

Active Pedagogy: Panacea to Adapted Unified Theory of Acceptance and Use of Technology Model for Quality Education in Nigerian Colleges of Education

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ABSTRACT

This study investigated active pedagogy of the Adapted Unified Theory of Acceptance and Use of Technology Model (AUTAUT) as panacea for integrating ICT to enhance quality education in Nigerian colleges of education (COEs). Six objectives and research questions with one hypothesis were involved in the study. The study adopted descriptive research design of survey type. The population of lecturers was 1,320 and 255 lecturers returned completed instruments from the 258 distributed. The Multi-stage sampling procedure was used in selecting samples with (73 females, 182 male lecturers). Descriptive statistics were used to answer research questions while the hypothesis was tested using inferential statistics of Analysis of Variance (ANOVA). Bonferonis' post-hoc analysis was used to locate sources of difference where significant differences were established. Findings revealed that lecturers had active pedagogy, relevant ICT competency and positive attitude towards integration of (AUTAUT) for teaching with weighted means of 2.53, 3.17 and 3.13, respectively as 2.50 was set as bench mark; also, lecturers' gender had no influence on integration of ICT tools but area of specialization and teaching experience influenced active pedagogy of (AUTAUT) with (ANOVA $F = 0.024$ and MANOVA $F = 0.000$ and where $p < 0.05$ respectively). The study concluded that lecturers' active pedagogy usage of UTAUT could be a panacea to integrating ICT tools, and it was recommended that (AUTAUT) could be incorporated into teaching in Nigerian COEs.

Keywords: Active pedagogy, Online, Integration, Attitude, Competency-skill.

Introduction

Quality education in the 21st Century is measured in terms of effective teaching which is universally and broadly understood as teaching that is well focused on students and their learning opportunities. Therefore, excellent and competent teachers are often perceived as those who know how to motivate their learners, how to convey concepts and how to help students overcome difficulties in learning experiences. With the advent of Information Communication Technologies ICT, there is a common understanding that the world has become globalized and knowledge is shared and distributed with relative ease. Actually, the evolution of computers and media in education has forced the re-examination of what is worth knowing and by extension, how to share and integrate the knowledge with others particularly in the education industry. (Heinich, Molenda, Russell and Smaldino, 2002; Singh, Sharma and Upadhya, 2008).

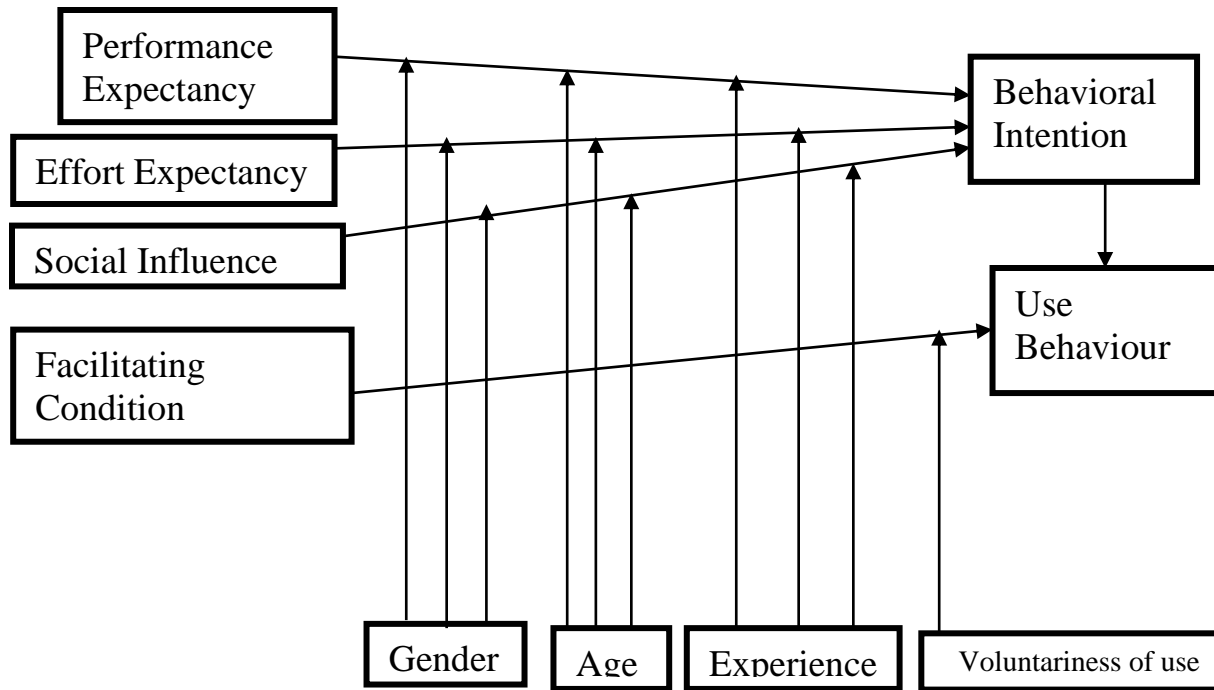
Research findings indicate that teaching and curriculum design need to be focused on meeting students' future needs, implying the development in students of generic capabilities such as critical thinking, teamwork and communication skills. Therefore, the relevance of what is taught must be

established by using real-life, current or even local instructional examples and by relating theory to practice (Ojokheta and Onimisi, 2019). Hence a competent teacher needs to use active pedagogies as relevant with ICT integration in the teaching process which is a model of teaching that highlights minimal teacher lecturing or direct transmission of factual knowledge, multiple small group activities that engage learners in self-discovery or problem solving and frequent learner's questions, self-pace and discussions. The World-wide education reformers are at tandem to active teaching and learning methodologies in the hope of improving the quality of learning and education industry.

ICT can actually make meaningful shift by ensuring that students do not learn the way lecturers are taught in the traditional style, rather students can be taught using the new computer technological devices. This is in support of Makinde (2020) who reported that the investigation on the influence of social/mass media as a change agent on childhood social pedagogy and academic achievement in Lagos, Nigeria reveals that the media contents type students exposed to should be monitored in other not to influence them adversely since the media has more advantages than disadvantages if used correctly.

Researchers have varyingly proposed theories, ideas and models on the application of technology in instruction, for instance, Taylor and Todd (2001) in their own submission extended, integrated and compared the TAM with two variations of the Theory of Planned Behaviour (TPB) to determine which model is the most helpful in understanding the technology usage while (Venkatesh, Moris and Davis 2003) expanded TAM, by building a new model known as Unified Theory of Acceptance and Use of Technology (UTAUT). Technology Acceptance Model (TAM) has proven to be a theoretical model in helping to explain and predict users' behaviours towards information technology (Legris, Ingbam and Cotterette, 2003) in Samuel (2014) submitted that it is superior to Diffusion of Innovation Theory and Idea (DITI) and Theory of Reasoned Action (TRA).

The UTAUT contains four core determinants variables of intention and usage. These are performance expectancy, effort expectancy, social influence and facilitating conditions. UTAUT also defined another four moderator variables that influence the core determinants variables which are gender, age, experience and voluntariness of use thus, in this work, the researcher is of the opinion that adhering to the generic TPB, DITI, TAM & UTAUT might occasioned to inconsistent outcomes as shown in figure 1.



Source: Venkatesh et .al (2003) and Kwacha (2007) in Ajayi (2017)

Figure 1: Unified Theory of Acceptance and Use of Technology (UTAUT)

Strategically the active pedagogical application of the Adapted Unified Theory of Acceptance and Use of Technology (AUTAUT) Model in ICT integration of online tools can make the teaching and learning more exciting, enterprising and enjoyable while at the same time securing successfully teaching/learning outcomes in shorter time frames (Ajayi, 2017).The innovation of active pedagogy would serve as panacea to the application of online tools for teaching and learning in Nigeria Colleges of Education and fill the gap of integrating ICT in instruction as technology is conscious innovation applications of processes and products as shown in figure 2.

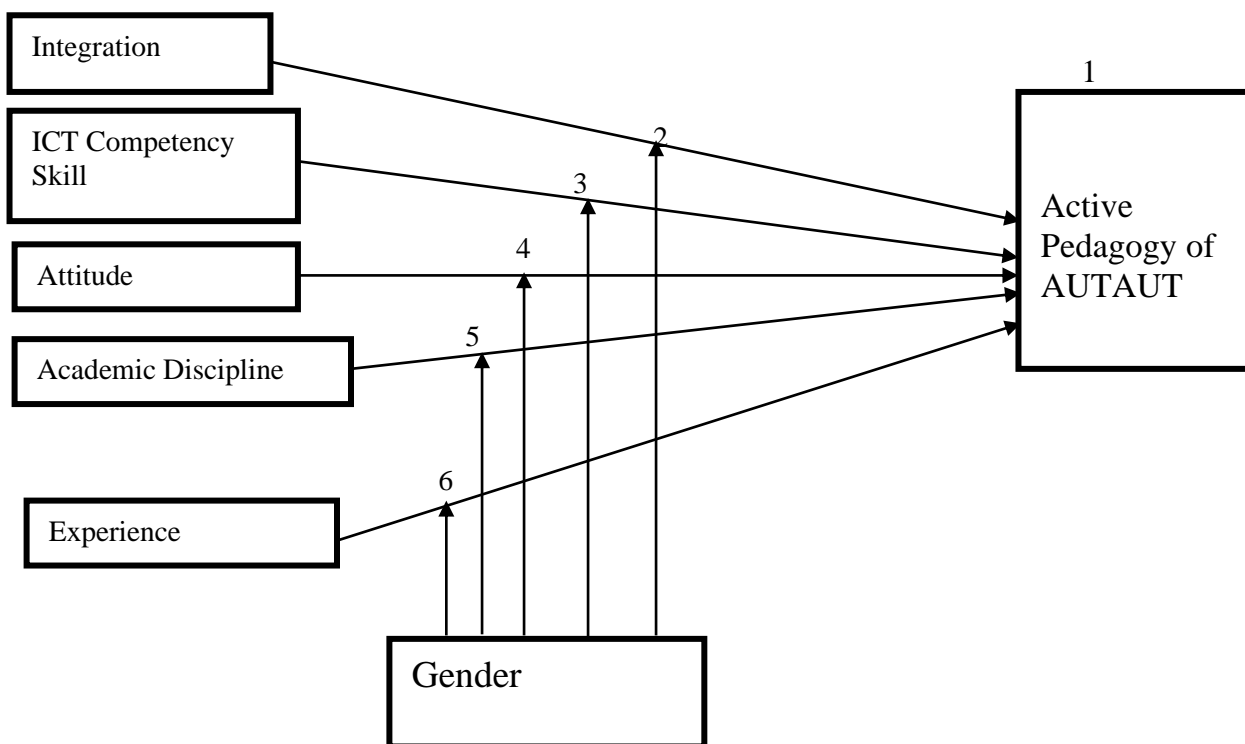


Figure 2 Adapted Unified Theory of Acceptance and Use of Technology Model (AUTAUT).

Instrumentation

An overview of teacher education in Nigeria, Trend of ICT in education in the 21st century Nigeria, Integration and Benefits of online tools access and application in teaching with the concept, types and relevance of online tools in Nigeria Colleges of Education were researched upon by scholars in education. The literature establish that online tools are relevant to teaching and learning environment due to the ubiquity of web browsers, and the convenience of using the web browser as a client, sometimes called a thin client (Jane, 2013, Ajayi, 2017). The availability, strength to update and maintain web applications without distributing and installing software on variety of client computer-based hardware such as mobile technologies is a key reason for their relevance to education particularly for lecturers in Nigerian Colleges of Education (Gambari, 2012, Joshua, 2014).

Computer based strategies in application of online tools have been identified as one of the latest media which technology has brought for the use of mankind (Ajayi, 2017). Therefore, computer access and skill are required in almost all aspects of teaching and learning as required in the 21st century.

Research Questions

The following research questions were answered in the study.

1. How accessible are the ICT online tools for teaching by lecturers?
2. What is the level of lecturers' access to ICT online tools application for teaching?
3. What is the influence of lecturers' teaching experience on the integration of ICT online tools for teaching?

Research Hypothesis

The only null hypothesis tested was that:

Ho₁: There is no significant difference between lecturers' years of experience and the integration of ICT online tools for teaching.

Methodology

The population of lecturers in the sampled colleges which is 1,320 and on the sample size, the sampled size for the study falls within the range of 5,000, using 90% Cohen, Manion & Morrison (2007) table of sample size with confidence levels and confidence intervals of 10% for randomization the sample selected was 258.

Two types of instruments were used by the researcher: (i) a researcher designed questionnaire for lecturers and (ii) a self-rating scales on 25 ICT online tools regularly used based on Nigeria local contents particularly in the South-west geopolitical zone for teaching purposes selected from the 100 online tools arranged on a world standard ranking in usage for all respondents from the eight categories of online tools.

The title of the lecturers' Questionnaire is Lecturers Integration of Online Tools for Teaching. The questionnaire was structured into sections A, B, C and D. Section A of the lecturers' questionnaire sought for basic demographic information about gender, teaching experience while section B asked questions to gather data on Lecturers' access to online tools, computer competency skills, attitude and academic discipline as they affect access to online tools for teaching. The ICT competency skills subsection contained 10 items and a modified four points Likert response mode of Very Competent (VC) Competent (C), Under Guidance (UG) and Not Competent (NC) were used while strongly Agree (SA) Agree (A), Disagree (D) Strongly Disagree (SD) were used for subsections C and D which focused on integration and attitude.

The second instrument for this study was a self-rating scale of 25 ICT online tools regularly used for teaching purposes selected from the 100 online tools arranged by world standard ranking in usage for teaching for all respondents on online tools accessibility and integration for teaching purposes.

Validation of Research Instruments

The research instruments (questionnaires) and self-rating scale were subjected to test the extent to which it measures what it is designed to measure. The validation test area included face and content validity assessment strategies such as giving the draft to five experts from Library and Information Science Department and Educational Technology Department respectively for scrutiny, regularity of online tools use and value reviews. The various suggestions received from the experts were prioritized in presenting the final copy for the respondents.

Result of Findings

Research Question One

How accessible are the ICT online tools for teaching by lecturers in Colleges of Education?

Table 1: Access to Online Tools by Lecturers

S/N	Items	Lecturers	
		Mean	SD
1	I have access to online tools at home	3.21	.768
2	I have access to online tools in my office in the college	2.45	1.045
3	The ICT infrastructure are provided to support online tools usage for teaching in my college	2.21	1.234
4	I have access to a computer with adequate software at the college (e.g., Microsoft Word, Power Point, Adobe Acrobat)	2.38	1.000
5	Electricity power supply is available adequately to support online tools application in my college	2.05	1.567
6	I check my e-mail at least once a week.	3.03	0.876
7	My college has adequate support services for the online tool's application	2.40	1.092
8	Electricity power supply is available adequately to support online tools application in my home	2.56	.996
9	I have access to a computer with adequate software at home (e.g., Microsoft Word, Power Point, Adobe Acrobat)	2.82	1.010
10	I use online tools to give assignments to students often	2.24	1.211
Grand Mean on Access		2.53	0.434

Table 1 presents the results on the access to Online tools by lecturers and students. The results revealed mean score on lecturers' access to online tools, using a bench mark of 2.50 for each item. It is therefore deduced that lecturers have access to online tools at home with mean score of 3.21. However, Lecturers have limited access to online tools in the office in the college with mean score of 2.45. Most of the lecturers check their e-mail at least once a week with mean score of 3.03, Electricity power supply is available adequately to support online tools application in the homes of lecturers with mean score of 2.56 and lecturers had access to a computer with adequate software at home (e. g Microsoft Word, Power Point, Adobe Acrobat) with mean score of 2.82.

However, lecturers disagree that the ICT infrastructure are provided to support online tools usage for teaching in their college with mean score of 2.21. Majority of the lecturers had no access to a computer with adequate software/program at the college (e. g Microsoft Word, Power Point, Adobe Acrobat) with mean score of 2.38 and Electricity power supply is unavailable adequately to support online tools application in lecturers' office with mean score of 2.05. Most college have low adequate support services for the online tools' application with mean score of 2.40 and lecturers occasionally use online tools to give assignments to students often with mean score of 2.24. With a grand mean score of 2.53 and grand variance of standard deviation of 0.434 which is a bit higher than the 2.50 benchmark, it can be concluded that lecturers have moderate access to online tools.

Research Question 2

What is the level of lecturers' access and integration to ICT online tools for teaching?

Table 2: Lecturers' Access Level to Online Tools for Teaching

S/N	ONLINE TOOLS	ACCESSED FOR TEACHING			
		Yes		No	
		<i>F</i>	<i>%</i>	<i>F</i>	<i>%</i>
A	Status broadcast Tools				
1	Twitter	76	29.8	179	70.2
2	Facebook	135	52.9	120	47.0
3	FriendFeed	84	32.9	171	67.0
B	Blogging Tools	-----		-----	
1	WordPress. Com	40	15.7	215	84.3
2	Blogger	37	14.5	218	85.5
3	Typepad	78	30.6	177	69.4
C	Real-time chat and Instant messaging Tools	-----		-----	
1	Adobe Connect	49	19.2	206	80.8
2	WhatsApp	130	51.0	125	49.0
3	Skype	88	34.5	167	65.5
D	Document and File Sharing Tools	-----		-----	
1	Google Drive/Docs	57	22.4	198	77.7
2	SlideShare	55	21.6	200	78.4
3	Microsoft® Office 365	62	24.3	193	75.7
E	Social Networking Tools	-----		-----	
1	PodCast	57	22.4	198	77.7
2	MySpace	43	16.9	212	83.1
3	LinkedIn	71	27.9	184	72.2
4	Instagram	76	29.8	179	70.2
F	Wikis Tools	-----		-----	
1	WikiSpace	44	17.3	211	82.8
2	Google Sites	118	46.3	137	53.3

Research question 2 proffer answers to the level of access of Lecturers to Online Tools for teaching. It indicated that 135 (52.9%) lecturers apply Facebook and 130 (51%) of the lecturers apply WhatsApp for teaching. But only 76 (29.8%) lecturers apply Twitter for their teaching. Also, 84 (32.9%) lecturers apply FriendFeed, 40 (15.7%) lecturers apply WordPress. Com, Blogger 37 (14.5%), Typepad 78 (30.6%), Adobe Connect 49 (19.2%), Skype 88 (34.5%), Google Drive/Docs 57 (22.4%), Slide Share 55 (21.6%), Microsoft® Office 365 62 (24.3%), PodCast 57 (22.4%), MySpace 43 (16.9%), LinkedIn 71 (27.9%), Instagram 76 (29.8%), WikiSpace 44 (17.3%) and 118 (46.3%) lecturers apply Google Sites for teaching.

Research Question 6

What is the influence of lecturers' teaching experience on the access to ICT online tools for teaching?

Table 6: Lecturers’ Teaching Experience and their Access to ICT Online Tools.

Teaching Experience	Mean	N	Std. Dev.	Variance	Min.	Max.
Less than 5 years	.266885	34	.2377269	.057	.0000	.8519
5 yrs - 10 yrs	.242886	83	.2334841	.055	.0000	.8519
11yrs - 20 yrs	.281239	100	.2293197	.053	.0000	.8519
21yrs - 30 yrs	.312169	35	.2294197	.053	.0000	.7037
31yrs and above	.238367	3	.1771506	.031	.0370	.3704
Total	0.268309	255	0.22142	0.0498	.0000	.8519

Table 6 presented the analysis on lecturers’ teaching experience on the application of online tools for teaching. The grand mean on their application of online tools was 0.27. The result revealed that lecturers with 21 to 30 years of teaching experience utilize online tools most with a mean score of 0.31. Next to it are lecturers with 11 to 20 years of teaching experience who utilize online tools with a mean score of 0.28. Lecturers with less than 5 years of teaching experience utilize online tools with a mean score of 0.27. Also, lecturers with 5 to 10 years of teaching experience utilize online tools with a mean score of 0.24, while, lecturers with 31years and above teaching experience utilize online tools the least with a mean score of 0.24. It can be deduced that lecturers with 21 to 30 years of teaching experience mostly apply online tools with a variance of 0.053 while lecturers with 31 and above teaching experience apply online tools least with a variance of 0.031. It can be established that lecturers’ teaching experience has influence on the application of online tools for teaching.

Hypothesis

Ho₁: There is no significant difference between lecturers’ years of experience in the integration to ICT online tools for teaching.

Table 7: Descriptive Statistics on lecturers’ teaching experience

Teaching Experience	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Less than 5 years	2.538	.066	2.409	2.667
5 yrs - 10 yrs	2.412	.042	2.329	2.495
11yrs - 20 yrs	2.604	.038	2.529	2.679
21yrs - 30 yrs	2.611	.065	2.484	2.739
31yrs and above	2.600	.221	2.165	3.035

Table 7 presents the descriptive analysis on lecturers’ years of experience and their access to online tools for teaching. Lecturers with 21 to 30 years of experience had the highest mean of 2.611. Next to it are lecturers with 11 to 20 years of experience with mean score of 2.604 and lecturers with 31 and above 31 years of experience with mean score of 2.600. Others are lecturers with less than 5 years of experience with mean score of 2.538 and lecturers with 5 to 10 years of experience with mean score of 2.412. However, the hypothesis on lecturers’ experience and access to online tools was tested using ANOVA and presented in table 13.

Table 8: ANOVA on lecturers' teaching experience and application of online tools

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.948 ^a	4	.487	3.333	.011
Intercept	394.236	1	394.236	2698.617	.000
Teaching Experience	1.948	4	.487	3.333	.011
Error	36.522	250	.146		
Total	1675.510	255			
Corrected Total	38.470	254			

a. R Squared = .051 (Adjusted R Squared = .035)

Analysis of Variance on lecturers' experience and access to online tools are presented in Table 8. The results revealed that $F(4, 255) = 0.011$, $p < 0.05$ on the difference between lecturers' years of experience and the access to online tools for teaching. The hypothesis was rejected. Therefore, it implies that there was significant difference among lecturers' years of experience and the access to online tools for teaching. Bonferroni post hoc analysis further showed the direction of the differences between lecturers' years of experience and the access to online tools in Table 36.

Table 9: Bonferroni post hoc analysis on lecturers' teaching experience and integration to ICT online tools

(I) Teaching Experience	(J) Teaching Experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than 5 years	5 yrs - 10 yrs	.126187	.0778255	1.000	-.094228	.346602
	11 yrs - 20 yrs	-.065765	.0758788	1.000	-.280666	.149137
	21 yrs - 30 yrs	-.073193	.0920362	.019	-.333855	.187469
	31 yrs and above	-.061765	.2302017	1.000	-.713734	.590205
5 yrs - 10 yrs	Less than 5 years	-.126187	.0778255	1.000	-.346602	.094228
	11 yrs - 20 yrs	-.191952*	.0567537	.008	-.352688	-.031216
	21 yrs - 30 yrs	-.199380	.0770328	.102	-.417550	.018789
	31 yrs and above	-.187952	.2246246	1.000	-.824126	.448222
11 yrs - 20 yrs	Less than 5 years	.065765	.0758788	1.000	-.149137	.280666
	5 yrs - 10 yrs	.191952*	.0567537	.008	.031216	.352688
	21 yrs - 30 yrs	-.007429	.0750655	1.000	-.220027	.205169
	31 yrs and above	.004000	.2239575	1.000	-.630285	.638285
21 yrs - 30 yrs	Less than 5 years	.073193	.0920362	.019	-.187469	.333855
	5 yrs - 10 yrs	.199380	.0770328	.102	-.018789	.417550
	11 yrs - 20 yrs	.007429	.0750655	1.000	-.205169	.220027
	31 yrs and above	.011429	.2299349	1.000	-.639785	.662642
31 yrs and	Less than 5 years	.061765	.2302017	1.000	-.590205	.713734

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above	5 yrs - 10 yrs	.187952	.2246246	1.000	-.448222	.824126
	11 yrs - 20 yrs	-.004000	.2239575	1.000	-.638285	.630285
	21 yrs - 30 yrs	-.011429	.2299349	1.000	-.662642	.639785

Based on observed means.

The error term is Mean Square (Error) = .146.

* The mean difference is significant at the .05 level.

The post hoc analysis on lecturers' experience and integration to online tools was presented in Table 9. It revealed that there was significant difference between lecturers with less than 5 years and 21 to 30 years experiences in their access to online tools with $p = 0.019$. Also, significant differences existed among lecturers with less than 0.195 to 10 years and 11 to 20 years experiences in their access to online tools with $p = 0.008$.

Conclusions

The study found that lecturers have access to ICT online tools for teaching with grand mean of 2.53 as 2.50 was set as benchmark with standard deviation of 0.434; lecturers possess positive ICT competency skills on the application and integration of online tools to enhance teaching with grand mean at 3.17 with standard deviation of 0.535; lecturers have positive attitude towards the integration of ICT online tools for teaching with grand mean of 3.13 with standard deviation of 0.367; lecturers' area of specialization influenced their application and integration of online tools with grand variance of 0.61; lecturers' teaching experience has influence on the application and integration of ICT online tools for teaching with grand mean of 0.270; lecturers' gender had no influence on their application and integration of ICT online tools for teaching as the mean score of male is 0.28 and mean score of female is 0.26 with standard deviation of 0.236; furthermore there is no significant difference between male and female lecturers' ICT competency skill as the p value = 0.54 which is greater than alpha value of 0.05 while there is significant difference between lecturers' years of experience and the application and integration of ICT online tools for teaching as the ANOVA p -value = 0.11 is greater than alpha value of 0.05.

Recommendations were proffered based on the findings: Colleges of Education school ownerships should make adequate provisions of ICT facilities with adequate online tools affordable for lecturers in Nigerian colleges of education. This will improve teaching and learning; constant seminars and workshop on the relevance of ICT online tools in the use of active pedagogical strategies in the application of AUTAUT Model in integrating ICT for teaching and learning should be ensured and organized for lecturers to update knowledge acquisitions and the lacuna of gender differences in the use of online tools for teaching and learning should no longer be encouraged.

References

- Ajayi, J. A. (2017). Access to, And Application of Online Tools for Teaching and Learning in Nigerian Colleges of Education Ph. D. Thesis: Department of Educational Technology, University of Ilorin, Nigeria.
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research Methods in Education* (sixth edition). Taylor & Francis Group, Routledge, New York.
- Gambari, A. I. (2012). Training Manual for Open Distance and e-learning. Minna: Okezyy Production.com. International Society for Technology in Education.
- Heinich, R. Molenda, M. Russell, J. D. & Smaldino, S. E. (2002). Instructional media and technologies for learning (7th Ed). Upper saddle River. Merrill Prentice

- Jane, H. (2013). A Practical Guide to the Top 100 Tools for Learning. Retrieved from <http://c41pt.co.uk/top100tools/guide/.....oct 15th 2014>.
- Joshua, E . (2014). Assessment of University Lecturers' Attitude to and Self-efficacy in the Use of E-tutoring in South-west, Nigeria. An M.Ed. Dissertation in the Department of Educational Technology University of Ilorin.
- Legris, P., Ingham, J. & Collette, P. (2003). Why People Use Information Technology? A Critical Review of the Technology Acceptance Model. *Information & Management*, 40, 191-204.
- Makinde, S. O. (2020). Influence of Social/Mass Media as a Change Agent on Childhood Social Pedagogy and Achievement. *Indonesian Journal of Early Childhood Education Studies* 9 (1), 1-7
- Ojokheta, K. O. & Onimisi, J. S. (2019). Pedagogy of Conscientisation: Dividends and Lessons Derived from Political Discussion Among Adult Learners Through Whatsapp Social Media Platform. *FUOYE Journal of Education* 2 (1), 1-11
- Samuel, N. (2014). University Lecturers' perception of the use of mobile technologies for research collaboration in south-west, Nigeria. A *Ph.D. Research Proposal Department of Educational Technology, University of Ilorin*.
- Singh, P, & Means, B. (2000). Effects of Technology on Classrooms and Students. U.S Department of Education Office for Educational Research & Improvement. Retrieved November 20th, 2014 from http://www.ed.gov/pubs/Ed_reform_studies/Ed/Tech/effect_students.htm/.
- Taylor, S. & Todd, P. (2001). Understanding Information Technology Usage: A Test of Competing Models. *Information System Research*, 6(12), 144-176.
- Venkatesh, V., Morish M.G. Davis, G. B. & Davis F. D. (2003). Users Acceptance of Information Technology: Toward a Unified View, 7 (3), 42-68.