

Technological Competence of The Information Communication Technology (ICT) Trained Teachers and Their Teaching Performance

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Abstract — This study determined the technological competence of the Information Communication Technology (ICT) trained teachers and their teaching performance in Libertad Elementary School, Isabel, Leyte Division. Based on the findings of the study, an enhanced training program was proposed.

The elementary teachers' level of technical competence in ICT is interpreted as Very Good. This means that the ICT trained teachers have sufficient level of technical competence in the use of ICT in teaching.

The elementary teachers' level of technological competence with regards to application is interpreted as Very Good. This means that the teachers manifest a competent knowledge and skills on ICT application. This implies sufficient use of the teachers on the ICT facilities.

The elementary teachers' level of technological understanding in ICT use is interpreted as Fair. This means that the teachers have average/less manifestation on technological understanding. This is due to the lack of practice in the classroom setting and the lack of ICT facilities that they can use.

The elementary teachers' level of technological competence with regards to ICT integration is interpreted as Fair. This means very low knowledge and skills of the teachers to utilize the ICT in the teaching.

Generally, the technological competence of the ICT trained teachers is very good but fair on integration and technological understanding. Such result is attributed to the availability of the ICT facilities and problem on lack of resources. However, the performance of teachers was very satisfactory in spite of the lack of ICT facilities. The teachers are still very creative in making successful instructional plans. The proposed training program should be implemented.

Keywords — Technological Competence; Information Communication Technology, Teaching Performance



I. Introduction

The present era specifically in the field of communications industry requires technology that would help deliver information effectively and efficiently from one office to another at an instant is through information and Communications Technology (ICT).

Department of Education released an Order no.1 s 2007, dated January 19, 2007 on the strengthening the ICT governance of the Department of Education. Department of Education (DepEd) Secretary Jesli Lapus calls for the optimum use of information and communication technology and multi-media to deliver quality education and enhance institutional efficiency worthy of the 21st century.

In the Philippines, the Department of Education has begun to re-conceptualize the policies and strategies of ICT in education. It has initiated in 1996 a computerization program. However, Tinio (2002) enumerated the barriers why ICT utilization in the teaching-learning process is very limited or not fully maximized.

The year 2020 in the Philippines, the Educational system has been challenged brought about by COVID 19 pandemic. The schools are shutting down and learners are not allowed to go to school anymore. The primary chance of connecting the learners is through distance education and the need to overhaul and retrain the teachers in both online and offline platforms has never been felt until this year of difficulties.

Schools must become truly creative and innovative organizations so that they can become true Learning Organizations – powerful learning environments despite the very limited supply of the government. There is a need to take into account that the world is dependent so much on technologies in this generation and to ignore them will not only prevent us from being competitive globally – it may actually render us incompetent and powerless in the coming years.

The main concern of this study is to assess the level of ICT-trained teacher's on technological competence and their teaching performance in Libertad Elementary School, Isabel, Leyte Division and the same shall be the basis in the conduct of a training program. According to Samuel and Zaiton (2006), ICT does not only increase students' self-esteem and confidence but it also enables them to be more interactive and cooperative during the class activities. Since students are learning at their own pace, their anxiety about themselves is lessened. Thus, they will have more confidence to interact with other students in the class and simultaneously promote good collaboration among the students.

ICT can positively transmit knowledge to students. Its use can help students exploit enormous possibilities for acquiring information for schooling purposes and can increase learning through communication (Fuchs and Woessman, 2004).

In the international setting, Cunningham (1998) believes that utilization of computers in the educational system offers the most effective hope of compressing the leap forward. It helps in

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achieving a smooth and efficient operation as well as an essential aspect of the instructional program.

In Leyte Division, Sucalit (2015) conducted a study and found out that technology innovation through PowerPoint presentations, video materials, CD-ROM, etc. effectively transmit information, catch students' interest and improve motivation, retention and understanding while saving time.

In Libertad Elementary School, in-service trainings on the utilization of ICT instruction have always been initiated by high ranking officials as intervention to improve the teaching performance of elementary school teachers.

The researcher, being an Information and Communication Technology trained teacher and a Master Teacher, would like to delve her study on the teaching performance of the ICT-trained elementary public teachers to find out if ICT has truly enhanced the teaching performance.

Specifically, this study will seek to answer the following queries:

- 1. What is the level of technological competence of the ICT-trained teachers with reference to:
 - 1.1 technical competence in ICT
 - 1.2 ICT Application
 - 1.3 Technological understanding; and
 - 1.4 ICT Integration?
- 2. What is the teaching performance of the ICT- trained teachers based on the IPCRF- RPMS?
- 3. Is there a significant relationship between the technological competence of ICT-trained teachers and their teaching performance?
- 4. What are the problems encountered in the use of ICT?
- 5. What enhanced training program can be proposed based on the findings of the study?

Hypothesis

Ho: There is no significant relationship between the technological competence of ICT-trained teachers and their teaching performance.

II. Methodology

Design. This research used a descriptive-correlational type of design. This study determined the technological competence of the Information Communication Technology (ICT) trained teachers and their teaching performance in Libertad Elementary School, Isabel, Leyte Division. Based on the findings of the study, an enhanced training program was proposed.

Sampling. The subjects of the study were the ICT- trained teachers of Libertad Elementary School, Isabel, Leyte Division. The study employed universal sampling or complete enumeration of ICT trained teachers since SY 2021-2022. It has 14 trained teachers. Two ICT experts and 2 master teachers of the neighboring school were the one to rate the technological competence of the



14 ICT trained teachers. Two sets of questionnaires were used in this study. In measuring the technological competence of teachers in ICT facilities, the following indicators were used: technical competence in ICT, ICT application, technical understanding and ICT promotion. These indicators were taken from the study conducted by the Scottish Office of Education and Industry Development (SOEID) entitled "Teachers' ICT Skills and Knowledge Needs" led by Dorothy Williams of the University of Gordon in 2007.

The teachers' performance was based on the IPCRF-RPMS. This is a standardized tool used by DepEd to measure teachers' competence in all public schools and also adopted by some private institutions nationwide. The validity and acceptability of the tool was tested for almost six years to the different regions all over the country. These set of questionnaires were presented to the adviser for comments and suggestions for improvement and refinement. After the instrument was checked and approved by the adviser, a group of experts were requested to validate. The comments and suggestions of the experts were incorporated in the revision of the said questionnaire.

Research Procedure. 1. Seeking permission to conduct the study. A letter was sent to the Schools Division Superintendent of Leyte Division, asking permission to conduct this study.

2. Administration and retrieval of questionnaire. The researcher personally administered the survey questionnaire to the respondents of the study. Prior to the administration of the questionnaire, the researcher explained first the rationale of its importance so the teachers will be informed. Right after the respondents have filled-up the questionnaire, the same were automatically retrieved. 3. Results of IPCRF-RPMS were requested from the office of the principal. 4. Analysis and Interpretation. After the questionnaire was retrieved, it was collated, tallied, analyzed, and was subjected to data analysis based on the purpose of the study.

Treatment of Data. In the analysis and interpretation of the data, the following statistical tool was used: Weighted Mean. This tool was used to determine the level of technological competence and teaching performance of ICT-trained teachers. Pearson r-This was used to determine the significant correlation between the technological competence and the teaching performance of ICT-trained teachers.

III. Results and Discussion

I-A. Technical Competence in ICT Trained Elementary Teachers

Table 1 presents the elementary teachers' level of technical competence in ICT. This include Using and installing a variety of software, making simple connections of computers, installing computer peripherals, creating multimedia presentations using scanners, creating multimedia presentations using video cameras. using computers for word processing, designing and maintenance and using computers for accessing electronic mail.



The weighted mean is 3.45 which is interpreted as Very Good. This means that the ICT trained teachers have sufficient level of technical competence in the use of ICT in teaching. However, there are skills that needs to be improved like installing software's, making presentations using cameras, video cams or scanner since this area rated good and fair due to less exposure and practice of teachers in these skills. The lack of ICT equipment hampers the practice of the required competence. Website designing is also rated poor since this is already an expert domain in skills. Teachers are rarely trained on this aspect which has little use in teaching.

The highest rated item is on "Using computers for word processing," with a mean of 5.00 interpreted as Excellent and the accessing e-mails with a rating of 5.00 interpreted as excellent. This means that the teachers have high competence in operating the computers for typing documents or communication or lessons through word processing as well as accessing emails. The lowest rated item is on "Website designing and maintenance," with a mean of 1.10 interpreted as Poor. This means that the teachers have no knowledge and skills in designing web page. Designing web page involves technical competence and training. These teachers have no training and not graduate of computer science or information technology.

Table 1
Technical Competence of ICT Trained Elementary Teachers

A. TECHNICAL COMPETENCE	Weighted Mean	Interpretation
1. Using and installing a variety of software.	2.68	Fair
2. Making simple connections of computers.	4.30	Excellent
3. Installing computer peripherals.	3.60	Very Good
4. Creating multimedia presentations using	3.00	Good
scanners.		
5. Creating multimedia presentations using digital	2.90	Good
cameras.		
6. Creating multimedia presentations using video	2.70	Good
cameras.		
7. Using computers for word processing.	5.00	Excellent
8. Using computers for making presentations and	4.10	Very Good
spreadsheets.		
9. Website designing and maintenance.	1.24	Poor
10. Using computers for accessing electronic mail.	5.00	Excellent
Weighted Mean	3.45	Very Good



I-B. ICT Application of the Elementary Teachers

Table 2 presents the elementary teachers' level of technological competence with regards to application. ICT Application- refers to the way of applying the methods of ICT and describes the level of ICT skill.

The weighted mean is 3.51 which is interpreted as Very Good. This means that the teachers manifest a competent knowledge and skills on ICT application. This implies sufficient use of the teachers on the ICT facilities. The use of computer has helped the teachers in their work as teachers. Encoding, printing, saving, copying, internet searching, emailing are some of the applications used by the teachers. The ICT has aided the teacher in accomplishing their tasks as teachers, especially on making lessons; researching for added topics; encoding tests; preparing grades and researching on the net.

The highest rated item is on "Basic computer operations," with a mean of 4.60 interpreted as Excellent. This means that the teachers have high competence on computer use. The lowest rated item is on "web page creation" with a mean of 1.30 interpreted as poor. This means poor manifestation on web page design. This is consistent on the results of the technical skills of the teachers on web page design.

Table 2
Technical Competence of Elementary teachers
With Regards to Application

B. APPLICATION	Weighted Mean	Interpretation
1. Basic computer operations	4.60	Excellent
2. File management	4.30	Excellent
3. Networking	1.50	Poor
4. Word processing	5.00	Excellent
5. Spreadsheet use/Excel	4.00	Very Good
6. Information searching	4.00	Very Good
7. Internet searching	4.50	Excellent
8. Web page creation	1.30	Poor
9. Email use	4.50	Excellent
10. Digital imaging	1.40	Poor
Weighted Mean	3.51	Very Good



I-C. Technological Understanding of ICT Trained Elementary Teachers

Table 3 presents the elementary teachers' level of technological understanding in ICT use. This refers to the technological literacy, expertise of the teachers with regards to ICT. The weighted mean is 2.44 which is interpreted as Fair. This means that the teachers have average/less manifestation on technological understanding. This is due to the lack of practice in the classroom setting and the lack of I CT facilities that they can use. Most teachers would use ICT equipment based on schedule and at least once a month due to hectic reservations of the equipment. Some teachers are also bringing their own ICT equipment such as laptop to aid their teaching.

The highest rated item is on "using educational software," with a mean of 3.60 which means Very Good. There are available software's that can be used by the teachers in science or math. This implies competent knowledge and skills on information literacy. The lowest rated item is on "individualizing educational plan through computer instruction," with a mean of 1.10 interpreted as poor. This means low knowledge and skills when it comes to preparing a differentiated plan. This is attributed to the fact that no enough computers can be used in the school. The limited computers made it impossible for the teachers to individualize the instruction.

Table 3
Technological Understanding of ICT Trained Elementary Teachers

B. TECHNOLOGICAL UNDERSTANDING	Weighted Mean	Interpretation
1. using Educational Software.	3.60	Very Good
2. using information and communication	1.70	Poor
technology to improve students' writing.		
3. teaching information literacy skills using	2.50	Fair
resource-based learning.		
4. teaching information literacy skills using primary	2.60	Fair
sources		
5. modifying instructional approach through ICT	3.00	Good
use		
6. assessing students' performance through ICT use	2.30	Fair
7. individualizing educational plan through ICT use.	1.10	Poor
8. using adaptive technologies such as Laptop and	2.60	Good
projectors		
9. using technology for professional learning and	3.00	Good
communication.		
10. researching and evaluating the use of technology	2.00	Fair
in education.		
Weighted Mean	2.44	Fair



I-D. ICT Integration of the Elementary ICT Trained Teachers

Table 4 presents the elementary teachers' level of technological competence with regards to ICT integration. This refers for promotion in cooperative learning in the classroom so that students work together and learn from each other, and develop classroom activities incorporating challenging activities and assignments in a real-world application.

The weighted mean is 1.91 interpreted as Fair. This means very low knowledge and skills of the teachers to utilize the ICT in the teaching. Then again this is an issue on availability of the IT in the school to be utilized by the teachers. Not all teachers can use the ICT facilities simultaneously and that is why teachers would resort to their individual provision of ICT.

The highest rated item is on "Utilize ICT as an aid in making learning fun and interesting," with a mean of 2.70 interpreted as Good. This means that the teachers have average knowledge and skills on providing challenging task that has something to do with the use of ICT. The lowest rated item is on "Develop higher order thinking skills that help the students to see positive ways to approach new learning challenges," with a mean of 1.38 interpreted as poor.

Table 4
ICT Integration of Elementary ICT Trained Teachers

B. ICT INTEGRATION	Weighted Mean	Interpretation
1.Promote cooperative learning in the use of ICT in	2.00	Fair
classroom so that pupils work together and learn from each	2.00	Tan
other		
V	1.00	Fair
2. 20 to p classicolii acut incomportumis	1.90	rair
challenging activities and assignments that have a real-		
world application through ICT use		_
3. Develop higher order thinking skills that help the	1.38	Poor
pupils to see positive ways to approach new learning		
challenges through ICT		
4.Develop strategic learners who are capable to transfer	1.40	Poor
knowledge to solve problems creatively through ICT use		
5.Help pupils to develop their creative thinking skills	1.40	Poor
through ICT		
6.Help pupils make their own presentation in delivering	2.60	Fair
their reports or activities through ICT		
7.Help pupils to develop their critical thinking in ICT use	1.40	Poor
8. Provide pupils with more challenging activities/tasks in	1.70	Poor
ICT use		
9.Has increased pupils' interest in the subject matter	2.60	Fair
through ICT use		
10. Utilize ICT as an aid in making learning fun and	2.70	Good
interesting		
Weighted Mean	1.91	Fair



II. Teaching Performance of the ICT Trained Elementary Teachers

Table 5 presents the teachers' performance based on IPCRF-RPMS. Based on the evaluation of the school heads and principals the teacher-participants gained a grand mean of 4.23 (Very Satisfactory). This means that the teachers are competent in the following areas: instruction, personal and professional characteristics; and punctuality and attendance. In instructional competence, the teachers were rated outstanding in the following aspects: lesson planning and delivery; technical assistance; learner's achievement; school-home and community involvement. This means that the teachers have done their best in delivering the competitive instructional performance as classroom managers. Teachers have followed the guidelines and have prepared the instructional materials. A rating of outstanding was also given to the teachers in the aspect of personal and professional characteristics with a weighted mean of 8.50. This means that the teachers have the right disposition and attitude. In the aspect of punctuality and attendance, the teachers were also rated outstanding. This means that the teachers were significantly following the rules on punctuality.

According to Joki (1982), school boards can help improve the quality of teaching by writing strong, clear policies on administrative accountability (including provisions for instructional leadership); on teacher recruitment, supervision, and evaluation; on an instructional model keyed to specific objectives; and on in service training for administrators and teachers. Superintendents also might provide principals with clerical assistance to free more time for classroom observation, clinical supervision, demonstration teaching, and staff development (Joki 1982).

Teacher evaluation, in addition to its customary function of establishing a basis for promotion, retention, or dismissal of teachers, can also be a valuable tool for improving instructional effectiveness. A good evaluation program should emerge from the cooperative efforts of teachers and their evaluators in identifying broad areas of responsibility and specific objectives (Joki 1982). Thus teachers will "own" an evaluation program, rather than have one arbitrarily imposed.

Besides monitoring teacher performance, a specific objective of teacher evaluation should be to set measurable job improvement targets (Sweeney and Manatt 1982). Once targets are set, the principal and teacher work out a specific plan of action within a given time frame, and then review the teacher's progress in conference. Such clinical supervision promotes a school climate in which continuous improvement becomes an essential part of every teacher's job.

In addition to setting and clarifying expectations, administrators can also employ incentives to induce teachers to excel in their profession. These include merit pay plans, career options (including career ladders), enhanced professional responsibilities.



TABLE 5 TEACHERS' PERFORMANCE

RANGE	No. of Teachers	Percentage	Interpretation
4.5-5.000	4	40	Outstanding
3.5-4.499	5	60	Very Satisfactory
2.5-3.499	0	0	Satisfactory
1.5-2.499	0	0	Unsatisfactory
TOTAL	9	100	

IX. TEST OF RELATIONSHIPS BETWEEN THE TECHNOLOGICAL COMPETENCE AND THE PERFORMANCE OF TEACHERS

Table 6 presents the test of relationship between the technological competence and the performance of the teachers. The over-all computed t is 4.987 which is higher than the critical value of 4.51 and so the null hypothesis is rejected. This means that the correlation level is moderately significant. Hence, the ICT technological competence is associated to the teaching performance of the elementary teachers. The higher is the technological competence, the better is the performance. The performance is reflective with the strong motives and desires of the teacher to excel and do good in work and make better use of the ICT to aid the instruction.

Table 6
TEST OF RELATIONSHIPS BETWEEN THE GOAL ORIENTATION AND THE PERFORMANCE OF TEACHERS

Variables Correlated to TEACHING PERFORMANCE	r	Computed Value or t	Table Value @0.05	Decision on Ho	Interpretation
Technical Competence	0.67	7.849	4.51	Reject Ho	Significant (High Correlation)
ICT Application	0.70	8.642	4.51	Reject Ho	Significant (Very High Correlation)
Technological Understanding	0.13	2.030	4.51	Accept Ho	Not Significant (Negligible Correlation)
ICT Integration	0.08	1.426	4.51	Accept Ho	Not Significant (Negligible Correlation)
Over-All	0.39	4.987	4.51	Reject Ho	Significant (Moderate Correlation)

IV. Problems Encountered in the use of ICT

Table 7 presents the problems in the use of ICT. The forty teachers were provided with checklist on the probable problems encountered by the teachers in ICT use. The top most problem is the availability of the resources. All teachers shared that they were trained in the use of ICT however; they cannot practice it in actual due to no available ICT facilities provided. There are available resources but not enough to be used simultaneously by all teachers. The second most problem is the ICT ratio. This is related to the number one problem on availability. As much as the teachers would like to use ICT, but the lacking resources hampers their interest and enthusiasm.

Table 7
Problems encountered in the ICT Use

Problems	Rank	No	of
		Teachers	
1. Availability of ICT facilities	1	40	
2. ICT Use Ratio to teachers and pupils' ratio	2	38	
3. Updating of Technological competence	3	16	
4. Lack of Interest in the use of ICT	4	10	
5. Untrained (Lack of training)	5	5	

IV. Conclusion

Generally, the technological competence of the ICT trained teachers is very good but fair on integration and technological understanding. Such result is attributed to the availability of the ICT facilities and problem on lack of resources. However, the performance of teachers was very satisfactory in spite of the lack of ICT facilities. The teachers are still very creative in making successful instructional plans.

V. Recommendations

Anchored on the findings of the study, the following are recommended:

- 1. The proposed training program should be implemented;
- 2. On the aspect of technical skills on ICT, the following needs improvements:
 - 2.1 Using and installing a variety of software.
 - 2.2 Installing computer peripherals.
 - 2.3 Creating multimedia presentations using scanners.
 - 2.4 Creating multimedia presentations using digital cameras.
 - 2.5 Creating multimedia presentations using video cameras.
 - 2.6 Using computers for making presentations and spreadsheets.
 - 2.7 Website designing and maintenance.
- 3. On the aspect of multi-media application, the following should be improved:

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- 3.1 Networking
- 3.2 Web page creation
- 3.3 Digital imaging
- 4. On the aspect of technological understanding, the following should be improved:
 - 4.1 technology to improve students' writing.
 - 4.2 teaching information literacy skills using resource-based learning.
 - 4.3 teaching information literacy skills using primary sources
 - 4.4 modifying instructional approach.
 - 4.5 assessing student performance.
 - 4.6 individualizing computer instruction.
 - 4.9 using adaptive technologies.
- 5. On the aspect of ICT Integration, the following should be improved:
 - 5.1 Promote cooperative learning in the classroom so that students work together and learn from each other
 - 5.2 Develop classroom activities incorporating challenging activities and assignments that have a real-world application.
 - 5.3 Develop higher order thinking skills that help the students to see positive ways to approach new learning challenges.
 - 5.4. Develops strategic learners who are capable to transfer knowledge to solve problems creatively.
 - 5.5 Help students develop their creative thinking skills.
 - 5.6 Help students make their own presentation in delivering their reports or activities.
 - 5.7 Help students to develop their critical thinking.
 - 5.8 Provide students with more challenging activities/tasks.
 - 5.9. Have increased students' interest in the subject matter.
 - 5.10 Utilize ICT as an aid in making learning fun and interesting
 - 6. Acquisition and utilization of the following should be provided and improved:
 - 6.1 Video conferencing Equipment
 - 6.2 fax machine
 - 6.3 digital photographs



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AUTHOR'S PROFILE



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She is currently a Master Teacher II at Libertad Elementary School, Isabel District handling Grade Five class. She is assigned as a School Math Coordinator and as a SPG Adviser.

She bagged 1st Place winner in the District Oral Reading Test for the School Year 2019-2020. She is also awarded as outstanding SPG Adviser and outstanding Master Teacher in Isabel 2 District for the School Year 2019-2020 during the District Call of Honor (Pasidungog) on September 19, 2020.

She is happily married to Enrique A. Macion and had a child named Darlene Dreech Pepito Macion.