Technostress Levels Among Science Education Students of Central Mindanao University

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Abstract— The study investigated the levels of technostress among the Bachelor of Secondary Education major in Sciences students of Central Mindanao University. Specifically, it aimed to 1) ascertain the students' technostress level according to a) techno-overload, b) techno-complexity, c) techno-insecurity and d) techno-uncertainty, and 2) find out significant difference on the stress levels of students when grouped accordingly to year level. It utilized a descriptive research design involving the students specializing in Science at the College of Education. An adopted technostress questionnaire was utilized as the main research instrument. Descriptive statistics and One-Way Analysis of Variance (ANOVA) was employed to answer the objectives. The results revealed that the technostress level was found to be high for techno-overload and techno-complexity while neutral for techno-insecurity and techno-uncertainty. Overall, students were found to be neutral in their stress level. When grouped accordingly to year level, data revealed that there is no significant difference on the level of technostress experienced by BSED-Science students. The university may revisit the guidelines on conducting online classes and assigning of classwork and consider technostress as a variable to look into for the benefit of students.

Keywords— Technostress, Online learning, Education students.

I. INTRODUCTION

Due to lockdowns and the abrupt move away from traditional in-person classes toward largely virtual and asynchronous sessions, the COVID-19 pandemic's onslaught over the past two years has been difficult for the educational system. To prevent the teaching and learning process from being impeded, several learning management systems were used at the majority of Philippine universities. During this health crisis, online learning has been widespread, allowing teachers and students to interact virtually in real-time settings. Other technology-based instructional approaches, such as blended learning and MOOCs, have also been quickly adopted. ICT use is revolutionizing educational systems across the globe (Li and Wang, 2000 as cited by Aziz and Yasid, 2021). The incorporation of ICT in the classroom has been shown to benefit students. ICT integration in the classroom promotes active participation (Oladusu et al, 2020), new understanding in their areas of learning (Chai, Koh and Tsai 2010), and contribute to the acquisition of 21st-century competencies.

The utilization of ICT may have brought numerous benefits to the students during the online distance learning; however, the excessive usage of computer-based tools has presented problems such as technical, lack of knowledge on the use of the digital tools, addiction, and physical exhaustion among others. Even when students are considered to be digital natives given how they are so connected to the online world, there are still a considerable number of disadvantages, one of this is technostress.

A. Technostress

According to Kader et al., (2020) and Tarafdar et al., (2010), technostress is the stress experienced by ICT users due to inability to cope with the demands of computer usage in an organization. In education, the term denotes the stress experienced by teachers and students while having online classes. Wang et al (2020) posits that several problems such as decline in performance, learning dissatisfaction, insufficient commitment to learning results from technostress. In the university level, students are expected to carry out tasks simultaneously and cope with the demands of their coursework, however due to the shift in learning modality, there seems to be a build-up of stress as they continuously engage learning sessions using ICT tools. The pressure to learn things online in a short amount of time adds to the level of stress students experience.

B. The BSED Curriculum

The BSED-Science curriculum is based on CMO No. 75 s. 2017. This caters undergraduate education students who aims to specialize in the different fields of the Sciences-Physics, Chemistry, Biology and Earth and Environmental Science. During the pre-pandemic times, they are exposed to varied instructional strategies emphasizing real-life applications of the concepts learned in class. Laboratory activities are regularly conducted to supplement classroom instruction, develop students' practical and scientific skills and work in groups to develop rapport, teamwork and camaraderie. This typical classroom scenario of science majors was also abruptly changed.

There have been several studies on technostress conducted in industries and other work-related sectors, however, there is scarcity of data in terms of technostress among students in universities. Hence, this study would like to examine investigate the levels of technostress experienced by BSED-Sciences of one Higher Education Institution (HEI) in Bukidnon Philippines.

Hence, this study aimed to 1. ascertain the students' technostress level in relation to: a) techno-overload, b) techno-complexity, c) techno-insecurity and d) techno-uncertainty 2. find out significant difference on the stress level of students when grouped according to

II. METHODS

This study utilized descriptive quantitative research design. According to Williams (2007) descriptive research is a research method that can determine the situation in current phenomenon.

Research Participants

This study included BSED-Sciences students across all levels of the College of Education officially enrolled during the AY 2021-2022. They were informed to answer a 5-point Likert scale on the technostress levels with four components through the questionnaire distributed via Google Form.

Instrument

his research utilized an adopted research questionnaire on technostress from Aziz and Yazid (2021). It is composed of 22 statements divided into four components namely: techno-overload (9 items), techno-complexity (6 items), techno-insecurity (4) and techno-uncertainty (3 items). The internal reliability coefficient of each dimension is 0.94, 0.93, 0.88, and 0,89 respectively.

Procedure

Permission to gather data among the students of the College of Education specifically BSED-Sciences was sought through a letter sent to the Dean for approval. Considering the current situation during the academic year where online learning was still in place and students are not physically present in the university, the questionnaire was distributed through Google Form. Students were given ample time to answer the questionnaire.

Data Analysis

On the level of technostress based on the four components, weighted mean from the components were presented and analyzed. On the other hand, for the second problem, Analysis of Covariance (ANOVA) was employed to find out significant difference on the levels of technostress among students when grouped according to year level.

III. RESULTS

Table 1 shows the result on the techno-overload among BSED-Science students. Of the nine statements, 1 was noted as very high technostress, six were high and two neutral. The statement "I have to change my study habit to adapt to online learning with a mean of 4.31 implies that students had it shift the way they study from the traditional use of books in the classroom to the materials uploaded by subject teachers online. This may also be due to the volume of classwork, internet availability among others. Meanwhile the statement "I feel my personal life is being invaded by online learning is found had the lowest mean at 3.10. This suggests that students value the importance of online learning in this time when face to face classes are not get fully implemented. Technology has now become essential part of their lives as this is usual not only for educational purposes. This strong connection to technology may seem to explain why they tend not to feel that online learning is invading their personal lives.

TABLE 1. Students' technostress level in Techno-overload

Statements	Mean	Descriptor
I have to do more work than I can handle due to the implementation of online learning.	3.63	High
I have to work with very tight time schedules due to the implementation of online learning.	3.58	High
I have to change my study habit to adapt to online learning.	4.31	Very High
I have a higher workload because of the increased complexity of online learning.	3.65	High
I have less free time due to the implementation of online learning.	3.17	Neutral
I have to be in touch with my work even during vacation because of online learning.	3.78	High
I have to work much faster due to the implementation of online learning.	3.74	High
I have to sacrifice my vacation and weekend time to keep current on the updates and new requirements of online learning.	3.65	High
I feel my personal life is being invaded by online learning.	3.10	Neutral
MEAN	3.62	High

TABLE 2. Students' technostress level in terms of Techno- complexity

Statements	Mean	Descriptor
I find often online learning too complicated for me to understand it well.	3.57	High
I find often online learning too complicated for me to use it effectively.	3.47	High
The high complexity of online learning causes me to doubt its usefulness and practicality in education.	3.58	High
I do not have adequate knowledge of online learning to complete my homework satisfactorily.	3.15	Neutral
I need to spend a considerable amount of time and effort to use online learning effectively.	3.94	High
I do not find enough time to study and upgrade technology skills to meet the needs of online learning.	3.22	Low
MEAN	3.49	High

Table 2 shows the students' level of techno-complexity. As shown, four statements indicated high technostress with "I need to spend a considerable amount of time and effort to use online learning effectively" with the highest mean (3.94), followed by "The high complexity of online causes me to doubts its usefulness and practicality in education" (3.58). Meanwhile the statement I do not find enough time to study and upgrade technology skills to meet the needs of online learning had the lowest mean (3.22). In terms of techno complexity, students' seen to be affected by the intricacies of online learning. They find it complicated to understand and use it effectively. Thus, may be due to the idea that not all students are technologically advanced while then is a handful that are techno-savvy, they are more who knows only the basic, hence, the high technostress. According to Qi (2019), the use of technology-based learning application leads to low academic performance since students are stress due to the complexity of it to be learned.

Table 3 shows the level of students' technostress in relation to technology insecurity. Results show that students were all neutral on the four students under this dimension. This implies that students are undecided on whether they are threatened by

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peers in using the online learning. The degree of insecurity may be due to the notion that the other students are way better than other and sore may be left behind. Considering the nature of the program (BSED Science), students are exposed to different types of learning platform such as virtual labs, simulations, interactions websites, thus may helpful in learning this techno-insecurity since they are required to explore and familiarize the use of such learning portals. In online learning, the idea of collaboration is still plausible, when students are tasked to do an activity by teams or by groups, this becomes an avenue to also build rapport and develop camaraderie which may ultimately lower due techno-insecurity.

TABLE 3. Students' technostress level in Techno-insecurity

Statements	Mean	Descriptor
I am threatened by peers who have more vital online learning skills.	3.11	Neutral
I do not share my knowledge regarding online learning with my peers for fear of being accused of cheating.	2.81	Neutral
I am threatened by peers who know more about online learning than I do.	2.86	Neutral
I am threatened by peers who quickly adapt to the online learning environment than I do.	3.07	Neutral
MEAN	2.96	Neutral

TABLE 4. Students' technostress level in terms of Techno-uncertainty

Statements	Mean	Descriptor
There are frequent upgrades in online learning we use in our university.	3.65	High
There are constant changes to the functionalities of online learning we use in our university.	3.51	High
Our university regularly replaces one teaching and learning method with another.	3.32	Neutral
MEAN	3.49	High

The table presents the lead of techno-uncertainty among the BSED Science students. As reflected in the data, a mean of 3.49 was obtained, indicating high technostress. The student "There are frequent upgrades in online learning we use in our university" had the highest mean of 3.65 followed by the "There are constant changes to the functionalities of online learning we use in our university" with a mean of 3.51. This finding may be attributed to the institutions freedom gives to its profession to use different learning management systems. Although Google was used as primary platform, there are teachers who also venture into using different LMS. In addition, teacher can give the academics freedom to choose the type of teaching strategy to use as well as to source out materials for different websites.

However, students were neutral on the statement "Our university regularly replaces one teaching and learning method with another". With the modality of learning as being online, the teaching and learning method is usually done through between done via Google Meet. Thus, is the most prominent method and day to period. Moreover, there is freedom give to teacher given to teacher to choose the teaching and learning method that best suits the students' needs.

The table below shows the overall mean of the four technostress categories. As gleaned from table 5, two categories indicated high (techno-overload-3.62 and techno-

complexity-3.49). While techno-uncertainty (3.32) and techno insecurity were followed to be neutral on the level of technostress. This suggests, that the degree of being stressed due the online learning is of moderate learning. While students may seem to be stressed so much with the over flooded information and the complexity on the use of ICT, they were somewhat undecided techno-insecurity and techno-uncertainty. Students are not so much pressured by other students' familiarity of the online learning, more so, then techno-uncertainty is also of a neutral lead.

TABLE 5. Summary of Students' Technostress in All Categories

Categories	Mean	Descriptor
Techno-overload	3.62	High
Techno-complexity	3.49	High
Techno-insecurity	2.96	Neutral
Techno-uncertainty	3.32	Neutral
OVERALL MEAN	3.39	Neutral

TABLE 6. One-Way ANOVA on Students' Technostress According to Year Level

	Sum of Squares	df	Mean Squares	F	Sig
Techno-overload Between Groups Within Groups Total	1.466 31.850 33.316	3 113 116	.489 .282	1.734	.164
Techno-complexity Between Groups Within Groups Total	2.372 36.839 38.911	3 113 116	.791 .323	2.445	.068
Techno-insecurity Between Groups Within Groups Total	.479 76.634 77.113	3 113 116	.160 .678	.235	.872
Techno-uncertainty Between Groups Within Groups Total	1.716 34.423 36.139	3 113 116	.572 .305	1.877	.137
Technostress Between Groups Within Groups Total	.785 18.401 19.246	3 113 116	.262 .163	1.602	.193

One-Way Analysis of variance on the component of technostress, when students are grouped according to year level. As shown, all components were found not significant as well as the overall technostress level. This implies that students, whatever year level they are in are having the same technostress levels. The group of students under survey are subjected to the same online learning modality, exposed to the same learning management system, the same curriculum and other similarities that may be considered as factors that explain this result.

IV. CONCLUSION

The study showed that the BSED-Sciences students were experiencing technostress on different levels. In terms of techno-overload and techno-complexity dimensions, there is high technostress level, this result is alarming considering that the delivery on instruction in the university has not fully transitioned back to full face to face instruction. There are still a number of courses that will be delivered through full online modality. In terms of techno-insecurity and techno-

uncertainty, results revealed neutral on these components. Students are experiencing stress on these dimensions although in a lesser scale. When grouped according to year level, there is no significant difference, hence, regardless of the year level, the BSED-Sciences students are experiencing the same level of technostress.

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