

**Virtual Fatigue:
Exploring Challenges Experienced by Students in the Online Classroom
During the Pandemic**

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Abstract

Almost 1.6 billion students across more than 200 countries have been affected by the COVID-19 pandemic, which has caused the greatest disruption in the history of global education. Over 94% of students worldwide have been impacted by school closures, which have had a profound impact on many aspects of our lives. With the implementation of various safety measures, new challenges emerge when restrictions loosen and schools reopen. A shift toward digital learning has been spurred by the abandonment of in-person instruction in many educational institutions. Notwithstanding its difficulties, the pandemic has made it possible to incorporate online learning. This article aims to provide a comprehensive report on the challenges experienced by the students during the pandemic. Data revealed that students experienced virtual fatigue and that their gender and socio-economic status has no influence to the said virtual exhaustion.

Keywords: *pandemic, digital learning, virtual fatigue, gender, socio-economic status*

Introduction

One of the biggest changes brought about by the COVID-19 pandemic was the rapid shift to online learning. Remote learning required all schools to adapt, which had a significant impact on university students. They encountered fresh challenges in online learning environments. The transition from traditional classroom settings to online learning represented a significant turning point in the educational process. Students who were accustomed to following traditional teaching methods, interacting with teachers and classmates in person, and being physically present in classrooms were abruptly pushed into a digital learning environment. It wasn't just a change in the method of instruction; it was a dramatic shift from the experience of learning.

In a regular classroom setting, students could interact with classmates and teachers face-to-face, ask questions, and discuss various topics. Learning took place in a physical setting where participants could collaborate and receive prompt feedback. However, with the shift to online learning, these recognizable objects were replaced by digital communication, online resources, and virtual screens. Students used to interact with teachers and peers in person, but now they communicate such as through messages and screens. The impact of the COVID-19 pandemic on student learning has been the subject of numerous studies. Byrnes et al., (2020) as cited in

Miñosa, Bezar, Sitin, Saavedra & Labastilla (2022) revealed that the COVID-19 pandemic has impacted students' learning in higher education in a negative way, causing significant changes in almost all aspects

of society. Switching to online learning had an impact on students' emotional and psychological well-being in addition to their academic performance. The fact that some felt more alone emphasizes how important mental health and wellbeing are. This adjustment required overcoming the challenges of distance learning, managing increased workloads, and figuring out how to maintain motivation.

In her paper, Tarkar (2020) examines how the closure of schools has impacted the way that education is structured. First, it had an impact on the methods of instruction and evaluation. A small number of private schools that offer online courses have embraced online teaching techniques. Children in those schools are enrolled in online courses. Conversely, low-income public and private schools are shut down completely and do not have access to online learning resources. Students' learning is being interfered with by it. The shift in teaching methods is causing parents to deal with a number of problems.

It is important to comprehend the difficulties that students in the online classroom faced during the pandemic because these issues have a direct bearing on the efficiency and inclusiveness of the educational system. Teachers and educational institutions can adjust their strategies to give students focused support and improve their overall learning experience by learning more about the challenges that students encounter in the virtual learning environment. This exploration aims to identify and comprehend the various obstacles that students encountered when taking classes online during the pandemic. It's critical to identify these difficulties, which can range from technological issues to feelings of isolation. Understanding them facilitates the development of effective strategies to improve e-learning and address the general welfare of students in this evolving educational landscape.

Related Literature and Studies

Education During the COVID-19 Pandemic

Due to lockdowns and social distancing measures, the COVID-19 pandemic has forced schools, training facilities, and higher education institutions to close worldwide. Teachers are now utilizing a variety of online platforms to alter the way they deliver high-quality instruction. In the midst of this unprecedented global crisis, online learning, distance education, and continuing education have become vital solutions despite the difficulties faced by both educators and students. With few other options, moving from traditional in-person instruction to online learning requires a big adjustment on the part of both teachers and students. Through a variety of online platforms, the educational system and educators have embraced "Education in Emergency," despite the fact that they are implementing a system for which they were not fully prepared (Pokhrel&Chhetri, 2021).

E-learning resources were crucial for colleges and universities to continue teaching students during the pandemic as physical facilities were closed (Subedi et al., 2020). Staff and students must be assessed for preparedness in order to support their adaptation to these changes. People with a growth mindset adjust more readily than those with a fixed mindset, who might find it difficult to change. There is no specialized method for online learning; instead, different subjects and age groups require different approaches (Doucet et al., 2020). Due to the flexibility of virtual learning, students with physical disabilities are able to participate more fully without having to move around a lot (Basilaia&Kvavadze, 2020).

Petrie (2020) stated that the unexpected closing of schools due to the global pandemic affected parents, teachers, and students all over the world. Education systems work hard to maintain high standards of instruction even as attempts are made to slow the outbreak. Emotional and psychological difficulties prevent many students from engaging in productive learning at home. The best ways to homeschool online are still being investigated. Appropriate pedagogy and the ICT proficiency of teachers and students are essential for effective online learning. With features like workplace chat, video meetings, and file storage, platforms like Microsoft Teams, Google Classroom, Canvas, and Blackboard make it easier to

create, train, and develop skills. They facilitate the sharing of a variety of content and allow for the tracking of student learning via tests and assessments using rubrics.

According to Dougherty et al. (2020), the flipped classroom model includes giving students access to learning materials ahead of time and using online class time for in-depth discussions with peers and faculty. This method encourages the development of abilities like critical thinking, problem-solving, and self-directed learning. The use of cloud-based learning management systems like Elias, Moodle, Big Blue Button, and Skype, as well as virtual classroom platforms like Google Hangouts Meet, Zoom, Slack, and Cisco WebEx, is growing in popularity.

The Existing and Proposed Solutions for Virtual Fatigue

Several research works have suggested methods to minimize the effects of Zoom fatigue. Many of these problems can be resolved with small changes to the Zoom interface, and people who are knowledgeable about Zoom fatigue research may already have found some workarounds. Beyond software updates, overcoming obstacles requires cultural and technological shifts. For example, having an external keyboard and webcam increases control and flexibility when it comes to seating arrangements. One way to reduce frustration is to make "audio only" Zoom meetings the default or to promote sporadic phone calls (Bailenson, 2021).

Enhancing a group's sense of identity is supposed to lessen fatigue by boosting attendance at meetings and requiring less effortful attention. Quantitative analyses by Bennett et al. (2021) show that lower levels of post-meeting weariness are correlated with higher feelings of group membership.

Gabriel et al. (2021) argue that people should be free to decide whether or not to use their cameras during Zoom meetings, in contrast to the popular belief that participants should always turn on their cameras. It is not recommended to draw conclusions about productivity or distraction based solely on camera usage. By turning off the camera, you may minimize distractions and fatigue by lowering the amount of stimuli on the screen. It also reduces anxiety about one's surroundings, appearance, and facial expressions. Nonetheless, in some circumstances, having the camera on might improve a feeling of engagement and connection (Bennett et al., 2021).

Putting one's own video on the screen may increase distractions and result in an overload of stimuli, according to Fosslien and Duffy (2021), as referenced by Han, William, and Cui (2021). By limiting the stimuli displayed and lowering fatigue, the "hide self" view in Zoom conferences can help lessen this. While maintaining a sense of group belonging, this feature keeps participants from seeing themselves, which cuts down on the amount of time they spend worrying about their past.

Callahan (2020) highlights that taking breaks is essential for distancing oneself and reducing tension during or after online meetings. When there aren't any natural pauses, participants should purposefully make time to glance away, shrink the video window, or move away from the screen. It is advised to test your ability to listen for brief periods of time without looking at the screen. According to Bennett et al. (2021), having back-to-back Zoom meetings all day long without a break has a negative effect on wellbeing. This is similar to situations in real life where people can take breaks, go for walks, and have conversations.

As tempting as it may be, multitasking is not recommended. Studies show that trying to multitask can cause performance reductions of up to 40% (Association for Psychological Science, cited by Huggins 2021). Focus and productivity can be increased by shutting off distracting tabs and applications, putting away the phone, and paying attention during video chats (Fosslien and Duffy, 2021, as cited by Han, William & Cui 2021).

According to Engst (2021), it can be challenging to remain motionless during a videoconference because people might inadvertently move or adjust their positions. This problem can be resolved by turning off the camera when not in use or by positioning it to allow for personal movement.

To effectively engage during virtual classes, it is advised to maintain an empowered posture, use nonverbal expressions, and actively participate within one's comfort zone (Peper & Yang, 2021). Even in the face of physical constraints, deliberate and emotional engagement can be beneficial.

To lead and participate actively in class, keep your posture straight, project confidence through your body language, and use your facial expressions to communicate nonverbally. The important thing is to respect one's personal comfort zones while actively participating and expressing interest. People who are unable to exhibit physical enthusiasm can still benefit from emotionally engaging and expressing their intentions, even if their bodies are unable to fully participate (Peper & Yang, 2021).

Cruz (2021) advises educators to lessen eye strain by utilizing PowerPoint presentations with mock chalkboard backgrounds and dark mode options. It is advisable to steer clear of vivid, strong hues like light green or light pink, particularly for kids who have vision problems, as these could lead to virtual fatigue.

Overview of the Students in Virtual Fatigue

An end-of-semester survey was given to students in a study by Castelli et al. (2020) titled "Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so." The purpose of the survey was to get feedback on the course, the teaching, and the students' experiences. Following the most recent synchronous unit meeting, a link to the survey—which was administered online using Qualtrics—was emailed to absent students, who had until the deadline to complete it. Anonymity was guaranteed, most items could be skipped, and participation was completely voluntary with no points awarded.

The study's main goal was to analyze the main survey question, which asked, "If you ever left your video off during the live Zoom lab meetings, why did you leave it off?" Students were given the option to select "Not Applicable – I always had my camera on," "Other," or any combination of the 12 predetermined hypotheses. Students had to attest to their attendance at certain synchronous class meetings in order to be considered for the analysis. An indirect source of information regarding the reasons behind turning off cameras in the classroom comes from responses to survey questions regarding the course, the move to remote learning, and the efficiency of laboratory teachers.

The majority of students (90 percent, N = 249) had some degree of video camera OFF during remote synchronous Zoom meetings. Students gave a variety of explanations for their decision. Across all demographic groups, concern for one's appearance was the most common reason. The second most frequent reason was the desire to hide one's physical location, which was followed by the fear of being noticed in the background. Students also voiced worries about upsetting their teachers or fellow students, as well as their desire to avoid being observed using the computer or doing other things. Regarding technology, a smaller number of respondents reported problems with their webcams, but a higher percentage mentioned irregular internet connections.

The results of this analysis offer a complex and interesting look into the interactions that take place between instructors and students when using videoconferencing to facilitate distance learning. According to a review of the documents, students gave video conferencing an overall positive rating and frequently

connected it to the teachers' "accessibility" and "compassion." Surveys conducted among faculty members revealed that, on average, they used videoconferencing 16.8 hours a week, indicating that they have conflicting opinions about this form of communication. Although they anticipated real-time interaction with students, this was not the case because of internet outages, which prevented students from actively participating. Interviewees frequently experienced "zoom fatigue," which is characterized as physical and mental exhaustion. In fact, 88% of survey respondents said they had experienced zoom fatigue during synchronous videoconferencing class sessions. Interviews with faculty and students provided a deeper understanding of videoconferencing's impact on college classes.

In interviews, faculty and students complained that the media-rich video conferences were deficient in a number of areas, which had a detrimental effect on the communication technology's capacity to support natural dialogue and interaction. While both teachers and students expressed irritation and dissatisfaction with using video conferences in the classroom, their experiences varied significantly. The majority of students turned off their cameras during the videoconferences, upsetting faculty members, and many participants did not communicate at all. Consequently, instructors often found themselves lecturing to a wall of blank slates, unable to engage students in conversation about the material or with one another. Students reported feeling hidden and silent during video conferences, which seems contradictory given that the mediated environment's organizational structure discouraged direct interaction.

They argued that instructor policies mandating the muting of microphones in order to prevent random outside noises had the unintended consequence of discouraging direct input. Students found it awkward to mute and unmute the microphone feature in order to ask or answer questions because they were worried about interjecting or overlapping. To put it more simply, feedback and nonverbal communication are two areas where videoconferencing hinders communication. Due to disconnected videoconferences and restricted communication, educators and students yearned for a more organic connection. Faculty realized they weren't reaching students, and students felt they weren't learning as a result. One student described videoconference class sessions as "not authentic." (Massner, 2021).

Harper (2020) found that college students are facing the difficulties of "Zoom fatigue," a condition made worse by the move of employment and classes to online environments. Students now connect with peers and instructors virtually from the comfort of their homes, replacing the traditional face-to-face interactions. Similar to this, students at Georgetown University report feeling emotionally and physically spent after spending hours on Zoom and other video-conferencing apps for classes and meetings.

The story of one student demonstrates how Zoom fatigue affects extracurricular activity participation considerably and transcends beyond the classroom. The negative effects are emphasized by the unwillingness to participate in more Zoom calls on the weekends, which are usually set aside for fun and relaxing activities. According to Stanford University's Jeremy Bailenson, Zoom can be mentally taxing because it requires more mental work to interpret nonverbal cues, which are essential for communication. It is more difficult to achieve synchrony—the blending of nonverbal cues with speech and movement—during a video conference.

Professor Eric Langenbacher highlights that there are serious disadvantages for both teachers and students when using Zoom, including unstable connections, less student interaction, and a shorter attention span. In contrast to in-person activities, Langenbacher (2020) observes that the online approach seems more tedious and stressful because teachers are unable to capitalize on the energy generated by a well-received lecture or seminar.

As junior Yifu Mu (COL '22) notes, physical exhaustion is a major disadvantage of taking classes online. He has experienced eye strain and fatigue as a result of extended exposure to the blue light on the screen.

Essentially, the problems caused by Zoom fatigue go beyond the classroom and impact all facets of students' lives, including extracurricular activities and general wellbeing.

Research Questions

1. What challenges do the Students experienced during the Pandemic?
2. Is there a significant difference on the virtual Fatigue experienced by the students according to their gender and socio-economic status?

Methodology

The higher education students enrolled in the 2021–2022 academic year comprised the study's respondents. These respondents in particular are selected to evaluate the effects of virtual fatigue on students in their digital learning during the pandemic. Stratified random sampling, which subdivides a population up into smaller subgroups known as strata, is the sampling technique that was employed. The strata in stratified random sampling, also known as stratification, are established according to the common characteristics or attributes education level. the members, such as income or The sample size was initially established using Slovin's formula, and the participants were grouped according to year level within each stratum.

The Zoom Exhaustion and Fatigue Scale was adapted by the researchers to gather data. This questionnaire was formulated by Bailenson – along with Jeff Hancock, founding director of the Stanford Social Media Lab; Géraldine Fauville, former postdoctoral researcher at the VHIL; Mufan Luo; graduate student at Stanford; and Anna Queiroz, postdoc at VHIL to help measure how much fatigue people are experiencing in the workplace from videoconferencing. Questionnaire will be adapted by the researchers. The ZEFS describes several types of fatigue, including general ($\alpha=0.93$), visual ($\alpha=0.91$), social ($\alpha=0.89$), motivational ($\alpha=0.89$), emotional ($\alpha=0.80$), with an overall consistency acceptable internal consistency ($\alpha=0.94$) for Chronbach's Alpha.

Results and Discussions

On the Virtual Fatigue Experienced by the Students During Pandemic According to their Gender

Table 1.0 illustrates how virtual fatigue affects tertiary students' online learning differently. Because their p-values were less than 0.05, the data showed that only Physical and Social Fatigue were statistically significant. This suggests that the respondents' gender has an impact on both their social and physical exhaustion. However, the outcome is not noteworthy in terms of overall fatigue. Therefore, we agree with the null hypothesis, which states that there is no discernible variation in the impact of virtual exhaustion on accounting students' online learning based on their gender.

The findings disprove the research of Fauvilleat (2021), which found that gender may have an impact on an individual's degree of participation and its consequences. It looked at the generation of first-person particular in relation to mirror anxiety and its role in intervening in fatigue gender impacts. It also computationally analyzed the dialect of the responses to the open-ended address regarding participants' involvement with video conferencing. Hunter and Banks (2017), on the other hand, came to the conclusion that students experience high levels of fatigue, and that symptoms are significantly more common in females than in males. Furthermore, the fatigue may be used to spot early signs of voice issues and/or monitor recovery because it indicated elevated complaints (between normal and dysphonic) in a population likely to be elevated.

Parojenog, Eyo II, Saavedra, Muarip, Pahulaya, & Labastilla (2022) also found out in their study that Senior High school students had employed Coping mechanisms which addressed the concerns in the use of the blended learning modality during the COVID-19 pandemic. In terms of the hazardous effect to their health of the technology they used, they also found a solution by using anti-radiation gadget.

Furthermore, among all the coping mechanisms which they have mentioned, the use of instructions through Google and Youtube got the highest mean. More so, Muarip (2022) revealed in her study that among the stress coping mechanisms (SCM), chatting with friends and watching movies and entertaining comedies were the two SCM that were most commonly employed by the tertiary students. They also overcome their stresses through prayers, reading religious scripts and listening spiritual songs which was commonly employed by the respondents. It is somehow good to note that removing oneself from the stressful situation and learning how to manage time properly making oneself busy with academic activities and sharing one's problem with parents, friends, and teachers and regularly doing physical exercises are also other ways opted by the respondents to reduce their stress during the pandemic.

Table 1.0 Significant Difference in the Effect of Virtual Fatigue to the Online Learning of the Accountancy Students when Respondents are Grouped According to Gender

Fatigue	T	p value	Interpretation
General Fatigue	0.785	0.433	Not Significant
Physical Fatigue	2.343	0.020	Significant
Mental Fatigue	-0.065	0.948	Not Significant
Visual Fatigue	-0.433	0.665	Not Significant
Vocal Fatigue	-0.231	0.818	Not Significant
Social Fatigue	2.767	0.006	Significant
Reduced Activity	1.660	0.099	Not Significant
Reduced Motivation	-0.047	0.963	Not Significant
i) Emotional Fatigue	1.542	0.125	Not Significant
Overall Fatigue	1.292	0.198	Not Significant

Margin of error at 0.05

On the Virtual Fatigue Experienced by the Students During Pandemic According to their Socio-Economic Status

Table 2.0 shows the difference in the effect of virtual fatigue on online learning of the respondents when grouped according to their socio-economic status. The results revealed that only reduced activity is statistically significant since its p-value is less than 0.05. This implies that the socio-economic status of the respondents affects their activity. However, in overall Fatigue, the result is not significant. Meaning the socio-economic status of the respondents is not the reason for their fatigue. Thus, we accept the null hypothesis: there is no significant difference in the effect of virtual fatigue on the online learning of Accountancy students in terms of their socioeconomic status.

The result is relevant to Oducado et al.'s study. al. (2021), who asserts that Zoom fatigue, another name for videoconference tiredness, is a new illness connected to synchronous virtual meetings or video conferences. They found that people who use video conferences primarily for business purposes tend to be less tired after the session than those who use them primarily for study. Additionally, research has demonstrated that a negative attitude toward videoconferencing and higher levels of usage (longer and more frequent meetings) lead to a noticeably increased feeling of exhaustion during virtual conferences. Additionally, videoconference fatigue is more common in people with erratic internet connections, younger people, women, lower socioeconomic status, and lower academic achievement. McNamara et. al (2020) found a significant correlation between total fatigue indicators and socioeconomic status. According to the study, there is a linear relationship between the physical and psychosocial risks in the offshore environment and a variety of outcome measures related to health and well-being. Additionally, when a variety of stressors were added together (as opposed to researching pairs of hazards), this effect was more prominent.

Table 2.0 Significant Difference in the Effect of Virtual Fatigue to the Online Learning when Grouped According to the Respondents' Socio-Economic Status

Fatigue	F	p value	Interpretation
General Fatigue	1.364	0.258	Not Significant
Physical Fatigue	0.382	0.683	Not Significant
Mental Fatigue	0.048	0.953	Not Significant
Visual Fatigue	0.496	0.610	Not Significant
Vocal Fatigue	0.870	0.421	Not Significant
Social Fatigue	2.109	0.124	Not Significant
Reduced Activity	4.209	0.016	Significant
Reduced Motivation	0.450	0.638	Not Significant
i) Emotional Fatigue	2.221	0.111	Not Significant
Overall Fatigue	2.129	0.122	Not Significant

Margin of error at 0.05

Conclusion and Recommendations

The effects of COVID-19 on employment, education, and means of basic survival have been disproportionate. A virtual learning environment has been established within universities by numerous higher education institutions by utilizing online learning opportunities. The study revealed that every student encountered virtual fatigue when learning digitally, including a bad internet connection, difficulty accessing online platforms because of a large user base, a lack of equipment, and a lack of personal space for online instruction. The purpose of this study was to ascertain the difficulties that students faced during the pandemic. The majority of the students reported feeling virtually tired, according to the results. With a p-value of less than 0.05, this study's analysis of the data leads it to the conclusion that only two types of fatigue—physical and social—were statistically significant. However, when categorized based on their socioeconomic status, the overall Fatigue result is not statistically significant. Therefore, the result is not significant in terms of overall fatigue. In other words, the respondents' weariness has nothing to do with their economic status. Given that fatigue significantly increases risk of workplace accidents and injuries as well as lowers productivity and performance, this study suggests that educators be innovative in their approach to teaching and minimize their students' screen time. Since prolonged fatigue can lead to serious physical and mental health problems, this should be given priority in schools.

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