

In-Service Teachers' Extent Of Exposure And Level Of Skills On The Use Of Technology: An Exploratory Study

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Abstract

Students are better prepared to participate in the global economy when technology is integrated into academic curricula. They are also more prepared to give solutions to problems in their local, national, and international communities, among other benefits. This study was created with the goal of determining the level of preparedness of in-service teachers in terms of adopting technology into their classes. The participants were in-service teachers. The sequential explanatory mixed method research design was used in this investigation. This methodology was appropriate because the study assessed the extent to which in-service teachers had been exposed to technology and their level of proficiency in its use. As a result of their high degree of exposure to technology at home, participants demonstrate a comprehensive understanding and familiarity with the technologies, particularly in terms of their knowledge and understanding of the specific functions and characteristics of the various media types. This conclusion suggests that participants have a general awareness of how to use software tools in the classroom, which is consistent with previous findings. Consequently, they use digital tools to generate reports, compute grades, and create instructional materials, which allows them to present lessons and assess students more efficiently.

Keyword: technology, exposure, skills, in-service teachers,

Introduction

In recent decades, technological integration has gained in importance as a means of facilitating communication between professors and their pupils. Its presence in the classroom has been established for some time now, as teachers use computers and television to lure students to acquire and comprehend knowledge and skills. Later on, the adaptability of technology enabled teachers and students to extend learning and cooperation beyond the confines of traditional classrooms. In recent years, such innovations have played an increasingly crucial role in encouraging students to become active global citizens (Duke et al., 2013). Integrating technology into academic curricula prepares students to compete in the global economy and develops them to provide answers to problems in their local, national, and

international communities, among other things (Hicks & Turner, 2013).

The most frequently mentioned reason for the lack of complete implementation of technology is a lack of proper professional development and training for instructors (Ertmer et al., 2012). According to the National Education Association in the United States (2008), teachers appeared to have increased confidence in integrating technology into classroom activities; nevertheless, because technology is constantly improving, teachers must remain up to date on these developments. To solve this significant hurdle to technology application within the educational setting, new training programs must be developed. TPD for teachers on ICT integration in the Philippines is still restricted to basic digital literacy, according to the National Council of

Teachers (Sasing et.al, 2008). TPACK framework emphasizes the need of having proper content and pedagogy when integrating technology into a learning environment. This framework is vital because the technology that is being introduced must communicate the content and support the manner in which knowledge is transmitted in order to improve students' educational experiences (Kurt et.al, 2012).

In its capacity as a Teacher Education Institution, the Cagayan State University at Piat (CSU-Piat) serves its feeder municipalities in the Itawes District through its vision and mission to achieve global prominence in technological and professional fields and to produce globally competent graduates through excellent instruction, responsive public service, and community engagement. It is anticipated that the incorporation of technology into pedagogical practices and material distribution will enable the facilitation of teaching and learning processes, hence making them more efficient and effective. Teaching with technology is defined as the use of technological resources to support pedagogical objectives in order to assist teachers become more effective in their teaching.

The purpose of this study is to determine the level of preparedness of pre-service teachers and in-service teachers in terms of incorporating technology into their classrooms. The outcomes of this study would serve as a baseline for the development of a training program to improve the teaching-learning process through the use of technology integration in the classroom setting.

Table 1. Frequency and Percentage Distribution of Participants of the Study

School	Frequency	Percentage (%)
Piat National High School	32	17.02
Piat Academy	21	11.17
Itawes National High School	42	22.34
Lyceum of Tuao	15	7.98
Sto. Nino National High School	45	23.94
Veridiano Academy	13	6.91
Mauanan National High School	10	5.32
Saint Francis Academy	10	5.32
Total	188	100.00

188 in-service teachers were covered in the study. These participants of the study were

Statement of the Problem

This study aimed to assess the extent of exposure of in-service teachers to technology and level of skills on the technology use. The results of the investigation served as a basis in the development of a training program to promote technology integration in teaching for in-service teachers.

Specifically, it sought to answer the following questions:

1. What is the extent of exposure of participants to technology?
 - 2.1 at home; and
 - 2.2 at school?
2. What is the participants' level of skills on the use of technology?

Research Methods

Research Design

The study utilized the sequential explanatory mixed method research design. This design is appropriate as the study assessed the in-service teachers' the extent of technology exposure and level of skills on technology use.

Participants of the Study

The participants of the study were in-service teachers from the different (4) public schools and (4) private schools in the Itawes District of Cagayan. Total enumeration was employed in the study.

Table 1 presents the number of in-service teachers who served as participants in the study.

asked to rate their extent of exposure to technology, level of skills on technology use and

the extent of technology integration in teaching. The result of the survey served as a basis to develop a training program for in-service teachers.

Instrumentation

The survey instrument used in this study was adapted and modified from Technology Integration Knowledge for Teachers Questionnaire by Hosseini et al. (2012).

For reliability and validity, the constructed questionnaire was presented for criticism to the adviser, to his colleagues in the academe, and the members of the Ethics and Review Committee (ERC). The face and content validation of the questionnaire were studied, validated, evaluated, and approved by the academic experts.

The questionnaire method was used to obtain the necessary information of the participants. The questionnaire covered the concepts of technologies, pedagogies, and content that were discussed in the literature review. The questionnaire comprised six (6) sections.

Part II appraised the extent of exposure of the participants to technology at home and school.

Part III evaluated the participants’ level of skills on the use of technology in terms of the following: software and hardware tools, computer applications, and basic computer operations.

Data Gathering Procedures

This study followed a systematic approach in gathering the data:

1. Secured approval from the Ethics Review Committee (ERC). This was done to ensure that the study meets the ethical standards of the university. Keeping the confidentiality of the participants’

information was observed by the researcher.

2. Secured permission from the Vice President of Academics and Dean of the Graduate School for the conduct of the study. Before the distribution of the questionnaires, the researcher sent a letter to the Schools Division Superintendent and School Directors and Principals of the concerned private and public secondary schools sought permission to conduct the study.
3. Secured Informed Consent from participants. The researcher oriented the participants on the objectives of the study and sought their consent for their participation in the study.
4. Administration of the questionnaires. After the approval of the letter of permission, and securing of informed consent, the researcher personally administered the questionnaire to the target participants.
5. Organization of the Data. After the retrieval and collection of all the questionnaires, the researcher tallied and coded the answers of all the participants and the collated data subjected to data processing.

Data Analysis

The results of the data were analyzed using the following data analysis tools:

Weighted Mean. This tool was utilized to present the participants’ extent of technology exposure and level of skills on technology use. The means were interpreted using the given scale.

Table 2. Scale of Interpretation for the Means

Item Range	Extent of Exposure and Technology Integration	Level of Skills on Technology Integration
3.25-4.00	Very Great Extent	Very High
2.50-3.24	Great Extent	High
1.75-2.49	Moderate Extent	Low
1.00-1.74	Very Low Extent	Very Low

Chi-Square. This was used to test the significant difference in the participants' extent of technology exposure, level of skills on technology use, level of technological pedagogical and content knowledge, extent of technology integration in teaching, attitudes towards technology integration when they are grouped according to profile variables. This statistical tool was used to determine the significant difference between participants' level of knowledge on technology integration in teaching and each of the following:

1. extent of exposure to technology
2. level of skills on technology use

Ethical Considerations

The following ethical considerations were the APA 7th edition documentation style.

Research participants were asked to sign an informed consent form to be officially considered as participants. They were treated with respect for their dignity. They were also briefed about the aim of the study and were allowed to share only what they wanted to relate.

They were also given space to think. They were also informed that they could have a choice of not continuing with the interview anytime if they are not anymore interested or comfortable.

Besides, only those who would like to give the full consent prior to the study were included. They were also ensured of the protection of their privacy and the adequate level of confidentiality of the research data.

Anonymity of individuals and organizations participating in the research were ensured. In the interpretation of the primary data, the researcher avoided any bias or misleading information.

The works of other authors used in any part of the dissertation are acknowledged using the APA 7th edition documentation style.

Discussion of Findings and Results

Participants' Extent of Exposure to Technology

Table 1. Participants' Assessment on the Extent of Exposure to Technology at Home

Indicators	Mean	Descriptive Interpretation
1. Desktop computer	2.61	Great Extent
2. iPad	2.51	Great Extent
3. Mobile phone	3.40	Very Great Extent
4. Laptop	3.53	Very Great Extent
5. Tablet	2.55	Great Extent
6. Scanner	2.50	Great Extent
7. Television	3.29	Very Great Extent
8. Printer	2.86	Great Extent
9. Wi-Fi modem	2.37	Great Extent
Categorical Mean	2.83	Great Extent

Table 1 shows the participants' perceptions of their level of exposure to technology at home, as expressed by the participants. Participants' exposure to mobile phones, laptops, and televisions in their respective houses is reflected in the table, while their exposure to desktop computers, iPads, tablets, scanners, printers, and Wi-Fi modems is reflected in the table as a "great extent" in their respective homes. In general, the participants had a high level of exposure to technology at their place of residence.

The results show that the participants have been exposed to a significant amount of technology at home, according to the findings. The high level of exposure that participants have to technology at home is an indication of their extensive knowledge and familiarity with the technologies, particularly with regard to the specific functions and features of various media types. Furthermore, exposure to technology at home is important for teachers to become more productive in their classrooms (Waldrip, 2016), as this is a medium

via which they can obtain information or tools that they will require throughout the preparation and implementation of their lesson.

Table 2. Participants' Assessment on the Extent of Exposure to Technology at School

Indicators	Mean	Descriptive Interpretation
1. Desktop computer	2.71	Great Extent
2. iPad	2.50	Great Extent
3. Mobile phone	3.29	Very Great Extent
4. Laptop	3.31	Very Great Extent
5. Tablet	2.57	Great Extent
6. Scanner	2.53	Great Extent
7. Television	2.73	Great Extent
8. Printer	3.05	Great Extent
9. Wi-Fi modem	2.57	Great Extent
Categorical Mean	2.80	Great Extent

Table 2 shows the participants' perceptions of their level of exposure to technology at school, as expressed by the participants. According to the data in the table, the participants have a "very great extent" of exposure to the use of mobile phones and laptops at their respective schools, while having a "great extent" of exposure to the use of desktop computers, iPads, tablets, scanners, televisions, printers, and Wi-Fi modems at their respective schools.

These findings indicate that the participants have received an acceptable amount of exposure to the usage of technology in the classroom. It is usual for teachers to employ digital resources such as mobile phones and laptop computers to enhance interactive learning activities and

effective dialogues in their classrooms (Scwab, 2016).

This indicates that mobile phones and laptops are frequently used as teaching aids for lesson presentations, the creation of teaching materials, the preparation of lessons, the assessment of learning outcomes, and other instructional tasks, as indicated by their extensive exposure to technology at school (Scwab, 2016). According to Islam et al. (2019), the use of technology in the classroom increases teacher competency in pedagogical as well as subject areas, and it aids learners in learning more effectively through the use of technological tools.

Participants' Level of Skills on Technology Use Software Tools

Table 3. Level of Skills on the Use of Software

Indicators	Mean	Descriptive Interpretation
Microsoft Office Word	3.30	Very High
Microsoft PowerPoint	3.27	Very High

Microsoft excel	3.22	High
Google Search	3.25	Very High
Spreadsheet	2.98	High
Abode Reader	2.70	High
Moviemaker	2.51	High
Video Converter	2.50	High
Audio Recording	2.63	High
Microsoft Publisher	2.72	High
Categorical Mean	2.89	High

Table 3 depicts the participants' degree of expertise in the use of software tools in the classroom, as measured by the participants. Teachers have "extremely high" levels of proficiency in the usage of Microsoft Office Word, Microsoft PowerPoint, and Google Search, according to the survey. Their proficiency in the use of the other gadgets indicated in the table is rated as "high." The overall mean of 2.89 indicates that the participants' degree of proficiency in the usage of the various devices is generally high.

Teachers' usage of Microsoft applications such as Word, PowerPoint, and Google Search, demonstrating that they have the technical capabilities and skills to analyze raw material and relevant knowledge in order to build new creative teaching ways and foster a higher level of instruction (Scwab, 2016).

This finding implies that participants have a general understanding of how to use software tools in the classroom. As a result, they employ software tools to make reports, compute grades, and develop instructional materials, which allows

them to present lessons and assess students more effectively. The use of technology for instructional purposes has the potential to have extensive, beneficial effects on students since diverse technologies provide relevant and engaging chances for meaningful learning experiences (Shell, 2005). Students are more actively involved in their learning when teachers employ technology tools such as PowerPoint presentations and word processing in the exploratory/inquiry method because they interact with their preferred medium of learning (Anthony, 2012).

Moreover, while preparing materials for instruction, assignments, and assessments of learners, teachers rely heavily on the Internet, word processing software, and search engines. Furthermore, they provide the subject matter's contents using PowerPoint presentations (Gulbahar, 2007; Yildirim, 2007; Goktas et al., 2009; Cakir, 2012; Unal & Ozturk, 2012; Kurt, 2013).

Hardware Tools

Table 4. Level of Skills on the Use of Hardware

Indicators	Mean	Descriptive Interpretation
Personal computer	2.77	High
LCD projector	2.78	High
Speaker	2.97	High
Router	2.53	High
LCD TV	2.84	High
Scanner and printer	2.92	High
Laptop	3.34	Very High
External drive	2.86	High
Flash drive	3.09	High

Internet installation	2.93	High
Categorical Mean	2.86	High

As demonstrated in Table 4, the participants possess a "very high" level of proficiency in the use of laptop computers, as well as a "high" level of proficiency in the use of other hardware tools. Laptop computers are lightweight, portable devices that may be utilized in the classroom with ease. Laptops are equipped with a variety of application tools, such as Microsoft Word, Microsoft PowerPoint, and Microsoft Excel, that can assist teachers in the delivery of lessons, the creation of reports, and other instructional duties. The portability of laptops is a result of the extremely high degree of expertise that teachers have in the usage of computers.

Teacher's high level of proficiency in using instructional-assisted teaching tools such as computers, laptops, and tablets were considered appropriate tools in integrating technology into their teaching process in order to make their lesson presentation more creative, meaningful, and interactive, according to Lei (2009). In addition, the use of laptops can improve the quality of instruction, improve students' skills and achievement, and teachers' technology skills can significantly improve with increased access to technology (Lei and Zhao, 2008; Lowther, Ross, and Morrison, 2003; Penuel, 2006; Zucker, 2004; Gulek and Demirtas, 2005; Zucker & Hug, 2008; Dawson et al., 2008).

Computer Applications

Table 5. Level of Skills on the Use of Computer Applications

Indicators	Mean	Descriptive Interpretation
Word processing applications	3.04	High
Spreadsheet applications	2.98	High
PowerPoint applications	3.09	High
Multimedia applications	2.85	High
Web search applications	3.02	High
Communication applications	2.86	High
Video applications	2.75	High
Audio applications	2.61	High
Games applications	2.71	High
Google meet applications	2.62	High
Graphic applications	2.56	High
MS Teams applications	2.44	Low
Edmodo applications	2.48	Low
Schoology applications	2.45	Low
Quipper applications	2.46	Low
Categorical Mean	2.75	High

The level of computer application proficiency demonstrated by the participants is shown in Table 6. As revealed by the data, participants have a "high" level of skill in the use of word processing, spreadsheets, PowerPoint, multimedia, web search, communication applications, video and audio applications, games

applications, Google Meet, and graphic applications, while they have a "low" level of skill in the use of Microsoft Teams, Edmodo, Schoology, and Quipper applications, among other applications. It is worth noting that the participants' use of PowerPoint and word processing apps received the highest ratings, with

mean scores of 3.09 and 3.04, respectively, among the participants. The findings of Reyes (2019) confirm that teachers have a high degree of proficiency in the Microsoft Word and PowerPoint applications.

A high level of proficiency in the use of computer applications is demonstrated by the majority of participants. In light of these findings, it appears that teachers are adept at using computer applications in the preparation and implementation of their lessons.

Computer Operations

Table 6 Level of Skills on the Use of Computer Operations

Indicators	Mean	Descriptive Interpretation
1.Turning on and shutting down a computer/laptop.	3.49	Very High
2.Starting and exiting a computer program.	3.37	Very High
3.Performing file management including deleting, saving, and renaming files	3.39	Very High
4.Using the “search” command to locate the file	3.33	Very High
5.Moving, removing files from a hard drive to a USB	3.35	Very High
6.Printing a document using a printer.	3.45	Very High
7.Creating a basic word document.	3.53	Very High
8.Creating a basic PowerPoint presentation.	3.56	Very High
9.Changing font and font size in a document.	3.54	Very High
10.Sending and receiving attachments through e-mailing messages.	3.30	Very High
Categorical Mean	3.43	Very High

Table 7 depicts the participants' level of proficiency in various computer operations, as indicated by their responses. According to the data, all of the participants rated their level of computer operating skills as "very high." These findings suggest that participants possess the necessary level of proficiency in manipulating and executing fundamental commands on computer applications, which allows them to use the computer to complete their teaching-related duties.

The findings of the study, which indicate that teachers possess extremely high levels of

proficiency in the use of various computer operations, are validated by Reyes (2019). He asserted that teachers are capable of dealing with a wide range of computer operations, from turning on the computer to shutting it down, as well as managing the computer to maximize its functions, such as opening and closing a program, file management, and file search. Additionally, the computer activities such as producing, storing, printing, editing, and transmitting of files are controlled by the skilled participants.

Summary Table on the Level of Skills on Technology Use in Teaching

Indicators	Mean	Descriptive Interpretation
Software Tools	2.89	High
Hardware Tools	2.86	High
Computer Applications	2.75	High
Computer Operations	3.43	Very High

This table emphasizes the summary table that shows the participants' level of proficiency in the use of technology in the classroom. It is evident from the table that the participants possess "high" levels of proficiency in the use of software tools, hardware tools, and computer-based applications. It is noteworthy that the participants' "very high" degree of proficiency in computer operations is on display. This finding implies that instructors are capable of manipulating, operating, and executing computer applications, as well as utilizing technology tools to assist them in their teaching-related responsibilities.

Conclusions and Recommendations

1. Proper planning and implementation of technology tools, materials in classrooms such as poor infrastructure, inadequate use of technology, lack of sufficient technological materials and tools, effective professional development programs.
2. Introduce the use of technology among in-service teachers to learn and apply on how these new technologies will emerge to their professional development.
3. Equip the in-service teachers with the knowledge and skills needed to evaluate teaching and learning outcomes associate with the use of technological tools and materials that they used in their teaching.
4. Ensure that in-service teachers have the requisite knowledge and skills to continue the use of technology throughout their professional careers.
5. In-service teachers have enough exposure and skills on the use of technological tools in teaching
6. Needs to re-train in-service teachers and develop more skills to ensure quality of instruction and ensure to achieve teaching and learning outcomes.

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