TECHNOLOGY PROFICIENCY OF TEACHER AND STUDENT LEARNING AND SATISFACTION IN AN ONLINE LEARNING ENVIRONMENT

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Abstract: This study aimed to determine which domain of technology proficiency of teacher best influences student learning and satisfaction in an online learning environment. This study utilized the non-experimental quantitative research design using descriptive technique involving teachers in one District of Davao Occidental Division, Philippines. The study was conducted on the second semester of school year 2021-2022. Research instruments on technology proficiency of teacher best influences student learning and satisfaction in an online learning environment. were used as source of data. Using mean, pearson-r, and regression as statistical tools to treat the data, the study showed the following results: the level of technology proficiency of teachers is very high, the level of student learning and satisfaction in an online learning environment is very high, there is a significance on the relationship between technology proficiency of teachers and student learning and satisfaction in an online learning environment, and domain of technology proficiency of teachers best influences student learning and satisfaction in an online learning environment is Emerging Technologies for Student Learning.

Keywords: Technology Proficiency of Teachers, Student Learning and Satisfaction in an Online Learning Environment, Educational Management, Quantitative Research, Philippines

1. Introduction

As the students transitioned to online learning, they have experienced various adjustments in terms of internet connectivity, setup, and interfacing. These have greatly posed a challenge in their journey towards mastery of the competency that the teachers prepared for them. In most cases, the adjustment period may take a little while to some students while others have to look for assistance of their elderly at home (Dini, Jaber & Danahy, 2021).

To navigate online learning with ease among the students, the competence of teachers in terms of technology proficiency has a good merit. When teachers are computer savvy and know numerous activities that can be used in online class, the students will easily find the transition a worthwhile experience. Hence, it is necessary that teachers in online class must have a number of activities prepared at hand to ensure that students' learning can be possible despite the remote learning experience (Christensen, 2021).

Given the premise that students in online class are those who are digital natives, still this is not a guarantee that they achieve a good level of satisfaction in their online learning experience. Among the source of dissatisfaction of these students in the online learning modality is in the interaction. These students admitted that they are limited by the engagement they do in the online class since they find it difficult to adjust in a virtual class (Kew & Tasir, 2021; Wang, Shi, Lu, Lin & Yang, 2021).

Similar to interaction which students have noted as one of the concerns in the online learning is their inability to fully engage in the class discussion. Some students believe that they have limited access to engage with other classmates. Not because that their teachers imposes limitations but there are instances when engagement is necessary, the internet connectivity is weak that it hampers them to exchange ideas or perform collaborative tasks

(Estriegana, Medina-Merodio, Robina-Ramírez & Barchino, 2021).

In the local context, many students have issued in the online class. Their frustration is due mainly to the amount of time they are allowed to stay in front of the computer especially that there is an imposed limitations on time as to how long students can attend online classes. This restriction sometimes adds to frustration that it cuts the momentum of the students' learning. Aside from this, students also noted that some activities seem not to be fairly performed due to the weak internet especially on rainy weather conditions.

The online learning is another alternative for students to attend classes in the absence of face-to-face interaction. It may still be other options among the students even if schools will go back to the old normal learning modalities. In this regard, the researcher is prompted to conduct study on technology proficiency of teachers and student learning and satisfaction in an online learning environment with the aim to document necessary inputs to establish a smooth online learning class and to address the knowledge gap in terms of finding relevant evidence in the local context regarding topic covered in this research as the researcher has rarely come across with the same study on the same topic in the local setting.

Research Objectives

This study aims to find out which domain of technology proficiency of teacher's best influences student learning and satisfaction in an online learning environment. Specifically, this study sought to answer the following objectives:

1. To describe the level of technology proficiency of teachers in terms of:
1.1. Technology Proficiency;
1.2. Professional Development and Instruction, and
1.3. Emerging Technologies for Student Learning.
2. To ascertain the level of student learning and satisfaction in an online learning environment in terms of:
2.1 Course Structure;
2.2 Learner Interaction;
2.3 Student Engagement;
2.4 Instructor Presence;
2.5 Student Satisfaction, and
2.6 Perceived Learning
3. To determine the significant relationship between technology proficiency of teachers and student learning and satisfaction in an online learning environment.
4. To determine which domains of technology proficiency of teacher's best influences student learning and satisfaction in an online learning environment.

Hypothesis

The following hypothesis will be treated at 0.05 level of significance.

1. There no significant relationship between technology proficiency of teachers and student learning and satisfaction in an online learning environment.
2. No domains of technology proficiency of teacher's best influences student learning and satisfaction in an online learning environment.

2. Methods

This study used a correlational approach to conduct non-experimental quantitative research. A major portion of quantitative educational research is non-experimental because many critical factors of interest are uncontrollable. Because non-experimental research is such an important strategy for many researchers, it is necessary to establish a classification system for non-experimental methods that is both highly descriptive of what we do and allows us to communicate effectively in an interdisciplinary research context. Correlational research designs determine the type and extent of a relationship between two naturally occurring variables.

3. Results

Level of Technology Proficiency of Teachers

Presented in Table 1 is the level of *Technology Proficiency of Teachers* with the overall mean of 4.50 with a descriptive equivalent of *very high* indicating that all enumerated indicators were oftentimes manifested. The overall mean was the results obtained from the mean of the indicators for the specific items from the questionnaire intended for this particular indicator which is appended in this study. Among the enumerated indicators, *Emerging Technologies for Student Learning* obtained the highest mean score of 4.18 or high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: use social media tools for instruction in the classroom, teach in a one-to-one environment in which the students have their own device, integrate mobile technologies into my curriculum, find a way to use a smartphone in my classroom for student responses, and use mobile devices to have my students access learning activities.

Table 1. Level of Technology Proficiency of Teachers

Indicator	SD	Mean	Descriptive Level
Technology Proficiency	0.53	4.48	Very High
Professional Development and Instruction	0.60	4.35	Very High
Emerging Technologies for Student Learning	0.52	4.68	Very High
Overall	**0.78**	**4.50**	**Very High**

The indicator *Technology Proficiency* obtained the highest mean of 4.48 with a descriptive rating of very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: send a document as an attachment to an e-mail message, find primary sources of information on the Internet that I can use in my teaching, use the computer to create a slideshow presentation, create a lesson or unit that incorporates subject matter software as an integral part, and use technology to collaborate with other teachers or students who are distant from my classroom.

Professional Development and Instruction obtained a mean score of 4.35 or very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: download and read e-books, save and retrieve files in a cloud-based environment, download and view streaming movies/video clips, use online tools to teach my students from a distance, and use mobile devices to connect to others for my professional development.

Level of Student Learning and Satisfaction in an Online Learning Environment

Presented in Table 2 is the level of *Student Learning and Satisfaction in an Online Learning Environment*. Computations revealed an overall mean score of 4. 26 or *very high,* indicating that all enumerated indicators were oftentimes manifested. The overall mean was the results obtained from the mean of the indicators for the specific items from the questionnaire intended for this particular indicator which is appended in this study.

Table 2. Level of Student Learning and Satisfaction in an Online Learning Environment

Indicator	SD	Mean	Descriptive Level
Course Structure	0.63	4.26	Very High
Learner Interaction	0.85	4.23	Very High
Student Engagement	0.82	4.21	Very High
Instructor Presence	0.90	4.35	Very High
Student Satisfaction	0.89	4.34	Very High
Perceived Learning	0.91	4.20	Very High
Overall	**0.74**	**4.26**	**Very High**

Among the enumerated indicators, *Instructor Presence* obtained a mean score of 4.35 or high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: The teacher's feedback on assignments was clearly stated, the instructor's feedback on assignments was constructive, the teacher provided timely feedback about my progress, The teacher cared about my progress, and I learned from the feedback that was provided by the teacher. *Student Satisfaction* obtained a mean score of 4. 34 or very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: I am satisfied with my overall experience in this class, I am satisfied with the content of the lesson, and I am satisfied with the level of student interaction that occurred in the class.

Course Structure obtained a mean score of 4.26 or high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: Student learning outcomes was aligned to the learning activities.

Course navigation was logical, and the layout of the course was organized.

Learner Interaction obtained a mean score of 4.23 or very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: I frequently interacted with other students in the class, there were opportunities for active learning in this class, and the learning activities promoted interaction with others.

The indicator *Student Engagement* obtained a mean score of 4.21 or very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: I frequently interacted with my teacher of this course, I discussed what I learned in the class, and I completed my readings as assigned during the class.

Perceived Learning obtained a mean score of 4.20 or very high. As presented in the appended table, the mean ratings of the following items under this indicator were as follows: I am pleased with what I learned in the class, The learning activities enhanced my understanding of the lesson.

Correlations between Measures

Illustrated in Table 3 were the results of the test of relationship between the variables involved in the study. The overall correlation had a computed r- value of 0.168 with a probability value of 0.05 which is significant at 0.05 level.

Doing an in-depth analysis, it could be gleaned that the indicators of *Technology Proficiency of Teachers* and *Student Learning and Satisfaction in an Online Learning Environment* revealed a computed r-values ranging from .254 to .421 with probability values of 0.01 which is lesser than .05 level of significance. The significant relationship between the two variables is an indication that the increase in the level of *Technology Proficiency of Teachers* led to the increase in *Student Learning and Satisfaction in an Online Learning Environment*.

Table 3. Significance of the Relationship between Technology Proficiency of Teachers and Student Learning and Satisfaction in an Online Learning Environment

Technology Proficiency of Teachers	**Student Learning and Satisfaction in an Online Learning Environment**		
	R	**p-value**	**Remarks**
Technology Proficiency	.386	.001	Significant
Professional Development and Instruction	.254	.012	Significant
Emerging Technologies for Student Learning	.421	.000	Significant
Overall	**.168**	**.005**	**Significant**

*Significant at 0.05 significance level.

Significance of the Influence of the Domain of Technology Proficiency of Teachers on Student Learning and Satisfaction in an Online Learning Environment

Presented in Table 4 is the regression analysis showing the predictive ability of *Technology Proficiency of Teachers* on *Student Learning and Satisfaction in an Online Learning Environment* Satisfaction in an Online Learning Environment. The analysis shows that when Technology Proficiency of Teachers was regressed on Student Learning and Satisfaction in an Online Learning Environment, it generated an F-value of 18.94 with 0.01. The value of this regression is 18.94 with 0.01.

It can be stated that Technology Proficiency of Teachers influenced Student Learning and Satisfaction in an Online Learning Environment. Among the indicators of Technology Proficiency of Teachers only one gave significant influence on Student Learning and Satisfaction in an Online Learning Environment, which is Emerging Technologies for Student Learning, t=1.58, P=0.536.

Table 4. Regression Analysis Showing the Extent of the Influence of Predictor Variables on Student Learning and Satisfaction in an Online Learning Environment

Technology Proficiency of Teachers	β (Standardized Coefficients)	B (Unstandardized Coefficients)	t	Sig.
Constant	1.6825	0.5281	2.18	0.000
Technology Proficiency	-0.09734	0.08225	0.08	0.395
Professional Development and Instruction	0.72831	0.06283	0.09	0.002
Emerging Technologies for Student Learning	0.02451	0.08243	1.58	0.536
R	0.265			
R^2	0.725			
F	18.94			
p	0.000			

CONCLUSION

With considerations on the findings of the study, conclusions are drawn in this section. The level of technology proficiency of teachers is very high, the level of student learning and satisfaction in an online learning environment is very high, there is a significance on the relationship between technology proficiency of teachers and student learning and satisfaction in an online learning environment, and domain of technology proficiency of teacher's best influences student learning and satisfaction in an online learning environment is Emerging Technologies for Student Learning.

The results of this study revealed that the level of technology proficiency of teachers is very high. The researcher recommends that the district where the study is conducted in Schools Division Office of Davao Occidental may conduct training that will help improve the aspects of Professional Development and Instruction.

Meanwhile, the study revealed a very high level of student learning and satisfaction in an online learning environment. The researcher recommends that the district office may provide Learning Action Cell among the teachers on the topic Perceived Learning.

The study found a significant relationship between technology proficiency of teachers and student learning and satisfaction in an online learning environment. The researcher therefore recommends that the District Office may consider the provision of trainings or activities relative to the variables under study to help the school heads and teachers enhance on the indicators which are among the lowest in the indicators of the variables under study.

The study found that the domain of technology proficiency of teacher's best influences student learning and satisfaction in an online learning environment is Emerging Technologies for Student Learning. The researcher recommends that school heads may provide sessions in Learning Action Cell among teachers for improvement.

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