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Evaluation of Methods Adopted for Training Students in the Use of Quantity Surveying Software Packages in Tertiary Institutions in Nigeria

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Abstract

Effective training through selection of suitable methods is imperative for students to acquire necessary skills and competences required for employment. Suitability of the methods adopted for training the students the use of dedicated quantity surveying software packages is in doubt due to the increasing rate of unemployment among the graduates. Hence, this paper examined the methods adopted for training the students with a view to determining their suitability. Primary data were obtained through questionnaires administered virtually through email and WhatsApp social medium due to COVID-19 pandemic on the total population of 21 lecturers responsible for training the students in the 20 fully accredited tertiary institutions in the country. In addition, secondary data were obtained from the end of the semester students' raw score sheets of the ICT courses from the lecturers' records. A total of 18 properly completed questionnaires representing 85.7% return rate, were received via email and WhatsApp social medium. The data obtained were analysed with descriptive and inferential statistics such as means, percentages, and Cramer's V test using IBM Statistical Package for Social Sciences (SPSS) version 25. The results obtained revealed that the lecturers were not academically qualified in both ICT and pedagogy thus playing roles they were not trained for. It further revealed that the lecturers were adopting only two forms of traditional training method (Lecture and Discussion) which could not produce the required learning outcome. Thus, the study concluded that the adopted methods of training were unsuitable and recommended capacity building in both ICT and Teaching for the lecturers.

Keywords: ICT, Quantity surveying, Software packages, Tertiary institutions, Training methods.

Introduction

Globalization has brought about immense changes in every walk of life right from the habits of eating to habits of working. Quantity surveying practice cannot be an exception, hence, dramatic but significant changes in scope and service delivery is inevitable to keep abreast of global trends. These changes had been attributed to several challenges confronting the profession. These include inter alia, increasing dissatisfaction of construction clients with projects outcomes (Ajanlekoko, 2009, Adetola, 2004 and Egan, 1998) and particularly in Nigeria, decline in the involvement and preclusion of the practices in construction projects due to supplanting from allied professional practices in the industry. In response to these challenges, the profession had been adopting Information and Communication Technology (ICT) in its service delivery. This is to provide value-added services that promote prompt completion of construction projects at reduced cost, enhance its competence and consolidate its relevance in the industry.

According to Karunasena, Niroshan and Perera (2015), the profession has shaped its path to suit and adjust for the threat and grab the opportunities of ICT with wide hands. This has resulted in increasing adoption and use of the ICT in the practices which in the opinion of Adeoye (1996), Musa, Oyebisi and Babalola (2010), Ajegbelen (2016) and Siddiquah and Salim (2017) had led to the development of various quantity surveying dedicated software packages for efficient and

effective performance of the practices' operations and service delivery. Consequently, skills and proficiency in the use of these software packages had become a necessary but not sufficient condition for employment of graduate quantity surveyors in the practices. Eugene (2009) argued that the modern quantity surveyors required being equipped with the necessary skills and competencies to ride the next global wave of sustainable development (SD) in order to remain relevant. It becomes imperative therefore, to train these new generations of quantity surveyors in the use of these software packages to enhance and consolidate their employability in the Nigerian construction industry and beyond.

According to Oyeniyi (2012), human societies in the quest for development have identified and developed higher institutions as well as designed structured training and educational programmes as major avenues for processing human beings to acquire the necessary skills and technical competence for their roles in the development of the society. Oladipo *et al.* (2009) therefore, argued that all the creative skills needed to drive the industries are imparted unto the students who are qualified for enrolment in the institutions. Thus, tertiary institutions are majorly concerned with the generation and transfer of knowledge that encompasses the skills and competencies required by graduates in all fields to meet the industries' labour needs and their professional bodies' requirements. In addition, the goal of the education system is to impart the overall development of individuals and society and enable the teaching-learning community to compete favourably in the global market with sustainable growth and development.

According to the National Universities Commission (NUC) (2007), the major objective of the designed curriculum for degree courses in environmental sciences is to produce competent graduates with sufficient contemporary theoretical knowledge and practical skills to deal with the planning, design, construction, management and conservation of man-made and natural environment. It is therefore important, according to Olagunju (2014), for construction educators to provide qualitative education that encompasses all skills needed by graduates to meet the expectations of the employers and professional bodies in the industry.

However, knowledge and skill in information and communications technology (ICT) is an indispensable competence required by both the professional body regulating the practices of quantity surveying and the industry. Thus, the Royal Institute of Chartered Surveyors (RICS) (2018) classified it under the mandatory competency and the Australian Institute of Quantity Surveyors (AIQS) (2012) and Nigerian Institute of Quantity Surveyors (NIQS) (1998) categorized it under basic competency to be acquired along with the core competencies in the tertiary institutions. It therefore becomes a lynchpin course to be taught at different levels of quantity surveying degree and diploma programmes in the country (NUC, 2007 and National Board Technical Education (NBTE), 2001). Successful transfer of this knowledge and skills to the students through teaching, community-centred research and services is one of the cardinal responsibilities of the higher institutions' educators.

Consequently, since the integration of ICT into the universities and colleges of technology/polytechnics' curricula in 2007 and 2001 respectively (NUC, 2007 and NBTE, 2001), some of the lecturers in the departments running quantity surveying programmes have been teaching and training students in the required aspects of the technology (ICT) and most especially, the use of dedicated software (Oladele, 2016) employing various methods. As the best designed curriculum and most perfect syllabus cannot bring about a desirable learning outcome unless driven by competent teachers through the right teaching methods (Opinmi, 2007), assessment of suitability of the teaching methods employed by the quantity surveying educators is imperative. This is more so, as greater focus on and publicity about performance indicators of teaching quality have increased the attention paid to teaching methods (Bourner and Flowers, 1997) and attendant high cost of training (Martins, Kolomitro and Lam, 2014). Hence, the goal of this study is to examine the repertoire of methods that have been used for training the students in the use of quantity surveying dedicated software packages prevalent in

practices in Nigeria with a view to determining their suitability to stimulate students expected academic and professional learning outcomes.

Although there is plethora of studies on ICT integration into education, most of them were focused on the use of the technology as a tool for teaching and learning (Brodual, Fagernes and Hadjerrouit, 2007). Among these are Musa (2018), Musa, Mahmud and Abd.Jalil (2018), Oladimeji and Folayan (2018), Mahmud, Ndomi and Omodara (2017), Olayiwola and Alimi (2015), Sawant (2015), Al-Ansari, Ozioko and Nwabueze (2010), Flecknoe (2002) and Jonassen *et al.* (1996) whose studies majorly investigated the use of the technology as a tool for teaching and learning. Others like Umeagukwu, Emmanuel and Ngozi (2014), Kisanga and Ireson (2014), Sang, Valeke, VanBrack, Tondeur and Zhu (2011), Kramer, Jenkins and Katz (2007) and Harris (2002) explored the benefits and challenges of learning through ICT.

According to Hadjerrouit (2008), there is much less published research work on the teaching of ICT as a school subject in the secondary schools and a course in the tertiary institutions. Few available ones such as the studies of Agbo (2015), Vajargah *et al.* (2010), Hadjerrouit (2008), Brodual, Fagerness and Hadjerrouit (2007), Lim and Tay (2003) and Niederhauser and Stoddart (2001) focussed secondary institutions. Those studies such as Alemu (2015), Matyokurehwa (2013), Csiki and Zsako (2008), Herskin (2004) and Kassbol (2002) focusing institutions of higher learning paid more attention to the teaching/training of the technology generically than its teaching/training with respect to a field of study like quantity surveying. In addition, Bidabadi, Isfshani, Rouhollahi and Khalil (2016) argued that research and exploration to figure out useful and effective teaching and learning methods are some of the most important necessities of educational systems. It is decipherable from the fore going that studies on the adopted method(s) for training quantity surveying students in the use of the available dedicated software packages in Nigeria and its suitability are sparse, hence, this study.

Effective teaching or training is sine qua non to successful implementation of curricula and optimum learning outcomes. As teaching is a cardinal complement of curriculum so the methods of training or teaching are inevitable complements of the course contents. According to Martins *et al.* (2013), as there is no single method to deliver course contents, the teachers/trainers continue to search for the best suited method to present their lessons to the students. Mocinic (2012) argued that any method(s) so selected should not only foster active learning but should also facilitate acquisition of new knowledge, ability, skills and attitudes (KASA) in answer to the requirements of the rapid technological development and contemporary labour market. In the opinion of Bidabadi *et al.* (2016) the method should aid the students to question their preconception about the course and motivate them to learn.

ICT as a course in the new NUC (2007) benchmark and minimum academic standard (BMAS) and NBTE (2001) curriculum is divided into computer application and computer application to quantity surveying to be taught in two semesters. In the first semester, the computer application to be taught includes four topics: data and file management, theory and principle of communication and information system, generic system and application software and application of quantity surveying dedicated software to measurement and estimating. The computer application to quantity surveying to be taught in the second semester is a continuation and advancement to generic computer application of the previous semester and comprises mainly the practical application of the quantity surveying dedicated software to various quantity surveying functions. The functions are cost planning and analysis, contract planning, financial forecasting, interim and final valuation, contract documentation and administration and cost control (NUC, 2007 and NBTE, 2001). The teachers and the students need to learn and be well grounded in these topics to acquire the required digital competency.

Successful delivery of these curriculum contents requires the teachers to adopt a training method or combinations of methods that foster active learning and acquisition of the required ICT skills and competencies in accordance with the goal and objectives of the curriculum. According to

Martin *et al.* (2013), teachers must search for the best method to present targeted information to the students among various methods. Similarly, Brown (2007) argued that in the absence of a single training method that guaranteed success in all circumstances and time due to the methods' uniqueness, it is the responsibility of the trainers to select a method that suits his pedagogical needs. Following from these submissions, it is obvious that despite the claims of proponents of some training methods there is no consensus among the authors and practitioners on the best or right way to train. However, as different methods are designed to suit specific contexts, so it is expedient for the trainers to select such method(s) that portend to offer optimum learning outcome. In the opinion of Waters (2009) the selection of appropriate method (s) could be daunting hence, it should be based on informed decision.

In identifying and characterizing training methods, previous studies adopted different approaches and bases. For example, while Mocinic (2012) classified the methods based on the level of activation of the trainer and the trainee during the session and the population of the participants involved, Bourner and Flowers (1997) characterized them based on the learning aims. Similarly, the basis of classification of Hacket (2007) is the participants' interest. However, Martin *et al.* (2013) took a wider and comprehensive review of the training methods on the bases of seven criteria: the learning modality, learning environment, trainer presence, proximity, interaction level, cost consideration and time demand, which encompasses the bases of other studies. The study noted that each of these criteria is a basis for classifying training methods and thirteen core training methods were identified. These are case study, games-based, internship, job rotation, job shadowing, lecture, mentoring and apprenticeship, programmed instruction, role-modelling, role play, simulation, stimulus-based training and team training.

Similarly, The Guide Association (2013) categorized training methods into two based on who is responsible for provision of training materials: directive and non-directive. The directive approach involves the trainer choosing what material to give the learners and how to give it to them, based on the training needs, aims and objectives. It includes demonstration and instruction, games, icebreakers, presentations and handouts. In the non-directive approach, the trainer allows the learners to find their route through the session, guiding them where and when necessary. It includes brainstorming, case studies, discussion, role play and team building.

A detailed examination of these studies revealed that there is no consensus among authors about the basis for classification and identification of training methods. It further revealed that trainers have a wide range of methods to select from, depending on the objectives and learning outcome of the training. When the objective is to develop the technical and conceptual skills of the trainee as in ICT, then method or methods that would impact both the cognitive and kinesthetics domains of the trainee is apt. According to Brodahl *et al.* (2007), Hadjerrouit (2008) and Walter and Rangaswamy (2014), employment of conventional methods for ICT training is wrought with three main problems: the memory, understanding and dependence problems. The memory problem emanates from the challenges that the students have to memorize and remember detailed procedures during the exercise sessions indicating students' poor understanding of the principles of solving exercises and handling tasks manifesting in high dependency of the students on their trainers.

To overcome these problems, alternative training methods based on contemporary learning theories according to Dagdilelis, Satratzemi and Evangelidis (2004), McDougall and Boyle (2004) and Watson (2006), are inevitable. Mocinic (2010) argued that these methods should encourage and foster the students' participation actively, socially and practically in the learning process. These methods include Herskin's Understanding-Oriented and Learner Centred ICT training methods. In addition, Csiki and Zsako (2008) developed six methods for teaching ICT application software. These include problem-oriented, application-oriented, menu-oriented and function-oriented methods. Others are concept-oriented and abstract tool-oriented methods. Thus, a trainer has the opportunity of selecting the most suitable method(s) to its training needs

from a wide range of options. Instead of the two-phased process; the overview and hands-on exercise involved in the conventional ICT training methods, Herskin (2004) proposed a four-stage training process based on the ICT pedagogical principles. These are the overview, instruction, exercise and summary phases. In the opinion of Hadjjerouit (2008), the summary phase which is mainly for question sessions may not be taken separately as the trainees may be afforded the opportunity to ask questions and seek clarifications at each of the three preceding phases. Consequently, he collapsed the four-stage training process of Herskin (2004) into three phases; the overview, instruction and exercise phases. Whichever process or training method is adopted, it is the achieved learning outcome (which measures the suitability of the training method) that is most paramount. It is discernible from the foregoing that the training method(s) employed by tertiary institutions' lecturers in Nigeria in training students in the use of dedicated quantity surveying software and its suitability have not been empirically documented. These gaps in knowledge are explored in the remaining part of this study.

Materials and Methods

The study adopted quantitative research method to determine the type of methods adopted and assess its suitability in training the students. Primary data were obtained through questionnaires administered virtually through email and WhatsApp social media due to the ravaging Covid-19 pandemic during the period of the study. In addition, secondary data were obtained from the records of the scores of the students in the post training proficiency test at the end of the semester. The questionnaires were administered on the target population of lecturers that are responsible for training the students in the use of dedicated software packages in the departments of quantity surveying that had been granted full accreditation in the Nigerian universities and polytechnic/colleges of technology. These are the quantity surveying departments in the universities and polytechnic/colleges of technology that had been granted full academic accreditation by the National Universities Commission (NUC) and National Board for Technical Education (NBTE) respectively and professional accreditation by the Quantity Surveying Registration Board of Nigeria (QSRBN). According to QSRBN (2019), only 20 tertiary institutions were granted full academic and professional accreditation to run quantity surveying in the country. Pilot study revealed that 21 lecturers were responsible for training the students in the use of dedicated quantity surveying software packages in the fully accredited tertiary institutions. Hence, relevant information was sought from all the 21 lecturers, due to the small population size. A total of 18 properly completed questionnaires representing 85.7% return rate, were received via email and WhatsApp social medium. The data obtained were analysed with descriptive and inferential statistics such as means, percentages, and Cramer's V test using IBM Statistical Package for Social Sciences (SPSS) version 25.

Results and Discussion

The results obtained from the analysis of the data are presented and discussed in the following su-headings

Particulars of the Respondents

The respondents were asked to indicate their institutions, status, professional and academic qualifications, years of experience as lecturer in their institutions and period they have been training students in the use of the dedicated quantity surveying software. Their responses are presented in Table 1 which revealed that out of the eighteen (18) lecturers involved in the training of the students in the use of quantity surveying dedicated software, ten (10) representing about 56% were from either polytechnics or colleges of technology. Of these, four (4) representing 22%, five (5) representing 28% and one (1) representing 6% of the lecturers are principal lecturers, senior lecturers and lecturer 1 respectively. The remaining eight (8) representing 44% are university lecturers consisting of four (4) senior lecturers (22%) and two (2) representing

11% each are in reader and lecturer 1 cadres. In addition, it is decipherable from the Table that over eighty-eight percent (88%) of the lecturers are holders of a minimum of master's degree in quantity surveying. While the remaining 12% of the lecturers are first degree holders, 44% of them are PhD holders in quantity surveying. It is pertinent to note that none of the respondents indicated any academic qualifications in other fields of knowledge.

Table 1. Particulars of the Respondents

Respondent's Particulars	University/University of Technology		Polytechnic/College of Technology		Total	
	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.
Institution	8	44.4	10	55.6	18	100.0
Status						
Professor	0	0.0	0	0.0	0	0.0
Chief lecturer	0	0.0	0	0.0	0	0.0
Reader	2	11.1	0	0.0	2	11.1
Principal lecturer	0	0.0	4	22.2	4	22.2
Senior lecturer	4	22.2	5	27.8	9	50.0
Lecturer I	2	11.1	1	5.6	3	16,7
Lecturer II	0	0.0	0	0.0	0	0.0
Graduate Assistant	0	0.0	0	0.0	0	0.0
Assistant Lecturer	0	0.0	0	0.0	0	0.0
Total	8	44.4	10	55.6	18	100.0
Highest Academic Qualification						
B. Sc.	0	0.0	2	11.2	2	11.2
M. Sc.	0	0.0	8	44.4		44.4
Ph. D	8	44.4	0	0.0	8	44.4
Other fields	0	0.0	0	0.0	0	0.0
Total	8	44.4	10	55.6	18	100.0
Professional Qualification						
*MNIQS	4	22.2	9	50.0	13	72.2
**MNIQS & MNCS	3	16.6	0	0.0	3	16.6
***MNIQS & MNUT	1	5.6	1	5.6	2	11.2
Total	8	44.4	10	55.6	18	100.0
Teaching Experience in the Higher Institution						
1-5 years	0	0	0	0	0	0.0
6-10 years	0	0	0	0	0	0.0
11-15 years	0	0	1	5.5	1	5.5
16-20 years	5	27.6	7	39.0	12	66.6
Over 20 Years	3	16.8	2	11.1	5	27.9
Total	8	44.4	10	55.6	18	100.0
Experience in the Training of the Software						
1-5 years	0	0.0	0	0.0	0	0.0
6-10 years	3	16.5	4	22.2	7	38.7
11-15 years	5	27.9	6	33.4	11	61.3
16-20 years	0	0.0	0	0.0	0	0.0
Over 20 Years	0	0.0	0	0.0	0	0.0
Total	8	44.4	10	55.6	18	100.0

**MNIQS (Corporate Member Nigerian Institute of Quantity Surveyors)*
**MNCS (Corporate Member Nigerian Computer Society)*
**MNIQS (Corporate Member Nigerian Union of Teachers)*

Furthermore, all the respondents are professionally qualified (Corporate members of Nigerian Institute of Quantity Surveyors) and in addition about 17% and 11% of them are corporate

members of Nigerian Computer Society and Nigerian Union of Teachers respectively even though they were not academically qualified in either ICT, education and other fields of knowledge. While none of the lecturers have less than 11years experience working in the higher institutions, all of them have been training the students in the use of dedicated quantity surveying software for at least six (6) years. Consequent upon the high profile of the respondents, information obtained from them are expected to be authentic, reliable and correct.

Critical examination the results obtained from the analysis of the profiles of the lecturers that were involved in the training of the students in the use of the software packages revealed that although they have a substantial year of experience performing this role and were professionally and academically qualified in the field of quantity surveying, they were not academically qualified in information communications technology (ICT) and education. These findings agreed with the findings of Hadjerrouit (2008) that lecturers lack specific training and qualifications in ICT and education. These inadequacy in the qualifications of the lecturers is expected to impact on the quality of their training capability and outcome of their service delivery.

The role they played as trainer of students in ICT related course; an area of specialisation in which they were not academically qualified is a pointer to the fact that they are playing a role they were not trained to perform. This result is consistent with the findings of Bidabadi *et al.* (2016) and Hadjerrouit (2008) that most lecturers in the higher institutions are not trained for their teaching role and are largely ignorant of effective pedagogy.

Training Methods Adopted by the Respondents

The respondents were asked to indicate the training method(s) they adopted in training their students in the use of the dedicated quantity surveying software. Their responses are presented in Table 2
Table 2 revealed that out of the seventeen training methods presented to the respondents only two were adopted in training the students. Only three lecturers (16.6%) from the polytechnics/colleges of technology employed discussion methods to train the students. Others: fifteen lecturers (83.4%) from both universities and polytechnics/colleges of technology adopted lecture methods and none of them (all the lecturers) adopted any of the ICT dedicated methods or combine any of the methods in training the students.
The adoption of only lecture and discussion; two forms of traditional or conventional method for training the students by the lecturers as the finding of the study revealed is not unexpected. This is so because the lecturers have no formal qualifications in both digital and pedagogical education. This finding corroborated the submission of Hadjerrouit (2008) and Brodahl *et al.* (2007) and the finding of Bidabadi *et al.* (2016) and Walter and Rangaswamy (2014) that training methods based on conventional epistemologies are still predominant in our higher educational institutions. Thus, the majority of today's tertiary institutions' teachers most often than not adopt traditional training methods to deliver psychomotor related and other courses indiscriminately. According to Kushnir, Manzhula and Valko (2013), this is because the majority of the teachers are representatives of the previous generation and hence, adopt a training model/method that suited them but not the new generation of students.

Similarly, Brodahl *et al.* (2007) attributed this to the teachers' lack of pedagogical and digital competencies required to teach ICT for effective learning outcome.
The results further revealed that Lecture (83.4% adoption) as the dominant of the two traditional methods agreed with the finding of Walter and Rangaswamy (2014), Apel (2003) and Bourner and Flowers (1997) that training practices in our higher institutions continue to be the same as in the forties as lecture remained the dominant form of academic teaching and training.

Table 2. Training Methods Adopted by the Respondents

Training Methods	University/University of Technology		Polytechnic/College of Technology		Total	
A. Generic Training Methods	Freq.	Perc.	Freq.	Perc.	Freq.	Perc.
Lecture	8	44.4	7	39.0	15	83.4
Demonstration	0	0	0	0	0	0
Seminar	0	0	0	0	0	0
Mentoring	0	0	0	0	0	0
Dalton's plan	0	0	0	0	0	0
Project	0	0	0	0	0	0
Discussion	0	0	3	16.6	3	16.6
Programmed Instruction	0	0	0	0	0	0
Simulation	0	0	0	0	0	0
Stimulus based	0	0	0	0	0	0
Team method	0	0	0	0	0	0
Others (Specify)	0	0	0	0	0	0
Total	8	44.4	10	55.6	18	100.0
B. ICT Specific Training Method						
Problem-Oriented	0	0	0	0	0	0
Application-Oriented	0	0	0	0	0	0
Menu-Oriented	0	0	0	0	0	0
Function-Oriented	0	0	0	0	0	0
Concept-Oriented	0	0	0	0	0	0
Basic Tool-Oriented	0	0	0	0	0	0
Total	0	0	0	0	0	0

Suitability of the Training Methods Adopted by the Respondents

The suitability of the training methods adopted by the lecturers was evaluated through the learning outcome achieved (Students' success rate in the course) after a series of training sessions which the lecturers held with the students at the end of a semester. The students' success rate was calculated from the records of the scores of the students in the post training examination at the end of the semester. The success rates were thereafter transformed to three points Likert's scale. The scales are 'Low' for success rate between 0 and 45%, 'medium' for between 46 and 59% and 'high' for success rate of 60% and above. The suitability of the training methods adopted by the lecturers, measured through the students' success rate in the course was analysed through cross-tabulation and the results obtained is presented in Table 3

Table 3 revealed that the success rate of the students at the end of the semester examination for 8 (53.3%) out of the 15 lecturers that adopted Lecture method in training the students was low. In addition, only 26.7 and 20% of the lecturers have medium and high students' success rates respectively. The Table further revealed that 66.7% of the lecturers that adopted the discussion method have medium students' success rate and the remaining 33.3% have low success rate. It is discernible from Table 3 that all (100%) and 80% of the lecturers that adopted discussion and lecture methods respectively to train the students have at most medium students' success rates.

This undoubtedly indicated that the two adopted methods of training were unsuitable for effective learning outcome. However, the difference in the percentage of the lecturers (100 and 80) that adopted the two training methods having at most medium students' success rates is suggestive of possible relationship between the training methods adopted and the learning outcome (students' success rate). Hence, the suitability (Learning outcomes) of the adopted training methods were subjected to phi and Cramer's V test to determine the relationship, its strength and significance between the variables. The result obtained is presented in Table 4.

Table 3. Suitability of the Training Methods Adopted by the Respondents

Training Methods Adopted		Success rate of the Students at the end of the Semester Examination of the course			
		Low	Medium	High	Total
Lecture	No. of Lecturers	8	4	3	15
	Within Percentage	53.3	26.7	20.0	100.0
	Total Percentage	44.4	22.2	16.7	83.3
Discussion	No. of Lecturers	1	2	0	3
	Within Percentage	33.3	66.7	0.0	100.0
	Total Percentage	5.6	11.1	0.0	16.7
Total No. of Lecturers		9	6	3	18
Total Percentage of Lecturers		50.0	33.3	16.7	100.0

Table 4. Test of Relationship between the Training Methods and the Learning Out-come

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.333	.368
	Cramer's V	.333	.368
N of Valid Cases		18	

Table 4 showed that there is a medium positive relationship (Cramer's V= 0.33) between Training methods and the learning outcome (measured in terms of the students' success rate at the end of the semester examination in using the dedicated software they are trained with). The difference in the success rate of the students trained with the lecture and discussion methods were not significant (ρ = .37) and thus their learning outcomes are the same and not more than medium. The implication of this is that there is a direct relationship between training methods and learning outcomes (Positive value). In addition, that the influence of the two adopted methods of training is not significant enough to engender effective learning of the software packages.

The positive relationship between the training methods and learning outcomes as the finding of the study revealed is consistent with the submission of Opinmi (2013) that the best syllabus or most perfect curriculum remains dead unless quickened into life by the right method of teaching/training. It also corroborates the findings of Berk (2009), Bourner and Flowers (1997) and Csiki and Zsako (2008) that effective improvement in trainees' knowledge, ability, skill and attitude is an outcome of good methods of training. According to Walter and Rangaswamy (2014) different training methods are appropriate to different learning goals and good methods which are psychologically and socially sound would raise the competences of the trainees and inappropriate and bad methods would debase it.

The maximum of medium success rate of the students at the end of the semester examination is expected and agreed with the findings of Walter and Rangaswamy (2014), Hadjerrouit (2008), Berk (2009) and Bidabadi *et al.* (2016) that the traditional training methods are unsuitable and ineffective for successful ICT learning outcome in this modern time. The findings further corroborated the finding of Mocinic (2012) that the goal of training defined through the learning outcomes or development of competences cannot be realised through the adoption of sheer traditional didactic methods, more efficient methods are required.

Conclusion

The study had examined the methods adopted by lecturers in the higher institutions in Nigeria in training the students the use of quantity surveying software packages. The findings revealed that the lecturers are playing roles they were not trained to perform as all of them lacked both academic qualification in ICT and pedagogy required for successful learning outcomes. It further revealed that only two forms of traditional training method; lecturing and discussion were being adopted separately by the lecturers which did not engender effective learning of the software packages and impart the required competence. Hence, the study concluded that the training methods adopted were unsuitable. It therefore recommended that the lecturers should go through capacity building training in both ICT and Teaching to be able to adopt suitable and appropriate training methods that foster active learning and acquisition of required ICT skill and competency.

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