ASSESSING THE LEVEL OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) KNOWLEDGE AND SKILLS OF TECHNICAL TEACHERS IN TECHNICAL SCHOOLS IN RIZAL PROVINCE

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Abstract
This study determine the level of Information and Communication Technology (ICT) knowledge and skills of technical teachers in technical Schools in Rizal Province. To achieve this broad objective, two research questions were developed and answered while two research hypotheses were formulated and tested. Survey research design was used to carry out this study. The population for the study consists of all the 189 technical teachers the technical schools in Rizal Province. Since the population was sizeable there was no sampling. The instrument for data collection was structured questionnaire which was face validated by three experts, two from Technology Education Department and one was given to a lecturer in Department of Educational Evaluation. To determine the reliability of the instrument, Cronbach alpha method was used and a reliability coefficient of 0.77 was obtained. Data for the study was collected with the help of Co-researchers. The data collected were analyzed using Mean and t-test. Presentation and analysis of data were made by the use of tables. The result revealed that the level of ICT knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province is low. It was recommended among others that Technical teachers should look out for business offices where AutoCAD is used for business and visit those places as excursions with their students.

Keywords: ICT, knowledge, skill, technical education, teachers

Introduction

There has been increasing interest in introducing innovations such as Information and Communication Technology (ICT) into the teaching in Technical schools. In the view of Valasidou (2018), ICT is an innovative instrumental tool that enables the educators to modify the teaching and learning processes in order to increase students' interest. Brown (2019) explained that ICT is considered very crucial for the achievement of various educational objectives in terms

of expanding the citizenry access to education at all levels and improving the quality of teaching and learning process.

In the explanation of Daniels (2012), the use of Information and Communication Technologies in the educative process has been divided into two broad categories: ICTs for education and ICTs in education. ICTs for education refers to the development of ICT specifically for teaching and learning purposes, while the ICTs in education involves the adoption of general components of ICTs in the teaching and learning process. Effiong (2015) emphasized that ICT use in schools' curriculum depends highly on the teachers who will use ICT to teach the students. This requires that teachers should have the ability to incorporate ICT into teaching. Okereke (2018) noted that, the application of ICT to teaching makes instructions more effective and productive. In this regard ICT is viewed as innovations that enable technical teachers facilitate effective teaching in technical schools.

Teaching is the way to impart knowledge/skills to students. It is a profession of a person who teaches. In short, it is described as an activity or the act of educating or instructing that impart knowledge and skills. Effective teaching engages the students, tackling their problems and as a result, learning becomes an active, meaningful and understandable experience. Effective teaching results in effective learning by the students.

Literature is full of evidence regarding the use of ICT in effective teaching. For instance, Yusuf (2015) explored that the education field has been affected by ICTs which has undoubtedly affected teaching, learning and research. Findings revealed that ICT has the potential to accelerate, sharpen, deepen and enrich skills to motivate and engage students, to help relate school experience to work practices, create economic viability for the workers of tomorrow as well as strengthening teaching and helping schools change. ICT is helpful to teachers in many

aspects. It helps teachers in performing their duties effectively. Use of ICT in classrooms will enhance the quality of teaching-learning process and results in better academic achievement (Paul, 2012). Seng Eng (2015) showed that ICT contributes positively to the learning in schools and for it to be effective, it requires the conscious effort of all in the school ecosystem that is the principal, teachers, parents and students to make it work. Fox (2017) examined the use of ICT in teaching and learning contexts and findings revealed that ICTs provide benefits to learning and teaching. Sife, Lwoga & Sanga (2017) explored that ICTs provide great opportunities to improve teaching-learning processes. Hennessy, Harrison & Wamakote (2010) synthesized that there is a need for teachers to integrate ICT into subject teaching-learning pedagogical approaches.

A teacher is an individual who is trained in pedagogy and teaching areas of a particular subject to impart knowledge, skills, and attitudes to students in an institution. According to Olaitan, Alaribe, and Nwobu (2019), a teacher is a person who communicates knowledge, skills and attitudes to someone in a school. Okute and Agomuo (2010) noted that a teacher is a facilitator of learning; who helps students to realize their full potentials educationally, a teacher as one who possesses practical and theoretical knowledge of his vocation, has clear understanding of the students he teaches, and ensures that he increases in the knowledge of his field at all times. There are male and female business studies teachers. These teachers are trained in different higher institutions of learning. In this study, a technical teacher is someone who is trained in pedagogical areas of technical education and is charged with the responsibilities of imparting acquired knowledge, skills and attitudes of technical subjects to students in Technical schools.

Technical education is the technological skill education children received after primary education and before the tertiary stage. Technical schools are divided into junior and senior

sections. The ability of technical teachers to teach students ICT related technical subjects depend on the level of ICT knowledge and skills possessed.

In this study knowledge and skill are seen as on entity. It is a person's ability to identify and perform a given task well as a result of training and practice. Knowledge and skill as viewed by Soanes (2011) is the ability to recognize and do something well especially, as a result of long practice. Osinem and Nwaoji (2015) stated that, knowledge and skill is the proficiency displayed by someone in the performance of a given task. ICT knowledge and Skill is the ability required by technical teachers for effective teaching in technical schools.

In this study, level is the identification of the value that calls for retraining of technical teachers in the areas of ICT incorporated into technical subjects curriculum to enable the teachers improve their instruction to students in technical subjects in technical schools. To assist the technical teachers in the area of study, it becomes important to retrain these teachers through intervention programmes in updating their knowledge and skills for effective teaching. Also, the researcher observed that many technical school students after graduation find it difficult to establish and manage small businesses, particularly those who had no opportunity for further training. Those who tried to work in technical centres where modern technologies are used find it difficult to manipulate computers and other ICT equipment. Olufemi and Onyenu (2010) affirmed that the influence of technologies has rendered manual skills inadequate for the world of work while creating needs for new sophisticated skills. Therefore, it is necessary to determine the level of ICT knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province. Therefore, it is necessary to determine the level of ICT knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province.

Objective of the Study

The objective of this study is to determine the level of Information and Communication Technology (ICT) knowledge and skills of technical teachers in technical Schools in Rizal Province.

Specifically, the study sought to determine the level of:

1. Word processing knowledge and skills of technical teachers in technical Schools in Rizal Province.
2. AutoCAD knowledge and skills of technical teachers in technical Schools in Rizal Province.

Research Questions

Based on the specific purposes of the study, the following research questions will guide the study.

1. What is the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province?
2. What is the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province?

Research Hypotheses

The following two null hypotheses were tested

1. There is no significant difference in the mean responses of junior and senior classes technical teachers on the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province.

2. There is no significant difference in the mean responses of junior and senior classes technical teachers on the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province.

Research Method

Survey research design was used to carry out this study. Survey is a generalized means of data collection through the use of interviews or questionnaires. The area of the study was Rizal Province. The Province is one of the Province in the Philippines. The population for the study consists of all the 189 technical teachers the six (6) technical schools in Rizal Province. Since the population was sizeable there was no sampling. The instrument for data collection was structured questionnaire developed by the researcher from the review of related literature for the study. It was intended to elicit the objective opinions of the respondents on the level of information and communication technology skills of technical teachers for effective teaching. The questionnaire was divided into two sections (**i -ii**) in line with the specific purposes of the study to elicit data on the level of information and communication technology skills of technical teachers for effective teaching. Section (i) contained 5 items relating to word processing skills and Section (ii) contained 5 items relating to AutoCAD skills; Section. The response options of the questionnaire items were arranged under the following rating scale of Very High (VH) = 4.50-5.00; High (H) = 3.50-4.49; Low (L) = 2.50-3.49; Very Low (VL) = 1.50-2.49 and Undecided (UD) = 1.00-1.49. The instrument was face-validated by three experts from the Department of Technology Education and Education Evaluation, Philippine Normal University. Each of the experts was given a copy of the questionnaire items and was requested to eliminate or indicate

any ambiguous statement or item in the instrument. The experts were also requested to include other related items or skills which the researcher might have probably left out; unrelated skills among the items presented to them should be deleted. The instrument for the study was scrutinized and face validated to establish that they were reasonable and appropriate. Their inputs helped in making necessary adjustments and modifications of the instrument. Their suggestions were incorporated into the final draft of the questionnaire that was administered to the respondents for data collection.

To obtain the reliability of the instrument, copies of the questionnaire were trial-tested by administering 20 copies to technology teachers in two secondary schools in Mindoro Province. For the purpose of obtaining the reliability of the instrument, Cronbach Alpha reliability method was used. The data obtained from the administered questionnaire was analyzed using Cronbach Alpha Co-efficient method. The result of the analysis yielded a co-efficient of 0.77. The co-efficient was considered high and positive which was an indication that the instrument was reliable enough for measuring what it purports to measure in a consistent manner. Four research assistants were hired and instructed on what to do by the researcher for data collection. Each of the six research assistants was asked to cover one technical school to administer the questionnaire to the respondents. The researcher visited each of the technical school during the data collection to coordinate and monitor the whole data collection exercise. The questionnaire was retrieved from the respondents by the research assistants and was collated by the researcher for the data analysis. The return rate of the questionnaires was 92%. The data collected were analyzed using Mean and t-test. The Mean was used to answer the research questions. T-test was used to test the two hypotheses at 0.05 level of significance.

Result

Research Question 1

What is the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province?

Table 1: descriptive statistics of the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools

S/N	items	mean	Remark
1.	Start word processing package	4.01	High
2.	save and assign file names to documents	2.86	Low
3.	use the tools menu	2.64	Low
4.	preview and print text	2.89	Low
5.	use exit command in a file	4.14	High

Data presented in Table1 showed that 3 out of the 5 word processing knowledge and skills had Mean values that ranged from 2.64 to 2.89 which showed that the level of 3 word processing knowledge and skills of technical teachers for effective teaching were low. The remaining 2 items specifically, items 1 and 5 had Mean values of 4.01 and 4.14 respectively indicated that the level of 2 word processing knowledge and skills of technical teachers for effective teaching were high. Generally, the level of word processing knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province was low.

Research Question 2

What is the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province?

Table 2: descriptive statistics of the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools

S/N	items	mean	Remark

1.	start window button to display the start menu	4.34	High
2.	use two dimensions (2D) in AutoCAD program is	1.63	Very Low
3.	use three dimensions (3D) in AutoCAD program is	1.44	Very Low
4.	Modify drawing on AutoCAD is	1.19	Very Low
5.	Store and retrieve drawing in AutoCAD is	2.14	Low

Data presented in Table2 showed that 3 out of the 5 AutoCAD knowledge and skills had Mean values that ranged from 1.19 to 1.63 which showed that the level of 3 AutoCAD knowledge and skills of technical teachers for effective teaching were very low. Item 5 mean value was 2.14 which indicated that AutoCAD knowledge and skills of technical teachers for effective teaching for that item was low. The remaining one item specifically, items 1 had Mean values of 4.34 indicating that the level of AutoCAD knowledge and skills of technical teachers for effective teaching for the item was high. Generally, the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province was very low.

Research Hypothesis 1

There is no significant difference in the mean responses of junior and senior classes technical teachers on the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province.

Table 3: t-test analysis of the responses of junior and senior classes technical teachers on the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools

S/N	Classes	Mean	SD	N	Df	t-cal	t-tab	Level of sig.	Remark
1.	Junior	3.01	0.63	90	187	1.55	1.96	0.05	NS
	Senior	3.04	0.68	99					

The t-test analysis presented in Table 3 revealed that the t-calculated (t-cal) value of 1.55 is less than the t-table (t-tab) value of 1.96 at P=<0.05 levels of significance and at 187 degree of freedom (df). This showed that, there is no significant difference in the mean responses of junior and senior classes technical teachers on the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province. Therefore, the null hypothesis of no significant difference is accepted.

Research Hypothesis 2
There is no significant difference in the mean responses of junior and senior classes technical teachers on the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province.

Table 4: t-test analysis of the responses of junior and senior classes technical teachers on the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools

S/N	Classes	Mean	SD	N	Df	t-cal	t-tab	Level of sig.	Remark
1.	Junior	1.99	0.79	90	187	1.41	1.96	0.05	NS
	Senior	1.95	0.90	99					

The t-test analysis presented in Table 3 revealed that the t-calculated (t-cal) value of 1.41 is less than the t-table (t-tab) value of 1.96 at P=<0.05 levels of significance and at 187 degree of freedom (df). This showed that, there is no significant difference in the mean responses of junior and senior classes technical teachers on the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province. Therefore, the null hypothesis of no significant difference is accepted.

Discussion of Findings

The result of the analysis from table one showed that the level of word processing knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province is low. This shows that technical teachers do not possess adequately these knowledge and skills which are paramount for effective teaching to take place in this ICT age. This agrees with the finding of the study carried out by Siddiquah and Salim (2017) that teachers do not possess adequate basic knowledge on ICT skills such as knowledge of MS Word, MS Power Point, searching and browsing the internet and among others. This agreement is perhaps due to the reason that ICT facilities which have been found to be the driving force of this modern age and also enhances learning are lacking in most technical schools.

The result from table three revealed that there was no significant difference in the mean responses of junior and senior technical teachers on the level of word processing knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province. This implies that both junior and senior classes technical teachers realized the crucial role ICT plays in facilitating teaching. This is in disagreement with the findings of (Alakpodia, 2014) who reported higher ICT skills in favor of junior workers. Perhaps, this disparity is due to the fact that the studies were carried out in different location.

The result of the analysis from table two showed that the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical schools in Rizal Province is very low. This shows that technical teachers do not possess enough of these knowledge and skills which are paramount for effective teaching of technical drawing in this ICT age. This agrees with the finding of the study carried out by Siddiquah and Salim (2017) that teachers do not possess adequate basic knowledge on ICT skills such as knowledge of MS Word, MS Power Point, searching and browsing the internet and among others. This agreement is perhaps due to

the reason that most technical schools do not have functional computer systems and teachers do not have personal system.

The result from table four revealed that there was no significant difference in the mean responses of junior and senior classes technical teachers on the level of AutoCAD knowledge and skills of technical teachers for effective teaching in technical Schools in Rizal Province. This implies that both junior and senior classes technical teachers realized the crucial role AutoCAD software plays in facilitating teaching of technical drawing in this era. This is in disagreement with the findings of (Alakpodia, 2014) who reported higher ICT skills in favor of junior workers. Perhaps, this disparity is due to the fact that the studies were carried out in different location.

Conclusion

Based on the findings of this study, the following conclusions were reached.

Technical teachers ICT knowledge and skills for effective teaching in technical school in Rizal Province is not adequate.

Recommendations

Based on the findings of the study, the researcher made the following recommendations:

1. Institutions of higher learning where Technical teachers are being trained should fully equip Technical education department with AutoCAD and Word processing software installed computer systems so as to give them necessary training that would enable the teachers have full knowledge and skills they need to transfer to their students.
2. Where the computer systems installed with Word processing and AutoCAD are not readily available, Technical teachers should look out for business offices where Word

processing and AutoCAD is used for business and visit those places as excursions with their students.

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