

The influence of coworker support on technostress through self-efficacy among civil servant (PNS) elementary school teachers in Tanjungbalai City

Pengaruh coworker support terhadap technostress melalui self- efficacy pada guru PNS sekolah dasar di Kota Tanjungbalai

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ABSTRACT

Digital transformation in education has the potential to induce technostress among teachers, which refers to a form of psychological stress caused by the demands of technology utilization. Various studies indicate that coworker support and self-efficacy are crucial factors in coping with technostress. Therefore, this study aims to analyze the influence of coworker support on technostress, mediated by self-efficacy. A quantitative explanatory survey design was employed, involving 200 civil servant elementary school teachers in Tanjungbalai City. Data analysis was conducted using the Structural Equation Modeling-Partial Least Squares (SEM-PLS) method. The results reveal that coworker support does not have a direct, significant effect on technostress; however, self-efficacy fully mediates the relationship between coworker support and technostress. Future research is encouraged to replicate this model across more diverse educational levels and regions, utilize longitudinal designs, develop instruments better suited to local cultural contexts, and examine other potential antecedents, mediators, or moderators, including school principal leadership and digital literacy. These findings suggest that education authorities should integrate professional counseling services, specifically addressing technostress into teacher well-being programs.

ABSTRAK

Transformasi digital dalam dunia pendidikan berpotensi menimbulkan technostress pada guru yaitu tekanan psikologis yang muncul akibat tuntutan penggunaan teknologi. Berbagai penelitian menunjukkan coworker support dan self-efficacy merupakan faktor penting dalam menghadapi technostress. Oleh karena itu, penelitian ini bertujuan untuk menganalisis pengaruh coworker support terhadap technostress melalui self-efficacy. Penelitian menggunakan desain kuantitatif explanatory survey terhadap 200 guru PNS SD di Kota Tanjungbalai. Analisis data dilakukan menggunakan metode structural equation modeling-partial least squares. Hasil penelitian menunjukkan bahwa coworker support tidak terbukti berpengaruh langsung dan signifikan terhadap technostress. Namun, self-efficacy terbukti memediasi secara penuh hubungan antara coworker support dan technostress. Penelitian selanjutnya disarankan untuk mereplikasi model ini pada jenjang dan wilayah yang lebih beragam, menggunakan desain longitudinal, mengembangkan instrumen yang lebih kontekstual sesuai budaya lokal, serta menguji variabel lain yang berpotensi berperan sebagai antedeced, mediator, atau moderator, seperti kepemimpinan kepala sekolah, dan literasi digital. Temuan ini memberikan kontribusi pada instansi dinas pendidikan untuk mengintegrasikan layanan konseling profesional yang memahami isu technostress sebagai bagian dari program kesejahteraan guru.

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1. INTRODUCTION

Digital transformation in the education sector has changed the learning processes, including designing, implementation, and evaluation of learning. Consequently, teachers are required to continuously learn and adapt to various digital devices and applications. In general, these changes have made the learning process more flexible, faster, and more accessible (Graham et al., 2023; Pressley et al., 2022). However, when the demands of technology use are not accompanied by adequate skills and human resources, teachers may experience work-related stress.

Various studies have shown that the integration of technology into learning can become a source of pressure for teachers. Ma et al. (2022) found that studies on teacher stress during the pandemic included 54 studies involving 256,896 teachers from 22 countries, with a stress prevalence of 62.6 percent. These findings indicate that the sudden transition to online learning placed considerable psychological pressure on teachers. Kotowski et al. (2022) also reported that 72 percent of teachers experienced high or extreme levels of stress, while 57 percent experienced high or extreme levels of burnout during changes in learning practices throughout the pandemic.

These findings suggest that the transition to digital learning contributed to teachers' psychological burden, particularly when the changes occurred rapidly and required substantial adaptation to new work demands. Furthermore, a national survey of teachers across 27 provinces conducted by Haeri & Afriansyah (2024) found that 79.1 percent of teachers felt that the digitalization of learning increased their administrative workload, 51 percent of teachers completed digital-related tasks outside school hours, and 14.7 percent worked late into the night to complete technology-based tasks.

Taken together, findings from previous studies indicate conditions consistent with the characteristics of technostress described by Tarafdar et al. (2019). Tarafdar defines technostress as a condition of stress experienced by individuals due to their inability to adapt effectively to the use of information and communication technology in the workplace. This condition may be characterized by feelings of anxiety, mental exhaustion, frustration, being overwhelmed by digital demands, and difficulty keeping up with rapidly evolving technologies.

Similar condition is also identified in Tanjungbalai City. A preliminary study conducted through communication with elementary school teachers in Tanjungbalai City revealed that some teachers feel pressured to master various digital devices and applications within a relatively short period. In addition, teachers reported that the use of technology has increased their workload beyond their teaching responsibilities. As a result, some teachers feel overwhelmed, experience mental exhaustion, and have difficulty balancing teaching demands with technology-based administrative tasks in carrying out their responsibilities.

The findings of preliminary study are further supported by recent reports by the Education Quality Assurance Center (BPMP) of North Sumatra Province. Over the past three years, all elementary schools in Tanjungbalai City have received various digital learning facilities, including Chromebooks, laptops, Wi-Fi, and Digital Interactive Boards (DIB). However, the utilization of DIBs at the elementary school level in Tanjungbalai City remains relatively low. This condition indicates a gap between the availability of digital facilities and teachers' psychological readiness to utilize educational technology, which may potentially contribute to technostress.

The urgency of this study lies not only in the presence of technostress but also in the potential consequences that may arise when teachers lack adequate resources to handle it. In the context of elementary school teachers, technostress is an important issue since teachers are responsible not only for teaching but also for managing digital administration, developing instructional media, input grades online, establishing communication with parents, and adapting to curriculum changes, all of which require the use of technology. Technostress issues among elementary school teachers can affect not only their professional lives but also their personal lives and overall well-being (Wang et al., 2023).

Moreover, elementary school teachers who serves as civil servants (PNS) are directly subjected to various government policies regarding digital transformation and, therefore, have greater obligations to implement digital education systems compared with some other groups of teachers. In the context of Tanjungbalai City, the utilization of the technological facilities available in schools may be hindered, ultimately limiting the optimization of digital learning. Teachers experiencing technostress may also be more likely to adopt minimal technology-use strategies or return to conventional teaching practices because they are perceived as easier and more convenient. If this situation persists, the gap between the availability of digital infrastructure and its utilization in learning may continue to widen.

The causes of technostress among teachers are not limited to the presence of technology or the complexity of the devices, but are also influenced by various factors driven by the work environment and individual characteristics. According to Yang et al. (2025), environmental factors may include organizational support, supervisor support, coworker support, infrastructure quality, and job demands related to technology use. Meanwhile, individual factors may include digital competence, experience with technology, readiness to adapt to change, and individuals' beliefs in their own capabilities (self-efficacy).

Therefore, understanding technostress requires certain degree of alignment between technological demands and the resources available for teachers to handle them. This perspective is consistent with the Job Demands-Resources (JD-R) Model, which explains that the impact of job demands on individuals' psychological conditions is influenced by the availability of job resources and personal resources (Bakker & Demerouti, 2017). From this perspective, coworker support as a social resource and self-efficacy as a personal resource are important to examine as mechanisms that may help teachers cope with technostress.

Based on the discussion above, this study focuses on coworker support and self-efficacy, as they represent two distinct yet interconnected resources for coping with technological demands. Coworker support is selected as a workplace-based resource because coworkers are the individuals who interact directly with teachers in their daily activities at school and can provide emotional, informational, and instrumental assistance when teachers encounter difficulties in using technology. Geoffrion et al. (2025) define coworker support as a form of social support provided by coworkers in the workplace through emotional and instrumental assistance, which helps individuals cope with difficult situations, reduce stress, and strengthen their sense of connectedness with their colleagues. This support may include listening to concerns, providing encouragement, and sharing resources or information needed to complete work-related tasks.

Meanwhile, self-efficacy as a personal resource refers to individuals' beliefs in their own capabilities, particularly to determine how teachers perceive and respond to technological demands. Bandura (1997) defines self-efficacy as an individual's belief in their ability to plan

and execute actions necessary to achieve desired outcomes. According to Bandura, self-efficacy is not determined by the level of competence an individual possesses, but rather emphasizes an individual's confidence in their ability to cope with future situations that are uncertain, unpredictable, and often stressful.

Several previous studies have provided evidence of the relationship between coworker support, self-efficacy, and technostress. Dong et al. (2020) found that collegial support positively influences TPACK (Technological Pedagogical Content Knowledge) and teachers' computer self-efficacy. This means that the greater the support provided by colleagues, the better teachers are able to integrate technology into learning and the stronger their confidence in using technology. These findings indicate that positive interactions with coworkers can serve as a resource that helps teachers develop their capacity to cope with technological changes.

The role of self-efficacy as a psychological mechanism in reducing technostress is also supported by empirical research in Indonesia. Windasari et al. (2025) found that self-efficacy mediates the relationship between perceived organizational support and technostress among public senior high school teachers in Makassar. The findings indicate that support provided by the work environment can strengthen individuals' beliefs in their own capabilities, which in turn helps reduce their levels of technostress. Although the study was conducted among secondary school teachers, its findings suggest that self-efficacy may serve as a psychological mechanism explaining the relationship between social support and technostress across different educational contexts.

The research gap in this study arises from the insufficient explanation of the psychological mechanism linking coworker support to technostress. Previous studies have provided evidence that social support can help teachers cope with job demands and that self-efficacy is associated with individuals' ability to cope with technological demands. However, these findings do not fully explain the process through which support from coworkers is received by teachers and subsequently translated into stronger beliefs in their ability to cope with technological demands.

In other words, the direct relationship between coworker support and technostress does not sufficiently explain how social resources within the school environment can influence teachers' psychological responses to technological demands. Based on this gap, the novelty of this study lies in examining self-efficacy as a mediating mechanism that explains the relationship between coworker support and technostress among civil servant elementary school teachers. This research model integrates the JD-R Model and Social Cognitive Theory by positioning coworker support as a job resource and self-efficacy as a personal resource. Within this framework, coworker support is viewed not only as a factor that may directly reduce technostress but also as an environmental resource that can strengthen teachers' beliefs in their own capabilities. In turn, stronger self-efficacy is expected to help teachers cope with technological demands more adaptively, thereby reducing technostress.

Based on the theoretical framework and research gap described above, this study aims to analyze the effect of coworker support on technostress, examine the effect of coworker support on self-efficacy, examine the effect of self-efficacy on technostress, and test the role of self-efficacy in mediating the effect of coworker support on technostress among civil servant elementary school teachers in Tanjungbalai City. Taking the basis from the JD-R Model and

Social Cognitive Theory, as well as the findings of previous studies discussed above, the research hypotheses are formulated.

- H₁: There is an effect of coworker support on technostress among civil servant elementary school teachers in Tanjungbalai City
- H₂: There is an effect of coworker support on self-efficacy among civil servant elementary school teachers in Tanjungbalai City
- H₃: There is an effect of self-efficacy on technostress among civil servant elementary school teachers in Tanjungbalai City
- H₄: There is an effect of coworker support on technostress through the mediation of self-efficacy among civil servant elementary school teachers in Tanjungbalai City

The findings of this study are expected to serve as a reference for teachers, as the frontline of digital transformation in education, to actively take responsibility for developing their own capabilities and contributing to a supportive school environment. The findings are also expected to serve as a reference for schools, particularly school principals, in creating a psychologically safe school that encourages teachers to further utilizing and experimenting the provided technologies, as well as for education authorities in designing teacher professional development programs that integrate psychological well-being and digital competence.

2. METHODS

Design

This study employs a quantitative approach with an explanatory survey design, which aims to explain relationships among variables and examine the effects or causes underlying a phenomenon based on data obtained from respondents. This approach was selected because it enables the researcher to explain the causal relationships among the variables examined in this study, namely coworker support, technostress, and self-efficacy. The data were analyzed using Structural Equation Modeling (SEM), specifically the Partial Least Squares (PLS) approach. SEM-PLS was selected because it enables the simultaneous examination of relationships among latent variables, including variables measured through multiple indicators that cannot be tangibly observed.

Participants

The population of this study consists of all civil servant teachers (PNS) actively teaching at public elementary schools in Tanjungbalai City. According to data from the Tanjungbalai City Education Office in 2026, there are 323 civil servant teachers distributed across 51 public elementary schools in six districts: 55 teachers in Datuk Bandar, 38 in Datuk Bandar Timur, 54 in Sei Tualang Raso, 85 in Tanjungbalai Selatan, 29 in Tanjungbalai Utara, and 62 in Teluk Nibung.

Civil servant teachers were selected as the study population because they are directly involved in implementing learning and face technological demands in both teaching activities and school administration. In addition, this population has characteristics that align with the objectives of the study, namely examining the relationships among coworker support, self-

efficacy, and technostress in the context of digital transformation in education. The sampling technique used was proportionate stratified random sampling, with districts serving as the strata. This technique was selected because civil servant teachers are distributed across six districts with different population sizes. Proportional allocation ensures that each district is adequately represented in the sample according to the proportion of civil servant teachers in the population.

The sample consisted of 200 civil servant teachers. This number was determined to obtain adequate representation of the teacher population across the six districts. Sample allocation was conducted proportionally based on the number of teachers in each stratum, including 34 teachers from Datuk Bandar, 24 from Datuk Bandar Timur, 33 from Sei Tualang Raso, 52 from Tanjungbalai Selatan, 19 from Tanjungbalai Utara, and 38 from Teluk Nibung. The inclusion criteria for the sample were: (1) Being a civil servant teacher; (2) Actively teaching at a public elementary school in Tanjungbalai City at the time of the study; and (3) Being willing to participate in the study by completing the research instruments thoroughly.

Instruments

The technostress variable was measured using the Technostress Scale developed by Ragu-Nathan et al. (2008) and adapted into Indonesian by Subchi et al. (2024). The instrument consists of 19 items covering five dimensions: techno-overload, techno-complexity, techno-invasion, techno-uncertainty, and techno-insecurity. An example item is, "I have a higher workload because of the increasingly complex technology." Based on construct validity testing using Confirmatory Factor Analysis (CFA), the second-order model demonstrated good goodness of fit, with $\chi^2 = 138.186$, $df = 116$, $p = 0.0784$, and $RMSEA = 0.030$, indicating that the instrument was suitable for use. Reliability was based on the reliability of the original scale, with item reliability coefficients ranging from 0.77 to 0.83.

The coworker support variable was measured using the Coworker Support Scale developed by Setton and Mossholder and adapted to the Indonesian organizational context (Tews et al., 2013), which was subsequently validated in the form of Bahasa Indonesia version by Prihatsanti (2021). The scale is based on two main dimensions: instrumental support and emotional support. An example item is, "My coworkers are willing to set aside their own work to help solve my work-related problems." The reliability results demonstrated excellent internal consistency, with person reliability of 0.92, item reliability of 0.97, and a Cronbach's Alpha of 0.95.

Self-efficacy was measured using the General Self-Efficacy Scale-12 (GSES-12), developed by Bosscher & Smit (1998) based on Albert Bandura's self-efficacy theory. The scale has been validated in the form of Bahasa Indonesia version using Item Factor Analysis (IFA) by Soetjipto et al. (2023). An example item is, "When I have a plan, I am confident that I can successfully carry it through to completion." The reliability testing showed that the instrument had good internal consistency, with an Ordinal Cronbach's Alpha of 0.830 for the total scale.

Data Analysis

The data analysis technique used in this study was Structural Equation Modeling (SEM), specifically the Partial Least Squares (PLS) approach. SEM-PLS was selected because

it enables the simultaneous examination of relationships among latent variables, including variables measured through multiple indicators that cannot be tangibly observed. In addition, SEM-PLS is suitable for examining both direct and indirect relationships among variables within the research model and can accommodate data that are not normally distributed. SEM-PLS is also particularly appropriate for analyzing the mediating effect in the relationships among the variables examined in this study, namely coworker support, technostress, and self-efficacy.

3. RESULTS AND DISCUSSION

Descriptive Analysis

The findings from the descriptive analysis are presented in Table 1. The table summarizes the comparison between the hypothetical means and the empirical means of the three variables.

Table 1. Comparison of hypothetical and empirical means

Variables	Hypothetical		Empirical		Categories
	Mean	Std Dev	Mean	Std Dev	
Coworker Support	42	9.33	52.4	8.74	High
Technostress	47.5	9.5	43.44	8.33	Moderate
Self-Efficacy	36	8	39.69	7.97	Moderate

Based on Table 1, the empirical mean for coworker support was 52.40, which is considerably higher than the hypothetical mean of 42. With an empirical standard deviation of 8.74, the teachers' overall scores were classified as high. The empirical mean for technostress was 43.44, which was lower than the hypothetical mean of 47.50. With a standard deviation of 8.33, teachers' technostress was classified as moderate. Meanwhile, the empirical mean for self-efficacy was 39.69, slightly higher than its hypothetical mean. With a standard deviation of 7.97, this indicates that teachers' self-efficacy was at a moderate level.

Outer Model Evaluation (Measurement Model)

According to Hair et al. (2022), there are two criteria for determining whether the outer model meets the requirements for convergent validity in reflective constructs. The initial measurement showed that several indicators had outer loading values below the threshold of 0.70. However, based on the recommendation of Hair et al. (2022), outer loading values ranging from 0.40 to 0.70 may still be retained as long as the AVE and CR values meet the required thresholds, namely $AVE > 0.50$ and $CR > 0.70$. In this study, discriminant validity was assessed using an HTMT threshold of < 0.90 , while model fit was indicated by an SRMR value of $d'' 0.08$ (Hair et al., 2022; Hu & Bentler, 1999). Based on the initial convergent validity assessment, the AVE values for self-efficacy and technostress did not meet the required threshold. Therefore, several items were eliminated to increase the AVE values and achieve a fit and adequate measurement model. After several rounds of testing, the final outer model after item elimination is summarized in Table 2.

Table 2. Outer loading

Item	Outer Loading	Item	Outer Loading
CS1	0.672	SE4	0.670
CS10	0.816	SE5	0.891
CS12	0.839	SE6	0.835
CS13	0.811	SE7	0.869
CS14	0.809	SE8	0.824
CS2	0.656	TS14	0.764
CS3	0.757	TS11	0.704
CS4	0.808	TS12	0.723
CS5	0.735	TS15	0.673
CS6	0.793	TS6	0.695
CS7	0.783	TS7	0.788
CS8	0.792	TS8	0.804
CS9	0.865	TS9	0.794

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

Based on Table 2, following the elimination, the remaining indicators demonstrate consistency with satisfactory outer loading values. These results confirm that the CS, SE, and TS constructs possess convergent validity.

Discriminant Validity

Discriminant validity is assessed using the heterotrait-monotrait (HTMT) ratio and the Fornell-Larcker criterion. Table 3 presents the HTMT values for the constructs.

Table 3. HTMT Results

Variables	CS	SE	TS
CS			
SE	0.546		
TS	0.153	0.343	

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

All HTMT values are below the 0.90 threshold, indicating adequate discriminant validity.

Table 4. Fornell-Larcker criterion

Variables	CS	SE	TS
CS	0.782		
SE	0.510	0.822	
TS	-0.093	-0.329	0.745

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

The Fornell-Larcker criterion is also met (Table 4), as the square root of the AVE for each construct exceeds the correlation values with other constructs. Furthermore, the model demonstrates good fit, with an SRMR value of 0.080.

Construct Reliability

Construct reliability was evaluated using Cronbach's alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE).

Table 5. Reliability results, AVE, and SRMR

Variables	CA	CR (rho_a)	CR (rho_c)	AVE	SRMR
CS	0.947	0.951	0.953	0.611	
SE	0.878	0.896	0.911	0.675	0.080
TS	0.885	0.890	0.908	0.554	

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

Based on Table 5, construct reliability shows Composite Reliability values above 0.80 and AVE values above 0.50, indicating excellent internal consistency. The model fit is also considered adequate, with an SRMR value of 0.080.

Inner Model (Structural Model) Evaluation

Based on Table 7, the inner model assessment shows that the Technostress (TS) construct has an R-square value of 0.116, indicating that 11.6 percent of the variance in technostress can be explained by coworker support and self-efficacy. Meanwhile, the self-efficacy construct has an R-square value of 0.260, indicating that coworker support explains 26 percent of the variance in self-efficacy. The relatively close R-square adjusted values to the corresponding R-square values (TS = 0.107; SE = 0.256) indicate good model stability. In terms of predictive relevance, the Q-square values for TS (0.011) and SE (0.239) are greater than zero, indicating that the model has adequate predictive relevance. Furthermore, the f-square values show that coworker support has a small effect on technostress ($f^2 = 0.009$) but a small to moderate effect on self-efficacy ($f^2 = 0.351$). Meanwhile, self-efficacy has a small effect on technostress ($f^2 = 0.121$). These findings indicate that coworker support plays a greater role in strengthening individuals' beliefs in their own capabilities (self-efficacy), which subsequently contributes to reducing the level of technostress experienced by employees.

Table 6. F-square, R-square, and Q-square

Variables	R-Square	R-Square Adjusted	Q-Square	F-Square	
				TS	SE
TS	0.116	0.107	0.011		
SE	0.260	0.256	0.239	0.121	
CS				0.009	0.351

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

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Hypotheses Testing

The results of the hypothesis testing are presented in Table 7.

Table 7. Path coefficient

Direct Effect	β	T statistics	P-values	Description
CS $\rightarrow$ SE	0.510	7.921	0.000	Significant
CS $\rightarrow$ TS	0.101	0.939	0.348	Not Significant
SE $\rightarrow$ TS	-0.381	4.926	0.000	Significant
CS $\rightarrow$ SE $\rightarrow$ TS	-0.194	4.234	0.000	Significant

Note: CS = Coworker Support; SE = Self-Efficacy; TS = Technostress

Based on Table 7, the relationship between coworker support and self-efficacy was found to be positive and significant ($\beta = 0.510$; $t = 7.921$; $p < 0.001$). This finding indicates that the greater the support teachers receive from their coworkers, the stronger their beliefs in their ability to perform their duties, including coping with the demands of using technology in teaching and school administration. Conversely, the direct effect of coworker support on technostress was not significant ($\beta = 0.101$; $t = 0.939$; $p = 0.348$), indicating that coworker support alone is insufficient to directly reduce the technostress experienced by teachers.

Meanwhile, self-efficacy had a negative and significant effect on technostress ($\beta = -0.381$; $t = 4.926$; $p < 0.001$), indicating that teachers with stronger beliefs in their ability to use and adapt to technology tend to experience lower levels of technostress. Overall, these findings suggest that the role of coworker support in reducing technostress among teachers is more effective through enhancing self-efficacy than through a direct effect on technostress.

The specific indirect effect analysis showed that self-efficacy significantly mediated the relationship between coworker support and technostress ($\beta = -0.194$; $t = 4.234$; $p < 0.001$). Meanwhile, the direct effect of coworker support on technostress was not significant ($\beta = 0.101$; $p = 0.348$). These findings indicate full mediation, in which the effect of coworker support on technostress among civil servant elementary school teachers in Tanjungbalai City does not occur directly but entirely through an increase in self-efficacy.

Discussion

This study aimed to analyze the relationship between coworker support, self-efficacy, and technostress among civil servant elementary school teachers in Tanjungbalai City, as well

as to examine the role of self-efficacy as a mediator in the relationship between coworker support and technostress. Based on the hypothesis testing results, coworker support had a positive and significant effect on self-efficacy, while self-efficacy had a negative and significant effect on technostress. In contrast, the direct effect of coworker support on technostress was not significant. Nevertheless, the indirect effect analysis showed that self-efficacy significantly mediated the relationship between coworker support and technostress.

This pattern of findings indicates that coworker support does not necessarily reduce the pressure associated with technology use, but can contribute to reducing technostress by strengthening teachers' beliefs in their own capabilities. Thus, the main finding of this study suggests that self-efficacy serves as a psychological mechanism that connects social resources in the workplace with teachers' ability to cope with technological demands.

The finding that coworker support does not have a significant direct effect on technostress indicates that coworker support does not necessarily reduce the pressure experienced by teachers when dealing with technological demands. Theoretically, based on the JD-R Model, coworker support represents a job resource that can help individuals cope with job demands and reduce their negative effects (Bakker & Demerouti, 2017). However, the function of coworker support as a job resource does not always result in reduced strain through a direct pathway. In the context of this study, coworker support may help teachers resolve specific technical problems, but it may not necessarily change their perceptions of their own ability to cope with continuously evolving technological demands.

Technostress does not only arise from a lack of technical assistance but may also be associated with the need to continuously learn new technologies, changes in digital systems, technology-based administrative workloads, and individuals' beliefs regarding their own capabilities. This finding differs from the study by Ong & Khan (2022), which found that coworker support played a role in reducing stress among primary and secondary school teachers in Malaysia. This difference suggests that the function of coworker support may depend on the characteristics of the demands and work context faced by individuals. Therefore, among civil servant elementary school teachers in Tanjungbalai City, the availability of coworker support does not appear to be sufficient as a direct mechanism for reducing technostress, but is more likely to operate through changes in teachers' personal resources.

The practical implications of these findings suggest several strategies for educational stakeholders in Tanjungbalai City. If coworker support is not adequately effective to address technostress, the existing supportive social climate within schools should be managed deliberately and systematically so that it can be translated into concrete mechanisms for improving teachers' digital competencies, rather than merely fostering emotional solidarity. School principals, supervisors, and relevant education authorities in Tanjungbalai should design structured peer-learning-based professional development programs, such as digital peer coaching, teacher learning circles focused on the use of PMM and other educational applications, and technology mentoring systems that position digitally competent teachers as facilitators for colleagues who continue to experience difficulties with technology.

The finding that self-efficacy has a significant negative effect on technostress indicates that teachers' beliefs in their own capabilities represent an important personal resource for coping with technological demands. Theoretically, Bandura (1997) explains that self-efficacy influences how individuals perceive difficulties, determine the level of effort they invest, and maintain persistence. In the context of technology use, teachers with stronger beliefs in

their ability to master technology and manage technology-based learning are more likely to perceive digital demands as challenges that can be overcome rather than as threats that deplete their psychological resources. This finding is consistent with the transactional model of stress and coping, which emphasizes that appraisal of stressors is strongly influenced by individuals' perceptions of their own capabilities. Personal resources such as self-efficacy can reduce the perceived imbalance between demands and available capacities, thereby reducing experienced stress (Saleem et al., 2021).

This finding is consistent with various recent studies that have explicitly examined the relationship between technology self-efficacy and technostress among teachers. Dong et al. (2020) found that computer self-efficacy and technological content knowledge negatively predicted technostress, indicating that the stronger teachers' confidence in their technopedagogical competence, the lower the level of technostress they reported. Similarly, Nartgün et al. (2024) reported that teachers' technology self-efficacy was negatively associated with technostress and served as a protective factor against the psychological effects of techn overload, techno-complexity, and techno-invasion.

Theoretically, this body of evidence reinforces the view that self-efficacy is a key personal resource within the Job Demands–Resources (JD-R) framework, enabling teachers to perceive technological demands as manageable challenges and thereby reducing the likelihood of technostress. Practically, these findings suggest that efforts to reduce technostress among civil servant elementary school teachers in Tanjungbalai City should not focus solely on providing technological devices and applications but should also be systematically directed toward strengthening teachers' technological and pedagogical self-efficacy.

The main finding of this study indicates full mediation, in which the coworker support construct does not have a direct effect on technostress but has a significant indirect effect through self-efficacy. This means that coworker support becomes effective in reducing technostress when such support succeeds in strengthening teachers' confidence in their ability to use technology and manage digital demands. Within the JD-R Model, coworker support functions as a social job resource that strengthens the personal resource of self-efficacy, which in turn directly reduces the perceived imbalance between technological demands and individual capabilities (Winarno et al., 2021). This pattern is consistent with Social Cognitive Theory, in which the influence of the social environment, including coworkers, on technology-related stress is mediated by self-beliefs developed through mastery experiences, peer observation, social persuasion, and emotional regulation (Bandura, 2012; He & Wen, 2025).

The finding of full mediation is also consistent with recent literature that positions self-efficacy as a key psychological mechanism linking environmental resources to technostress. Çınar & Kenek (2025) found that teachers' digital literacy reduced technostress both directly and indirectly through increased self-efficacy, illustrating how digital competence can be internalized into a stronger sense of capability in dealing with technological demands. Other research has shown that perceived digital competence and the frequency of technology use negatively predict technostress, with this effect being partially explained by individuals' beliefs in their digital capabilities (Ortilano et al., 2026). The practical implication of this full mediation finding is that coworker support should be structured in ways that facilitate mastery experiences and strengthen self-efficacy rather than merely providing emotional support or sharing workloads. Digital literacy and self-efficacy development strategies for educators in Indonesia should therefore integrate practice-based training, peer observation, constructive

feedback, and emotional regulation training when dealing with new technologies (Andika, 2026).

This study has several limitations that should be considered when interpreting the findings. First, the sample consisted of only 200 civil servant elementary school teachers in Tanjungbalai City and was predominantly female (85 percent) and bachelor's degree graduates (97.5 percent). This limits the generalizability of the findings to broader and more diverse teacher populations and warrants caution when extending the results beyond the characteristics of the current sample.

Second, this study employed a cross-sectional design, in which all variables were measured at a single point in time. Consequently, the study cannot establish the temporal sequence or provide strong evidence of causal relationships among coworker support, self-efficacy, and technostress. Although the mediation model was grounded in the JD-R Model and Social Cognitive Theory and supported by the statistical analysis, the observed mediation relationship should be interpreted as being consistent with the proposed theoretical model rather than as evidence of causality. Future research could employ a longitudinal design to examine whether changes in coworker support are actually followed by changes in self-efficacy and, subsequently, changes in technostress over time.

Third, the data were collected using a self-report questionnaire, meaning that all variables were measured based on the respondents' perceptions. Therefore, the use of this method may introduce perceptual biases, such as the tendency to provide socially desirable responses, difficulties in recalling past experiences, or response patterns. Therefore, future research could combine questionnaires with other data collection methods, such as interviews, observations of technology use, or assessments from other parties, to obtain a more comprehensive understanding of the phenomena being studied.

Fourth, the use of the same data source to measure the independent, mediating, and dependent variables at the same time may potentially introduce common method bias. Although the tests conducted in this study did not indicate any issues that would interfere with the interpretation of the model, the possibility of common method bias should still be considered. Future research could reduce this potential bias by separating the timing of measurements, using different data sources, or combining objective and subjective measurement methods.

Fifth, during the evaluation of the measurement model, several items which did not met the established measurement criteria were eliminated. Although item elimination was necessary to obtain a measurement model that met the validity and reliability criteria, it may also reduce the coverage of the construct dimensions originally represented by the instrument. Therefore, the findings should be interpreted within the context of the instrument version after the item elimination process. Future research could further develop and validate the instruments among teacher populations in Indonesia to ensure that each construct is represented more comprehensively.

Sixth, this study focused on civil servant elementary school teachers in Tanjungbalai City. Therefore, generalizing the findings to teachers at other educational levels, non-civil servant teachers, or regions with different educational and digital infrastructure characteristics should be done with caution. Future research could expand the population to include junior high school, senior high school/vocational school, PPPK (contract-based teachers), and private school teachers, as well as teachers from other regions, to determine whether the coworker support '! self-efficacy '! technostress mechanism exhibits a similar pattern.

For the final limitation, although the research model has explained the role of self-efficacy as a mediator, other factors may also influence technostress. Factors such as digital competence, age, experience towards technology, infrastructure quality, organizational support, leadership, workload, and technology readiness were not included in the model. Future research could consider these variables to develop a more comprehensive model of the factors contributing to technostress among teachers.

4. CONCLUSION AND RECOMMENDATIONS

This study concludes that coworker support does not have a direct effect on technostress among civil servant elementary school teachers in Tanjungbalai City. Conversely, coworker support has a positive and significant effect on self-efficacy, which in turn has a negative and significant effect on technostress. These findings indicate that coworker support does not directly reduce technostress but contributes to strengthening teachers' confidence in their ability to cope with the demands of technology use. The mediation analysis further confirmed that self-efficacy fully mediates the relationship between coworker support and technostress.

These findings imply that strengthening self-efficacy is a key mechanism determining the effectiveness of coworker support in reducing technostress, thereby extending the application of the JD-R Model and Social Cognitive Theory to the context of elementary education in Indonesia. Future research is recommended to replicate this model across different educational levels and regions, employ longitudinal designs, develop more contextually and culturally appropriate instruments, and examine other variables that may function as antecedents, mediators, or moderators, such as school leadership, digital literacy, and workload.

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