Impediments, Challenges, Needs and Attitudes Towards Technology Utilization: an Inquiry

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Abstract

Flipped learning, which is a modern pedagogy, is one of the most recent breakthroughs in higher education. In light of the rapid expansion of information technology and technological development, educators have underlined the significance of revamping the educational system in order to better prepare 21st century learners for the problems that would face them in this new century. Educationalists stressed the importance of matching their pedagogies to the current time period. The research investigates the barriers, challenges, needs, and attitudes of teachers concerning the use of technology in the classroom. The sequential explanatory mixed method research design adopted in this investigation is equipped with the results of this study. It is revealed by the findings that instructors' attitudes regarding integrating technology into the classroom are "favorable." The teachers have extremely positive attitudes toward the use of technology in the classroom, which implies that they have a favorable disposition toward the integration of technology into the teaching and learning process as a whole. Master teacher-participants have more positive attitudes toward incorporating technology into education than classroom teachers and head teacher-participants, according to the overall mean percentage of participants. It demonstrates that master teachers have a favorable attitude toward and confidence in their ability to employ technology-assisted instructional tools to facilitate the delivery of the lesson to students.

Keyword: technology utilization, impediments, needs. attitudes, challenges, sequential explanatory

Introduction

In light of the rapid expansion of information technology and technological development, educators have underlined the significance of revamping the educational system in order to better prepare 21st century learners for the problems that would face them in this new century. Educationalists stressed the importance of matching their pedagogies to the current time period. As a result, pedagogies must incorporate approaches that promote higher-order thinking skills, metacognitive skills, and collaborative learning to promote deeper learning. The availability of digital technology had supplied both incentives and ease in order to achieve the pedagogies established by twenty-first-century educational leaders. Kivunja (2015) proposed that institutions of higher education embrace social media technology as effective pedagogies to support active 21st-century learning, teaching, and assessment since it provides chances for experiential learning and learning through collaboration. Experiential

learning, according to the findings of this study, is an extremely effective method of cognitive processing since it involves the reciprocal exchange of speech between students in order to create a deeper comprehension of technology pedagogical subject knowledge. Noel (2015), on the other hand, advocated for the use of technology in education to establish a constructivist learning environment that encourages students to participate in, reflect on, and collaborate with one another. The learning management system (LMS) was the most popular media, according to Asiksoy and Ozdamli (2017), who also revealed that the machine was the most often used instrument. As an added bonus, according to Afify (2018), digital idea mapping is a beneficial tool in the support of constructivist learning theory. Scott (2015) asserted that the existing set curriculum and delivery structure prevents students from benefiting from tailored learning opportunities. The researcher asserted that individualized learning should be implemented in 21st-century educational settings. As a result, the system may cater to the needs of individual students, which can be accomplished through flexible curriculum as well as learning and teaching possibilities (Deed et al., 2014; Scott, 2015; Waldrip, Yu, & Prain, 2016). Flipped learning, which is a modern pedagogy, is one of the most recent breakthroughs in higher education. In a flipped classroom, lectures were previewed as students participated in more student-centered activities and applied information throughout the classroom during the day (Kyung Hye, Kwi Hwa, & Su Jin, 2018; Sletten, 2017; Zipp, Maher & Olson, 2017). Lectures can be accessed at any time, whether at home or away from the classroom, under this form of education. The usage of developing technology and software is also incorporated into the process. A mixed response had been received to the flipped learning technique, with some academic professionals expressing success and others citing difficulties. Further research was being conducted in this area to determine whether reversed learning could be used at higher education institutions.

Teachers were required to incorporate digital technology into their curricula and activities as a result of the widespread adoption of digital technology in society. In this so, educational scholars brought together three important domains in efficient teaching-learning processes: technology, pedagogy, and contextual knowledge. The TPACK, or Technological, Pedagogical, and Content Knowledge, is formed through the integration and interaction of these areas. The similarities between the three identified domains result in the identification of four key components of the study that are included in this framework in addition to the three previously recognized domains. Among these are Technological Knowledge (TK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Technological Pedagogical and Content Knowledge (TPCK), and Technological Pedagogical and Content Knowledge (TPCK) (TPACK). For the purpose of determining how effective TPACK is in teaching, the components are used as variables. Instructors' TPACK efficiency was found to be influenced most by TPK and TCK in certain studies, while other studies revealed that some variables had no significant impact on teachers' TPACK efficiency. Teacher ideas and views about technology, as well as their confidence in their ability to make full use of it, were found to be important determinants in determining the TPACK value of their students. According to several research, persons who have faith in the capabilities of technology are more likely to use technology efficiently and appropriately

than others. Other research, on the other hand, found that even if teachers have a good attitude toward technology, their usage of technology remains stifled. In the twenty-first century pedagogy of instructors, technology is unquestionably an important component. Being components of the TPACK framework, the study is interested in the factors that influence these components. The studies given indicate that the usage of technology is a complicated process that is influenced by a wide range of factors. The reason for this could be due to access and support limitations, or to insufficient teacher preparation. Individual technology use is also influenced by the opinion and confidence of teachers, which is a significant predictor of student technology use. The use of technology by teachers has also been shown to be affected by factors such as gender, professional seniority, and individual innovativeness.

Trainings to identify and address the reasons that contributed to the difference in teacher competency in technology integration are offered as a means of closing the gap between those who have developed competencies in technology integration and those who have not. Multiple studies found that after taking a course or participating in a training program, instructors' attitudes toward technology and their usage of it improved dramatically. However, while pre-service teachers have been provided with courses that teach them how to integrate technology into the teaching-learning process, researchers have pointed out that in-service teachers must also be provided with programs or trainings that focus on professional development because educational and technological changes are unavoidable. The availability of data or studies that may be used to develop training programs for rural teachers is limited, which makes it difficult to build effective training programs. In accordance with the findings of certain researchers, rural areas face unique problems; therefore, studies tailored to their needs must be carried out to identify the essential aspects that influence instructors' ability to incorporate technology into their subject matter and pedagogy.

Statement of the Problem

This study aimed to assess and conduct a pairwise correlation on the technological pedagogical content knowledge, the extent of exposure of in-service teachers to technology, the extent of technology integration to teaching, and their knowledge, skills, and attitudes towards technology use in teaching. 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 attitude of participants towards the use of technology?
2. Is there a significant difference on the participants’ attitude on technology use when grouped according to profile variables?
3. What are the problems, challenges, and needs of the participants on technology utilization?

4. What do the participants suggest to improve the extent of technology integration in teaching?
5. What training program can be designed to enhance technology utilization among in-service teachers?

Hypotheses

Based on the problems raised in this study, the following hypotheses were tested at a 0.05 level of significance:

1. There is no significant difference on the participants' attitude on technology use in teaching when they are grouped according to profile variables.

Research Methodology

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. Those who participated in the study were in-service teachers from four distinct public schools and four separate private schools in the Itawes District of Cagayan province. The study made use of a technique known as total enumeration. The study included 188 in-service instructors who were asked to participate. In the survey, the participants were asked to rate their level of exposure to technology, their level of proficiency in technology use, and the extent to which technology was integrated into their classrooms. The results of the poll were used to construct a training curriculum for in-service teachers, which was based on the findings. Technology Integration Knowledge for Teachers Questionnaire by Hosseini et al. was utilized as the basis for the survey instrument in this study, which was customized and adjusted (2012). The questionnaire that was prepared was offered for criticism to the adviser, to his colleagues in academia, and to the members of the Ethics and Review Committee in order to determine its reliability and validity (ERC). In this study, the academic specialists looked at the face and content validation of the questionnaire. They validated, analyzed, and approved the results. The questionnaire method was utilized to gather the information from the participants that was needed for the study. It addressed the ideas of technology, pedagogies, and content that were explored in the literature study and was administered via a survey. There were six (6) sections in total to the questionnaire. The following data analysis tools were used to analyze the findings of the data collection: The Weighted Average. This tool was used to demonstrate to the participants their level of technology exposure as well as their level of technological proficiency. The means were interpreted in accordance with the scale that was provided. Chi-Square. In this study, we looked at whether there was a statistically significant difference between the participants' extent of technology exposure, level of skills in technology use, level of technological pedagogical and content knowledge, extent of technology integration in teaching, and attitudes toward technology integration when they were divided into groups based on their profile characteristics. To evaluate whether there was a statistically significant difference between participants' levels of knowledge on technology integration in teaching and each of

the following variables, this statistical method was employed. Participants in the study were required to complete an informed consent form in order to be considered for formal participation. They were handled with dignity and with consideration for their feelings and opinions. Also informed of the study's purpose, they were only permitted to share information that they wished to share with the rest of the study participants. Also provided was time for reflection. They were also advised that they might opt out of the interview at any point if they were no longer interested or comfortable with it. Furthermore, only those who were willing to offer their informed consent in its entirety prior to participating in the study were invited to participate. They were also assured that their personal information would be protected, as well as that the study data would be kept confidential to a sufficient level. Everyone who took part in the study was kept anonymous, as were the organizations and individuals that took part in it. There were no biases or misleading information in the interpretation of the original data because the researcher did not use secondary data.

Other authors' works that are cited in any portion of the dissertation are acknowledged in accordance with the APA 7th edition documentation format.

Discussion of Findings and Results

Participants' Attitudes Towards Technology Integration

Table 1. Attitudes Towards Technology Integration in Teaching

Indicators	Mean	Descriptive Interpretation
1. The use of technology tools in the classroom makes my teaching more satisfying.	3.14	Favorable
2. I am interested in working with technological tools.	3.16	Favorable
3. I feel that I get more accomplished because of technological tools.	3.14	Favorable
4. I feel it is important to be able to access the internet anytime I want.	3.16	Favorable
5. I am confident that I have the necessary skills to use instructional technology for instruction.	3.12	Favorable
6. I develop systematic grading procedures by using technological assessment tools.	3.14	Favorable
7. Using technology in the classroom will increase my effectiveness as a pre-service teacher.	3.08	Favorable
8. Using technology in the classroom will make it easier for me to teach.	3.07	Favorable
9. I assess student output using technological assessment tools.	3.13	Favorable

10. I feel more accomplished when I effectively use technology in the classroom.	3.11	Favorable Favorable
11. Integrating technology will allow me to increase the quality of my work and my sense of accomplishment in my teaching.	3.08	Favorable
12. I think it is important to keep up with the latest trends in technology and assessment.	3.12	Favorable
13. I think that teaching with technology and assessment is important because it motivates my teaching.	3.07	Favorable
14. It is important to have the opportunity to satisfy my curiosity when I discovered new learning with the use of technology in teaching.	3.12	Favorable
Categorical Mean	3.11	Favorable

Data in table illustrates the participants' attitudes towards technology integration. The results reveal that teachers' attitudes towards technology integration in teaching is "favorable". The teachers have highly favorable attitudes on the use of technology in teaching which imply that they have a positive disposition towards technology integration in the teaching and learning process. More specifically, the teachers consider technology as a tool that assists them as they perform their teaching-related tasks. Teachers who possess favorable attitudes towards integrating technology are more driven and motivated in their teaching practices (Albirini, 2016; Al-Zaidiyeen et al, 2010; Cavas et al, 2009).

The result is supported by Dogan's (2012) study which determined that in-service teachers have a positive attitude towards the use of technology in teaching. Also, Ipek et al. (2014) discovered that in-service teachers showed a positive attitude towards the use of technology in their teaching.

Furthermore, teachers also have a positive approach towards the use of new technologies which can accelerate the integration of technology. Teachers believe that the value of technology can lead learners to technology-related activities.

Significant Difference in the Attitudes Towards Technology Integration of Participants When Grouped According to Profile Variables

Table 2. Chi-Square Test Analysis on the Significant Difference in the Participants' Attitudes Towards Technology Integration When They are Grouped According to their Profile Variables

Grouping Variables	χ^2 Value	Df	P-value	Decision at ∫=0.05
Age	10.46	12	0.41	Accept Ho
Sex	0.32	2	0.85	Accept Ho
Course/Program	4.40	2	0.11	Accept Ho
Field of Specialization	25.89	18	0.10	Accept Ho
Position/Rank	13.57	4	0.00*	Reject Ho
Highest Educational Attainment	10.07	8	0.26	Accept Ho
School type	2.46	2	0.29	Accept Ho
Years in teaching	10.30	10	0.41	Accept Ho
Trainings related to technology	15.95	12	0.19	Accept Ho

*Significant level at 0.05

Table 2 presents the Chi-square result on the comparative analysis on the participants' attitudes towards technology integration as categorized according to their profile variables. The following probabilities of 0.41, 0.85, 0.11, 0.10, 0.26, 0.29, 0.41, and 0.19 which is higher than 0.05 level of significance suggest that the null hypothesis is accepted for the following grouping variables: age, sex, course/program, field of specialization, highest educational attainment, school type, years in teaching and technology-related training, respectively. This result means that the participants do not significantly vary in their attitudes towards technology integration in teaching when they are grouped according to the grouping schemes. However, when they are grouped according to position/rank with a probability value of 0.00, a significant difference exists. Furthermore, the participants vary in terms of their attitudes towards technology integration in teaching when they are grouped according to position/rank.

Table 3. Contingency Table on the Chi-Square Test Results on the Significant Difference in the Participants' Attitudes Towards Technology Integration in Teaching When Grouped According to Position/Rank

Grouping Variables / Attitudes Towards Technology Integration	Position/Rank			χ2 Value	df	PV	Decision at ∫=0.05
	Classroom Teacher	Master Teacher	Head Teacher				
Strongly Favorable	34 (19.54)	7 (63.64					

		)		13.57	4	0.00	Reject Ho
Favorable	127 (72.99)	3 (27.27)					
Moderately Favorable	13 (7.47)	1 (9.09)	3 (100.00)				
Unfavorable							
Total	174	11	3				
Mean	3.12	3.54	2.00				

In terms of the significant difference in the attitudes towards technology integration in teaching of participants when they are grouped according to position/rank. The obtained probability value in the chi-square test reveals that there is a significant difference on the attitudes of the participants towards technology integration in teaching. As shown by the percentages in table 37, for the classroom teacher-participants, most or 19.54% have "strongly favorable" attitudes towards technology integration, majority or 72.99% have "favorable" attitudes, followed by 14 or 7.47% whose attitudes towards technology integration is "moderately favorable." For master teacher-participants, majority or 63.64% have "strongly favorable" attitudes on technology integration, 3 or 27.27% have "favorable" attitudes, followed by only 1 or 9.09% whose attitude is "moderately favorable." Lastly, all the head teacher-participants have a "moderately favorable" attitudes towards technology integration in teaching.

The overall mean percentage shows that the master teacher-participants have favorable attitudes in integrating technology in teaching than classroom teachers and head teacher-participants. It indicates that master teachers have the positive disposition and confidence to use technology-aided instructional materials to facilitate the delivery of the lesson.

In a study conducted by Rana (2012) she ascertained that there is a significant difference in the participants' attitudes towards technology integration when grouped according to their teaching position/ranks. Teachers have different performing tasks, responsibilities inside the classroom, thus, differ in their attitudes towards technology integration.

Conclusion and Recommendation

Effective professional development programs, proper design and implementation of technology tools and materials in classrooms, such as bad infrastructure, insufficient use of technology, a lack of appropriate technological materials and tools, and insufficient technological materials and resources Technology should be introduced to in-service teachers so that they can study and apply the new technologies that will be introduced to

them in the future to further their professional growth. Preparation of in-service teachers for evaluating the teaching and learning outcomes associated with the use of technological tools and resources in their classrooms. Maintaining in-service teachers' knowledge and skills is essential to ensuring that they can continue to use technology throughout their professional careers. In-service teachers have received sufficient exposure to and training in the use of technology tools in the classroom. In order to assure the quality of instruction and the achievement of teaching and learning outcomes, it is necessary to retrain in-service teachers and develop additional abilities.

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