International Journal of Research Publication and Reviews

Technostress in Secondary School Teachers

Fifti Imro'atur Rosyidah ᵃ, Susilo Purwati ᵇ

[a] *Muhammadiyah University of Malang, Jl. Raya Tlogomas No.246, Babatan, Tegalgondo, Kec. Lowokwaru, Malang City, East Java 65144, Indonesian.*
[b] *Muhammadiyah University of Malang, Jl. Raya Tlogomas No.246, Babatan, Tegalgondo, Kec. Lowokwaru, Malang City, East Java 65144, Indonesian*
E-mail address: fifti.smpn1ksb@gmail.com
DOI: https://doi.org/10.55248/gengpi.4.1123.113107

A B S T R A C T

The rapid use of technology on the one hand can be beneficial, but on the other hand it also has a negative impact on teachers. This condition triggers stress for teachers who are unable to adapt quickly to technology. This stress is called technostress. Technostress is a phenomenon of stress caused by the inability to cope with the demands of an organisation in the use of computer-related technological equipment. Technostress is considered a cause of stress in teachers, technostress reduces the interpretation of information about the usefulness and ease of use of technology which results in resistance to the use of technology. The use of information technology that is supposed to provide convenience in work can actually be a burden that is perceived to hinder teacher performance and can even trigger discomfort in carrying out their work. From the results of the systematic review in several countries, it shows that one of the factors causing technotress in teachers is the lack of support from the agency and also colleagues. While the solution that can be done to reduce technostress in teachers is to provide full support to teachers in the form of self-development and also collaboration with colleagues.

Keywords: Technostress; teachers; causative factors.

1. Main text

Introduction

The impact of the Covid pandemic in 2019 on education is the rapid use of technology in education. Both teachers and students are required to be familiar and able to adapt quickly to the use of technology. In addition, in this era of globalisation, in order to improve their professionalism, teachers are required to improve their abilities and performance, because no matter how good the curriculum is implemented, teachers are the spearhead of its implementation. In Law no 14 of 2005 in article 1 paragraph 1 concerning teachers and lecturers, which is defined that teachers are professional educators whose main task is to educate, teach and guide, direct, train, assess and evaluate students in early childhood education, formal education pathways, basic education and secondary education (Alfianur & Sakti, 2022).

Professional teachers are teachers who are able to create creative, innovative and memorable learning for their students. The classroom becomes vibrant and alive so that students are able to optimise learning into meaningful learning. The existence of technology at school can be useful when a teacher is able to use it effectively. Currently, teachers should master the knowledge and use of information technology appropriately in learning activities. In general, the performance of teachers at school has an important role in achieving school goals. According to Danim, the characteristics of the education crisis in Indonesia are teachers who have not been able to show adequate performance (Danim, 2006). The existence of quality teachers is an absolute requirement for the presence of quality education systems and practices.

With the rapid use of technology, on the one hand it can be beneficial such as facilitating and accelerating learning activities, but on the other hand it also has a negative impact on teachers. Many applications have been used to carry out learning, both the process and the evaluation. Even for the completeness of the administration of teacher work, a lot is now done online. This condition triggers stress for teachers who are unable to adapt quickly to technology. The stress is called technostress, technostress is a negative effect on human attitudes and behaviour, ways of thinking and mentality arising directly or indirectly from the use of information technology and not being able to adapt to an information technology-based environment (Okonoda, 2017). Teachers become unable to complete work because they are not used to using information technology in some of their activities. The factors experienced are that teachers do quite a lot of work and are required to better understand the use of information technology. If this happens continuously, there will be a decrease in performance (Wibowo, 2020). There must be an effort to overcome this technostress to prepare teachers for the discomfort of using information technology (Jameel Abo Mokh et al., 2021).

In this cinematic, the researcher's question is what factors cause technostress in secondary school teachers, and what factors can reduce technostress in secondary school teachers. in this systematic, the research subject is limited to teachers, more specifically secondary school teachers. previous research used as a review is research conducted from 2019 to 2022. The database used is Scopus. The type of journal used is an English-language journal.

Methods

There are several processes in conducting a systematic review, namely planning the review (by identifying benefits and developing), conducting the review (journal search, primary journal selection, assessing journal quality, data extraction and synthesis), and reporting (Kitchenham, 2004). The planning of the review by the author began by creating a research question, namely what are the factors that cause technostress in secondary school teachers? Next, the author created a comprehensive list of search words. The search words used were technological stress, technostress, and teacher. These search words were used to search for journals on the Scopus database. From the keywords used, 127 journals were obtained. The next step was to check for duplication in all journals obtained using Rayyan, and 2 duplicates were obtained. After selection, it was determined that only 1 journal was used. Next, the journal selection stage was carried out based on the title in accordance with the theme to be reviewed, namely technostress in teachers, the results obtained were 17 suitable journals and continued by uploading the full text of the existing journals and obtained a total of 8 journals that were in accordance with the theme of the systematic journal review.

In selecting the journals, the author provides restrictions on the selected journals, namely: 1) the journal discusses technostress as the dependent variable and its causal factors as the independent variable, 2) the subjects are teachers in secondary schools, 3) the type of research is quantitative and qualitative, 4) English language journals, 5) the research was conducted from 2017 to 2022. Meanwhile, journals that were not included in the criteria were: 1) journals that discuss technostress in students, college students and lecturers, 2) not written in English, 3) articles with the type of review, reports and research whose methods are not clearly described.
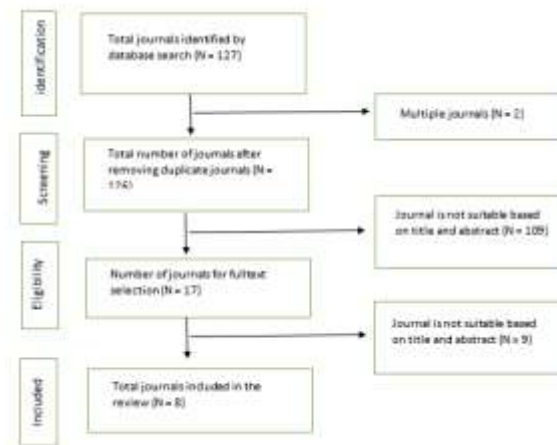
Picture 1. Systematic review prism graph

Result and Discussion

Technostress was first coined by an American clinical psychologist Craig Bord in 1984. Bord defined technostress as a condition caused by the difficulty of people and professional fields to adapt to rapid technological change (Brod, 1986). Technostress can generally be defined as mental distress experienced by employees due to the use of ICT in the workplace (Weil, M. M., & Rosen, 1997). Technostress is a phenomenon of stress caused by the inability to cope with the demands of an organisation in the use of computer-related technological equipment. Effiyanti and Sagala suggested that there are several naming of technostress conditions, with other terms such as: technophobia, cyberphobia, computerphobia, computer anxiety, computer stress, negative computer attitudes and computer aversion (Effiyanti & Sagala, 2016).

Technostress is considered a cause of stress in teachers, technostress reduces the interpretation of information about the usefulness and ease of use of technology which results in resistance to the use of technology. The use of information technology, which should be able to provide convenience in work, can actually be a burden that is felt to hinder teacher performance and can even trigger discomfort in carrying out their work. In a study conducted by Al-Fudail and Mellar, it was found that teachers suffer from technological pressure when using and implementing classroom learning. The pressure comes from how to operate software and networks (Al-Fudail & Mellar, 2008). Whereas Syvanen, et al found a relationship between the use of educational technology and the power of technology generation, identifying the anxiety that occurs in teachers in using technology. In particular, Syvanen et al. stated that the main causes of technostress in teachers are the use of ICT integrated in every learning activity, the presence or absence of school support and attitudes towards the use of educational technology. The study found that teachers who have a positive attitude towards educational technology and enjoy school support have low levels of technostress (Nordkvelle, 2016).

According to Tafadar, there are 5 categories that trigger technostress, namely: 1) Techno-overload is forcing users to work faster and more. A stressful condition where users feel forced to use rapidly developing information technology for a long time. 2) Techno-invasion is forcing users to work with tight time / almost no time off. Stressful conditions experienced by users because they feel they have to use information technology anytime and anywhere so that there is no difference between personal matters and work matters. 3) Techno-complexity is forcing users to learn, understand and adapt to time-

consuming computers. This stress condition is because users feel that using information technology lacks understanding and understanding so that users must understand and learn the menus in the information technology. 4) Techno-insecurity is a situation of feeling threatened with losing your job if you cannot understand computers properly and correctly. This stressful condition is experienced because users feel afraid of losing their jobs if they cannot understand information technology or are afraid of being replaced by other people who are more familiar with using information technology. 5) Technological uncertainty (Techno-uncertainty) is that technology is developing faster and faster resulting in feeling uneasy if you miss out on understanding new technology. This stressful condition is caused because users feel that information technology is developing rapidly and users feel disturbed by these changes (Tarafdar et al., 2011).

From several explanations of the above figures regarding technostress, it can be concluded that technostress is a state or tendency of stress experienced by individuals due to their inability to cope with the use of technology related to ICT in their workplace. The inability of the use of technology in the workplace, teachers are prone to technostress, this condition can cause problems in terms of mental health and well-being in teachers so that it will adversely affect the quality of life of teachers. This systematic review research is expected to provide information about the factors that cause stress in secondary school teachers and what solutions should be done to overcome this stress, so that it is useful for teachers in carrying out their work.

Table 1. A variable list of technostress-causing factors affecting the type of stress.

No	Author	Subject	Causative factors	Types of Technostress
1	Francesco Sulla, et al. (2022)	1210 primary and secondary school teachers	Lack of support from agencies, colleagues, students and parents	Anxiety, fatigue and ineffectiveness
2	Carrasco, et al (2022)	327 teachers	The lack of technological equipment and the lack of mastery of technological tools	Techno-Anxiety
3	Rama Adithya V. et al (2021)	1361 teachers	A shift in administrative duties teachers.	Burnout
4	Thiyagu,K.: Joshith VP (2021)	150 teachers	Perceptions of the integration of technology in teaching and processes, and one's technical knowledge and skills.	Techno-Anxiety
5	Carla Estrada Munoz, et al (2020)	428 primary and secondary education teachers	Males tend to have higher levels of technostress. (with an unbalanced sample unbalanced sample)	Scepticism, fatigue, anxiety and inefficiency
6	Califf & Brooks (2020)	416 class 12 teachers	Lack of literacy and collaboration.	Techno- inscurity, Techno–invasion, techno overload.
7	Yan Dong et al (2019)	366 class 12 teachers	Low technological competence, high technological demands.	Technostress teaching and learning process, rofession, technical issues, personal, and social issues.
8	N. Annalakshmi; A.Catherin Jayanthy (2019)	200 teachers	Teaching experience, personal issues, health issues, technical issues and time management.	Techno- overload, Techno-invasion, Techno-complexity, Techno-insecurity,

Sulla et al in Italy and France examined emotions, technostress and teacher fatigue during PJJ to 1210 teachers with an age range of 20 to 60 years, the majority of respondents were 84.79% female with an average age of 41 while 15.21% were male respondents with an average age of 40 years. The results obtained state that the causes of technostress in teachers are anxiety and fatigue. These two things are the most influential dimensions of technostress in teachers. Specifically discussed in this study anxiety is expressed in subjects in the form of fear, while forms of fatigue such as decreased cognitive function, including decreased concentration, memory and decision making. Factors that influence this are the lack of support from the agency in the form of self-development such as organising training. In addition, the lack of support from colleagues, students and parents is also a factor in triggering technostress in teachers. In addition, the inability of public administration to manage the transition of distance learning, the completeness of digital media, insufficient funds, and rigid organisational structures also trigger technostress.

The results of a study conducted by Carrasco et al (2022) in Riobamba from 327 teachers stated that 47.71% of teachers in Riobamba experienced technostress with techno-anxiety type. A total of 156 out of 327 teachers were at very high, high and moderate scores on the dimensions of anxiety, scepticism and ineffectiveness, with feelings of fear and tension due to the use of technology, while for teachers who experienced technical fatigue a total of 119. The contributing factors of technostress are the lack of technological equipment and the lack of mastery of technological tools mastered by teachers in facing the challenges of educational virtualization (Carrasco et al., 2022).

Another researcher conducted a study related to technostress in a group of low-income teachers in Indian schools by taking a sample of 1361 about the use of technology specifically the use of android or smartphones. Findings from 70 teachers interviewed showed that although smartphones help with teaching and administrative functions, they can lead to burnout among teachers, and become a triggering factor for technostress. The shift of teachers' administrative tasks from paper to digital systems is also a cause of stress and burnout among teachers. The lack of support from the school administration

to manage teachers' workload also triggers technostress, even though the school management organises training on professional development for teachers. From the data analysis, it was found that teachers in public schools experienced significantly higher technostress than teachers in private schools. The results of the data analysis obtained state that peer and school support can reduce the effects of technostress on smartphone technology (Varanasi et al., 2021).

From a study conducted by Thiyagu and Joshith (2021) to 150 teachers in Kasaragod India, obtained the results that the factors causing technostress in teachers are the fear of losing storage materials, losing internet data and fear of viruses or threats. Thiyagu stated that perceptions of the integration of technology in teaching and processes, as well as technical knowledge and skills, also affect a person's technostress. Most teachers are from the digital immigrant generation, who cannot use digital technology tools properly (Thiyagu, K., & Joshith, 2021).

From research on technostress conducted by Carla et al (Estrada-Muñoz et al., 2020). Conducted on 428 public and private elementary and secondary school teachers around the Valparaiso and Metropolitan Santiago areas, Chile using the RED-TIC questionnaire. The technostress instrument used was constructed from four subscales, which when arranged allowed for the identification of two types of technostress manifestations due to intra-labour psychosocial risks. Thus, a high score on the dimension would be an indicator of technostress in two manifestations namely: 1) techno-anxiety and techno-fatigue. In the case of teachers in Chile, 11.9% experienced techno- fatigue, 13.1% showed techno- anxiety status. 10.7% of the population showed both pathologies, in other words 50 teachers, at least 5 of them had to go on occupational sick leave.

From the results of this study, it was found that there was no statistically significant relationship between the age group of teachers and the level of technostress anxiety. As for the manifestation of the level of techno-fatigue in Chilean teachers, it was found that male teachers tend to experience it more than female teachers. For the relationship between teachers' age group and the level of techno-fatigue as measured by the technostress instrument, there was no statistically significant correlation between the two variables. From the four data presented, it can be concluded from the research conducted in Chile that male teachers show a higher incidence of techno-anxiety and techno-fatigue compared to female teachers. This means that gender is a contributing factor to technostress in teachers in the Valparaiso and Metropolitan Santiago regions of Chile.

From the empirical study conducted by Califf and Brooks, it is stated that there are several ways to reduce the negative impact of technostress. One way is through a concept called literacy facilitation which involves organisations promoting a collaborative workplace culture where employees encourage each other to share and facilitate knowledge, skills, and general advice on the use of technology for work. By doing so, end-users become literate about the use of technology for work and are more likely to overcome problems associated with its use. Creating a collaborative workplace culture is particularly important in the context of grade 12 teaching. Literacy facilitation is therefore a suitable and practical variable to use to investigate the use of negatives associated with technostress as experienced by grade 12 teachers. In particular, literacy facilitation has not been empirically tested in the study of grade 12 education (Califf & Brooks, 2020).

Yan Dong et al conducted a study on the relationship between teachers' technostress and TPACK, computer independence ability and school support in China. Data were collected using a composite instrument that had been adapted from previous studies. The research subjects were 366 teachers. The subjects were secondary school teachers from different regions. These included the provinces of Hunan, Henan, Anhui, Shanxi and Shandong as well as the cities of Beijing and Shanghai in China. Most of the regions are located in the eastern and central parts of China with above average socio-economic status. In addition, the schools where the teachers of the subjects of this study have integrated ICT into the curriculum and teaching. The subjects consisted of 42.3% males and 57.7% females, 29% from primary schools, 25.7% from junior high schools, and 45.4% from senior high schools. The ages of the teachers ranged from 22 to 57 years, and their teaching experience ranged from 1 to 43 years.

From the results of the research conducted, it was found that the causal factor of technostress in teachers is that the technological competence possessed by teachers affects the level of stress. TPACK plays an important role in helping teachers overcome psychological stress due to technology. Stress in teachers will arise if the demands of competence in the use of technology are beyond the existing individual skills. The demand for teachers to use various sources of knowledge triggers technostress in teachers. It is important for school leaders to provide high-quality, long-term professional development support. This study found that co-operation between colleagues can mediate technostress in teachers. The existence of training programmes that create more opportunities for teachers to gather hands-on experience, conduct more contextual evaluations and provide timely feedback to improve teachers' knowledge and abilities can reduce stress on teachers in adopting ICT in their classrooms. In addition, schools play an important role in improving teachers' technological literacy and confidence in using technology, which can effectively reduce technostress in teachers (Dong et al., 2020).

From the investigation and analysis of technostress among senior secondary level teachers conducted by Annalakshmi (Annalakshmi & Catherin Jayanthy, 2019), results were obtained about the factors causing technostress in school teachers. The data obtained were collected from 200 teachers from public and private schools in Madurai District, India. By using the descriptive survey method adopted. From the interpretation of the data, it is found that there is no significant difference between the level of technostress of teachers in terms of gender, there is no significant difference between the level of technostress of teachers with respect to locality (region), there is a significant difference between the level of technostress between teachers with respect to their teaching experience. The causes of technostress are due to individual problems, health problems, technical problems or time management.

From the systematic review obtained, it was found that not all journals searched conducted research on secondary school teachers, there were several journals that conducted research using research subjects ranging from elementary school teachers and also teachers in inclusive schools, but still researchers used it in the systematic because most of the subjects used in the study were secondary school teachers. Of the 8 journals reviewed, the results obtained can be used to answer the researcher's question above. Factors that cause technostress in secondary school teachers are 1) lack of support from agencies, colleagues, students and parents, 2) the shift of teachers' administrative tasks to digital/online systems, 3) perceptions of the integration of technology in teaching and processes, and one's technical knowledge and skills. 4) lack of literacy and collaboration, 5) low technological competence,

6) lack of teaching experience, 7) personal, health and technical problems and time management skills, and 8) lack of technological equipment. While factors that can reduce technostress in secondary school teachers are: 1) full support from the agency to teachers, can be in the form of self-development activities such as training, webinars, teacher workshops. 2) Collaboration with colleagues, students and parents, 3) improving technological literacy skills.

Conclusion

To be a professional teacher today, the ability to use technology is needed to create creative, innovative and memorable learning for students. The rapid use of technology on the one hand can be beneficial, but on the other hand it also has a negative impact on teachers. This condition triggers stress for teachers who are unable to adapt quickly to technology. This stress is called technostress. Teachers become unable to complete their work because they are not used to using information technology in some of their activities. The factors experienced are that teachers do quite a lot of work and are required to be more understanding in the use of information technology.

From the results of research in several countries it can be concluded that the factors that cause technotress in secondary school teachers are: lack of support from the agency with the shift of teacher administrative tasks to digital / online systems, perceptions of technology integration, lack of literacy and collaboration and teaching experience and personal problems. While the solutions that can be done to reduce the existence of technostress in secondary school teachers according to the results of research that has been carried out by previous researchers during 2019 to 2022 are support from the agency in the form of self-development activities in collaboration with colleagues, students and parents, and improving technological literacy skills by the teacher concerned by self-study.

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