Research Article

Technopedagogical Competence of Faculty Members of the University of Eastern Philippines

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Abstract

One of the most stressful tasks of today's classroom teachers is how to effectively integrate technology in meeting 21st century demands. This requires not only competence in ICT but also updated technologies to be used and a positive attitude towards this endeavor. This study aimed to assess the level of technopedagogical competence of the 79 faculty members of the University of Eastern Philippines and to identify their attitudes toward teaching with a computer. A descriptive- correlational method supplemented by interview was employed to determine specifically the profile of the respondents in terms of sex, age, number of trainings relevant to computer/ICT, ownership of computer/laptop, and attitude towards teaching with computers. The sample respondents were identified using the Slovin Formula employing stratified random sampling. Frequency counts, percentages, T-test: Two-sample, ANOVA single factor, and multiple regressions were used to measure the data gathered. Results showed that the majority of the respondents are in the Middle Ages from 40 to 50 years old, mostly female, and owned computer/laptop, but don't have proper training related to Computer/ICT. The Respondents indicated a favorable attitude towards ICT and showed high technopedagogical competence. Among the different variables in the profile, age and number of trainings displayed a significant relationship with the technopedadogical competence. Likewise, the same variables indicated a significantly different means in their technological competence.

Keywords: technopedagogical competence, technology skills, attitude towards ICT, 21st century skill

Introduction

The task of educating students with the use of technology seems to be one of the most taxing responsibilities of today's teachers. As teachers are the most important influence in classroom learning, the teachers play an invaluable role in ensuring that technology is being integrated into the pedagogy for the learners of the digital age. Learning and teaching with technology are hard, it can be overwhelming, and the field is always changing (Jacobsen, Clifford, and Friesen 2001).

The challenge to help the student learn 21st century skills become bigger as teachers are expected to be trained in computer literacy to be able to train students to do the same skills. Hadden (2004) attests that technology is best learned within the context of application – those activities, projects, and problems that replicate real-life situations are among the most effective approaches for learning technology. Being critical about technology integration is a time-consuming and difficult task for teachers (Beaudin and Hadden, 2004).

There is a growing interest in the integration of technology into the classroom. Technology integration should be defined not simply as a question of access but rather as a tool both for improving educators' professional productivity and promoting students' learning (Hernandez-Ramos, 2005). Although in-service training programmed have contributed to the growing understanding of the potential of technology for the construction of learning, technology integration will only be achieved to the extent educators can link the tool naturally and logically to the normal flow of the school curriculum, a situation that has yet to be fully achieved in educational institutions (Cuban 2001; Mills & Tincher 2003).

Teacher training must be at the heart of any attempt to formally incorporate technological tools into classroom activity. This training should be the basis for serious reflection that will promote the transformation of teaching practices and make a significant contribution to the adoption of technologies by teachers (Guzman & Nussbaumt, 2009). The use of technology in many areas and its rapid development reveal the requirement of national policies to arrange suitably for the preparation of a labor force that is competent to deal with these developments. Societies that are making efforts to become an information society are particularly expected to use technology devices well to access and use information (Simsek, Demir, Bagceci & Kinay, 2013). Teachers using technology effectively and purposefully will raise technologically literate individuals. Therefore, it is inevitable for qualifications that teachers and pre-service teachers will have to change. (Muhammet Ozdemir, 2016).

Leema & Saleem (2017) states that acquiring techno-pedagogical proficiencies will make teaching and learning a pleasurable exercise as it would minimize the pressure on the teacher and enable the students to explore deeper into domains of knowledge.

Methodology

The study utilized the descriptive- correlational research to 79 Faculty members of the University of Eastern Philippines chosen through Slovin's formula and selected randomly from the different colleges. An adapted technopedagogical competence inventory was used to gather the data statistically treated using frequency counts, and percentages for the profile of the respondents, means for their attitudes towards teaching with computers, multiple regression for the test of the relationship between variables, and t-test: two-sample Assuming Unequal Variances and ANOVA Single Factor for the test of difference of the technopedagogical competence among the respondents' profile. The respondents also answered their agreement or disagreement on their attitudes towards teaching with computer/ICT by checking SA for Strongly Agree, A for Agree, U for either agree or disagree, D for Disagree, and SDA for Strongly Disagree. The means of the items and every respondent were computed and categorized into the following:

      4.20 – 5.00   Highly Favorable (HF)
      3.40 – 4.19   Favorable (F)

2.60 – 3.39   Moderately Favorable (MF)

1.80 – 2.59   Less Favorable (LF)

1.00 – 1.79   Not Favorable (NF)

The respondents responded to their technopedagogical competence by checking VHC for Very Highly Competent, HC for Highly Competent, MC for Moderately Competent, LC for Less Competent, and NC for Not Competent. The means of the items and every respondent were computed and interpreted using the following:

4.20 – 5.00   Very Highly Competent

3.40 – 4.19   Highly Competent

2.60 – 3.39   Moderately Competent

1.80 – 2.59   Less Competent

1.00 – 1.79   Not Competent

Results And Discussion

The specific variables used to determine the profile of the 79 faculty members of the university include their sex, number of trainings relevant to computers/ICT, ownership of computers/ICT, and attitudes towards computers. These data are shown in Tables 1 to 4.

Profile of the Respondents

Table 1a shows the sex profile of the 79 faculty respondents from the different colleges of the University of Eastern Philippines. The table indicates that 57 or 72.15 percent are female while 22 or 27.85 percent of them are male. It can be gleaned from the table and evident that there are gender inequalities as female outnumbered the male. This implies that females dominate the male when it comes to the teaching profession as shown in its population in the university.

Table 1a. Sex Profile of the Respondents

SEX	Frequency	%
Male	22	27.85
Female	57	72.15
TOTAL	79	100.00

Table 1b shows the age profile of the 79 respondents from the different colleges of the university. The data revealed that the majority of the respondents belonged to the group whose ages ranged from 41-50 years old constituted 25 or 31.64 percent, 20 or 25.32 percent belonged to 51 years old and above, 22 or 27.85 belonged to 31-40 years of age, and 12 or 15.19 percent belonged to 21-30 years old. The data in Table 2 indicates that people at the age of 31-50 are in the mid-career where the tendency is to continue to seek challenges, want to develop new skills, and benefit from additional experiences that would further develop their competencies.

Table 1b. Age Profile of the Respondents

Age	Frequency	%
21-30	12	15.19

31-40	22	27.85
41-50	25	31.64
51 and above	20	25.32
TOTAL	79	100.00

Technopedagogical competence needs computer skills. One cannot be competent in this field without the proper skills in using and manipulating computers. So, the respondents were asked about the trainings they engaged in relevant to computer/ICT. The data is presented in Table 1c which indicates that 64 or 81.01 percent don't have any training attended related to computer/ICT. Only 9 or 11.39 percent attended only once, 5 or 6.33 percent attended twice, 1 or 1.27 percent attended more than two times.

This further shows that most of the faculty members were not trained to use a computer and how to integrate this into the teaching-learning process. There's a need to hone their capabilities and skills along with the use of computer/ICT to improve their technopedagogical competence. As they affirm in the interview that faculty members must be given a chance to attend seminars/trainings that will help develop their skills in manipulating computers and how to use them in their teaching.

Table 1c. Number of Trainings Attended Related to computer/ICT

No. of trainings related to computer/ICT	Frequency	%
None	64	81.01
1 Training	9	11.39
2 Trainings	5	6.33
3 or more Trainings	1	1.27
Total	79	100.00

Table 1d shows the respondents' ownership of laptops/computers. This displays that the majority of them owned laptops/computers of their own which is 68 out of 79 or 86.07 percent. Few say or only 11 or 13.93 percent say that they don't have a laptop or computer of their own. This supports that though they lack trainings since they owned laptops/computers then they were able to self-develop their computer skills. The fact that they are always exposed to their laptop and they can use it anytime they want, and though they lack proper trainings on the use of a laptop, they still show high technopedagogical competence because they owned laptop/computer.

Table 1d. Ownership of Laptop/computer

Ownership	Frequency	Percentage
With laptop/computer	68	86.07
Without laptop/computer	11	13.93
TOTAL	79	100.00

Several researches have been conducted to find out the teachers' attitude towards the use of computers in their teaching-learning processes. Giray, et al (2017) revealed that the majority of the elementary pre-service teachers of the University of Eastern Philippines have favorable attitudes towards CBI. It is supported by the study of Baker (2011) which showed that teachers have positive attitudes towards computers.

Table 2 reflects the favorable attitude of the faculty members towards computer/ICT which is 31 or 39.24 percent. 20 or 25.32 percent has Highly Favorable Attitude, 21 or 26.58 percent showed moderately favorable attitude; 6 or 7.59 percent is Less Favorable and only 1 or 1.27 percent is Not Favorable attitude. Since the table shows that almost half of the respondents have favorable attitudes, this means that they have a positive disposition towards teaching with computers. This confirmed the study of Giray (2017) and Baker (2011).

Table 2. Attitudes Towards Teaching with Computers

ATTITUDES	Frequency	Percentage
Highly Favorable Attitude	20	25.32
Favorable Attitude	31	39.24
Moderately Favorable Attitude	21	26.58
Less Favorable Attitude	6	7.59
Not Favorable Attitude	1	1.27
TOTAL	**79**	**100.00**

Table 3 presents the attitudes of the respondents towards teaching with computers per item. Generally, the respondents have favorable attitudes. The data reveals that the majority of the items were rated moderately favorable by the respondents.

The three items with the highest means were rated highly favorable attitudes towards teaching with computers as "ICT training is useful for my personal development", "Using ICT has a positive impact on my teaching method", and "I wish to learn more about using ICT in teaching process". This data means that the faculty members of the university recognize the importance and advantages of using a computer in the teaching-learning process and that it helped a lot in delivering the lesson efficiently. They still want to be trained and to develop fully their expertise through trainings as manifested in their answers in the interview. The majority said that they already know how to use or integrate ICT in their teaching but they find it difficult because of lack of facilities. There's limited access to the internet and insufficient ICT facilities.

The bottom three statements with the lowest means showed that the faculty has moderately favorable attitudes towards teaching with computers as "I do not have adequate skills to use ICT"; "I prefer to use traditional teaching method than ICT"; and "Class management is difficult with ICT". This means that the teachers are amendable that they still need enhancement of their computer skills so they prefer to use the traditional way of teaching than using ICT for constant interaction between them and their students. This is also supported by their answer in the interview. Some of them lack the skills and proper trainings of using and integrating ICT in their lessons.

Table 3. Attitudes Towards Teaching with Computer Per Item

Statement	Mean	Interpretation
1. I wish to learn more about using ICT in the teaching process.	4.63	HFA
2. Using ICT has a positive impact on my teaching methods.	4.63	HFA
3. ICT training is useful for my personal development.	4.62	HFA
4. I have to develop my ICT skills to improve my professional capacity.	4.58	HFA
	3.47	FA
5. Using ICT decreases the interaction between the teacher and the	3.42	FA

students.	3.37	MFA
6. Using ICT in class wastes lesson time.	3.33	MFA
7. I do not think there is more to learn about ICT.	3.28	MFA
8. Training programs for ICT are only aligned for beginning	3.22	MFA
teachers	2.96	MFA
9. Class management is difficult with ICT.		
10. I prefer to use the traditional teaching method than ICT.		
11. I do not have adequate skills to use ICT		
GRAND MEAN	**3.77**	**FA**

Level of Technopedagogical Competence

As far as the level of technopedagogical competence of the respondents is concerned, generally, they displayed a highly competent level. Table 4 reveals that among the 79 respondents, 34 or 43.04 percent are highly competent, only 22 or 27.85 percent are very highly competent, 17 or 21.52 percent of the respondents are moderately competent, 5 or 6.33 percent are less competent, and 1 or 1.27 percent is not competent. High competence in technopedagogical skills of the respondents means that even though they lack proper training in ICT since they owned a laptop/computer of their own, they still showed high competence. This confirmed the study of Ozdemir (2016) which states that the TPACK means of the pre-service elementary school and preschool teachers in Turkey were found to be high. The study of Sathiyaraj and Singaravelu (2013) disclose that technopedagogical competence of pre-service elementary mathematics teachers to be midlevel. This study disconfirmed the study of Lee and Kim (2014) which concluded that pre-service teachers were at the lowest level in terms of understanding technology integration.

Table 4. Level of Technopedagogical Competence of the Respondents

Technopedagogical Competence	Frequency	Percentage
Very Highly Competent	22	27.85
Highly Competent	34	43.04
Moderately Competent	17	21.52
Less Competent	5	6.33
Not Competent	1	1.27
TOTAL	79	100.00

Table 5 presents the test of a significant relationship between the profile and the level of Technopedagogical competence of the respondents. The table shows that generally, the profile is significantly related to the level of technopedagogical competence of the respondents with a p-value=0.001 (p<.005). In the light of the results presented in this table, the level of technopedagogical competence of the faculty members of the university is statistically related to their profile and therefore, their competence would depend on their ages and number of trainings attended related to ICT. Additionally, it is seen on the table that among the different profiles of the respondents, the age has a p-value = 0.000 (p<.05) which is highly significant to the level of technopedagogical competence, and the number of trainings attended showed a p-value =0.001 (p<0.05) which is also statistically significant. Furthermore, this implies that the older the respondents the lower are their technopedagogical competence, while the younger the respondents, the higher are their technopedagogical competence. Similarly, the more training attended, the higher are their technological competence.

Table 5. Test of Relationship between the Respondents' Profile and Technopedagogical Competence

Profile	p-value	Interpretation
Sex	0.512	NS
Age	0.000	S
No. of Trainings attended related to ICT	0.001	S
Ownership of Laptop/Computer	0.442	NS
Attitude Towards Teaching with Computer	0.152	NS
	0.001	*S*

As seen from Table 6, the technopedagogical competence of the respondents differs significantly and statistically among ages and the no. of trainings attended related to ICT. The age profile registered a p-value =0.049 (p<0.05) which shows significantly different. This means that the technopedagogical competence of the respondents differs statistically among their ages. In the same manner, the number of trainings attended disclosed a p-value=0.0449 (p<0.05) showing a significant difference. Moreover, the technopedagogical competence of the respondents differ significantly from their trainings, which supports the claim of this study that the more trainings, the higher are their technopedagogical competence, and the less training shows a lower competence. The other profile like sex, ownership of laptop/computer and attitudes towards teaching with a computer are not statistically different. In parallel to this finding, North and Noyes (2002) and Jamieson, Finger, and Albion (2010) concluded that

technopedagogical competencies do not differ depending upon gender. In their study, North and Noyes (2002) have clarified these findings with the equalization of differences in the use of computers as men and women have equal opportunities because of the prevalence of computers in schools. Nevertheless, the study conducted by Erdoğan and Şahin (2010) determined that pre-service elementary mathematics teachers' techno-pedagogical competencies have a significant difference in favor of male teachers.

Table 6. Test of Difference in Technopedagogical Competence Among the Profile

Profile	p-value (Two-tailed)	Interpretation
Sex	0.3973	NS
Age	0.0419	S
No. of Trainings attended related to ICT	0.0449	S
Ownership of Laptop/Computer	0.9793	NS
Attitude Towards Teaching with Computer	0.1388	NS

Conclusıon

The study concluded that despite the high competence of the respondents in their technopedagogical skills, they are still open to further enhancing their competency through trainings. This means that there is a need for the faculty members of the university to be trained in terms of computer use and integrating it into the teaching-learning process. There is a favorable attitude towards teaching with computers which means that the faculty members are willing to learn, to be trained to use, and to integrate computers/ICT in their teaching. Though the respondents reflect a high level of technopedagogical competence, still they need further enhancement of their skills as shown in their willingness to learn more about ICT in the teaching process and their agreement that ICT training is useful for their personal and professional development. As a result, technopedagogical competence can be enhanced through further trainings on ICT use and integration.

Recommendatıon

Based on the findings of the study, the following were recommended. Faculty members who are not yet competent and those who are not yet exposed to trainings in ICT should be the ones to be prioritized in future trainings. Faculty members regardless of age must be encouraged to integrate the use of ICT in teaching, this is very timely as we have shifted into e-learning in which our learning resources utilizes ICT facility to maximize the teaching pedagogy of our teachers in UEP. Another study should be conducted using other variables and to further confirm the result of the study.

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