20	0.001	Significant
Posttest (Females)	30	9.07	3.6				

Significant at the  $P \leq 0.05$  levels

Table 2 revealed the mean score of pre-service teachers use and manipulation in the Ultra-modern Micro-teaching Laboratory for experimental and control group is significantly different with  $t(29) = 4.20$  and  $P = 0.001$ , < of 21<sup>st</sup> century interactive classroom skills 0.05 with mean difference of experimental group as 6.13 and 9.07 for the experimental group. This indicates that pre-service teachers in the experimental group exposed to Ultra-modern Micro-teaching Laboratory acquired ICT manipulative skills and techniques/strategies of technology integration better than their counterparts in control group, since 0.001 is less than 0.05, therefore Ultra-modern Micro-teaching Laboratory was presumed to be better approach in improving pre-service teachers 21<sup>st</sup> century skill prior to teaching practice than their counterpart. Ultra-modern microteaching laboratory improved pre-service teachers' ICT manipulative skills prior to teaching practice and the pre-service teachers' ability to manipulate ICT-gadgets in the laboratory were positively appreciated which determines the presence of 21<sup>st</sup> century classroom skills. And that the null hypothesis two is thereby rejected.

## DISCUSSION

The table two indicates that there is strong significant relationship between ultra-modern micro-teaching laboratory student teachers' teaching skills this is accordance with Ghavifekr and Wan Athirah, (2016) who revealed that most teachers are aware that ICT and digital technology are very useful in teaching, and these technologies help teachers to obtain more updated materials which improves their teaching skills. On top of that, Abu Bakar (2013) stated that the positive aspects of digital technology such as its attraction, convenience, multimodality, relevance, interactivity, and importance provide teachers with a lot of advantages in teaching. With these advantages that the digital technologies are providing, teachers are supposed to be able to integrate them successfully in the teaching and learning process. However, the effectiveness of the technology integration depends on the teachers' level of TPACK as well. The educators' technological skills and knowledge will determine the success of ICT integration. Hidayu *et al.*, (2019) asserted that the use of technology in learning provides opportunities for students to build their personal skills, and the various levels of tasks that students could do with technology allows the students to work by themselves at their own pace. As the lessons designed with technology integration are essentially more interesting and engaging, it is proven that students' learning could be fostered and students are able to learn better and more effectively (Ghavifekr and Wan Athirah, 2016).

## REFERENCES

Achuoye, K.A. (2007). *Microteaching: A practice on Teaching Skills*, Port Harcourt, Pearl Publishers.

- Adewoyin, J. A. (2007). Fundamentals of Educational Technology: Ota; Attitude Students Teaching Practice Performance in North-west Geo-Political Zone, Nigeria
- Aggarwal, J. C. (2009). *Principles, Methods and Techniques of Teaching*, Second Revised edition, Vikas publishing House PVT LTD, New Delhi.
- Ajibola, A. M., (2013) Effects of Microteaching Skills on Student Teachers' Performance on Teaching Practice in Colleges of Education, North-Central, Nigeria' *Unpublished doctoral thesis*, University of Ilorin, Ilorin.
- Akhwani, A. (2020) Integration of TPACK as a Basic Framework for 21st Century Learning: An Analysis of Professional Teacher Competencies, *Advances in Social Science, Education and Humanities Research*, 5 (08) 291-296.
- Akhwani, A. (2020) Integration of TPACK as a Basic Framework for 21st Century Learning: An Analysis of Professional Teacher Competencies, *Advances in Social Science, Education and Humanities Research*, 5 (08) 291-296.
- Anagün, Ş. S. (2018). Teachers' Perceptions about the Relationship between 21st Century Skills and Managing Constructivist Learning Environments, *International Journal of Instruction*, 11(4), 825–840. <https://doi.org/https://doi.org/10.12973/iji.2018.11452a>.
- Anealka Aziz, H. (2018). Education 4.0 Made Simple: Ideas for Teaching. *International* Achuoeye, K.A. (2007). *Microteaching: A practice on Teaching Skills*, Port Harcourt, Pearl Publishers.
- Adewoyin, J. A. (2007). Fundamentals of Educational Technology: Ota; Attitude Students Teaching Practice Performance in North-west Geo-Political Zone, Nigeria.
- Aggarwal, J. C. (2009). *Principles, Methods and Techniques of Teaching*, Second Revised edition, Vikas publishing House PVT LTD, New Delhi.
- Ajibola, A. M., (2013). Effects of Microteaching Skills on Student Teachers' Performance on Teaching Practice in Colleges of Education, North-Central, Nigeria' *Unpublished doctoral thesis*, University of Ilorin, Ilorin.
- Akhwani, A. (2020). Integration of TPACK as a Basic Framework for 21st Century Learning: An Analysis of Professional Teacher Competencies, *Advances in Social Science, Education and Humanities Research*, 5 (08) 291-296.
- Anagün, Ş. S. (2018). Teachers' Perceptions about the Relationship between 21st Century Skills and Managing Constructivist Learning Environments, *International Journal of Instruction*, 11(4), 825–840. <https://doi.org/https://doi.org/10.12973/iji.2018.11452a>.
- Anealka Aziz, H. (2018). Education 4.0 Made Simple: Ideas for Teaching. *International Utilization in the Instructional Process and Microteaching Skills*; Lagos, National Open University of Nigeria.
- Egunjobi, A.O., Nwaboku, N. and Salawu, I.O.(2011). EDT 733: Facilities for Media Utilization in the Instructional Process and Microteaching Skills; Lagos, National Open University of Nigeria.
- Fernandez, M.L. and Robinson, M. (2007). Prospective Teachers' Perceptions on Microteaching Lesson Study: 127 (2) 203-215.
- Ghavifekr, S., and Rosdy, W. A. W (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES)*, 1(2), 175-191.
- Herring, M. C., Koehler, M. J., and Mishra, P. (Eds.). (2016). *Handbook of technological pedagogical content knowledge (TPACK) for educators*. Milton Park, Abingdon, Oxfordshire USA Routledge Taylor & Francis NY.
- Hasniza Nordin, (2014). Pre-Service Teachers' TPACK and Experience of ICT Integration in Schools in Malaysia and New Zealand. University of Canterbury, New Zealand.
- Koehler, M. J. and Mishra, P., (2006). "Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge PUNYA MISHRA," *Teach. Coll. Rec.*, vol. 108, no. 6, pp. 1017–1054, 2006.
- Konstantinos, C. (2012). Microteaching: 'A Middle Aged' Educational Innovation: Still in Fashion? SOE15-chatzidimou.pdf-Foxit Reader ,

- Loretta A. A and Julfa, Z. (2018). ICT as an Effective Tool for Lifelong Learning and Psychological Adjustment of Secondary School Students for Sustainable Development, *Journal of Educational Media and Technology*, Vol. 22, (2): 39-45.
- Michael, J. (2009). Disadvantages of Traditional Classroom. Retrieved 24/10/2013, 09:53pm from [http://www.taboola.com/en/popup?template=colorbox&taboola utm\\_source=rrd-parenthood360&taboola utm\\_medium=bytaboola&taboola utm\\_content=thumbs-2r:below-article-thumbs](http://www.taboola.com/en/popup?template=colorbox&taboola utm_source=rrd-parenthood360&taboola utm_medium=bytaboola&taboola utm_content=thumbs-2r:below-article-thumbs).
- NCCE Minimum Standard, (2020).
- Singh, S. (2011). Teaching Competency through Microteaching Approach; [indianfusion.aglasem.com/3FP%3DI3323](http://indianfusion.aglasem.com/3FP%3DI3323).
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2): 4-14.
- Tega, D. (2007). Thorndike's Laws of Learning; [voices.yahoo.com/thorndikes-laws-le](http://voices.yahoo.com/thorndikes-laws-le).
- Tidwell, S. (Retrieved on 26/2/2013). Ideas for Microteaching [www.ehow.com/list\\_65863667-ideas-mic-te](http://www.ehow.com/list_65863667-ideas-mic-te).
- UNESCO (2017). *ICTs in Education*. Retrieved 5th October, 2017 from [www.unesco.org/new/en/newdeh/areas-of-action/specialthemes/icts-ineducation/+&cd=3&hl=en&ct=c lnk&gl=ng](http://www.unesco.org/new/en/newdeh/areas-of-action/specialthemes/icts-ineducation/+&cd=3&hl=en&ct=c lnk&gl=ng).
- Yusuf, M.O. (2006). Influence of Videotaping and Audiotaping Feedback Modes on Student Teachers' Performance in Microteaching; Malaysian Online, *Journal of Instructional Technology* 3 (1) [www.unilorin.edu.ng/newsite2/EDUCAT...](http://www.unilorin.edu.ng/newsite2/EDUCAT...)