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Solutions To Alleviate Technostress And Reduce Emotional Exhaustion For Lower Secondary School Teachers In Thai Nguyen Province Amidst Digital Transformation

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Abstract
While digital transformation in education enhances teaching effectiveness, it simultaneously poses numerous psychological challenges for educators. This study investigates the current state of technostress and emotional exhaustion among lower secondary school teachers in Thai Nguyen Province. Utilizing a quantitative method with a sample of 408 teachers, and employing an integrated instrument adapted from the Technostress Scale and the Maslach Burnout Inventory, the results indicate that a majority of teachers confront moderate to high levels of stress driven by constant connectivity, the blurring of work-life boundaries, and information overload from digital administrative workloads. This technostress, compounded by a sense of professional isolation due to reduced face-to-face interaction, exerts a strong positive impact on teachers' emotional exhaustion, physical fatigue, and diminished career enthusiasm. On this basis, the study proposes solutions aimed at supporting teachers in stress management, establishing digital boundaries, and enhancing psychological well-being in the current context.

Keywords: *Technostress; Emotional exhaustion; Lower secondary school teachers; Thai Nguyen; Mental health.*

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I. Introduction

Digital transformation in Vietnamese education, driven by management software, digital resources, and AI, has enhanced teaching efficiency but triggered unprecedented psychological challenges, notably technostress. The "constant connectivity" via platforms like Zalo and Viber blurs work-life boundaries. Educators face information overload from managing digital portfolios while responding to after-hours inquiries from parents and students. Additionally, virtual pedagogical communication diminishes face-to-face interaction, fostering professional isolation. Over time, these factors cumulatively drive emotional exhaustion and diminish professional passion.

In Thai Nguyen Province—the educational hub of the Northern Midland and Mountainous region—lower secondary school teachers face intense reform pressures under the 2018 General Education Curriculum. While local digitalization is robust, existing policies and research focus heavily on infrastructure and digital skills, overlooking teachers' psychological well-being. This oversight creates a critical research gap that this study aims to address.

II. Research Methodology

Theoretical Research Method: Collecting, analyzing, synthesizing, systematizing, and generalizing relevant literature regarding technostress and emotional exhaustion among lower secondary school teachers.

Survey Questionnaire Method: Gathering perspectives from 408 lower secondary school teachers in Thai Nguyen Province (including Tan Long, Hoang Van Thu, Chua Hang, Ngo Quyen, Nha Trang, Tan Lap, Hoa Thuong, and Yen Lang lower secondary schools) through an investigation questionnaire. The instrument comprised clusters of questions addressing:1/ The emotional and physical state of lower secondary school teachers in Thai Nguyen Province;2/ Technostress arising from constant connectivity on digital platforms among lower secondary school teachers in Thai Nguyen Province;3/Technostress driven by technological innovation among lower secondary school teachers in Thai Nguyen Province;4/Diminished face-to-face interaction and professional isolation among lower secondary school teachers.

In-depth Interview Method: Selecting and conducting semi-structured interviews with a subset of students and teachers to further elucidate and qualitative enrich the quantitative findings.

Data Processing Method: The collected data were processed using descriptive statistical methods via SPSS 26 software (frequencies, percentages, and mean scores) to objectively reflect the current state of technostress and emotional exhaustion among lower secondary school teachers in Thai Nguyen Province.

To assess the levels of technostress and emotional exhaustion among lower secondary school teachers in Thai Nguyen Province, scores were assigned based on a 5-point Likert scale: *Never* (1 point), *Rarely* (2 points), *Sometimes* (3 points), *Frequently* (4 points), and *Very frequently* (5 points). The intervals of this 5-level scale are defined as follows: **1.00 – 1.80:** Very low level (Virtually unaffected)/ **1.81 – 2.60:** Low level (Mild impact, within personal control)/ **2.61 – 3.40:** Moderate level (Exhibiting negative manifestations but not continuously)/ **3.41 – 4.20:** High level (Distinct manifestations, occurring with frequent frequency)/ **4.21 – 5.00:** Very high / Severe level (Red alert).

III. Research Results And Discussion

The Current State of Technostress and Emotional Exhaustion among Lower Secondary School Teachers in Thai Nguyen Province in the Context of Digital Transformation

The Physical and Emotional State of Lower Secondary School Teachers in Thai Nguyen Province in the Context of Digital Transformation

Table 3.1: The physical and emotional state of lower secondary school teachers in Thai Nguyen Province in the context of digital transformation

No	Items	Never		Rarely		Sometimes		Frequently		Very Frequently		Mean	SD
1	I feel drained of energy and exhausted at the very beginning of the workday.	0	0	0	0	20	4.9	219	53.7	169	41.4	3.36	0.57
2	I easily lose my temper, become impatient, or feel emotionally desensitized to student misconduct.	0	0	0	0	19	4.7	21	53.4	171	41.9	3.37	0.57
3	I experience physical symptoms due to high-intensity work (such as shoulder and neck pain, eye strain, and sleep disorders).	0	0	5	1.2	71	17.4	245	60.0	87	20.3	4.01	0.66
4	I feel that I am only fulfilling my minimum responsibilities and no longer possess professional dedication.	12	2.9	96	23.5	181	44.4	119	29.2	0	0	2.99	0.80
Grand Mean/Grand SD												**3.4**	**0.65**

he results in Table 3.1 indicate that the current physical and emotional state of lower secondary school teachers in Thai Nguyen Province under the pressure of digital transformation falls within the "exhibiting negative manifestations but not continuously" threshold (Mean = 3.40), with a distinct variation among specific criteria (Mean scores ranging from 2.99 to 4.01).

The most severe issue identified is the deterioration of physical health ("I experience physical symptoms due to high-intensity work (such as shoulder and neck pain, eye strain, and sleep disorders)") which Mean is 4.01 (SD= 0.66), signifying a high level of severity. Notably, up to 60.0% of teachers "frequently" and 21.3%"very frequently" suffer from physical symptoms such as shoulder and neck pain, eye strain, and sleep disorders. This is a direct consequence of increased interaction time with technological devices (e.g., preparing lesson plans, grading, and managing portfolios on LMS), maintaining a fixed sedentary posture, and working extended hours beyond official schedules, which induce occupational hazards and disrupt natural circadian rhythms.

This physical overload directly triggers adverse psychological ramifications, placing educators at risk of widespread emotional exhaustion. The manifestation of feeling drained of energy at the beginning of the workday ("I feel drained of energy and exhausted at the very beginning of the workday") (Mean = 3.36 SD = 0.57). Within this, 95.1% of teachers responded at the "frequently" and "very frequently" levels, and 0%selecting "never" or "rarely". As psychological energy is depleted, teachers' capacity for behavioral self-regulation diminishes, leading to a tendency to become easily angered, impatient, or emotionally desensitized to students ("I easily lose my temper, become impatient, or feel emotionally desensitized to student misconduct"), with mean is 3.37 (SD = 0.57) and a cumulative percentage of 95.3% at the two highest levels. This serves as a critical warning indicator that directly threatens the teacher-student relationship and pedagogical quality.

Conversely, professional dedication, despite being compromised, still exhibits a degree of resilience. The criterion "only fulfilling minimum responsibilities, lacking dedication" registers the lowest Mean score of 2.99, yet displays the highest variance in opinions (SD = 0.80). Although a substantial proportion of teachers only "sometimes" experience this mindset (44.4%) and 26.4% maintain their professional passion ("never/rarely"), the fact that nearly one-third of the teachers (29.2%) "frequently" perform duties perfunctorily warrants critical consideration.

In summary, the digital transformation landscape imposes a "dual burden" (physical overload and emotional exhaustion) on lower secondary school teachers in Thai Nguyen Province. Without timely interventions from educational administrators to streamline superficial digital administration, and simultaneously equip teachers with stress management and technological ergonomics skills, this state of physical exhaustion and emotional crisis will become a major barrier to sustainable educational reform.

Technostress Arising from Constant Connectivity on Digital Platforms among Lower Secondary School Teachers in Thai Nguyen Province

Table 3.2: Technostress arising from constant connectivity on digital platforms among lower secondary school teachers in the context of digital transformation

No	Items	Never		Rarely		Sometimes		Frequently		Very Frequently		Mean	SD
1	The boundary between my working hours and personal rest is blurred due to work-related messages outside of official hours.	0	0	0	0	268	64.3	139	34.1	7	1.7	3.37	0.51
2	I feel anxious or restless (the FOMO effect) if I do not constantly check school or parent chat groups (Zalo/Viber).	0	0	0	0	210	51.5	140	34.3	58	14.2	3.62	0.72
3	I experience information overload from simultaneously managing digital portfolios and responding to late-night online inquiries from students or parents.	0	0	0	0	183	44.9	193	47.3	32	7.8	3.62	0.62
4	I feel exhausted by the pressure to maintain a proper pedagogical image and exercise hyper-vigilance regarding my statements on social media due to fear of public backlash.	0	0	101	24.8	132	37.3	152	32.4	23	5.6	3.18	0.87
Grand Mean/Grand SD												**3.4**	**0.68**

The results in Table 3.2 indicate that technostress stemming from constant connectivity on digital platforms among lower secondary school teachers in Thai Nguyen Province is established at a moderate level (Mean = 3.40). Although digital environments offer operational flexibility, the data reflects the reality of a compulsory, full-time working mechanism.

First, information overload and digital anxiety manifest as pervasive, high-intensity phenomena. The anxiety resulting from the Fear of Missing Out (FOMO) on work-related chat groups ("I feel anxious or restless (the FOMO effect) if I do not constantly check school or parent chat groups (Zalo/Viber)") and information overload due to simultaneously handling digital portfolios and responding to late-night inquiries from parents/students ("I experience information overload from simultaneously managing digital portfolios and responding to late-night online inquiries from students or parents") with mean is 3.62. Specifically, 48.5% (34.3% frequently and 14.2% very frequently) of teachers exhibit a psychological dependency on real-time messaging applications (Zalo, Viber). For item 3, the proportion of teachers responding from the "frequently" level upwards reaches 55.1% (SD = 0.62). Digital transformation has effectively extended the workday into the late hours of the night, transforming domestic spaces into secondary workplaces and compelling educators to process streams of multi-tasking information continuously.

The inevitable consequence is the erosion of boundaries between working hours and personal rest due to after-hours messaging ("The boundary between my working hours and personal rest is blurred due to work-related messages outside of official hours"), yielding a Mean is 3.37 (SD = 0.51). This falls within the moderate range but tiptoes the maximum threshold (3.40). Remarkably, 0% of teachers selected "never" or "rarely"; among them, 34.1% are "frequently" disrupted, and 64.3% experience this "sometimes." These results offer undeniable

evidence that the right to disconnect of lower secondary school teachers has been entirely neutralized, severely compromising the time required for labor reproduction and family care.

Finally, the pressure regarding the maintenance of a professional pedagogical image and cautious statements on social media due to fear of public backlash (item 4) is positioned at a moderate level with Mean is 3.18. This indicator possesses the highest deviation in the dataset (SD = 0.87), reflecting highly diversified personal experiences among teachers. Nonetheless, the fact that 32.4% of teachers "frequently" feel exhausted by this constant vigilance underscores that the status of educators is under continuous digital surveillance 24/7.

In conclusion, constant digital connectivity places a heavy strain on the private lives of lower secondary school teachers in Thai Nguyen Province. This situation necessitates an explicit legal framework or internal regulations from local educational authorities to safeguard employees' privacy and legitimate rest periods in the digital era.

Technostress Driven by Technological Innovation among Lower Secondary School Teachers in Thai Nguyen Province

Table 3.3: Technostress driven by technological innovation among lower secondary school teachers in the context of digital transformation

No	Items	Never		Rarely		Sometimes		Frequently		Very Frequently		Mean	SD
1	I feel anxious and stressed when the school implements new management software, instructional models, or Artificial Intelligence (AI) tools.	2	0.5	53	13.0	191	46.8	147	36.0	15	3.7	3.29	0.75
2	I sacrifice an excessive amount of personal time just to learn how to operate new technologies, which detracts from the time invested in the professional quality of my lessons.	2	0.5	96	23.5	176	43.1	122	29.9	12	2.9	3.11	0.81
3	I am fearful of encountering technical failures (such as network errors, software glitches, or device malfunctions) during online teaching or observed classroom sessions.	2	0.5	101	24.8	174	42.6	118	28.9	13	3.2	3.09	0.82
4	I feel inadequate and self-conscious when observing colleagues or students who possess superior mastery of technology compared to myself.	11	2.7	112	27.5	181	44.4	98	24.0	6	1.5	2.9	0.82
Grand Mean/Grand SD												3.1	0.8

The results in Table 3.3 indicate that the level of technostress induced by technological innovation among educators is currently situated at a moderate level, with an overall grand mean of 3.10 (SD= 0.80). Although it has not crossed into the high-severity range, the component indicators reveal underlying conflicts between digital demands and teachers' adaptive capacities.

Firstly, psychological anxiety towards emerging technological trends ("I feel anxious and stressed when the school implements new management software, instructional models, or Artificial Intelligence (AI) tools") records the highest score in the table (Mean: 3.29, SD: 0.75), approaching the high threshold. A total of 39.7% of teachers feel stressed "frequently" (36.0%) and "very frequently" (3.7%) when schools deploy new management software, instructional models, or Artificial Intelligence (AI) tools. This reality compels teachers to continuously re-train themselves to avoid obsolescence amidst the explosion of digital tools.

This anxiety correlates directly with time consumption and technical risks. Forfeiting personal time to master technology at the expense of investing in lesson quality ("I sacrifice an excessive amount of personal time just to learn how to operate new technologies, which detracts from the time invested in the professional quality of my lessons") (Mean: 3.11, SD: 0.81), with 32.8% of the sample acknowledging frequent or very frequent occurrences. Paralleling this is the apprehension of encountering sudden technical failures during live teaching or lesson observations ("I am fearful of encountering technical failures (such as network errors, software glitches, or device malfunctions) during online teaching or observed classroom sessions"), which registers a Mean is 3.09 (SD = 0.82). The total proportion of teachers responding from the "sometimes" to "very frequently" levels on this

item reaches 74.7%. Digital technology, despite its supportive role, has become a direct stressor due to variables that remain beyond the control of local technical infrastructure.

In terms of social interaction and professional self-esteem ("I feel inadequate and self-conscious when observing colleagues or students who possess superior mastery of technology compared to myself"), the feeling of inadequacy regarding technological proficiency compared to colleagues or students registers the lowest mean score at 2.90 (SD = 0.82). While the majority of teachers fall into the categories of "sometimes" (44.4%) or "rarely/never" (30.2%), 25.5% still frequently confront this sense of inadequacy due to the shrinking "digital divide" between generations.

To conclude, technological innovation places lower secondary school teachers into a dual-pressure cycle: consuming personal time while inflicting a fear of technical failures and digital inadequacy. These findings call for urgent action from educational administrators to synchronize infrastructure and establish substantive training pathways, thereby minimizing "digital trauma" among the teaching workforce in the Education 4.0 era.

Diminished Face-to-Face Interaction and Professional Isolation among Lower Secondary School Teachers in Thai Nguyen Province

Table 3.4: Diminished face-to-face interaction and professional isolation among lower secondary school teachers in Thai Nguyen Province

No	Items	Never		Rarely		Sometimes		Frequently		Very Frequently		Mean	SD
1	Online or text-based communication renders teacher-student and peer relationships superficial and disconnected.	12	2.9	153	37.5	163	40.0	77	18.9	3	0.7	2.76	0.81
2	I feel lonely and lack direct support or sharing from colleagues and the School Board when facing psychological crises.	22	5.4	160	39.2	170	41.7	55	13.5	1	0.7	2.63	0.79
3	Prolonged virtual meetings and online professional activities intensify my mental depletion and foster a sense of social detachment	33	8.1	172	42.2	150	36.8	49	12.0	4	1.0	2.55	0.84
Grand Mean/Grand SD												**2.6**	**0.8**

Data in Table 3.4 indicate that the manifestations of diminished interaction and professional isolation among lower secondary school teachers in Thai Nguyen Province predominantly fluctuate between low and moderate levels. Although digital spaces have not entirely severed traditional connections, subtle impairments regarding social connectedness have begun to surface (Mean = 2.65$; SD = 0.81).

Firstly, the transition to virtual interactions is undermining the quality of core pedagogical relationships. The criterion concerning how online communication renders teacher-student and peer relationships superficial ("Online or text-based communication renders teacher-student and peer relationships superficial and disconnected") records the highest score in the table, with Mean of 2.76 (SD = 0.81). Specifically, 40.0% of teachers feel this loosening of bonds "sometimes," and 19.6% experience it "frequently/very frequently." The absence of direct non-verbal cues in digital environments diminishes empathy, transforming pedagogical interactions into mechanical exchanges of information.

The impoverishment of online interactions progressively induces a psychological state of isolation. The manifestation of feeling lonely and lacking support from colleagues and the School Board during crises ("I feel lonely and lack direct support or sharing from colleagues and the School Board when facing psychological crises") yields a Mean of 2.63 (SD = 0.79). Within this, 41.7%of teachers "sometimes" and 13.7% "frequently" endure this sentiment. The lack of face-to-face sharing spaces at the workplace drives teachers to withdraw, coping with stress individually rather than seeking institutional support.

On the administrative side, virtual meetings ("Prolonged virtual meetings and online professional activities intensify my mental depletion and foster a sense of social detachment") register a Mean is 2.55 (SD = 0.84). Although 50.3% of the respondents negate this impact ("never/rarely"), 13.0% of teachers remain frequently and very frequently subject to its negative effects. This manifestation aligns with videoconference fatigue syndrome, where continuous focus in front of a screen accelerates mental depletion and a sense of social detachment.

Evidently, the digitalization landscape is inadvertently fostering a "socially distanced" working environment for lower secondary school teachers in Thai Nguyen Province. Although the level of isolation is not yet critical, the trend toward superficial relationships and the feeling of being unsupported during crises present

real hazards. This state of affairs demands that administrators balance online and face-to-face governance, maintaining in-person interaction spaces to reinforce the psychological support system for the teaching workforce.

Solutions to Alleviate Technostress and Reduce Emotional Exhaustion for Lower Secondary School Teachers in Thai Nguyen Province amidst Digital Transformation

Administrative Solutions at the Department and Bureau of Education Levels

Standardizing and synchronizing digital platforms: Instead of deploying disjointed software programs that cause information overload, all administrative activities (grading, lesson plans, emulation data) must be integrated into a single shared database system. This minimizes the compulsion for teachers to simultaneously maintain physical and electronic records (the dual burden).

Issuing explicit guidelines on online interaction hours: Regulations must clearly specify a nighttime timeframe during which teachers are not required to receive or respond to messages from schools or parents (except in emergencies) to restore the boundary between working hours and personal rest.

Reforming technology training methods for teachers: Transitioning from mass, high-intensity training sessions to a "scaffolding and modular" training model differentiated according to teachers' existing digital proficiency. Priority should be given to providing open educational resources and short instructional videos so that teachers can actively engage in self-directed learning, thereby avoiding the excessive exploitation of their personal time.

Institutional Solutions at the School Board Level

Streamlining unnecessary virtual meetings to mitigate screen fatigue: Replacing operational and routine meetings with written guidance documents distributed via the internal system.

Establishing a coordination framework with the parents' association: Schools need to collaborate with parents to agree upon a digital interaction timeframe (e.g., no messaging after 20:00). A centralized communication channel for each class should be established instead of allowing parents to message teachers' personal accounts unrestricted.

Restructuring professional activities: Shifting academic professional meetings into spaces for mutual sharing and direct peer support. Establishing a "Core Technology Taskforce" within the school to provide hands-on, step-by-step guidance for senior teachers, helping them eliminate digital inadequacy and self-consciousness.

Establishing a mental health prevention and counseling system for teachers: Rather than solely focusing on student psychology, schools must introduce mental well-being themes for teachers. Organizing in-person teambuilding and sports activities can compensate for the deficit in face-to-face interaction caused by virtual environments.

Self-Regulation Solutions at the Teacher Level

Every teacher needs to be equipped with resilience and self-protection capabilities against the negative ramifications of the digital era.

Practicing technological ergonomics: Teachers must proactively implement vision protection rules, adjust their sitting postures, and allocate appropriate rest intervals to prevent physical symptoms such as shoulder pain, neck pain, and sleep disorders.

Proactively filtering information: Disabling notifications for non-urgent work-related chat groups after working hours. Practicing stress-relief exercises (such as meditation or sports) to restore psychological energy before commencing a new workday.

Reconceptualizing emerging digital tools: Viewing new technologies (including AI) as administrative assistants designed to reduce workloads (e.g., automating multiple-choice test design or grading) rather than as a source of pressure to be dealt with. Mastering technology at a "sufficient" level allows teachers to focus on their core values: professional expertise and emotional connection with students.

IV. Conclusion

Digital transformation in education is not merely the replacement of blackboards with computer screens; it represents a comprehensive shift in the labor environment of educators. To protect this core human resource,

solutions must not separate "digital technology" from "digital humanism." All technological policies must place the physical health and emotional well-being of teachers at the center if sustainable educational reform goals are to be successfully achieved.

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