DEVELOPMENT SKILLS IN SOFTWARE DOCUMENTATION AND MAINTENENCE NEEDED FOR RE-TRAINING OF COMPUTER EDUCATION GRADUATES IN SOUTH-SOUTH, NIGERIA

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Abstract
The study sought to determine software development documentation and maintenance skills needed for re-training of computer education graduates in South-South, Nigeria. Seven specific objectives and seven research questions were postulated to guide the study and seven research hypotheses were formulated and tested at 0.05 level of significance. The study adopted descriptive survey research, the area of the study was Federal Universities in the South-South, Nigeria. The population of this study consisted of 692 final year Computer Education students and experts in five federal universities in South-South, Nigeria. The sample for the study consist of 253 respondents comprising 182 final year Computer Education students and 71 experts drawn from the total population of 692 students and experts in five Federal Universities offering Computer Education in South-South, Nigeria. Taro Yamane formula was employed to obtain the sample for the study. The researcher developed instrument titled "Quality Software Development Skills Need" (QSDSN). Questionnaire was used in collecting data both from Computer Education students and the software experts (the Computer Education lecturers). The instrument was face validated by three experts: one from the Department of Educational Foundations, Measurement and Evaluation, one from Computer Science Department and one from Industrial Technology Education. The corrections, suggestions and recommendations of these validates were

incorporated into the final copy of the instrument. The instrument was subjected to Cronbach Alpha Reliability Test to determine the internal consistency of the instrument and reliability coefficient of .92 was achieved. The data collected were analysed using mean ($\bar{X}$) and Improvement Need Index (INI) to answer the research questions while independent t-test was used to test all the research hypotheses at .05 level of significance. The findings revealed that computer education graduates need re-training in software documentation and software maintenance needs. It was recommended that the Federal Government of Nigeria should as a matter of urgency ensures training facilities and infrastructures are provided in the computer education units/Departments and lecturers should intensify effort to guide the computer education students to improve their skills in quality software development.

Introduction

The invisible enabler of the digital age is computer software running on various devices such as smartphones, in computers and other multimedia devices called applications. Software has become the driver of business innovation and itself has evolved into a multibillion dollar industry. Software according to Kowalski (2019) is referred to computer program used by the computer processor to perform various tasks. Specific software applications are designed for specific tasks like games, Global Positioning System (GPS) that is used to determine the ground position of an object, music and many others. In this work quality software is said to be a software designed with specifications to meet the standard of the intended users.

One of the fastest growing sectors of the economy has been the software industry. Another trend observed has been the evolving nature of software, occasioned by innovation, technology changing lifecycle as well as social

demands for improved service and more integration. One of the fallout of this has also been the changing skills need for software developers. Software developers are the creative minds behind software development and they have the technical skills to build that software or to oversee their creation by a team. Quality software development skills entails, documentation needs and maintenance needs.

Technical documentation refers to any document that explains the use, functionality, creation, or architecture of a product. Software documentation is written text or illustration that accompanies computer software or is embedded in the source code (McKay, 2018). The documentation either explains how the software operates or how to use it. According to Aleksander and Katarzyna, (2017), there are four main types of documentation that follow with System Design which explains the inputs, outputs and processing logic for all the programming courses. The next is System Documentation, which describes the system functions and the way they are implemented. This is followed by Operations Documentation. The developer also needs skills in User Documentation to meet international quality standard in software development. User documentation includes steps and information to the users who will communicate with the system. The goal of any technical documentation is to make the system usable and this revolves around making it structurally logical and easy to navigate. Thus, one must have content creation skills, writing skills,

skills in creating a simple, logical navigation structure. Beyond software documentation skills are quality software maintenance skills.

Software maintenance is an integral part of the software life cycle and has been identified as an activity that affects the overall system cost and effort. It is also a major factor affecting software quality. Software maintenance is asserted by Dinesh (2018) as a collection of activities that aim to evolve and enhance software systems with the purpose of keeping these systems operational. Software (and hardware) maintenance can be categorized into four types: Corrective maintenance, Adaptive maintenance, Perfective maintenance and Preventive maintenance. Thus, quality software maintenance skills include corrective, adaptive, perfective and preventive maintenance skills. To perform software maintenance effectively, various techniques are used. These include software configuration management, impact analysis, and software rejuvenation, all of which help in maintaining a system and thus, improve the quality of the existing system.

The production of ICT products and services – software, web pages, e-commerce, cloud and big data – requires software specialist skills to programme. In the new world order led by the Information Technology (IT), understanding of emerging needs and trends in dynamic software industry is a strategically key factor for the computer education sub-discipline in order to keep pace with industrial modernizations (Kary, 2008).

The OECD (2016) reports shows that changes in the demand for skills driven by the digital economy present two major challenges to skills development. First, while there is awareness that the skills profile of citizens and workers will be very different than in the past, the skills of the future are difficult to identify with certainty due to fast technological change in the digital economy. The second challenge is to ensure that, once changes in skills have been identified, skills development systems adjust significantly fast to match new skills demands. The need for better matching of the content of higher education courses to employers' needs and improving higher education/ industry relationships have been highlighted as needed by several studies on the IT industries. This has necessitated this study, to establish the skills needed for re-training of Computer Education graduates for quality software development.

Statement of the Problem

The national benchmark and minimum standard for Computer Science Education in the University is geared towards the acquisition of Computer Science skills so that graduates will be robust at solving industrial problems relating to information and communication technology. There are graduates who are sound in knowledge but lack capacity for utilising practical skills to solve problems. As such, graduates are involved more in memorisation of concepts; this has made them to be found wanting in performing practical oriented jobs. The skills gap leads to less preference for Computer Education

graduates who possess less software development skills. It also leads to widening skills gap between industries and educational training institutions and consequently, higher unemployment rate among Computer Education graduates. Universities on their own part have tried to bridge this deficiency gap by reviewing their curricular and tilting towards practical-oriented courses.

The knowledge of Computer Education graduates is good enough for the development of software, but it seems they are still deficient in skills needed for the development of quality software despite human potentials. The consequences of skills gap then result in companies or organizations failing to meet up with demand for quality software, create shortages in man power, cause unemployment and can also lead to loss of revenue as a result of lack of customer satisfaction on the software.

Bridging the knowledge and skills gap requires an in-depth analysis of current software industry skills trend and a proactive approach by computer educators in capacity building of graduates in quality software development.

Purpose of the Study

The main purpose of the study was to determine the quality software development skills needed for re-training of computer education graduates in South-South, Nigeria. Specifically, the study sought to:

i. Determine the software documentation skill needs of Computer Education graduates for quality software development in South-South Nigeria.

ii. Determine the software maintenance skill needs of Computer Education graduates for quality software development in South-South Nigeria

Research Questions

The following research questions were stated to guide the study

i. What are the software documentation skill needs of Computer Education graduates for quality software development in South-South Nigeria?

ii. What are the software maintenance skill needs of Computer Education graduates for quality software development in south-south Nigeria?

Research Hypotheses

The following null hypotheses were tested at .05 level of significance

i. There is no significant difference in the mean responses of Computer Education graduates and experts in software documentation skill needs for quality software development in South-South Nigeria.

ii. There is no significant difference in the mean responses of Computer Education graduates and experts in software maintenance skill needs for quality software development in South-South Nigeria.

Research Method

The study employed the descriptive survey research design. A descriptive survey is that in which the researcher collects data from a large sample drawn from a given population and describes certain characteristics of the sample as they are at the time of the study (Nwankwo, 2016). According to Ukwuije and

Obowu-Adutchay (2012), descriptive survey employ the use of sample to represent the entire population and it uses data collection techniques such as questionnaire, tests and interview.

The study was conducted in South-South Zone of Nigeria. South-South Nigeria comprises six states, namely Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States located within latitude 6.2059^{o}N and longitude 6.6959^{o}E of the Greenwich meridian. There are five federal Universities within the South – South that offer Computer Education programme namely: University of Uyo, Uyo; University of Port Harcourt, Port Harcourt; University of Calabar, Calabar; University of Benin, Benin and Federal University, Otuoke. The Zone has a lot of natural resources such as arable lands, solid minerals, oil and gas. Natural resources spur growth and encourage development, as the inhabitants take to different occupations. The rational for selecting this area for the study is hinged on the premise that the zone is opening up to industrialization and with a growing youth population, technical training will be essential for filling the skills gap. Presently, the Zone is being promoted as investors' world. Several developmental and industrial activities are opening up new employment opportunities in software development, particularly in industries and project companies that require digital technology. Also, as the acceptance of virtual businesses penetrates the society and new models of businesses spring up, this is requiring the services of software developers. This study has implications for tertiary institutions in the zone which are saddled with the responsibility of

training skilled personnel for changing work roles in the software industries and servicing companies. Ascertaining the skills required for software development will serve as a feedback for training institutions to develop programmes and offer training in the identified skill areas. To take advantages of these opportunities presenting itself as the Zone opens up to the software revolution, the local population needs to be trained and equipped with the necessary skills required to meet labour market demands, otherwise, juicy job opportunities created locally, may have to be filled up with migrant and more occupationally mobile workers from neighbouring States.

The population of this study consisted of 692 final year students and experts in five federal universities in South-South, Nigeria offering Computer Education discipline, between the period of 2019/2020 academic session. These states are Akwa Ibom, Cross River, Bayelsa, Rivers and Edo. The population was 692 final year students in the six Federal Universities and experts in South-South, Nigeria. The students' population in this study is considered as trainees in quality software development while the experts are adjudged to be quality software developers and practitioners. For the purpose of this study, the experts are the bench makers while the students are to attend to the benchmark set by the bench makers in this study.

The sample of the study consisted of 253 persons comprising 182 final year Computer Education students and 71 experts drawn from the total population of 692 students in the five states and experts in South-South Nigeria. Taro Yamane

formula was employed to obtain the sample size of the study. The computation yielded 253 which were converted to percentage (37%). This 37% of students and experts respectively from each state was finally selected by random sampling. A multi-stage sampling method was used to select the sample of the study. This was done by stratifying the students and experts population into five clusters representing the five states in the south-south. The decision by the researcher to adopt 253 as a sample is supported by Akpomi and Ordu (2009) who presented a table for various levels of population with their corresponding sample

The researcher developed instrument titled "Quality Software Development Skills Need Questionnaire" (QSDSNQ). This questionnaire was used in collecting data for the study. The instrument was meant for both final year Computer Education students and the software experts. The questionnaire was divided into two parts (A and B). Part "A" contained the personal data of the respondents. Part "B" contained the statements on the independent sub-variables which were grouped into eight sections (A and B). Section "A" sought information on software documentation skills need and Section "B" elicited information on software maintenance skills need. The instrument contained a total of 13 items on quality software development skills need. It should be noted that all items used for the research questionnaire came from software development curriculum for Computer Science as developed by National Universities Commission (NUC). Responses for experts were made on a five-

point rating scale as follows: Very Highly Needed (VHN) – 5 points, Highly Needed (NH) – 4points, Moderately Needed (MN) – 3 points, Lowly Needed (LN) – 2 points, Very Lowly Needed (VLN) – 1points, while the one for the students were made as follows: Very High Performance (VHP) – 5 points, High Performance (HP) – 4points, Moderate Performance (MP) – 3 points, Low Performance (LP) – 2 points, Very Low Performance (VLP) – 1points.

The instrument was subjected to face validation in order to ensure that the research instrument is capable of soliciting for the required information from the respondents. The pool of items in the instrument was first given to English specialist to ensure that there are no grammatical errors. The research instrument was then face validated by three educational experts. Two experts were from the Department of Industrial Technology Education and one from the Department of Curriculum Studies, Educational Management and Planning, all in the University of Uyo. These experts were requested to go through the draft copies of the instrument and make necessary corrections. The corrections, suggestions and recommendations of these validates were incorporated into the final version of the instrument. The decision by the researcher to adopt face validation is based on the remark by Ukwuije and Obowu-Adutchay (2012) that validation by others is an effective method for face validation of research instrument.

The reliability of the instrument was determined through a trial-testing of the instrument on 20 randomly selected respondents of which 10 were experts and

10 were final year Computer Education students in the states studied who were part of the population but not part of the main study. Trial testing is a method that involves people performance in each item (Udoh, 2014). This method of reliability is associated with the use of Cronbach alpha formula. According to Udoh (2014), when the options in the items are on scale such as Strongly Agree, Agree, Disagree and Strongly Disagree, Cronbach alpha coefficient is applied. Cronbach alpha reliability formula was used to determine the internal consistency of the instrument which stood at 0.92. This coefficient justified the instrument reliable for the study. The use of Cronbach alpha formula is suitable in determining internal consistency of instrument.

The copies of the research instrument were administered by the researcher on the sample of 253 experts and final year students of the Computer Education in the five Federal Universities in South-South, Nigeria with the help of five research assistants from those five states. The research assistants were properly briefed on how to help the researcher to administer and collect the completed copies of the questionnaire within a space of two weeks. The experts' questionnaire was administered individually while the students' questionnaire was in a group. Out of 253 copies of questionnaire administered, 253 copies were successfully collected which represented 100% return rate. Data from the copies collected were used for analyses.

The data collected was analysed using the mean ($\bar{X}$) and Improvement Need Index (INI) to answer the research questions. According to Madu and Iyiela

(2013), mean and Improvement Need Index (INI) is suitable when a gap between needed level and performance level is to be established. The mean for each skill need of software experts was represented by standard ($\bar{X}N$) while the mean of performance of Computer Education students was represented by ($\bar{X}P$). The difference between the two mean ($\bar{X}N$ - $\bar{X}P$) were determined to indicate the performance gap (PG) which yielded a positive or a negative value. This method of data analysis was adopted for answering the research questions. The independent t-test was used to test the seven null hypotheses at 0.05 level of significance.

Results and Discussion

Research Question 1

What are the software documentation skill needs of Computer Education graduates for quality software development in south-south Nigeria?

Table 1: Summary of Performance Gap Analysis of Mean Responses on Software Documentation Skill Needs of Computer Education Graduates

S/N	Items	$\bar{X}N$ (Experts)	$\bar{X}P$ (Students)	GAP $\bar{X}N$-$\bar{X}P$	Remark
1	User manual development skills	3.49	2.60	0.89	Needed
2	Operational manual writing skills	3.23	2.60	0.63	Needed
3	Design Document development skills	3.46	2.54	0.92	Needed
4	Requirements Document writing skills	3.50	2.60	0.9	Needed
5	Technical Documentation skills	3.23	2.54	0.69	Needed
6	Testing Document skills	3.61	2.57	1.04	Needed
7	List of Known Bug	3.47	2.59	0.88	Needed

Source: Field Work, 2019

Data presented in Table 1 revealed the mean rating of the opinion of the respondents on software documentation skill needs of Computer Education graduates for quality software development in south-south Nigeria. The result showed that all the items have performance gap to be between 0.63 and 1.04 with positive values indicating that students' performance level is below what is needed as indicated by the experts. Therefore, software system documentation skills are needed by Computer Education graduates for quality software development in south-south Nigeria.

Research Question 2

What are the software maintenance skill needs of Computer Education graduates for quality software development in South-South Nigeria?

Table 2: Summary of Performance Gap Analysis of Mean Responses on Software Maintenance Skill Needs of Computer Education Graduates

S/N	Items	$\bar{X}$N (Experts)	$\bar{X}$P (Students)	GAP $\bar{X}$N-$\bar{X}$P	Remark
1	Corrective maintenance skills	3.60	2.56	1.04	Needed
2	Adaptive maintenance skills	3.54	2.53	1.01	Needed
3	Perfective maintenance skills	3.49	2.58	0.91	Needed
4	Preventive maintenance skills	3.56	2.50	1.06	Needed
5	Problem and modification analysis skills	3.60	2.59	1.01	Needed
6	Quick fix skills	3.45	2.45	1.0	Needed

Source: Field Work, 2019

Data presented in Table 2 revealed the mean rating of the opinion of the respondents on software maintenance skill needs of Computer Education graduates for quality software development in south-south Nigeria. The result showed that all the items have performance gap to be between 0.91 and 1.06 with positive values indicating that students' performance level is below what is needed as indicated by the experts. Therefore, software system maintenance skills are needed by Computer Education graduates for quality software development in south-south Nigeria.

Research Hypothesis 1

There is no significant difference in the mean responses of Computer Education graduates and experts in software documentation skill needs for quality software development in South-South Nigeria.

Table 3: Summary of t-test analysis of the difference in the mean responses experts expected performance rating and students performance rating in software documentation skill needs for quality software development in south-south Nigeria, *n_1=71, n_2= 182*

S/N	Items	Group	$\bar{X}_1$ $\bar{X}_2$	t-cal	p-value	Remark
1	User manual development skills	Experts	3.49			
		Graduates	2.60	11.30	.000	Sig.
2	Operational manual writing skills	Experts	3.23			
		Graduates	2.60	8.45	.000	Sig.
3	Design Document development skills	Experts	3.46			
		Graduates	2.54	12.76	.000	Sig.
4	Requirements Document writing skills	Experts	3.50			
		Graduates	2.60	11.63	.000	Sig.
5	Technical Documentation skills	Experts	3.23			
		Graduates	2.54	10.16	.000	Sig.
6	Testing Document skills	Experts	3.61			
		Graduates	2.57	15.10	.000	Sig.
7	List of Known Bug	Experts	3.47			
		Graduates	2.59	9.76	.000	Sig.

Source: Field Work, 2019

Table 3 gives the summary of the t-test analysis in the mean responses of Computer Education graduates and experts in software documentation needs for quality software development in South-South Nigeria.

The result shows that all the items have p-values less than the 0.05 level of significance. Since all the calculated p-values were less than 0.05 level of significance, the null hypothesis which stated that there is no significant difference in the mean responses of Computer Education graduates and experts in software documentation needs for quality software development in South-South Nigeria is rejected. This implies that there is a significant difference in the opinion of experts and graduates in quality software development in South-South Nigeria.

Research Hypothesis 2

There is no significant difference in the mean responses of Computer Education graduates and experts in software maintenance skill needs for quality software development in South-South Nigeria.

Table 4: Summary of t-test analysis of the difference in the mean responses experts expected performance rating and students performance rating in software maintenance skill needs for quality software development in south-south Nigeria, $n_1=71$, $n_2=182$

S/N	Items	Group	$\bar{X}_1$ $\bar{X}_2$	t-cal	p-value	Remark
1	Corrective maintenance skills	Experts Graduates	3.60 2.56	13.72	.000	sig
2	Adaptive maintenance skills	Experts Graduates	3.54 2.53	14.44	.000	sig
3	Perfective maintenance skills	Experts Graduates	3.49 2.58	11.83	.000	sig
4	Preventive maintenance skills	Experts Graduates	3.56 2.50	13.65	.000	sig
5	Problem and modification analysis skills	Experts Graduates	3.60 2.59	13.61	.000	sig
6	Quick fix skills	Experts Graduates	3.45 2.45	15.50	.000	sig

Source: Field Work, 2019

Table 4 gives the summary of the t-test analysis in the mean responses of Computer Education graduates and experts in software maintenance skill needs for quality software development in South-South Nigeria.

The result shows that all the items have p-values less than the 0.05 level of significance. Since all the calculated p-values were less than 0.05 level of significance, the null hypothesis which stated that there is no significant difference in the mean responses of Computer Education graduates and experts in software maintenance skill needs for quality software development in South-South Nigeria is rejected. This implies that there is a significant difference in the opinion of experts and graduates in quality software development in South-South Nigeria.

Discussion of Findings

The result of the findings revealed that there is a gap in the performance level of Computer Education graduates in software documentation skills compared with the basic level of expected performance. Also, the t-test analysis indicated that there is a significant difference in the mean responses of experts expected performance rating and Computer Education graduates' performance in software documentation for quality software development in South-South Nigeria. This is simply as a result of the fact that the students are yet to acquire the expected level of skills in software documentation. Inability of Computer Education graduates to acquire the expected level of software documentation skills will significantly affect quality software development. This because documentation skills are part of software development.

The result of the findings of this study is in agreement with the findings of Scott (2019) whose study revealed that Business Education students need more training since their performance gap were all positive in all the identified items. Computer Education graduates need more practical training on software documentation for quality software development. When basic skills in software documentation are acquired by graduates, they will be able to document software; hence will be able to develop quality software. The position of the findings of this study is in support of Todd (2014) who opined that computer scientist continue to document tested software for quality of development. This implies that in order to the expected level of software documentation skills,

computer education need more training in software documentation to bridge the existing performance gap.

The result of the findings revealed that there is a gap in the performance level of Computer Education graduates in software maintenance skills compared with the basic level of expected performance. Also, the t-test analysis indicated that there is a significant difference in the mean responses of experts expected performance rating and Computer Education graduates' performance in software maintenance skills for quality software development in South-South Nigeria. This result is so because graduates' level of exposure was not adequate enough to enable them obtain the expected level of performance established by the experts, hence the low performance. Inability of Computer Education graduates to acquire the expected level of software maintenance skills will significantly affect their ability to develop quality software for organization as maintenance is necessary for quality to be ensured.

The result of the findings of this study is in line with the assertion of Hunt, Turner and Mckay (2018) who opined that that vocational education graduates' ability to maintain products produced or developed is influenced not just by a single vocational skill but by a combination of skills. This implies that for Computer Education graduates to be able to develop quality software and make it stand the test of time, they require a combination of skills related to software development, one of such skills will be maintenance of the software.

The main concern lies on the ability of Computer Education graduates to apply the appropriate software maintenance skills based on the performance gap as identified in the study. Poor software maintenance skills will lead to diminishing of the quality of the software and this can cause additional cost to the organization. The findings of this study implies that in order to acquire the expected level of software maintenance skills for making the software to remain in quality, Computer Education graduates need more training in software maintenance skills to bridge the existing performance gaps.

Conclusion

Based on the findings of the study, it was concluded that the computer experts in the industry and the University lecturers identified and agreed to the identified skill as being a software cycle that the student of Computer Education should possess in order to develop quality software in South-South States of Nigeria.

Recommendations

On the bases of the findings and the conclusion, the following recommendations were made:

i. Expert/lecturers should guide the Computer Education students to improve their skills in quality software development.
ii. The University management should organize workshop and invite experts in software development to sensitize Computer Education students on quality software development.

iii. Provision of computer textbook and other gadgets be made available through the ETF Funds, this will ensure students are well equipped with quality software development.

iv. Students should be exposed to internal seminars and workshop on software development by Universities through the ETF programme.

References

Akpomi, M. and Ordu, P.(2009). Modern office technology and the secretary's productivity in private business organisations. *African Journal of Business Management*, 3 (8): 333-339.

Aleksander, J. and Katarzyna, P. (2017). Selecting Requirements Documentation Techniques for Software Projects: a Survey Study. Being a paper presented at the *Federated Conference on Computer Science and Information Sciences - FedCSIS 2017), 3-6 Sept., 2017, Prague, Czech Rep.*

Dinesh, T. (2018). Techniques for Maintenance.Retrieved from www.ecomputers.com/software-engineering/techniques-for-maintenance on 11/09/2019

Kowalski, K. (2019). Software Engineering Talent Shortage – Its Quality, Not Just Quantity. Retrieved from https://tweakyourbiz.com/business/software/engineering-talent-shortage on 12/02/2020.

Kary, F. (2008).*Light-weight Reinforcement Learning with Function Approximation for Real Life Control Tasks*. ICINCO-ICSO Conference. New York, 127-134.

McKay, J. (2018). 5 Steps to Create Technical Documentation That's (Actually) Helpful**.** Retrieved https://plan.io/blog/technical-documentation on 10/01/2020

Nwankwo, N. (2016). A digital signal processing-based bioinformatics approach to identifying the origins of HIV-1 non B subtypes infecting US Army personnel serving broad. *Current HIV research, 11 4*, 271-80 .

OECD (2016), *Skills for a digital world*. *OECD skills studies*, OECD Publishing, Paris, http://www.gbv.de/dms/zbw/824458117.pdf.

Scott, K. (2019). SIGCSE: G: Empirical Assessment of Software Documentation Strategies: A Randomized Controlled Trial. In Proceedings of ACM Student Research Competition Grand Finals.ACM, New York, NY, USA.

Todd, S. (2014).Code Readability Testing, an Empirical Study.Retrieved fromhttps://kilthub.cmu.edu on 12/04/2020.

Udoh, J.C. (2014). Electoral Mapping and the Mass Media: Can Nigeria Learn from USA? *Journal of Educational and Social Research* 4 (1), 279-279

Ukwuije, R. P. I. and Obowu-Adutchay, V. (2012*).Introductory research methods and statistics in education*. Port Harcourt: Chadik Printing Press.