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Exploring Factors Influencing Stress Management among Indiana Aerospace University Teachers and Students When Adapting to Online Learning Platforms

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Abstract

This study examined the perceived physical, mental, and emotional factors associated with stress among teachers and Senior High School students of Indiana Aerospace University while adapting to online learning platforms. The study was conceptually anchored in the Job Demands–Resources perspective and the concept of technostress to explain how academic, technological, physical, and social demands may interact with available personal and institutional resources. It employed qualitative and quantitative approaches, incorporating a narrative orientation and a descriptive survey design. A survey questionnaire was distributed through social media platforms, while percentage and weighted mean were used to analyze the responses. Although the methodology identified 50 respondents, the Results section reported findings from 39 respondents; thus, the reported statistical results were based on the latter. Physical factors associated with stress included physical discomfort, fatigue and headache, irregular meal schedules, and altered sleeping patterns. Among the mental factors, procrastination obtained the highest weighted mean, followed by lack of self-motivation and heavy workload, lack of concentration, and difficulty transitioning to a new routine and environment. Frustration emerged as the highest-rated emotional factor, followed by severe emotional distress, emotional drain, communication difficulties, and social isolation. Overall, the findings indicate that stress during online learning was multidimensional, encompassing physical routines, academic and self-regulatory demands, communication, social interaction, and emotional well-being. The study recommends constructive stress management, adequate rest, physical activity, appropriate personal boundaries, and effective planning, while future studies should examine additional stressors and coping strategies. The study supports SDG 3 on Good Health and Well-Being and SDG 4 on Quality Education, with a secondary connection to SDG 9 on Industry, Innovation and Infrastructure. Its sustainability contribution lies in promoting healthier, more supportive, human-centered, and institutionally sustainable approaches to technology-enabled education.

Keywords: Academic Workload; Emotional Well-Being; Physical Well-Being; Procrastination; Stress Management; Technostress

1. Introduction

The rapid integration of digital technologies into education has transformed how teaching, learning, communication, and academic support are delivered. This transformation became especially pronounced during the COVID-19 pandemic, when educational institutions worldwide were compelled to move from conventional face-to-face instruction to technology-mediated forms of learning. Although digital learning provided a means of

sustaining educational continuity, the abrupt transition also exposed teachers and students to technological, academic, social, psychological, and physical demands that differed substantially from those encountered in conventional classroom settings. Importantly, the pandemic-era transition should not be equated entirely with intentionally designed online education. Ferri et al. (2020) emphasized that emergency remote teaching was implemented under crisis conditions and therefore involved constraints in preparation, infrastructure, pedagogical design, and institutional readiness that may not characterize established online education. These conditions made stress and well-being important dimensions of educational adaptation. The use of online platforms required students to regulate their schedules and learning behaviors while simultaneously managing academic workloads, distractions, connectivity limitations, reduced social interaction, and changes in their home learning environments. Teachers, on the other hand, were required to redesign instructional materials, learn or intensify the use of digital technologies, communicate remotely with learners, conduct assessments, and fulfill other professional responsibilities. Philippine and international research has demonstrated that online-learning challenges involve more than access to technology; they also intersect with mental health, motivation, time management, learning environment, social support, and institutional resources (Barrot et al., 2021; Oducado et al., 2020). Against this background, the present study examines factors associated with stress among teachers and students of Indiana Aerospace University as they adapted to online learning platforms. Rather than treating stress solely as a psychological condition, the study considers physical, mental, and emotional manifestations and circumstances surrounding learning and teaching in a digitally mediated environment. This broader perspective is important because stress within educational environments may emerge from interactions among academic demands, technological requirements, physical routines, social relationships, individual coping capacities, and institutional support.

The COVID-19 pandemic caused major disruption to formal education, forcing schools, colleges, and universities to shift rapidly from face-to-face instruction to digital and distance-learning modalities. Instruction was delivered synchronously, asynchronously, or through combinations of both depending on institutional resources and requirements (Cua, 2020). In the Philippines, the Department of Education implemented modular, online, television-based, and radio-based learning to sustain educational continuity, with modular instruction becoming widely used during school closures (Hernando-Malipot, 2020). Distance learning generally involves the geographic separation of teachers and learners and may be delivered through modular, online, television, or radio-based approaches (Llego, 2020). Modular learning provided flexibility and opportunities for self-paced learning (Jim, 2020), while Online Distance Learning relied more heavily on digital devices, internet connectivity, learning management systems, and synchronous or asynchronous communication technologies (Codamon, 2020). The rapid transition also introduced challenges involving connectivity, technology access, learning materials, instructional support, and home learning conditions (Codamon, 2020). Barrot et al. (2021) found that Filipino students experienced difficulties related not only to technology but also to their learning environment and mental health, while employing coping strategies such as resource management, help-seeking, technical improvement, and time management. These conditions highlight stress as an important concern in online learning. Prolonged or excessive stress may negatively affect health and functioning (U.S. National Library of Medicine, 2020), particularly when individuals face several demands simultaneously (Mental Health Foundation, 2020). In educational settings, stress may be associated with workload, deadlines, disrupted sleep, prolonged technology use, limited social interaction, and uncertainty. Pascoe et al. (2020) linked academic stress with poorer educational outcomes, reduced motivation, sleep difficulties, and mental-health concerns, while Son et al. (2020) reported difficulties involving concentration, disrupted sleep, social interaction, and academic performance during the pandemic. These findings support viewing stress as a multidimensional experience involving academic, physical, social, and psychological factors.

A major theme in the literature is the relationship between digital learning conditions and learner stress. Although online education offers flexibility, continuity, and access to learning resources, inadequate internet access, unsuitable home environments, competing responsibilities, technological difficulties, and limited interaction can increase educational demands. Ferri et al. (2020) identified technological, pedagogical, and social challenges in emergency remote learning, while Barrot et al. (2021) found that Filipino students encountered multiple online-learning difficulties and used various coping strategies. These findings suggest that technology itself is not inherently stressful; rather, stress may arise when technological demands exceed learners' available resources and circumstances. A second theme concerns workload, digital adaptation, and technostress among teachers. The rapid transition to online instruction required teachers to learn new technologies, redesign materials, communicate digitally, and manage technical difficulties alongside existing responsibilities. Penado Abilleira et al. (2021) linked intensive technological adaptation with technostress among university teachers, while Rey-Merchán and López-Arquillos (2022) highlighted techno-anxiety, techno-fatigue, institutional support, and workload management. Pressley (2021) further associated teacher burnout with teaching anxiety, communication concerns, and administrative support, while Kim and Asbury (2020) documented disruption to established professional practices. Together, these studies indicate that teacher stress is influenced not only by technological competence but also by workload, role changes, communication demands, organizational support, and available resources. Another theme is the connection between physical routines and psychological well-being. Altered sleeping

patterns, delayed meals, physical discomfort, fatigue, headaches, concentration difficulties, reduced motivation, heavy workload, procrastination, social isolation, emotional exhaustion, and frustration are all relevant to stress experiences. Pascoe et al. (2020) showed that educational stress may affect psychological well-being, behavior, sleep, and health, while Son et al. (2020) reported disrupted sleep, concentration problems, reduced social interaction, and academic concerns among students during the pandemic. These findings support examining physical, mental, and emotional factors together rather than focusing only on technological challenges. Coping, resilience, communication, and social support also influence how individuals respond to stress. Barrot et al. (2021) identified help-seeking, resource management, time management, and learning-environment regulation as coping strategies among Filipino students. Oducado, Parreño-Lachica, and Rabacal (2021) likewise found that resilience was inversely related to COVID-19 stress and fear among graduate students. Overall, the literature suggests that online-learning stress results from interacting technological, academic, physical, social, and personal conditions. Effective communication, technical support, manageable workloads, digital competence, appropriate scheduling, and adaptive coping may therefore serve as important resources in helping teachers and students manage these demands.

At the local level, this study focuses on Indiana Aerospace University in Lapu-Lapu City and examines the physical, mental, and emotional factors associated with stress among teachers and students adapting to online learning. Institution-specific investigation is important because stress may be influenced by technological systems, teaching practices, learner characteristics, and available support. At the national level, Barrot et al. (2021) found that Filipino students experienced various online-learning challenges and adopted different coping strategies, while Oducado et al. (2020) reported moderate COVID-19-related stress among many Filipino professional teachers and emphasized the need for stress-management support. These findings indicate that pandemic-related educational stress affected both learners and educators. At the global level, similar patterns were observed across educational systems. Emergency remote teaching introduced technological, pedagogical, and social challenges (Ferri et al., 2020), while teachers experienced technostress from rapid digital adaptation (Penado Abilleira et al., 2021). Students also reported difficulties involving concentration, sleep, social interaction, and academic performance (Son et al., 2020). Although these concerns were widely observed, their severity may vary according to infrastructure, institutional support, educational level, socioeconomic conditions, and individual resources. The present study adds institution-specific evidence from a Philippine setting, recognizing that findings from other countries or educational contexts may not fully represent the experiences of Indiana Aerospace University teachers and Senior High School students.

The study is interpreted primarily through the Job Demands–Resources (JD-R) Theory of Bakker and Demerouti (2017), which explains well-being and strain in terms of the balance between demands placed on individuals and the resources available to meet them. For teachers, online teaching demands may include heavy workload, time pressure, technological complexity, digital-material preparation, communication requirements, and disrupted work routines, while resources may include technological competence, institutional and technical support, manageable schedules, autonomy, and social support. For students, the JD-R perspective may be applied as an analogous demand-resource lens, where academic workload, deadlines, technological requirements, disrupted routines, and reduced social interaction represent demands, while time management, digital competence, teacher or family support, help-seeking, communication, and resilience function as resources. Barrot et al. (2021) support the importance of coping resources among Filipino learners, while Oducado et al. (2021) highlight the protective role of resilience. The study is also informed by the concept of technostress, which refers to strain associated with adapting to and continuously using information and communication technologies. Penado Abilleira et al. (2021) and Rey-Merchán and López-Arquillos (2022) demonstrated its relevance among educators exposed to intensive technology use. Together, the JD-R and technostress perspectives explain how technological, academic, physical, social, and emotional demands may contribute to stress, while personal and institutional resources influence how effectively teachers and students respond to these demands.

Existing literature provides substantial evidence concerning online-learning challenges, student mental health, teacher stress, burnout, technostress, and coping. However, several gaps support the relevance of the present investigation. Philippine research has examined students' online-learning challenges and coping strategies (Barrot et al., 2021), while other research has assessed pandemic-related stress among Filipino teachers (Oducado et al., 2020). These bodies of evidence are valuable but generally examine teachers and learners separately. An institution-level investigation involving both groups can provide a more integrated picture of how the same digital educational environment is experienced by those who deliver instruction and those who receive it. A second gap concerns the tendency to examine technological access, mental health, workload, or coping as separate concerns. The present research is potentially valuable because it considers multiple dimensions—physical, mental, and emotional—within one institutional investigation. This multidimensional approach is supported by research showing that academic stress may intersect with motivation, psychological health, sleep, concentration, and educational functioning (Pascoe et al., 2020; Son et al., 2020). A conceptual clarification is nevertheless necessary. The present instrument and research questions primarily identify perceived stress-related factors rather than directly testing the effectiveness of stress-management interventions. Therefore, the strongest interpretation of the

study is diagnostic: it identifies the conditions that should be prioritized when designing or improving stress-management measures for teachers and students. This formulation is more consistent with the actual research questions in the manuscript, which principally ask about physical, mental, and other stress-related factors. It also avoids making causal claims that a descriptive survey cannot establish. Accordingly, the rationale of the study lies in producing institution-specific evidence that can help Indiana Aerospace University identify which aspects of online learning warrant attention in supporting teacher and student well-being. Evidence on these factors may inform more targeted approaches to workload management, digital support, communication, psychosocial services, scheduling, and future implementation of technology-mediated instruction.

The study is most directly aligned with SDG 3 – Good Health and Well-Being because it addresses stress and its physical, mental, and emotional dimensions. The World Health Organization (2022) emphasizes that mental health is integral to individual and collective health and that environments influencing mental health should be strengthened alongside systems of support and care. Understanding stress within educational environments can therefore contribute to prevention-oriented institutional practices that protect both faculty and student well-being. The research also supports SDG 4 – Quality Education. Sustainable educational access involves more than keeping classes operational; educational systems must also provide conditions in which students can participate meaningfully and teachers can perform their roles effectively. The United Nations Department of Economic and Social Affairs (2025) continues to identify educational quality, equity, and digital and infrastructure gaps as important barriers to achieving SDG 4. By investigating the human consequences associated with technology-mediated instruction, the present study contributes evidence relevant to creating learning environments that are not only accessible but also supportive of well-being and sustained educational participation. A secondary relationship exists with SDG 9 – Industry, Innovation and Infrastructure, particularly its emphasis on resilient infrastructure and innovation. Online education depends on reliable digital technologies and systems, but technological innovation becomes educationally sustainable only when institutions also consider usability, accessibility, human capacity, and well-being. Evidence concerning connectivity, technological demands, and technostress can therefore help educational institutions approach digital transformation as both an infrastructure concern and a human-centered organizational process.

The significance of this research extends beyond the immediate question of whether teachers and students experience stress. From a public-health sustainability perspective, identifying physical, psychological, and emotional stress factors can support preventive approaches that reduce prolonged strain and promote healthier educational environments. This is particularly important because mental health influences people's ability to learn, work, maintain relationships, and participate meaningfully in society (World Health Organization, 2022). From an educational sustainability perspective, learning continuity should not be achieved at the expense of teacher or student well-being. Sustainable digital education requires instructional arrangements that can be maintained without creating unreasonable workloads, persistent exhaustion, or barriers that undermine learning. The study can therefore contribute to discussions concerning reasonable academic scheduling, communication practices, learner support, faculty support, and institutional preparedness. The study is similarly relevant to technological and digital sustainability. Digital transformation in education does not depend solely on acquiring devices or implementing learning management systems. Teachers and learners must have sufficient competence, support, time, and resources to use these systems productively. Research on technostress confirms that intensive use of ICT can produce psychological and occupational consequences if organizational and human requirements are insufficiently considered (Penado Abilleira et al., 2021; Rey-Merchán & López-Arquillos, 2022). Finally, the research contributes to institutional sustainability by providing locally grounded evidence that administrators, teachers, student-support personnel, and other stakeholders may use when planning future digital or blended-learning initiatives. A sustainable educational institution must be capable not only of adopting new technology but also of monitoring its effects on the people expected to use it. In this sense, stress management becomes part of institutional resilience: identifying demands, strengthening resources, protecting well-being, and ensuring that technological innovation remains compatible with quality education.

In view of the foregoing literature and contextual considerations, this study aims to identify the perceived physical, mental, and emotional factors associated with stress among teachers and students of Indiana Aerospace University while adapting to online learning platforms. It further seeks to understand these factors as a basis for developing appropriate stress-management, communication, technological-support, and institutional-support responses. The study does not assume that online learning inherently produces stress; rather, it examines the conditions accompanying its implementation that respondents perceive as stressful. By adopting this more precise formulation, the research can generate findings that are relevant to faculty and student well-being, digital-learning practice, and the sustainable management of technology-enabled education.

2. Material and methods

2.1 Research Design

The study utilized both qualitative and quantitative approaches. The qualitative component employed a narrative approach to capture the experiences and perspectives of the respondents, while the quantitative component used a descriptive survey design to collect and summarize data concerning factors associated with stress. The study emphasized systematic data collection, management, analysis, and interpretation to support the credibility of the findings.

2.2 Locale of the Study

The study was conducted at Indiana Aerospace University/Indiana Learning Center located along Kagudoy Road, Basak, Lapu-Lapu City, Philippines. The institution offers both basic and tertiary education and served as the setting in which the investigation was conducted.

2.3 Respondents of the Study

The respondents consisted of Grade 12 students and teachers of Indiana Aerospace University. Based on the methodology section, a total of 50 respondents participated, comprising 25 Grade 12 students and 25 teachers. Among the Grade 12 respondents, 13 were female and 12 were male, while the teacher respondents consisted of 17 females and eight males. Their responses provided the data used to examine the stress-related factors identified in the research questions.

2.4 Sample and Sampling Procedure

The study employed random sampling in selecting the respondents. Senior High School students enrolled in academic strands were randomly selected, while teachers were likewise randomly chosen to provide their perspectives and information concerning the research topic. The methodology identified a total sample of 50 respondents divided equally between Grade 12 students and teachers.

2.5 Research Instrument

A survey questionnaire served as the primary research instrument. It was used to gather information needed to address the research questions and examine the factors associated with stress among the respondents. The collected responses were subsequently organized, analyzed, interpreted, and used as the basis for drawing conclusions regarding the study.

2.6 Data Gathering Procedure

The researcher administered the survey questionnaire to the selected Grade 12 students and teachers. Different social media platforms were utilized to facilitate the distribution of the questionnaire and collection of responses from the participants. The gathered data were then prepared for organization, analysis, interpretation, and formulation of the study findings.

2.7 Data Analysis Techniques

The collected data were analyzed using percentage and weighted mean. Percentage was used to describe the distribution of responses and was computed by dividing the frequency by the total number of respondents and multiplying the result by 100. The weighted mean was calculated by obtaining the sum of the products of the frequency and corresponding rating and dividing it by the total number of respondents. In the methodology section, the total number of respondents used for these computations was stated as N = 50.

3. Results and Discussion

3.1 Profile of the respondents

3.1.1 Demographic Characteristics of the Respondents

Among the 39 respondents, 58.97% were 18 years old, 35.90% were 20 years old and above, and 2.56% each were 16 and 17 years old. No respondent was reported as 19 years old. Females constituted 51.28% of the sample and males 48.72%. In terms of respondent classification, 25 or 64.10% were Grade 12 students, while 14 or 35.90% were teachers. The near-balanced gender composition allows the findings to reflect perceptions from both male and female respondents, although the study was not designed to determine whether gender differences were statistically significant. Similarly, because teachers and students were combined in one sample, demographic findings should be interpreted as descriptive characteristics of the entire respondent group rather than evidence that age, gender, or respondent classification influenced stress. The study also reports 38 respondents under STEM and one under ABM. However, this distribution totals all 39 respondents even though only 25 respondents were identified as Grade 12 students. Therefore, the academic-strand distribution should be verified against the original dataset before publication and should not presently be interpreted as the actual strand distribution of the student respondents.

3.2 Physical Factors Associated with Stress

3.2.1 Alteration of Regular Sleeping Patterns

The findings showed that 41.03% of respondents strongly agreed and 33.33% agreed that alterations in regular sleeping patterns were associated with stress, representing a combined agreement of 74.36%. The item obtained a weighted mean of 4.08, indicating substantial agreement among respondents that sleep disruption accompanied their stressful experience of online learning. Sleep disruption is relevant because remote learning can alter established daily schedules and increase prolonged exposure to academic and digital activities. Hawamdeh et al. (2023) found that a considerable proportion of distance-learning students experienced insufficient sleep alongside psychological stress, suggesting that sleep and psychological well-being can become intertwined in technology-mediated learning conditions. The present finding should therefore be understood as evidence that disrupted sleep routines formed part of respondents' perceived stress experience rather than proof that online learning alone caused sleep problems.

3.2.2 Physical Discomfort

A combined 82.05% of the respondents agreed or strongly agreed that physical discomfort, including back, neck, and leg pain, was associated with stress. The item obtained a weighted mean of 4.15, the highest among the four physical factors evaluated. Only one respondent strongly disagreed with the statement. This result is consistent with research indicating that prolonged participation in distance learning can be accompanied by musculoskeletal discomfort. Vuran and Altunalan (2024) reported that distance-learning students experienced musculoskeletal complaints associated with screen-based learning and prolonged or unsuitable study positions. Hawamdeh et al. (2023) likewise examined low-back pain among distance learners in the context of prolonged sitting. These findings reinforce the importance of ergonomics, appropriate study environments, movement breaks, and physical activity when designing sustainable online-learning arrangements.

3.2.3 Inability to Eat Meals on Time

The findings showed that 35.90% strongly agreed and 41.03% agreed that being unable to eat meals on time was associated with stress, resulting in 76.93% combined agreement. The weighted mean was 4.10, while only 2.56% disagreed and none strongly disagreed. This finding may be interpreted more appropriately as an indication of disrupted daily routines than as evidence that meal timing directly causes stress. Emergency online learning required students and educators to integrate academic, work, household, and personal responsibilities within the same environment. Ezra et al. (2021) identified the management of overlapping academic, work, and family demands as an important difficulty during emergency remote teaching. Thus, irregular meal schedules may reflect broader difficulties in managing time and personal routines under increased educational demands.

3.2.4 Fatigue and Headache

Health-related concerns such as fatigue and headache received a weighted mean of 4.13. More than half of the respondents, or 56.41%, strongly agreed that these concerns were associated with stress, while 28.21% agreed, resulting in a combined agreement of 84.62%. The finding corresponds with research examining the physical effects of extended technology-supported learning. Vuran and Altunalan (2024) noted that students involved in distance education reported physical complaints that included headaches, musculoskeletal discomfort, and attention-related difficulties. These outcomes demonstrate that digital-learning environments should be evaluated not only for technological effectiveness but also for their potential implications for physical comfort and sustained well-being.

3.3 Mental Factors Associated with Stress

3.3.1 Lack of Self-Motivation

Lack of self-motivation obtained a weighted mean of 4.46. A total of 66.67% strongly agreed and 20.51% agreed that reduced self-motivation was associated with stress, representing 87.18% combined agreement. Only a small proportion disagreed or strongly disagreed. Motivation is particularly important in online learning because learners are required to exercise greater independence and self-regulation. Alhazmi (2023) observed that distance learning places considerable demands on students' self-regulation and intrinsic motivation and that reduced connection with teachers and peers can contribute to disengagement and loss of motivation. The present finding therefore suggests that stress management in online environments should consider motivational and self-regulatory support rather than focus exclusively on technological access.

3.3.2 Transition to a New Routine and Environment

Transitioning to a new routine and environment obtained a weighted mean of 4.20. Overall, 84.61% agreed or strongly agreed that adapting to new routines and environments was associated with stress, whereas only 2.56% disagreed. The finding reflects the disruptive character of emergency remote education. Ezra et al. (2021) emphasized that the transition to emergency remote teaching was rapid and lacked the extensive preparation associated with intentionally designed online education. Obermeier et al. (2022) similarly found that the abrupt transition to emergency remote teaching represented a challenging experience for students and that differences in

digital readiness contributed to stress. Adaptation difficulties may therefore arise not simply from technology itself but from having to reorganize learning behaviors, environments, and expectations within a short period.

3.3.3 Lack of Concentration

The results revealed a weighted mean of 4.41 for lack of concentration. More than half of respondents, or 56.41%, strongly agreed and 30.77% agreed with the statement, giving a combined agreement of 87.18%. Only one respondent disagreed. Difficulty maintaining concentration is compatible with evidence concerning prolonged screen-based and distance learning. Vuran and Altunalan (2024) identified attention and concentration problems among students in distance-learning environments, particularly when learning involved sustained screen exposure and lengthy online activities. Reduced concentration may also interact with fatigue, environmental distractions, motivation, and workload, indicating that it should not be interpreted as an isolated cognitive problem.

3.3.4 Heavy Workload

Heavy workload obtained a weighted mean of 4.46. Based on the frequencies reported in the original data, 69.23% strongly agreed and 17.95% agreed, producing a combined agreement of 87.18%. Only 5.13% strongly disagreed, while none selected disagree. The result is consistent with evidence that emergency remote teaching often intensified the demands experienced by both educators and learners. Yong et al. (2021) found that teachers experienced challenges relating to engagement, technological skills, instructional demands, and insufficient support during emergency remote teaching. Tejada Garitano et al. (2024) likewise reported substantial stress among teachers adapting to remote instruction and linked the emergency shift with radically changed teaching responsibilities. Workload management is therefore an important institutional component of stress prevention in digitally mediated education.

3.3.5 Procrastination

Among the mental factors, procrastination received the highest weighted mean at 4.54. Approximately 71.79% strongly agreed and 17.95% agreed that procrastination was associated with stress, resulting in a combined agreement of 89.74%. Only 5.12% collectively disagreed or strongly disagreed. This finding has strong support in recent research. Latipah et al. (2021) found that academic procrastination among high school students during pandemic learning was related to self-regulated learning and social-media use. Ma et al. (2022) likewise demonstrated that perceived stress significantly predicted academic procrastination and that self-regulated learning efficacy and self-control affected this relationship. These studies indicate that procrastination should not simply be interpreted as laziness; it may reflect problems in self-regulation, motivation, time management, and the ability to respond effectively to academic pressure.

3.4 Emotional Factors Associated with Stress

3.4.1 Difficulties in Communication

Communication difficulties obtained a weighted mean of 4.02. A combined 74.36% of respondents agreed or strongly agreed that inadequate communication was associated with stress, while 17.95% were neutral and 7.69% disagreed. Effective interaction is central to online teaching because technology-mediated environments reduce many spontaneous communication opportunities available in physical classrooms. Mısırlı and Ergüleç (2021) identified limited interaction as an important weakness of emergency remote teaching, while Yong et al. (2021) reported difficulties in engaging learners during remote instruction. These findings suggest that communication should be treated as both an instructional resource and a psychosocial support mechanism in online learning.

3.4.2 Social Isolation

Social isolation received the lowest weighted mean among the emotional factors at 3.62. Nevertheless, 25.63% strongly agreed and 30.77% agreed that social isolation was associated with stress, representing 56.40% combined agreement. Another 28.20% gave a neutral response, indicating greater variability in perceptions compared with the other factors. Although it was the lowest-rated emotional factor in this study, social isolation remains important because respondents differed considerably in how strongly they experienced it. Obermeier et al. (2022) found that students reporting greater social isolation and lower digital readiness were more susceptible to increased perceived stress during emergency remote teaching. Mısırlı and Ergüleç (2021) similarly identified social isolation and reduced interaction as significant shortcomings of emergency remote education. This supports the need for purposeful opportunities for peer and teacher interaction rather than assuming that technology automatically produces meaningful social connection.

3.4.3 Emotional Drain

Feeling emotionally drained obtained a weighted mean of 4.34. Approximately 66.67% strongly agreed and 15.38% agreed that emotional drain was associated with stress, representing a combined agreement of 82.05%. Emotional exhaustion is a recognized consequence of sustained demands and prolonged adaptation. Tejada Garitano et al. (2024) explained that maintaining teaching responsibilities during emergency remote instruction could contribute to emotional exhaustion in addition to physical fatigue. Their large-scale study of educators also found considerable worry and stress despite teachers simultaneously expressing pride in their professional

performance. The present result therefore reflects the possibility that individuals can continue fulfilling academic responsibilities while still experiencing substantial emotional strain.

3.4.4 Severe Emotional Distress Described as "Mental Breakdown"

The survey item identified in the original instrument as "mental breakdown" obtained a weighted mean of 4.38. A total of 69.23% strongly agreed and 12.82% agreed, indicating 82.05% combined agreement that this experience was associated with stress. This result indicates substantial perceived emotional distress among many respondents; however, the term "mental breakdown" should not be interpreted as a clinical diagnosis, because the study did not employ a diagnostic psychological instrument. It is more appropriate to interpret the item as respondents' perception of severe emotional strain. Research by Tejada Garitano et al. (2024) documented high levels of negative emotions, worry, frustration, and stress among educators engaged in emergency remote teaching, supporting the broader interpretation of substantial emotional burden without assigning a clinical condition.

3.4.5 Frustration

Frustration emerged as the highest-rated emotional factor, with a weighted mean of 4.44. Approximately 74.36% strongly agreed and 7.69% agreed, representing 82.05% combined agreement that frustration was associated with stress. Only a small proportion disagreed with the statement. The high rating of frustration is consistent with the broader demands created by sudden technological and pedagogical change. Tejada Garitano et al. (2024) identified frustration and stress among the negative emotional experiences associated with emergency remote teaching. Yong et al. (2021) further demonstrated that insufficient skills, difficulty engaging students, limited support, and unclear guidance could become significant challenges in remote instruction. Frustration may therefore emerge from the interaction of technological difficulties, workload, limited communication, and reduced control over the teaching or learning environment rather than from a single factor.

3.5 Overall Pattern of Stress-Related Factors

Across the physical factors, physical discomfort obtained the highest weighted mean at 4.15, followed by fatigue and headache at 4.13, inability to eat meals on time at 4.10, and altered sleeping patterns at 4.08. Among the mental factors, procrastination ranked highest at 4.54, followed by lack of self-motivation and heavy workload at 4.46, lack of concentration at 4.41, and transition to a new routine and environment at 4.20. Within the emotional dimension, frustration ranked highest at 4.44, followed by the item describing severe emotional distress or "mental breakdown" at 4.38, emotional drain at 4.34, communication difficulties at 4.02, and social isolation at 3.62. The original summary likewise identifies physical discomfort and health concerns as important physical factors, procrastination and workload as major mental factors, and frustration and severe emotional distress as major emotional concerns. Taken together, the findings portray stress during online learning as a multidimensional experience involving physical routines, cognitive and self-regulatory demands, academic workload, social interaction, and emotional well-being. This interpretation is consistent with research demonstrating that emergency remote education affected students and educators through interacting technological, environmental, academic, and psychosocial demands (Ezra et al., 2021; Obermeier et al., 2022). The findings therefore suggest that institutional stress-management initiatives should not be limited to individual relaxation or coping techniques but should also consider workload, scheduling, communication, digital readiness, ergonomics, social connection, and learning support. Because the present study is descriptive, however, these relationships represent perceived associations and should be investigated through larger and analytically stronger studies before causal conclusions are made.

4. Conclusion & Recommendations

The study concludes that teachers and Senior High School students of Indiana Aerospace University experienced multiple physical, mental, and emotional factors associated with stress while adapting to online learning. The major physical concerns included disrupted sleeping patterns, irregular meal schedules, fatigue and headaches, and physical discomfort such as back, neck, and leg pain. Mental factors were particularly reflected in procrastination and heavy workload, which contributed to feelings of pressure and being overwhelmed, while emotional concerns included severe emotional strain and frustration arising from workload, deadlines, and academic pressure. Overall, the findings demonstrate that stress during online learning was multidimensional and varied among respondents, involving interconnected physical routines, academic demands, and emotional experiences.

Based on the findings, students and teachers are encouraged to recognize their personal limits, manage stress constructively, and provide themselves with adequate opportunities for rest while fulfilling their academic and professional responsibilities. Maintaining a positive attitude, engaging in physical activity, managing personal boundaries, and planning responsibilities appropriately may help respondents cope with stressful situations. Future researchers are encouraged to expand the survey by including additional items that examine other potential sources of stress and the coping strategies employed by respondents, thereby providing a broader understanding of stress and its management.

The study is limited to the experiences and perceptions of selected Grade 12 students and teachers of Indiana Aerospace University and therefore reflects only the specific population and educational setting examined. The investigation relied primarily on survey responses and descriptive analysis of perceived physical, mental, and emotional stress-related factors; consequently, the findings describe respondents' perceptions rather than establish causal relationships between online learning and stress. The original manuscript itself does not provide a separate limitations section; this limitation statement is derived strictly from the documented scope, respondents, research design, and analytical approach of the study.

5. Compliance with ethical standards

The author affirms that no conflict of interest exists in relation to this study. The research was conducted in accordance with accepted ethical principles for studies involving human participants. The Grade 12 students and teachers who participated in the study were informed of the purpose of the research, and their participation was voluntary. Informed consent was obtained prior to data collection, and participants were allowed to decline or withdraw from participation without penalty. Confidentiality and anonymity were maintained by handling survey responses securely and reporting the findings only in aggregated form, without identifying individual participants. Considering that the study examined perceived physical, mental, and emotional factors associated with stress during adaptation to online learning, the research procedures were non-invasive and limited to the administration of a survey questionnaire. Appropriate institutional permission was secured prior to the distribution and administration of the research instrument.

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