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Relationship between Students' Attitudes on E-learning and their Technological Skills

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ABSTRACT

Technology integration has become a ubiquitous characteristic of the 21st-century teaching-learning process. The study aimed to establish an association between students' attitudinal domain of E-learning to their technological skills. It employed a quantitative correlational design to gauge the extent of the association between these two variables. An adopted survey questionnaire instrument was

administered to students (n=180) on an online platform. Findings revealed that students have a neutral attitude toward e-learning and technological skills. Bivariate analysis revealed a very low positive (r= .203, p<.574) correlation. The study suggests that students' attitude toward e-learning does not strongly influence their technological adeptness. Moreover, their advanced technical skills do not necessarily equate to stronger beliefs and perceptions of E-learning. This observation may be due to several underlying factors, which warrant deeper investigation and consideration as attitude and technological skills are critical factors towards academic success amidst flexible learning modalities. This study provides empirical evidence on the different factors needing further investigations to appraise their academic performance and foster a positive attitude in this emerging learning platform. Capitalizing on these aspects of learners will significantly improve learning outcomes in the new normal.

Keywords: E-learning, Technological Skills, Students' Attitudes, new normal learning

INTRODUCTION

The emergence of a global health crisis such as the COVID-19 brings technology to the center stage of the global educative system. As the only viable option to ensure learning continuity, the key players in education have embraced the challenge of technological literacy for instructional purposes (Irie et al., 2021). Technology-based instruction provides an easy avenue for virtual interaction and for sharing learning resources. Utilizing E-learning in which the discussion takes place via video-conferencing, e-mail, and live lectures, students can learn at different paces in different contexts (Daniels et al., 2019). As the modern world changes, the classroom setup has transformed the teaching and learning processes to make them more accessible without face-to-face communication. In particular, those university students with a high interest in technology tend to be easily adapted to distance education and e-learning processes (Akcil & Bastas, (2021).

E-learning has three notable roles: (1) to develop the mode of teaching and learning, (2) to enhance access to training and education, and (3) to ensure that students will remain competitive in the marketplace (Konwar, 2017). The unprecedented development in educational systems and processes vis-à-vis technology integration influenced students' attitudes toward e-learning caused

of their gender (Rafiq et al., 2020), digital citizenship behavior (Akcil & Bastas, 2021), and lack of interaction (Oducado & Soriano, 2021). Moreover, Sarı and Nayir (2020) stated that teachers and students could not demonstrate the extent of technology usage expected from them. Familiarity to use technology and the ability to understand its functions are necessary for E-learning (Asad et al., 2020). Effective learning and technological literacy are not simply about having all the technological resources and creative presentations. It is about how students respond to technology integration in the instruction, their learning environment, and their attitudes toward the mode, method, and modalities of learning amidst the pandemic and beyond (Kumar Basak et al., 2018; Al-Abdullatif & Gameil, 2021). As the country continuously explores means of adapting to various flexible learning modalities, addressing the stability, quality, sustainability, and capability necessary to ensure the successful implementation of these approaches (Irie et al., 2021; Sespene et al., 2021). The educational sector should take the lead in this goal.

In the context of this study, most students have embraced the use of technology in the teaching and learning processes compelled by the necessity for an online class and other modes of flexible learning. While university students may manifest technological adeptness, examining their attitude toward its usage for learning amidst the pandemic warrants further investigation.

Students' Attitude toward E-learning

Attitude is a determinant of students' perception of E-learning and the use of technology (Akcil & Bastas, 2021; Oducado & Soriano, 2021). This means that experiences and exposure to using technology vary as these help students to embody technological proficiency and connection towards E-learning. It is vital to determine if the increased usage of technology and available teaching online sources have improved the learning goals and outcomes and have created a positive upshot on the student's academic performance (Kim et al., 2019). The students' positive behaviors and attitudes have an essential role in their academic success of students (Ullah et al., 2017; Asad et al., 2020). There is a danger in not learning and acquiring technological skills as learners would become passive consumers of technology (Zabadi & Al-lawi, 2016) and would miss the opportunity to learn logic, problem-solving, and other benefits (Prior et al., 2016). Reyes et al. (2021) looked into the preparedness and attitude of college students toward E-learning in the Philippines. Their study showed that college students have positive affirmation about ICT use in education. More importantly, preparedness

for E-learning has no relationship with students' attitudes toward E-learning in education but exposure to E-learning does. It means that the more exposure to E-learning, the more students improve their attitudes towards it. Rubio (2016) identified students' attitudes toward online-integrated teaching using an online program, Schoology. After exposing them to the technology-driven platform, students had a positive attitude toward technology use in learning. There is also a correlation between readiness for online-integrated learning and compatibility in the subject Literature. Bishnu (2018) also revealed that the students at the higher secondary level displayed positive attitudes toward e-learning materials due to the affordances of sufficient E-learning tools. Oducado & Soriano (2021) claimed that students with stable internet connections appear to have a better attitude towards e-learning. E-learning tools served as a critical element in attaining higher achievement. The ease of using software and good technical skills affected students' attitudes toward e-learning (Adewole - Odeshi, 2014). Ullah et al. (2017) reported the same notion when they examined undergraduate students' attitudes toward online learning in District Peshawar, which showed no significant relationship between students' interest in computers to students' attitudes toward online learning. The slow and meager internet facilities with a poor understanding of students about online learning contributed to this result. As Prior et al. (2016) purported that attitude and digital literacy led to students' self-efficacy and desirable behaviors in online learning. These scientific reports accounted for the indispensable role that attitude plays in students' perception and experience towards technology use. The incongruence in their findings may be due to the different contexts the study took place which ranged from the pre-pandemic to the pandemic period. Albeit, these pieces of literature purported a positive relationship between students' basic computer literacy skills and their attitudes towards online-integrated learning, other recent scientific reports countered such findings. The attitudinal factor influences their overall learning outcome, and examining it in the backdrop of the pandemic amidst flexible learning modalities is imperative.

FRAMEWORK

This study is anchored on the Technology Acceptance Model (TAM) (Davis, 1989), which is based on the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) in psychology research. The TRA posits that behavioral intention is a function of an individual's attitude to behave in a certain way. The behavior and the intent of an individual to behave are a result of their beliefs and attitude. In this study, behavioral

intention is defined as their ability to use technology in e-learning. The students' attitude reflects their perceptions and beliefs on E-learning and the use of technology. Although TAM proposes that perceived ease of use and perceived usefulness of technology are predictors of user attitude towards using the technology, subsequent behavioral intentions, and actual usage (Weng et al., 2018), this study does not aim to measure those specific parameters rather it only attempts to gauge their level of technological skills and their attitude towards E-learning. The perceived ease of use influences the perceived usefulness of technology; hence this study focuses only on the attitudinal construct as a whole. TAM is an intention-based model designed to explain or predict user acceptance of computer technology (Weng et al., 2018). It has been used as the theoretical basis for many empirical studies of user technology acceptance (Salloum et al., 2019). Davis (1989) defined technology acceptance as an individual's psychological state concerning one's voluntary or intended use of a particular technology. Therefore, in this paper, TAM is used to study the acceptance of e-learning technology. In this study, E-learning was considered a system that utilizes Internet and web technology in delivering information to and interacting with the students through a computer interface.

OBJECTIVES OF THE STUDY

This study examined the relationship between students' attitudes toward E-learning and technological skills. Specifically, it sought to answer the following questions; a) what is the level of students' attitudes toward E-learning and technological skill?; b) is there a significant relationship between students' attitudes toward E-learning and technological skills?; and c) what are the factors that affect students' attitudes toward E-learning and technological skills?.

METHODS

The study utilized descriptive-correlational design to gauge the extent of the relationship between students' attitudes toward E-learning and technological skills. An online survey was administered to 177 BSED college students of a state university in Cebu City. The sample size was determined using the stratified sampling technique with Slovin's formula. The population of the respondents was 385 composed of the 1st, 2nd, and 3rd-year college students who are taking up Bachelor of Secondary Education for the school year 2021-2022. A structured questionnaire was adapted with permission from the respective authors. The items in the questionnaires were

modified from a standardized tool from Zabadi & Alawi (2016) and Aixia & Wang (2011) to tailor fit to the context of the study. It was pilot tested on a group of 30 students outside the sampling range to establish the reliability of the instrument with a Cronbach's alpha value of 0.75. The questionnaire is composed of three (3) parts. Each part consists of ten (10) statements with a five-point Likert scale response. The first part of the questionnaire contained statements about the attitudes of students toward E-learning, the second part sought their level of technological skills, and the last part is the statements identifies factors that affect the attitudes of students towards E-learning and technological skills.

In compliance with the safety and health protocols of the government, data collection involved the transformation of the questionnaire into a digital format to be distributed through an online platform (Google form). Bloc mayors of these respondents were requested to distribute the Google form link of the questionnaire. This study adhered to the ethical principles utilizing soliciting the information through proper informed consent by informing them of the risks and procedures. Voluntary participation, confidentiality, and anonymity were observed. Data from the survey were tabulated and analyzed using descriptive statistics. Bivariate analysis analyzed the relationship between the two variables. All analysis was performed using the IBM SPSS Version 27 software package.

RESULTS AND DISCUSSIONS

This study aimed to determine the relationship between students' attitudes toward E-learning and their technological skills.

Table 1

Overall students' attitudes toward E-learning

Statement	Mean	Descriptive Value
1. I am interested in studying some courses/subjects which utilize e-learning.	3.60	Agree
2. I think that E-learning promoted my learning experiences.	3.39	Agree
3. I think that the internet makes learning more efficient when presenting courses online.	2.90	Neutral
4. I like to use e-learning /online learning during the semester, if available.	4.10	Agree
5. I feel positive about e-learning.	3.25	Neutral
6. E-learning environment needs advanced technical knowledge.	4.25	Strongly Agree
7. I would prefer to have online classes rather than in the classroom (face-to-face).	2.25	Disagree
8. I consider online learning is more comfortable than the face-to-face classroom.	2.30	Disagree
9. I consider E-learning as a favorable alternative to a pen-paper-based system.	3.25	Neutral
10. I consider E-learning as an efficient learning method.	2.90	Neutral
Over-all Mean	**3.22**	**Neutral**

Legend: 4.21- 5.00 Strongly Agree; 3.41- 4.20 – Agree; 2.61- 3.40 – Neutral; 1.81- 2.60 –Disagree; 1.00- 1.80 - Strongly Disagree)

attitudes toward E-learning. Only statement six got the highest mean (μ=4.25), suggesting that students strongly agreed that the E-learning environment needs advanced technical knowledge. This finding supports Javier's (2020) claim that availability of E-learning tools and supported by Adewole-Odeshi (2014), underscoring good technical skills in using available software contributes to students' positive attitude toward E-learning. This alignment of findings may be attributed to the fact that the tactile aspect of learning is maximized particularly when manipulating computer tools and software for their learning tasks. In the pandemic context, a similar finding is reported by Reyes et al. (2021) in their investigation of the level of e-learning readiness among Filipino students in higher education during the pandemic in terms of five dimensions: computer/internet self-efficacy, self-directed learning, learner control, motivation for learning, and online communication self-efficacy. This finding on the neutral attitude of students toward e-learning may be due to what Reyes et al. (2021) pointed out Filipino students are ready in using computers and related tools and applications, but they lack control. Other sources of distraction were due to social media, house chores, family duties, and work responsibilities drawing their focus away from their academic tasks, resulting in a loss of productivity (Reyes et al., 2021).

In terms of preference, students disagreed, evidenced by statements seven and eight with a low mean indicating that students have a negative attitude towards online learning. Students like to have face-to-face classroom discussions. Interestingly, despite the negative preference for online learning, students agreed that they developed a positive experience with this learning modality concerning the different technological tools. With the current state of education in the country, students agree that e-learning is an alternative to a pen-paper-based system. E-learning served as an efficient learning method to promote learning continuity. Students are also neutral about considering that the online learning platform makes learning more efficient when presenting courses online. The overall mean score is μ=3.22, rated as neutral, suggesting that students do not have extreme attitudes toward E-learning. This supported local studies by Adanza (2014) that college students were prepared and had positive affirmation about ICT use in the instruction. He reported that only ICT exposure influenced their preparedness and not their attitude. This suggests that the learning environment contributed to students' netral attitude towards E-learning. It may be ascribed to the availability and exposure to technology as evidenced in Table 1, wherein the majority reported having multiple gadgets and internet connection. Students then spend long hours on technology use. Their level of attitude may also be

influenced by their learning experience during online classes noting that their first-hand experience with this new learning modality took place during a global health crisis, factors may have come into play, such as socioeconomic, location, teaching, and learning style compatibility. The level of attitude would affect how the students can obtain their learning. Hence, the positive attitudes and behaviors of students have an important on the student's academic success (Rafiq et al., 2020; Akcil & Bastas, 2021; Oducado & Soriano, 2021).

Table 2

Overall students' technological skills

Statements	Mean	Descriptive Value
1. I know how to use computers and cell phones in doing my assignments.	4.48	Expert
2. I know how to use Microsoft PowerPoint, Microsoft Excel, and Microsoft word.	3.98	Expert
3. I know how to solve and do statistical functions (e.g. standard deviation, mean) using spreadsheet software.	3.00	Intermediate
4. I know how to insert graphics into an electronic presentation.	4.10	Advanced
5. I know how to integrate/put sounds, animations, and multimedia files into the electronic presentation.	4.05	Advanced
6. I know how to use web search sites (e.g. Google) to search for information.	4.35	Expert
7. I know how to use video conferencing applications to participate in class or group activities.	4.27	Expert
8. I find it easy to log in the Google meet.	3.96	Advanced
9. I know how to save videos from Google classroom.	3.94	Advanced
10. I know all the software applications and their functions.	2.80	Intermediate
Over-all Mean	**3.89**	**Advanced**

Legend: 4.21- 5.00 Expert; 3.41- 4.20 – Advanced; 2.61- 3.40 – Intermediate; 1.81- 2.60 – Novice; 1.00- 1.80 - Basic)

Table 2 shows the weighted mean of students' technological skills. Two items having a mean of 2.61- 3.40 by the respondents signifies that students are at the intermediate level in terms of technical know-how on the use of various applications of technology (e.g., use of spreadsheet software applications and their functions). Moreover, students reported possessing computer skills to enhance and add effects such as inserting graphics into an electronic presentation, adding sounds, animations, and multimedia files into the electronic presentation, saving videos in different formats and locations, and webpage/website explorations, among others. This technical ability contributed to a strong agreement that they know how to use common technological devices and their basic applications to enhance their presentation and output along with website search. The overall mean is μ=3.89, suggesting those students' possessed advanced technological skills. Nowadays, it is essential to recognize that students have become more engaged and interested in utilizing technology. These results supported several relevant studies (Rhema & Miliszewska, 2014; Reyes et al., 2021; Oducado & Soriano, 2021) that contend that experiences and exposure to using technology

help students embody technological proficiency and connection to E-learning. Alongside this report, Rubio (2016) also mirrors the current result in such a way that in his study, those students exposed to an online program, students turned out to have a positive attitude toward online-integrated learning and it has something to do with their readiness. In the context of this study, their advanced technological skills may be due to their readiness to use the technology because they have access to it in the first place. It opens doors of chances for teachers, students, and schools to improve and obtain benefits from different forms of technology integration in the teaching and learning process to make the process more flexible and efficient.

Table 3

Factors affecting students' attitudes toward E-learning and technological skills

Factors	Mean	Descriptive Value
1. Computer literacy/skills (training background, access and work experience with ICT, ownership of own computer, and number of times upon using computer)	4.00	Agree
2. Availability and Accessibility of the gadgets (cellphone, Ipad, computer, laptop)	4.35	Strongly Agree
3. Internet Connectivity (stable and unstable connection, data capping)	4.20	Strongly Agree
4. E-learning Integration (flexibility of e-learning platform, instructional activity)	4.10	Agree
5. E-learning course quality	3.90	Agree
6. Instructor/Teacher attitude	4.50	Strongly Agree
7. Personal views of Students (Perception of using e-learning, ease of using technology, perception of the usefulness of e-learning)	4.05	Agree
8. Social Class (income of a family)	3.98	Agree
9. Residential Location (Province, City)	4.15	Agree
10. Availability of Electricity	4.90	Strongly Agree
Over-all Mean	**4.21**	**Strongly Agree**

Legend: 4.21- 5.00 Strongly Agree; 3.41- 4.20 – Agree; 2.61- 3.40 – Neutral; 1.81- 2.60 – Disagree; 1.00- 1.80 - Strongly Disagree)

Table 3 shows different factors that affected the attitude of students toward E-learning and their technological skills. The majority of the respondents agree that factors that affect students' attitudes toward e-learning and technological skills are computer literacy/skills, which constitute the training background, access and work experience with ICT, ownership of their computer, and the number of times upon using the computer. Another factor is e-learning integration indicated by the flexibility of the e-learning platform and instructional activity and E-learning course quality. Meanwhile, personal views of students include their perception

of using e-learning, ease of using technology, and perception of the usefulness of e-learning. Lastly, the social class factor pertains to family income and residential location. Four items are having a mean of 4.21- 5.00, which means that the respondents strongly agree that the factors that affect students' e-learning and technological skills are availability and accessibility of gadgets (cellphones, iPad, computers, laptops, etc.), internet connectivity (stable and unstable connection, data capping), instructor/teacher attitude and availability of electricity. The overall mean is 4.12 suggesting that students agreed that there is an interplay of multiple factors that influence their attitude and technological adeptness. From an academic perspective, it is very important to determine whether available teaching online resources have improved students' technological skills and impacted students' positive attitudes (Kim et al., 2019; Picardal & Sanchez, 2022). Furthermore, the results corroborated Bishnu's (2018) findings that students at the higher secondary level agreed e-learning tools are essential to the achievements of students in their studies.

Table 4

Correlation analysis between the students' attitudes on e-learning and technological skills

Variables	r – value	Significance	Interpretation
Students Attitude Technological Skills	0.203	.574	A very low positive correlation

*Correlation is significant at the 0.01 level (2-tailed)

Table 4 revealed the bivariate analysis using Pearson Product correlation between attitude toward E-learning and technological skills of students that revealed a very low positive association (r= .203, p<.574). Hence, the null hypothesis was rejected suggesting that there is no significant difference that exists between these variables. This shows that students' level of attitude towards E-learning has no significant effect or bearing on their technological skills. The observed slightly positive correlation suggests that there is enough evidence that this positive correlation exists in the population however insignificant to consider. This result could be attributed to the identified various factors affecting students' attitudes and technological skills. This result supported the findings of Ullah et al. (2017) and Reyes et al. (2021) that students have a positive attitude toward E-learning however, it does not correlate with their interest in the computer nor to

their ICT preparedness. The current findings may be similar to what the literature purported that the exposure of students to ICT or the availability of resources that can support effective online learning processes are not evident to all students. Overall, this finding may support the Theory Acceptance Model explanation that external variables influence individual perceptions of the usefulness and ease of use of a particular technological device thereby affecting their attitude towards it. This then influences a student's action or behavior of using these technological devices for learning or not. In this study, students reported having an advanced level of technological skills which could be because they perceived technology for online learning as easy to use, engaging, and useful for their learning, however, this did not increase their attitude towards E-learning due to several reasons such as availability of and exposure to technology.

CONCLUSIONS

This study was able to draw insights from the empirical evidence establishing a potential association between technological skills and the level of attitude toward online learning. The study suggests that the attitude of students towards E-learning does not strongly influence their technological adeptness. Consequently, their advanced technological skills are not related or associated fully with their beliefs and perceptions of E-learning. This observation could be due to several underlying factors inherent to learners' context and affordances. While the scope of the investigation is limited to a smaller sample size, the findings of this study provide optimism on the various factors that can be investigated further to maximize the learning process of students to boost their academic performance and foster a positive attitude in this new learning modality.

RECOMMENDATIONS

In light of the foregoing findings and conclusion, this study recommends that more facilities and increased exposure and training should be provided to students to boost learners' competitiveness in the area of technological adeptness. This will enable students to be technologically competent and efficient as well as develop a high level of positive attitude towards the use of technology in learning. For future research, factors such as home as a learning space and parental support can be looked into as to how it influences learners' attitudes toward E-learning and their development of technological skills.

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