



# Factors Affecting Technological Stress among Public School Teachers during COVID-19 Pandemic

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

**Aims:** The present investigation aims to study the factors affecting technological stress among public school teachers during the covid-19 pandemic. This study hopes to address this gap wherein the result is timely, relevant, and as a potential basis for possible interventions.

**Study Design:** The study employed a descriptive-correlational design.

**Place and Duration:** This study occurred in Region XI, Davao Del Sur, between 2021 and 2022.

**Methodology:** A total of 174 public school teachers participated in the study's data collection. Using an adapted survey questionnaire, distributed using GOOGLE forms, the demographic profile and the level of technostress were collected among those who participated in the Health Psychology Symposium led by the researchers.

**Results:** The findings revealed that the majority of the respondents were young adults, female, and were Teacher 1. Also, the test of significance revealed that the p-value was less than the 0.05 level of significance, thus indicating that there is indeed a significant relationship between age and the level of technostress of teachers.

**Conclusion:** The study concluded that age-specific interventions that may improve public teachers' technology usage or equipping them with skills to overcome stress must be perused.

*Keywords: Education; technostress; descriptive-correlation; public school teachers; pandemic.*

## 1. INTRODUCTION

The sudden shift from face-to-face interaction to the digital platform poses stress for public school teachers primarily trained to work face-to-face. Teachers are expected to use technology to enhance and facilitate the education of their students during this time of pandemic [1]. During this period, teachers are expected to use an intensive amount of technology in the delivery of educational services to the learners [2,3].

However, this expectation also brings some negative issues to the public-school teachers referring to technology as a stress-causing factor [4]. In relation, according to Brod (1984), technostress is a modern adaption illness that results from an inability to deal with new technologies in a healthy way, stress brought on by displaying unfavorable perceptions when users are unable to adjust to ICT [5,6]. Additionally, the majority of research on the detrimental impacts of technostress has been centered on a business or industrial job context [7,8].

In addition, when this technological integration in education is considered in terms of teachers and the educational context (Peinado-Abilleira et al. 2020), it has a new repercussion in that teachers will undoubtedly have apprehensions about this novel situation and will likely react negatively to this newly created stimulus object (Oklar et al. 2016). Certainly, studies investigated relationships between particular technostress on teachers', such as their owkr performance, and perception on techno-complexity and insecurity (Li et al. 2021).

Teachers are currently creating new methods of instruction resembling "emergency remote teaching" due to the shutdown of schools brought on by the pandemic. [9,10], rather than quality online teaching. However, the success of educational innovation depends on teachers' capacity to pedagogically incorporate technology into the classroom [11,12]. From this angle, it is clear how crucial teachers are to the integration process.

Moreover, findings from a Spanish study on technostress in the context of the COVID-19 pandemic revealed that female teacher educators from face-to-face universities who are older, have much more years of experience, and correspondingly hold a higher position were those who, by effects of pandemic afflicted the most from the adverse impact of technology [13].

However, none, in particular, was discussed showing technological stress was experienced by teachers who are older.

The purpose of the present investigation is to study the factors affecting technological stress among public school teachers during the covid-19 pandemic. This study hopes to address this gap wherein the result is timely, relevant, and as a potential basis for possible interventions. Moreover, this investigation will not only shed light on the level of technostress on teachers on their retirement but would also serve as a basis for the development of action research that would assist and address this psychological dilemma that the DepEd educators are experiencing.

### 1.1 Literature Review

Today's digitalized world persuades people's way of life and career. In most organizations expected, robotic companies, smartphones, and IT firms notably have used this form of advancement early on. In effect, their consumers in the labor market had to adapt to how these companies were producing. Work is the frontline of digitalization, pointed out by Mengay [14]. From work plans, there is a need to encode the logistics in a computer, and when someone has to figure it out through application, graphs, charts, and slides, presentations still make sense. Across all work processes, we need computers as the world digitalizes everything in the workplace. However, it has an ill effect on the psychosocial and psychological aspects of employees' lives caused by this technological change.

Interestingly, technostress has various dimensions on its effects. The more an organization digitalizes its team members, the broader its impact on direct employees' and stakeholders' lives. Technostress affects employees' work productivity in an organization or reframes its organizational roles and structure. Moreover, If the organization brings out the best adjustment to its digitalized process and has well-reinforced employees, a positive effect may occur; however, a negative ambiance can happen if the management fails in its adjustment [15].

Technostress is not right away the cause of decreasing work performance. Even a calibrated and seasoned or entry-level teacher also experiences technostress in the school setting.

Funny, but it is a human craft that stresses the most intelligent creatures on the land. In short, computers and IT tiring issues and digitalized concerns may not affect people's sanity through an educated mind and wise use of these technologies. A wise use entails manipulating the technological use by recognizing the early symptoms of technostress; cutting it very early in the system may help. To filter emails from special people alone, turning off mobile phones when asleep or at home. Shutting the windows on the screen may reduce multitasking, lowering energy levels, so a few of these may help consume the best energy for minimal effort, time, and focus [16].

On the other hand, job satisfaction and loneliness are caused by technostress which has a domino effect on proactive and reactive coping. The study of Kassim et al. [17] suggested a significant relationship between technostress and emotional exhaustion, leading to poor work performance. However, the study's coping methods were not evident, and researchers recommended further investigation of what form of intervention was most suitable.

Furthermore, creative self-efficacy is effective in dealing with technostress. While employees have self-indulgent to creative self-efficacy training as a moderator inside the system, the work environment plays a vital role in reframing a negative effect into a positive diversion to fulfill a particular task at work. The study shows how much time and healing a work-from-home mode of activity can help employees sustain health energy during a pandemic and biological crisis humankind faces [18].

Meanwhile, today's work effectiveness has increased with the aid of technology. However, while employees are productive in their work performance, their stress level has also increased. This event created physical and psychological effects on organizational employees through stress caused by technostress. However, there are factors useful to lessen the impact of technostress through the intervention programs, managing the self-programs, webinars and seminars, organizational training enhancements, and many more [19].

Educational technology is necessary for the educational setup. Since more advanced learning, technology is needed in teaching eager learners, both virtual and face-to-face. However,

exploring technology with rudimentary skills may not warrant a wise application. The adept teachers know their work balance as long as they know their capacitated teaching skills. If not, anxiety sets in [20].

## 1.2 Research Questions

This study aimed only to determine the level of technostress of public-school teachers. In particular, this sought to answer the following questions.

1. What is the demographic profile of the public school teachers in terms of:
  - a. Age,
  - b. Gender,
  - c. Educational Qualification?
2. What is the level of technological stress among public school teachers, in terms of the following:
  - a. Learning and Teaching Process,
  - b. Profession-Oriented,
  - c. Technological Issues Oriented,
  - d. Personal Oriented, and
  - e. Social Oriented?
3. Is there a significant relationship between the demographic profile (age) and the level of technological stress?
4. Based on the results, what intervention program may be proposed?

## 1.3 Hypotheses of the Study

In this study, the following are the hypotheses;

1. There is no significant correlation between age and teachers' techno-stress level.

## 1.4 Conceptual Framework

The above concept of the study shows the input, process, and output flow. The first attribute of a techno user is the digital use or close and direct contact with it. Second, depending on the environment in which someone is present revolves their response to the stimuli through the long exposure and technology usage. If the environment is healthy or unhealthy, someone's response varies, possibly mitigating a positive or negative behavioral change.

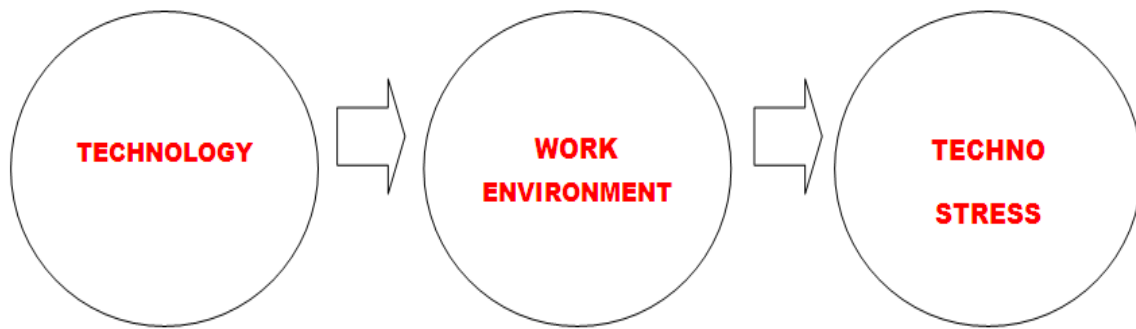


Fig. 1. Output flow

## 2. METHODOLOGY

### 2.1 Research Design

This study made use of a descriptive-correlational design. Eventually, the investigation considered the demographic factors and technostress among public school teachers of region 11.

### 2.2 Research Participants

The participants of this study will be DepEd Public School teachers with the following inclusion criteria: (1) Currently teaching (Public School) for more than five years; (2) Licensed Professional Teacher in the Philippines, (3) Male or Female and (4) Single or Married. Informed consent will be individually sought from them through the google link form.

### 2.3 Sampling

The researchers will employ purposive sampling under non-probability sampling, where the researchers have the autonomy to select whosoever participants to invite within the investigation period.

### 2.4 Data Analysis

This paper utilized the Teachers' Techno-stress Levels Defining Scale (TTLDS). This is a 5- Point Likert-type scale intended for defining teachers' techno-stress levels. It is a 28-item, five-factor ("Learning-Teaching Process Oriented," "Profession Oriented," "Technical Issue Oriented," "Personal Oriented," and "Social Oriented") scale. For reliability coefficients, Cronbach Alpha was calculated as 0.917, and Spearman-Brown was calculated as 0.845. This indicates that the test is standardized. It is valid, and reliable. Moreover, this test was only utilized

after the test developers approved a letter for permission to use.

### 2.5 Data-Gathering Procedure

Prior the data gathering commenced, the research team conducted a Psychology Symposium was conducted. The research team crafted a google form and disseminated it to prospective participants of the symposium. Upon signifying their consent to their engagement, as properly informed, filled-out survey forms were considered part of the repository documents of this study. Distinctively, other research members had a courtesy call and contact with the DepEd district supervisors and approved the engagement of public teachers in both research and symposium. Outright, teachers will then participate and register. Once the registration was done, the zoom link for this virtual purpose was disseminated to all qualified participants. The survey questionnaires from the symposium were tallied, computed, and critically analyzed.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

#### 3.1.1 Demographic profile of respondents

Table 1 presents the demographic profile of the respondents. The respondents' age, gender, and educational attainment were tallied to investigate this study's respondents.

Based on Table 1, the findings of the study presented that the majority of the respondents were female, garnering over 85 percent ( $n = 148$ ) of the total population ( $N=174$ ), as compared to males, who garnered only 14.9 percent ( $n = 26$ ). The majority of the respondents were Teacher I, 62.1 percent ( $n = 108$ ).

**Table 1. Demographic Profile of the Respondents**

Demographic Category	Type/Group	Frequency	Percentage
Gender	Female	148	85.1
	Male	26	14.9
Educational Qualification	Special Science Teacher	4	2.3
	Teacher III	27	15.5
	Teacher II	35	20.1
	Teacher I	108	62.1
Age (in years)	20-30	62	35.6
	31-40	59	33.9
	41-50	40	23.0
	51-60	13	7.5

**Table 2. Level of Technostress of Respondents**

Techno-Stress Indicators	Mean	SD	Descriptive Level
Social Oriented	3.25	.832	Moderate
Personal Oriented	2.79	.947	Moderate
Technological Issues Oriented	3.33	.915	Moderate
Profession-Oriented	2.68	.973	Moderate
Learning and Teaching Process	2.87	.915	Moderate
Overall	2.99	.727	Moderate

**Table 3. Test of Relationship between Technostress and Age of the Respondents**

Dependent Variables	Independent variable	
	Age	
	r	p-value
Techno-Stress	.019	.806

*p-value must be significant at a 0.05 level of significance (2-tailed).*

Meanwhile, in terms of age, most of the respondents were within the age range of 20-3-years old, with over 35.6 percent of the total population. The respondents who took the survey questionnaire distributed were young adults. Moreover, the frequency of the respondents categorized according to their demographic profile reflects that most of the public-school teachers in region XI were young adults and continue to serve amid the pandemic. Amid the pandemic, they are most likely to face the challenges it brought on the digitalization of education.

Presented in Table 2 were the study's findings, which included the mean ratings for each of the indicators and the overall mean rating of the respondents' level of techno -stress. From the table, it can be deduced that the mean ratings of the indicators, social oriented ( $\bar{x}$ = 3.25), personal oriented ( $\bar{x}$  = 2.79), technological issues oriented ( $\bar{x}$ =3.33), profession-oriented ( $\bar{x}$ =2.68), and learning and teaching process ( $\bar{x}$ =2.87) are within the mean range of 2.61-3.40, described as moderate. Expectedly, with the mean ratings of

the indicators, the level of the respondents' technostress was also found to be moderate, with a mean rating of 2.99 and a standard deviation of .727. It is also noteworthy; that the standard deviation was all less than one, implying that the respondents' scores are almost identical.

Looking at the mean ratings of each indicator, technological issues oriented garnered a mean rating of 3.33, rated highest among others. This implies that in terms of handling or responding to issues in their devices or gadgets, technologies used to distribute learning materials and connect with students, public school teachers find it to be causing moderate technostress.

Moreover, the findings indicate that the respondents are experiencing moderate levels of technostress at work. Public school teachers are indeed experiencing technostress adjusting towards offering learning services to students amid the pandemic. However, the intensity of technostress is not at an alarming rate, which precludes their work self-efficacy.

As presented in Table 3, statistical evidence provided that the age of respondents has a significant relationship with the level of technostress, with the p-value less than the level of significance of 0.05 ( $p\text{-value} = 0.19 < 0.05$ ). This would indicate that the as the age of the respondents were higher, the more likely their level of technostress rises. Also, this would mean that compared to older adults, or middle adults, young adults are more likely to have a lower level of technostress amid the pandemic. Hence, with enough statistical evidence, it is imperative that the failure to reject the null hypothesis, thus, there is indeed a significant relationship between age and the technostress of public school teachers.

### 3.2 Discussion

Based on the presented findings of the study, the results are congruent with the study of Mengay [14], which indicated that the digitalization of work affects the psychosocial and psychological wellbeing of employees. From the survey, the mean ratings indicated that public school teachers are experiencing a moderate level of technostress. Providing evidence that digitalization does have consequential effects on the health of employees. Prior to the pandemic, Mahboob and Khan [19] highlighted that work efficiency has risen because of technology use. However, along with it is the rise in stress.

Meanwhile, in terms of the age of the respondents, the majority were young adults. According to Johnson [16], technostress is bound to be experienced because of organizational mishaps regardless of the years spent working in any office. Similarly, Tarafdar et al. [15], with effective management and structure, an organization can overcome the consequential effects of technostress and may even prevent it from being experienced by employees.

Additionally, presented in Table 3 was the test of the relationship between the respondents' age and the Technostress level. The study aimed to identify factors that could be correlated to the technostress of public-school teachers, and based on separate studies involving stress and technology use, the researchers went on to identify whether the age of the respondents would be a factor. The findings would prove relevant in future research endeavors in

developing age-specific interventions. The findings revealed a significant positive relationship between the respondents' technostress level and their age. The findings are congruent to the study by Tams [21], which supported that older individuals are easily distracted by technology-mediated interruptions leading to greater mental workload, stress, and efficacy at work. The majority of the respondents of this study were between 20-30 years old, which implies that the moderate level of technostress reflects that compared to older and middle adults, young adult public-school teachers elicit no alarming level of technostress.

Furthermore, the findings of this study are relevant in the current era of education, when the education sector is forced to remote learning. With the pandemic receding, it is pertinent to understand and recognize how the digitalization of work has affected public school teachers. As per Peinado-Abilleira et al. [13], it is a new factor that teachers must face. This is considering that most of the teachers thriving in the sector belong in the traditional classroom face-to-face learning age. Fortunately, the findings of this study indicate that teachers are experiencing technological stress at a manageable level. However, this does not necessarily suggest that it is not affecting their work performance or that they are not experiencing techno-complexity and techno-insecurity (Li et al. 2021).

Technostress is only one of the many encompassing aspects of the many difficulties that teachers are facing as technology (digital) is forced to be integrated with the education system worldwide due to the pandemic. Moreover, the current study has provided evidence that teachers are experiencing technostress. According to Kassim et al. [17], individuals experiencing technostress also experience emotional exhaustion. This warrants interventions that will help teachers manage these emotions and psychological challenges to function and perform their tasks to their fullest potential [18,19].

### 4. CONCLUSION

Amid the pandemic, the digitalization of education has reinforced the utilization of technology that connect teachers and students through online platforms. Consequently, this

demands teachers to equip themselves with the necessary rudimentary skills to facilitate their classes and responsibilities. Unfortunately, in an attempt to respond to these demands, teachers are to face strains, leading to what is called techno-stress. Hence, the conduct of this descriptive-correlation study.

Furthermore, the investigation of the study has concluded with the following points:

- Most public-school teachers working amid the pandemic were females, and most were Teachers I. Also, most of these teachers are between 20-30 years old.
- The public-school teachers have a moderate level of technostress. This implies that public school teachers are experiencing technostress in handling technological difficulties, but the intensity, not alarmingly high, requires no clinical attention nor causes disruption to public school teachers' wellbeing.
- Public-school teachers' age and their level of technostress are significantly correlated. The study could best guide interventions that could be conducted that are age-specific. Interventions may seek to identify, and craft interventions suited and appropriate for different age groups that would consider age-specific traits to lead and corroborate technology use and stress de-stressing activities effectively.

Finally, this paper is only limited on identifying the level of technostress of public-school teachers particularly those who attended the Psychology symposium hosted by the research team. Adding to that, this study only sought to identify relationship between technostress and demographics of the participants. Future researches may anchor on this study to possibly widen the sample population, from school administrators, teaching and non-teaching staffs. The findings of this study will serve as a frame of reference for future studies involving technostress.

## CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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