

Internet Skills for Expediting Students' Learning

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Abstract: *The accomplishment of any educational system despite the strategic design depends to a large extent on the quality of teachers. Therefore, this study was carried out to determine the internet skills needs of vocational and technology teachers to facilitate students' learning in Nigeria technical and vocational institutions. The study adopted a survey research design. The population for the study consisted of 215 technology and vocational education teachers from Six (6) south western states of Nigeria. A research question was developed to guide the study. A structured questionnaire was used to collect data from the respondents which was duly validated by experts. Cronbach Alpha reliability technique was used to determine the internal consistency of the questionnaire items at 0.91. Data collected were analysed through Confirmatory factor Analysis (CFA) using Statistics Package for Social Sciences (SPSS) and Analysis Moment of statistics (AMOS). After a preliminary analysis (descriptive), data from respondents were found suitable for inclusion in Confirmatory factor analysis (CFA). The CFA was performed and the results of the analysis support the one-factor model of the internet skills component for facilitating students' learning. The study found that technology teachers require nine (9) internet proficiencies under investigation. Thus, it was recommended that conferences, workshops, seminars, training and retraining programmes should be organized at regular interval for teachers in order to enhance their competency for the purpose of boosting their performance in teaching.*

Keywords: *Competency Improvement, Teaching, and Learning, Vocational and Technology, Internet Skills, Confirmatory Factor Analysis.*

I. INTRODUCTION

The innovative and unceasingly changing technology requires technology and vocational teachers to have a greater

knowledge of how to use the internet in their professional areas for onward transmission to their respective students. Meanwhile, an individual student of technology education needs advanced knowledge to deal with the changes brought about by the latest technology. Internet skills are the concept of describing technology-related skills. This term is also frequently used as ICT skills, 21st-century skills, information technology skills, digital literacy, and digital skills [9]; [29]; [33]; [35]. Internet skills in this study are referring only to a restricted part of digital technology as well as information communication technology skills. Internet skills are stuck on basic skills in ICT, which involves using computers to assess, retrieve, produce, store, present, exchange information, to communicate, and take part in collaborative networks [7]; [16]; [8]; [34].

The current development and complexity in technology require a regular update of the teacher's competency. Dynamism in technology globally demands effective training and re-training of the teachers who will handle the students in their learning. There is no doubt, increasing student achievement hinge on teachers whose performance, in turn, rest on enhancing their competency. According to Todaro & Smith, [31] the value of education as revealed by the quality of instruction, facilities, and curricula, matters a lot. Despite far-reaching policy enactment, teacher education and the teaching career remain challenging subsectors in the education system [32]; [25]. There is a persistence emphasis on the worth of teachers and teacher education in the world over. Certainly, no nation can shape a robust and operative educational system without the unceasing review and subsequent improvement of its teacher training programmes as teachers remain the pillars of the system [21]. Teachers of technology education are expected to prepare students with work skills and knowledge that will empower the graduates to be proficient while carrying out operations [3].

The success of any educational system irrespective of how well planned depends to a large degree on the quality of teachers. The main impediment commonly confronted in Nigerian schools is basically the use of teachers who are not professionally capable. Some teachers in technology and vocational institutions have insufficient understanding in the use of innovative technologies which make them incompetent to accomplish their purposes of instructing the learners proficiently and successfully [10]. According to Osho, [24] students' achievement is hooked on numerous factors such as learning environment, instructional methods, and teaching strategy. Teachers with a challenging but respectable teaching approach stimulate students to work at a higher intellectual level.

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The Federal Ministry of Education [12] report on Technical and vocational colleges indicated that students in the institutions are often time not showing interest in vocational education due to the teaching approach being used by their teachers which are not motivating. Teachers' training and retraining have to provide them with skills and attitudinal change towards work, in so doing enhancing their effectiveness and output [2]. It means that teachers who actually implement the curriculum of vocational and technology institutions ought to be well prepared particularly in internet technology skills which are currently in use. It has become progressively imperative for educationalists to examine effective information, communication, and technology (ICT) implementations with the intention of understanding exactly what make them successful in teaching and learning [14]. According to Baylor and Ritchie [6], professional improvement has a weighty effect on how ICT is embraced in the classroom. ICT has potentials in increasing access and improving the quality of education in developing countries.

The curriculum of vocational and technology institutions according to Federal Republic of Nigeria (FRN) [12] includes various technology trade courses, which lead to the award of National Technical Certificate (NTC) and Advanced National Technical Certificate (ANTC) for craftsmen and master craftsmen respectively. The aim of technological crafts practice in Nigeria technical colleges is to produce skilled, craftsmen with comprehensive practical and theoretical knowledge, who should be capable to carry out different types of technological processes and design (National Board for Technical Education (NBTE) [20]. The purpose of technical education is to train students for particular careers or to prepare students for the general skills required for the workforce.

A number of skills and knowledge in technological engineering craft practice are taught by the teacher. A teacher, therefore, is a person that has been trained informatively and in the subject matter to teach skills, knowledge, and attitude to students [19]. A teacher is a person who communicates knowledge, skills, and attitude to someone in an institution [11]. According to Okoro [22] a technical teacher as an individual who has possessed suitable skills and knowledge in a professional area and totally educated to impart skill and knowledge to others. This implies that teachers in this study are individuals who have been trained professionally in the act of teaching technological engineering craft practice curriculum to students in Technical Colleges. Teaching effectively by technical teachers can only be made possible when they have good knowledge and skills in subject matter as well as having good manipulative internet skills suitable for instructional delivery in various technology-related subjects. Effective teaching is the act of imparting established knowledge and skills in a subject to students systematically in order for the objective of the lesson to be accomplished. It is on the basis of attaining the desired objective that technology teachers require an internet competency enhancement that will groom them to teach effectively. Litt and Hargittai [18] opined that Internet skills reduced the possibility of having experienced negative consequences of sharing information. According to Olaitan, Alaribe & Nwobu [23] capacity building is an effort calculated by increasing the ability of an individual to execute a task. In the context of this study, the capacity building could be otherwise referred to as

competency enhancement, which is the efforts intended to improve the level of knowledge, skill, and attitudes possessed by technology and vocational teachers in using the internet efficiently.

II. STATEMENT OF THE PROBLEM

Technical and vocational colleges are reputable institutions founded by the government to prepare individuals with skills, knowledge, and attitudes in diverse professions. It is expected of the students in this area of disciplines to be exposed to skills and knowledge in all relevant areas. To accomplish this, considerable internet potentials is required from the teachers to effectively carry out instructional delivery. The inadequate internet proficiencies of these teachers have been tagged with the low performance of graduates in the field. Graduates acquire inadequate skills and knowledge that can make them employable. Furthermore, a graduate of technology cannot practice what they learned in the school and far behind in internet world, therefore they are not effective in the world of work, and most of them are roaming the street for a non-existing white-collar job. Therefore, this informed the study to determine the internet competency needs of technology teachers for effective teaching within technical and vocational institutions in the southwestern states of Nigeria.

A. Purpose of the Study

The broad purpose of the study was to determine the internet skills needs of technology teachers for effective teaching with internet machinery and determine the construct validity of the model based on Confirmatory Factor Analysis (CFA).

B. Research Questions

The following research questions were developed to guide the study:

1. What are the internet skill improvement needs of teachers to facilitate students' learning in Nigeria technical and vocational institutions?
2. How valid are the internet skill towards facilitating students' learning based on the CFA model?

C. Methodology

The study adopted a survey research design. A survey research design, in the opinion of Ali [1] is a descriptive study which uses a sample of an investigation to the document, describe and explain what is in-existent or non-existent on the present status of phenomena being investigated. The population for the study consisted of 215 teachers from the six (6) south-western states in Nigeria. Two research questions were developed to guide the study. A structured questionnaire was used to collect data from the respondents which was duly validated by experts. Cronbach alpha reliability technique was used to determine the internal consistency of the questionnaire items at 0.91. Data collected were analysed through Confirmatory factor Analysis (CFA) using Statistics Package for Social Sciences (SPSS) and Analysis Moment of statistics (AMOS).

The survey research design is suitable for this study since data were collected through a questionnaire on the internet skill needs of technology teachers to facilitate students' learning.

D. Figures and Tables of Analysis

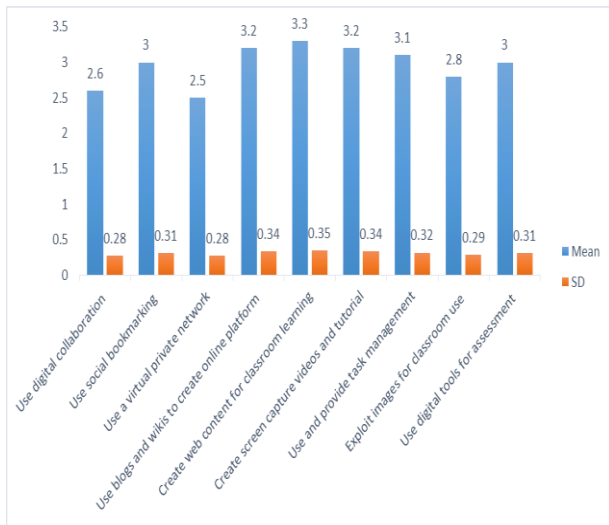


Figure 1. Mean rating with standard deviation and remarks on internet skill improvement needs of technology and vocational education teachers to facilitate students' learning in Nigeria technical and vocational institutions.

The initial CFA of internet skills (INTS) towards facilitating students' learning by TVE teachers is shown in Figure 2 below. The CFA did not conform to the standards for goodness model fit due to RMSEA which stood at .151, contrary to the specified threshold of .080 or less. The values obtained are: Chi-square=153.113, DF=27, Ratio=5.671, P=.000, CFI=.938, IFI=.938, TLI=.917, NFI=.925 and the RMSEA=.151.

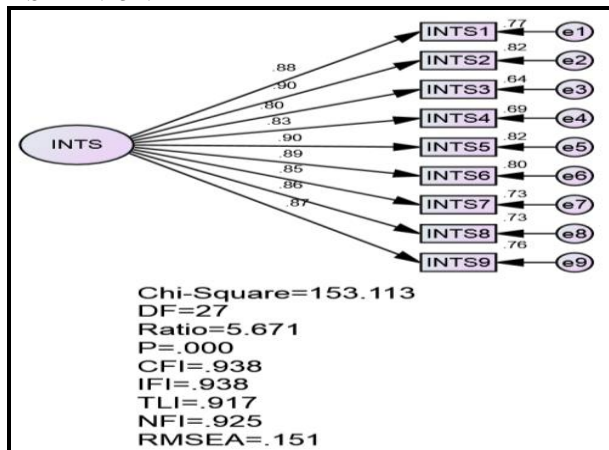


Figure 2: Initial CFA of internet skills

The CFA model for internet skills comprises of 9 (nine) variables. The result in Figure 2 confirms the notable factor loadings within the acceptable threshold but showing the misfit of the model with RMSEA value of .151 which indicate there is a need for Chi-square improvement. In order to do this, the modification indexes (MI) values as presents in Table 2 were well checked and was established that the measurement errors of e4 and e9 to be 27.879, e3 and e8 has 23.389, e1 and e6 also has value of 20.460 which were considered higher than the requirement of less than 15.00.

Consequently, the items with that redundancy status were modified through covariance and the model fit was achieved.

Table 1: Modification indices for CFA of internet skills

	M.I.	Par Change
e7 <--> e9	8.445	-.032
e5 <--> e9	9.094	.028
e4 <--> e9	27.879	.061
e4 <--> e8	8.147	.037
e3 <--> e8	23.389	.072
e3 <--> e7	10.079	.043
e3 <--> e4	4.824	-.031
e2 <--> e9	5.597	-.021
e2 <--> e7	5.966	.023
e2 <--> e6	7.488	.023
e2 <--> e4	5.823	-.023
e1 <--> e8	5.268	-.029
e1 <--> e6	20.460	.047

The modified CFA for internet skills (INTS) towards facilitating students' learning is presented in Figure 3. The covariance of items INTS1 and INTS6, as well as INTS3 and INTS8, enhanced the modification indices criteria. Therefore, the obtained values are: Chi-Square= 43.329, DF=22, Ratio=1.970, P=.004, CFI=.989, IFI=.990, TLI=.983 and NFI=.979, RMSEA=.069. Consequently, the model is considered suitable.

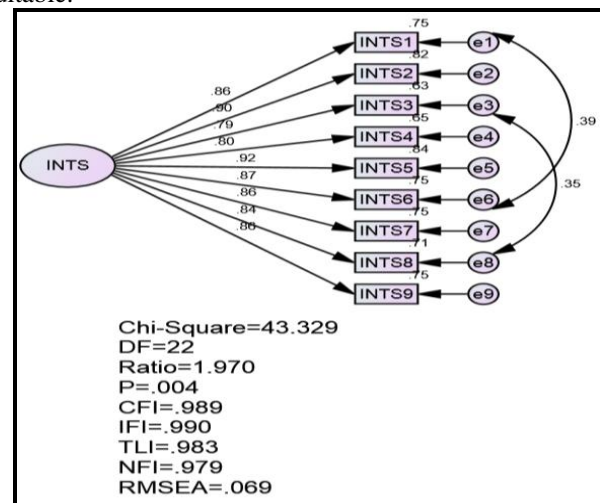


Figure 3: Modified CFA of internet skills

III. RESULT AND DISCUSSION

The findings of this study indicated that internet skills for the enhancement of students' learning were needed by teachers for effective teaching of technology and vocationally related courses in technical and vocational institutions. The findings revealed that mean scores ranged between 2.50 and 3.30, and the grand mean stood at 2.98, which implies that all the internet skills under investigation are required by the technology and vocational teachers. The findings of this study are in alignment with the outcomes of a study by Sowande [28], who established that teachers in metalwork technology needed improvement in 80 items of competencies for performance enhancement.



This finding is also in agreement with the opinion of Saidu and Abubakar [26], who found that effective utilization of equipment will inspire students and cause enhanced interest.

Confirmatory factor analysis (CFA) as used in this study, is a statistical method used to confirm the factor structure of a set of perceived variables. It allows the researcher to determine the relationship between observed variables and their essential latent constructs. This study presents both the initial and the Revised CFA Models of each of the constructs. For a model is considered fit, there are criteria to be met which encompass that all the factor loadings must be equal to or above 0.5. Also, the modification indices such as CFI, IFI, TLI must be above 0.90, the Ratio of the Chi-square and the degree of freedom (df) recommendations which range from as high as 5.0 [36] to as low as 2.0 [30], RMSEA<0.08. The Confirmatory Factor Analysis (CFA) conducted to validate the findings shows that items INTS1 (use digital collaboration), INTS2 (use social bookmarking), INTS3 (use a virtual private network), INTS4 (use blog and wikis to create online platform), INTS5 (create web content for classroom learning) INTS 6 (create screen capture videos and tutorial) INTS7(use and provide task management) INTS8 (exploit images for classroom use) INTS9 (use digital tools for assessment), were confirmed imperative and effective for facilitating students' learning. The final model revealed CFA of internet skills and each item shows an acceptable factor loading of more than 0.5 as required and the model exhibited satisfactory goodness-of-fit which implies that the model developed was suitable to be used to study the internet skills for enhancing students' learning. The study is in line with the specifications of [4]; [5]; [17]; [27]; [30]; [36]. The findings of these various authors support the justification of the findings of this study for internet skill needs of technology and vocational teachers in all related courses for the purpose of performance improvement in teaching and learning process.

IV. CONCLUSION

This study has established that technology and vocational teachers required internet competency enhancement in using all identified areas. There is an exigent necessity for competent teachers to impart both the skills and knowledge with the use of internet apparatuses in technology and vocational education fields of study as specified in the curriculum of Technical and vocational institutions to students who will become technicians in the future. Therefore, to ensure that teachers actually have the needed internet proficiencies and demonstrate such with the students, necessary linkage programme with relevant industries should be put in place by government purposely for teachers to enhance their proficiency. Conferences, workshop, and seminars should be organized for technology teachers in order to enhance their internet competency. Regular training and retraining of technology teachers should be prioritized by government particular on modern internet and digital machinery as being unfolded with technology.

REFERENCES

1. Ali, A. (2006). *Conducting Research in Education and Social Sciences*. Enugu: Tashiwa Net woness Ltd.
2. Audu, R., Aede, H. B.M., Yusri, B. K., Muhammad, S. B. S. & Inti, M. M. (2014). Retraining Needs of Motor Vehicle Mechanics Teachers at

- Technical College Level. *Journal of Technical Education and Training (JTET)*. 1(6); 2229-8932
3. Audu, R., Kamin, Y.B. & Balash, F. (2013). *Technical and vocational education through open learning trends: Development and issues from a local perspective*. New Zealand: Open Polytechnic.
4. Awang, Z. (2012). A Handbook on SEM," Structure Equation Modeling" (Vol. 4): University Technology MARA Kelantan: Malaysia Press.
5. Awang, Z. (2014). *A Handbook on SME: For Academicians and Practitioners*: MPWS Rich Resources.
6. Baylor, A. L., & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology using classrooms? *Computers & Education* 39, 395-414.
7. Bond, C. S. (2004). Surfing or drowning? Student nurses' Internet skills. *Nurse Education Today*, 24(3), 169-173.
8. Büchi, M., Just, N., & Latzer, M. (2017). Caring is not enough: the importance of Internet skills for online privacy protection. *Information, Communication & Society*, 20(8), 1261-1278.
9. Correa, T. (2016). Digital skills and social media use: how Internet skills are related to different types of Facebook use among 'digital natives'. *Information, Communication & Society*, 19(8), 1095-1107.
10. Ede, E. O & Ariyo, S. O. (2015). Competency Improvement Needs of Metalwork Teachers in the Use of Computer Numerically Controlled Machine Tools in Technical Colleges in Oyo State Nigeria. *Journal of Educational Policy and Entrepreneurial Research (JEPER)* 2(7). 19-27
11. Ede, E.O. & Olaitan, O. O. (2009). Management Resource Responsibilities of Auto mechanic Technology Teachers in Technical Colleges in the South Western States of Nigeria. *Institute of Education Journal*. 20 (1), 135- 147
12. Federal Republic of Nigeria (2004). *National Policy on Education*. Lagos: NERDC Press.
13. Federal Republic of Nigeria (2007). *National Policy on Education*. Lagos: NERDC Press.
14. Granger, C. A., Morbey, M. L., Lotherington, H., Owston, R. D., and Wideman, H. H. (2002).
15. Factors contributing to teachers' successful implementation of IT. *Journal of Computer Assisted Learning* 18(4), 480-488.
16. Khan, M. L., Wohn, D. Y., & Ellison, N. B. (2014). Actual friends matter: An internet skills perspective on teens' informal academic collaboration on Facebook. *Computers & Education*, 79, 138-147.
17. Kline, R. B. (2011). *Convergence of structural equation modeling and multilevel modeling*: na.
18. Litt, E., & Hargittai, E. (2014). A bumpy ride on the information superhighway: Exploring turbulence online. *Computers in Human Behavior*, 36, 520-529.
19. Miller, I. O., Bakare, J.A. & Ikatule, R.O. (2009). Professional Capacity Building Needs of Teachers for Effective Teaching of Basic Technology Curriculum to Students in Junior Secondary Schools in Lagos State
20. NBTE. (2007). *National Board for Technical Education/National Technical Certificate Curriculum*. Kaduna: Bida Road.
21. Niyozov, S. (2008). Understanding Pedagogy: Cross-cultural and Comparative Insights from Central Asia. In Mundy, K.; Bickmore, K.; Hayhoe, R., Madden, M., and Madjidi, K. (eds). *Comparative and International Education: Issues for Teachers*. Toronto: Canadian Scholars' Press.
22. Okoro, O.M. (2005). Vocational and Technological Education in Developing Countries: the place and role of the teacher. *Ebonyi Technology and Vocational Education Journal*. 1(1), 1-8
23. Olaitan, S.O., Alaribe, M.O. & Nwobu, V.I. (2009). *Capacity building needs of teachers of agriculture for effective teaching in upper basic schools in Abia State*. Paper presented at the Annual Conference of Nigerian Vocational Association (NVA) on quality assurance in vocational Technical Education (VTE) for the Achievement of Millennium Development Goals (MDGS) in Nigeria.
24. Osho, S. O. (2007). The future of Auto-mechanics work Students in Nigerian Technical Colleges. A paper presented at a Seminar organized by the Department of Technical Education, Tai Solarin University of Education, Ijagun. On 28th April.
25. Osuji, S. N (2009) Teacher Education Curriculum in Nigeria in the Perspective of Lifelong Education. *The Journal of International Social Research*, Volume 2 / 8 summer 2009. Available online:

- <http://www.sosyalarastirmalar.com/cilt2/sayi8pdf/osuji.pdf>.
26. Saidu, A.N. & Abubakar, U. (2017) Effective utilization of brick/block laying and concreting tools and equipment for skill acquisitive in brick/block laying and concreting trade in Yobe state technical colleges. *Journal of Nigerian Association of Teachers of Technology*. 12 (2), 43-48.
 27. Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., and King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of educational research*, 99(6), 323-338.
 28. Sowande, K.G. (2002). Technical competency improvement needs of metalwork teachers in Nigeria Colleges of Education. *Unpublished M.Ed thesis*. Department of Vocational Teachers Education, University of Nigeria, Nsukka.
 29. Steyaert J (2002) Inequality and the digital divide: Myths and realities. In: Hick S and McNutt J (eds) *Advocacy, Activism, and the internet*. Chicago, IL: Lyceum Press, 199–211.
 30. Tabachnick, B. G., Fidell, L. S., and Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5): Pearson Boston, MA.
 31. Todaro, M. P., and Smith, S. C. (2012). *Economic Development*. (11th edition), Boston: Addison-Wesley.
 32. Udofot, M. A. (2005). Ensuring qualitative Teachers for Sustainable Nigerian education System. A lead Paper Presented at the Nigeria Primary and Teacher Education Association, held at the Federal College of Education (T) Asaba, Delta State, June 13-17.
 33. Van Dijk J (2005). *The Deepening Divide Inequality in the Information Society*. London: Sage Publications.
 34. Van Deursen, A., and Van Dijk, J. (2010). Measuring internet skills. *International Journal of Human-Computer Interaction*, 26(10), 891–916.
 35. Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT press
 36. Wheaton, B., Muthen, B., Alwin, D. F., and Summers, G. F. (1977). Assessing reliability and stability in panel models. *Sociological methodology*, 8, 84-136.

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