# Zooming in on Zoom Fatigue: A Baseline Study among Blended Online Learners and Teachers in Basic Education

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## Abstract

*Videoconferencing (VC) tools were used extensively during the COVID-19 pandemic due to the prevalence of synchronous online classes. The prolonged use of these VC tools, however, may cause Zoom fatigue. We used the term "Zoom fatigue" conversely with the more customary term "videoconference fatigue" and defined it as the feeling of exhaustion during and/or after a video teleconference, regardless of the particular VC platform used. Drawing from a sample of 55 teachers and 155 learners in the blended online learning modality of the Basic Education curriculum from selected public schools in Bacolod City, this quantitative, cross-sectional study investigates the level of VC fatigue and its relationship with the attitude, frequency, duration, and burstiness of videoconference among teachers and learners in the Blended Online Learning Modality. Key parameters were measured using the Zoom Exhaustion and Fatigue Scale. Data were gathered through an online survey. The findings of this study indicate a somewhat moderate level of Zoom fatigue among teachers and learners. Moreover, teachers experience higher levels of visual fatigue while learners experience it least. These results highlight that the negative attitude towards videoconferencing greatly contributes to the higher levels of videoconference fatigue experienced by teachers and learners. There is no correlation in the age, sex, frequency, duration and burstiness of videoconference and these variables are not relevant in determining the difference in the level of Zoom fatigue experienced by both online teachers and learners when teaching using VC tools.*

*Keywords: basic education, online class, Philippines, remote learning, videoconference fatigue, zoom fatigue.*

## 1. Introduction

The enduring coronavirus 2019 pandemic has triggered a paradigm shift in teaching and learning, compelling educators to use various online platforms for academic exchange. These online platforms facilitated flexible learning and permitted large group meetings without compromising safety and health protocols (Barrera et al., 2020; Knitza et al., 2019). Videoconferencing (VC) via platforms such as Google Meet, Zoom, and Microsoft Teams has managed to bridge some gaps in teaching and learning and has proven to be useful in the present situation (El Khatib & Chizzotti, 2020). The use of VC did not violate any quarantine protocols ensuring the safety of both learners and teachers (Mobo, 2021). For most teachers, working from home during the pandemic has meant spending a lot of time on video meeting applications instead of meeting face-to-face for consultation, planning, information dissemination and conferences. However, despite their advantages, these VC tools are also prime locations for the dissemination of harmful information and improper conduct, which can also have a negative impact and even aggravate

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

the difficult situation (Cordero, 2021). In the Philippines, where blended online classes have been administered, many teachers and learners who lack the necessary skills have been compelled to adopt VC tools notwithstanding the challenges. Teachers have a dual responsibility: they must teach learners about technology while also learning how to utilise it themselves. (Orlanda-Ventayen et. al., 2021). Learners' feedback concerning the conducting of online classes also includes poor internet connectivity, shared suitable technology (laptop/desktop), lack of proficiency with digital tools and methods for conducting online classes or attending them (Ignacio, 2021), instructional struggles, domestic barriers (Aguilar & Torres, 2021) boredom, social media distraction, and mental stress (Delicano, 2020). While VC was publicised as the immediate alternative to face-to-face learning, most teachers and learners stated the tools were "exhausting" to use (Bailenson, 2021; Supiano, 2020).

To address these issues, school administration monitor the implementation of flexible learning; provide access to sufficient internet and technology resources, and organise teacher capacity-building and training sessions (Tanucan & Uytico, 2021; Tarrayo et al., 2021). Local studies advise schools to begin instructing teachers and learners in the use of blended online learning approaches and improve Information and Communication Technology (ICT) tools and the role of both teachers and learners although the Philippines is still in the early stages of embracing the fundamental shift in classroom instruction (Baloran, 2020; Baticulon, et al., 2021; Toquero, 2020). Self-regulated learning, which involves making a student an independent learner by utilising a variety of psychological techniques, such as self-control, academic self-motivation, and learning techniques, was also practiced to address social media distractions (Kumar & Sajja, 2020).

There are several studies on the impacts of the shift to online education in schools but most of these focus on readiness and challenges. Academic studies on the psychological impacts of VC are scarce, and to our knowledge, no local study exists yet on the exhaustion and fatigue it brings to teachers and learners. This study investigated the level of Zoom fatigue and its predictors, particularly for blended online teachers and learners. The findings of this study could be used as a basis for formulating educational policies in the implementation of blended and online modalities, providing essential insights into the strategic use of VC tools in online learning.

## 2.    Literature Review

Similar to how "Googling" is analogous to any web search, "Zooming" has replaced videoconferencing as the universal and generic verb. A newly-coined phenomenon, Zoom fatigue (synonymous with VC fatigue) refers to the weariness and stress you get after participating in any type of video call or videoconference (Fosslien & Diffy, 2020; Riedl, 2021). Recent literatures suggest that Zoom fatigue is real and can have negative effects on learners (Oducado et al., 2021). Zoom fatigue has four root causes, according to Bailenson (2021): too much close-up eye contact, cognitive load, restrictions from physical mobility, and staring at videos of oneself that lead to enhanced self-evaluation. Attitudes toward videoconferencing, frequency, duration, and burstiness of videoconferences as predictors of videoconference fatigue (Doty et al., 2022; Fauville et al., 2021; Oducado et al., 2021). Ching and Gungon (2023) also found that problematic internet use has caused online fatigue, which in turn affects learning effectiveness among high school students in the Philippines. Despite the fact that each point described previously is supported by one or more academic studies, they should all be viewed as just theories at this point. Three well-known media theories—media richness, self-presentation, and expectation violations theory—serve as the study's key tenets (Massner, 2021).

Media richness theory, often known as information richness theory or MRT, is a concept used to explain how people in an organization process messages delivered through multiple media means (Daft & Lengel, 1986). Email, video conferencing, and phone calls are just a few examples of communication channels whose richness is ranked and determined using MRT. Because a phone call cannot imitate visible social cues like gestures and body language, it may be deemed less rich than VC. According to MRT, richer, more intimate communication tools are typically more effective at spreading information than less rich tools. Feedback immediacy, diversity of stimuli, language variance, and personal emphasis are the four dimensions of media richness. The first two of these dimensions are the most important ones (Sheer, 2020).

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Irving Goffman (1989) initially introduced the idea of The Self-Presentation in Everyday Life. The "Drama-like Theory" elaborates on the idea and framework of life as a performance, with society serving as the main stage on which everyone participates. The individual's self-presentation in regular social life is referred to as a "drama." (Zhu & Li, 2021). A framework for understanding how teachers and learners present themselves through VC is provided by Goffman's self-presentation theory. They manage their identities by creating profiles, posts, photographs, comments, and videos, creating the ideal version of the person they want to project in the online space (Massner, 2021). In the context of online education, Jaber and Kennedy (2017) pointed out that student performance requires a strong sense of student identity.

The expectation violation theory (EVT) offers a theoretical framework for comprehending how we react to information that is potentially dangerous. According to EVT, anticipation is the idea that we have formed expectations about how other people should interact with us (Burgoon, 1993; Rui et al., 2018). Students have demands of their classes, teachers, and online interactions. Low levels of perceived teacher credibility and satisfaction may result from teachers' minimal usage of technology (Ledbetter & Finn, 2018). It is possible that having parents, siblings, and pets at home while doing synchronous VC classes violates the learners' expectations for their academic context and growing signs of Zoom fatigue. The theories of Media Richness, Self-Presentation, and Expectancy Violations together contribute to our conceptualisation of Zoom fatigue and its causes. VC platforms, such as Google Meet, Zoom, and Microsoft Teams, may provide rich interactions in the virtual learning environment; however they also pose a threat to the mental and emotional well-being of teachers and learners.

This study investigated blended online teachers' and learners' level of Zoom fatigue. Specifically, the following objectives are put forth:
  i.   To identify the level of Zoom fatigue of blended online teachers and learners when grouped according to age, sex, attitude, frequency, duration, burstiness of VC and as a whole; and
  ii.  To identify the significant difference in the Zoom fatigue of blended online teachers and learners when grouped according to age, sex, attitude, frequency, duration, burstiness of VC, and as a whole.

## 3.    Research Method

### 3.1.    Sampling

In the stratified random sample frame, which ran from February 7 to March 11, 2022, 210 participants were drawn from two junior high schools in the Bacolod City Division. The participants consisted of 55 teachers and 155 learners in the blended online modality of the Basic Education Curriculum. The sample was selected using the Stratified Random Sampling Method. This sampling method ensures that each grade level of the given population is adequately represented within the whole sample population of a research study. The purposive selection of the learning modality and the schools involved emphasises the use of VC in their synchronous online sessions and the duration of screentime exposure, respectively. One school runs four (4) consecutive hours of synchronous online classes while the other has two sessions of 2-hour long classes, one session in the morning and one in the afternoon.

### 3.2.    Data Collection and Research Instrument

This study utilised the Zoom Exhaustion & Fatigue (ZEF) Scale developed by Fauville, et. al. (2021). The instrument is made of 15 individual questions, with construct-specific choices that are designed to reveal five dimensions of fatigue: general (1-3), visual (4-6), social (7-9), motivational (10-12), and emotional (13-15) fatigue. Every item is measured on a 5-point Likert-scale, with the responses options of 1 = "Not at all", 2 = "Slightly", 3 = "Moderately", 4 = "Very" and 5 = "Extremely" provided for all except for two questions about frequency, for which the following responses were listed: 1 = "Never", 2 = "Rarely", 3 = "Sometimes", 4 = "Often" and 5= "Always". The instrument is freely available for use and was administered through Google Forms. The survey also included four measures of video conferencing utilisation aside from the 15 multidimensional ZEF scale of attitudes toward video conferencing.

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

**Attitude.** Attitude toward video conferences was rated on a three-item Likert scale (i.e., "How much do you like participating in video conferences?") ranging from 1 = "Not at all" to 5 = "Extremely".

**Frequency.** The question, "On a typical day, how many video conferences do you participate in" on a 5-point Likert scale from 1 = "1" to 5 = "5 and more".

**Duration.** Participants were asked to indicate "On a typical day, how long does a typical video conference last" using a Likert scale ranging from 1 = "Less than 15 minutes", 2 = "15 to 30 minutes", 3 = "30 to 45 minutes", 4 = "45 minutes to an hour", and 5 = "More than an hour".

**Burstiness.** Participants were asked to show "On a typical day, how much time do you have between your video conferences?" Burstiness was reverse-coded, as fewer meetings each day indicate greater burstiness since frequency, length, and burstiness measured the level of intensity of the video conferencing encounter. The response options range from 1 = "More than an hour", 2 = "45 minutes to an hour", 3 = "30 to 45 minutes", 4 = "15 to 30 minutes", and 5 = "Less than 15 minutes".

A Google Form was created, and a link was sent online to teachers and learners of participating schools to access and answer the form. This method was adopted to prevent face-to-face communication and to gather data with ease, speed, and accuracy.

### 3.3. Ethical Issues

Informed consent forms were sent to the parents of the participants prior to commencement of data collection. The form included the purpose, description, and benefits of the study. The participants were also notified that their names and their school will not be divulged in the manuscript. It was also clarified that their participation is voluntary. The name of the learner, name, and signature of the parent or guardian signified their full consent to participate in this study.

### 3.4. Data Analysis Plan

The consolidated Google Form was downloaded as an Excel File and data was collated according to the questions and identified constructs. In determining the level of Zoom fatigue, the ZEF Score was set by getting the mean rating across the 15 fatigue items. The following was used as score interpretation: 4.1 – 5.0 Extremely Fatigued; 3.1 – 4.0 Moderately Fatigued; 2.1 – 3.0 Somewhat Fatigued; 1.1 – 2.0 Slightly Fatigued; and 0 – 1.0 Not Fatigued at all.

For data on teachers' Zoom fatigue, all assumptions for using parametric statistics were satisfied. On the other hand, for data on students' Zoom fatigue, the normality test using Shapiro Wilk yielded a p-value of <0.001 suggesting a deviation from normality. Thus, non-parametric tests were used.

## 4. Findings and Discussion

### 4.1. Zoom Fatigue Levels

**Table 1.** Zoom Fatigue Levels of Blended Online Teachers When Grouped According to Selected Variables and as a Whole

| Variables | Mean | SD | Interpretation |
|---|---|---|---|
| Age | | | |
|     Younger (n=33) | 2.56 | 0.78 | Somewhat Fatigued |
|     Older (n=22) | 2.83 | 0.74 | Somewhat Fatigued |
| Sex | | | |
|     Male (n=19) | 2.69 | 0.82 | Somewhat Fatigued |
|     Female (n=36) | 2.66 | 0.76 | Somewhat Fatigued |
| Attitude | | | |
|     Not at All (n=3) | 3.42 | 0.22 | Moderately Fatigued |
|     Slightly (n=16) | 2.88 | 2.70 | Somewhat Fatigued |
|     Moderately (n=28) | 2.70 | 0.65 | Somewhat Fatigued |
|     Very (n=7) | 1.97 | 0.76 | Slightly Fatigued |
|     Extremely (n=1) | 1.20 | N/A | Slightly Fatigued |

Zooming in on Zoom Fatigue:                                    ASEAN Journal of Open and Distance Learning
A Baseline Study Among Blended Online Learners                 Vol. 14, No. 2, 2022, pp.79 – 90
and Teachers in Basic Education

| Variables | Mean | SD | Interpretation |
|---|---|---|---|
| Frequency | | | |
| 1 (n=32) | 2.84 | 0.81 | Somewhat Fatigued |
| 2 (n=18) | 2.52 | 0.69 | Somewhat Fatigued |
| 3 (n=4) | 2.05 | 0.41 | Somewhat Fatigued |
| 4 (n=1) | 2.07 | N/A | Somewhat Fatigued |
| Duration | | | |
| 30 – 45 minutes (n=23) | 2.47 | 0.76 | Somewhat Fatigued |
| 45 minutes to an hour (n=12) | 2.65 | 0.53 | Somewhat Fatigued |
| 1 hour to 1 hour and a half (n=4) | 3.30 | 0.23 | Moderately Fatigued |
| 1 hour and a half to 2 hours (n=8) | 2.81 | 0.78 | Somewhat Fatigued |
| More than 2 hours (n=8) | 2.81 | 1.14 | Somewhat Fatigued |
| Burstiness | | | |
| More than an hour (n=9) | 2.73 | 0.76 | Somewhat Fatigued |
| 45 minutes to an hour (n=6) | 2.67 | 0.97 | Somewhat Fatigued |
| 30 to 45 minutes (n=19) | 2.59 | 0.61 | Somewhat Fatigued |
| 15 to 30 minutes (n=2) | 3.54 | 0.38 | Moderately Fatigued |
| Less than 15 minutes (n=19) | 2.64 | 0.81 | Somewhat Fatigued |
| **As a whole (n=55)** | **2.67** | **0.77** | **Somewhat Fatigued** |

It can be gleaned from Table 1 that regardless of age and sex, teachers are somewhat fatigued when teaching online via videoconferencing tools. This suggests that the new method of online instruction had somehow increased teachers' anxiety in the classroom due to the greater demand on their mental resources than in-person instruction (Dahabiyeh et al., 2022; Canas et al., 2021; Orhan & Byhan, 2020; Zhao et al., 2020).

In terms of attitude toward VC, teachers who are not at all interested in participating in VC (3.42±0.22) reported being moderately fatigued compared to teachers who are slightly (2.88±2.70) and moderately interested (2.70±0.65) in participating in VC, who reported being somewhat fatigued. On the other hand, teachers who are very (1.97±0.76) and extremely interested (1.20) in participating in VC responded that they experience only slight fatigue. This suggests that teachers who have a good attitude about videoconferencing have reduced videoconferencing fatigue (Oducado et al., 2022). According to Salsabila et al. (2021) and Dahabiyeh et al. (2022), technical problems, such as when teachers are unsure of the features of the VC application, may have led to a bad experience using the platform, resulting in technostress, a bad attitude, and increased teacher exhaustion from using the tool.

Regardless of the frequency and duration of the VC, teachers reported being somewhat fatigued when teaching online. This implies that teachers become more fatigued as videoconferences become longer and more frequent (Fauville et al., 2021; Oducado & Estoque, 2021). Online meetings with weak social rules and regulations may amplify the effects of poorly managed offline meetings on employees' motivation, engagement, and energy (Doring et al., 2022).

In terms of burstiness, teachers who have at least 30 minutes to more than an hour of break in between VCs reported that they were somewhat fatigued, compared to teachers who only had 15 to 30 minutes break in between VCs who reported experiencing moderate fatigue. Meanwhile, teachers who have less than 15 minutes break in between VCs claimed to be somewhat fatigued. This indicates that Zoom fatigue correlates to having little time between two consecutive videoconferences. Fauville et al. (2021) associated burstiness of videoconferences with a higher level of fatigue. Riedl (2021) also recommends including breaks of roughly 10 minutes per hour in long video sessions, like online lectures to regulate blood pressure, electrodermal activity, and heart rate variability.

Overall, online teachers who participated in this study reported being somewhat fatigued after utilising various videoconferencing tools in their synchronous online classes, with a composite score of 2.24±0.70. In terms of subscale, visual fatigue (2.93±0.97) and motivational fatigue (2.81±0.84) had the highest mean scores out of the five subscales, while emotional fatigue (2.33±0.92) had the lowest. This implies that teachers become somewhat irritated and uncomfortable as their eye muscles tighten after this visually intense task caused by prolonged exposure to computer monitors (Dossari et al., 2022). The most significant factor among the three indicators of videoconferencing utilization is still longer virtual meetings which is

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

associated with an increase in fatigue during virtual meetings, according to reasonably consistent research (Oducado et al., 2022). Teachers feel somewhat worn out and drained as a result of accumulated stress from online teaching (Mheidly et al., 2020; Zhao et al., 2020). Teaching through videoconferencing tools caused them stress and frustrations, which may include technical difficulties, lack of emotional engagement, and poor student engagement. Technical issues, such as when teachers are unfamiliar with the features of VC tools, may have led to a negative experience using the platform, leading to a negative attitude, which in turn might have amplified teachers' fatigue with the application (Oducado et al., 2022; Zhao et al., 2020). Teachers are also disappointed due to lack of student involvement, excuses, poor attendance, and not taking the class seriously (Nambiar, 2020).

**Table 2.** Level of Zoom Fatigue of Blended Online Learners When Grouped According to Selected Variables and as a Whole

| Variables | Mean | SD | Interpretation |
|---|---|---|---|
| Variables | Mean | SD | Interpretation |
| Age | | | |
|     Younger (n=88) | 2.16 | 0.66 | Somewhat Fatigued |
|     Older (n=67) | 2.34 | 0.75 | Somewhat Fatigued |
| Sex | | | |
|     Male (n=67) | 2.12 | 0.65 | Somewhat Fatigued |
|     Female (n=88) | 2.32 | 0.73 | Somewhat Fatigued |
| Attitude | | | |
|     Not at All (n=7) | 2.71 | 0.76 | Somewhat Fatigued |
|     Slightly (n=46) | 2.36 | 0.78 | Somewhat Fatigued |
|     Moderately (n=55) | 2.22 | 0.61 | Somewhat Fatigued |
|     Very (n=35) | 2.04 | 0.53 | Somewhat Fatigued |
| Frequency | | | |
|     1 (n=15) | 2.33 | 0.63 | Somewhat Fatigued |
|     2 (n=96) | 2.22 | 0.74 | Somewhat Fatigued |
|     3 (n=21) | 2.38 | 0.64 | Somewhat Fatigued |
|     4 (n=7) | 2.32 | 0.36 | Somewhat Fatigued |
|     5 or more (n=16) | 2.03 | 0.72 | Somewhat Fatigued |
| Duration | | | |
|     30 – 45 minutes (n=23) | 2.25 | 0.68 | Somewhat Fatigued |
|     45 minutes to an hour (n=32) | 2.23 | 0.66 | Somewhat Fatigued |
|     1 hour to 1 hour and a half (n=29) | 2.32 | 0.63 | Somewhat Fatigued |
|     1 hour and a half to 2 hours (n=53) | 2.18 | 0.72 | Somewhat Fatigued |
|     More than 2 hours (n=17) | 2.30 | 0.89 | Somewhat Fatigued |
| Burstiness | | | |
|     More than an hour (n=80) | 2.20 | 0.75 | Somewhat Fatigued |
|     45 minutes to an hour (n=33) | 2.21 | 0.47 | Somewhat Fatigued |
|     30 to 45 minutes (n=15) | 2.28 | 0.78 | Somewhat Fatigued |
|     15 to 30 minutes (n=18) | 2.27 | 0.71 | Somewhat Fatigued |
|     Less than 15 minutes (n=9) | 2.50 | 0.90 | Somewhat Fatigued |
| **As a whole (n=155)** | **2.24** | **0.70** | **Somewhat Fatigued** |

Table 2 presents the level of Zoom fatigue of online learners based on selected variables. Regardless of age, sex, attitude toward VC, frequency of VCs in a day, duration, and burstiness of videoconferences, learners reported being somewhat fatigued (2.24±0.70) after attending their synchronous online classes. In terms of subscales, the highest mean score was obtained in the motivational fatigue (2.54±0.85) and social fatigue (2.42±1.02), and the lowest mean was in the visual fatigue (1.99±0.90). This implies that due to their active behaviour, online learners had higher degrees of motivational fatigue. As a result, the value of making an attempt to complete a task decreases as levels of fatigue increase, resulting in a performance decline (Muller & Apps, 2019). Aside from motivational fatigue, online learners also run out of energy to expend on

Zooming in on Zoom Fatigue:                                          ASEAN Journal of Open and Distance Learning
A Baseline Study Among Blended Online Learners                       Vol. 14, No. 2, 2022, pp.79 – 90
and Teachers in Basic Education

themselves and others. They feel overstimulated, stressed, tired, anxious, and under pressure as a result of being involved in a videoconference (Gulotta, 2021). Zoom fatigue has been linked to information overload, which can result from frequent usage of videoconferencing (Ebardo et al., 2021). Interestingly, this self-assessment revealed that learners experience visual fatigue less than teachers. Several studies contradict these findings since children are more likely to experience digital eyestrain than adults are (Dacillo, et al., 2022; Mheidly et al., 2020; Mohan, et al., 2021; Oducado et al., 2021).

It is also noteworthy that the group of learners with the highest level of Zoom fatigue are those who are not at all interested participating in VC (2.71±0.76). Consistent with earlier research (Ebardo et al., 2021; Fauville et al., 2021; Oducado et al., 2021), the largest predictor of videoconference fatigue according to this study was the respondent's attitude toward VC. Less fatigue among VC users is associated with a better attitude toward videoconferencing.

## 4.2.    Correlates of Zoom Fatigue

**Table 3.** Zoom Fatigue Levels of Blended Online Teachers When Grouped According to Selected Variables and as a Whole

| Variables | Mean | SD | p-value | Significance | Decision |
|---|---|---|---|---|---|
| Age |  |  |  |  |  |
| Younger (n=33) | 2.56 | 0.78 | 0.216 | Not Significant | Do not Reject Ho |
| Older (n=22) | 2.83 | 0.74 |  |  |  |
| Sex |  |  |  |  |  |
| Male (n=19) | 2.69 | 0.82 | 0.901 | Not Significant | Do not Reject Ho |
| Female (n=36) | 2.66 | 0.76 |  |  |  |

*Ho: There is no significant difference in the Zoom fatigue of blended online teachers and learners when grouped according to age, sex, attitude, frequency, duration, burstiness of VC, and as a whole*

Using t-test for independent samples, the results as shown in Table 3 indicate that there is no significant difference in the VC fatigue of teachers when they are grouped according to age (p=0.216) and sex (p=0.901), with p-values less than 0.05 alpha and therefore not rejecting our null hypotheses. This implies that age and sex are not relevant in the Zoom fatigue experienced by teachers when teaching using VC tools. This study contradicts other studies that claimed older workers experienced less physical and mental exhaustion as a result of ICT use than their younger counterparts. Older workers had a lower tendency to adopt unfit behaviour as a coping mechanism for stress, which was thought to explain this correlation (Hauk et al., 2019; Nimrod, 2020). Also, Fauville et al. (2021) stated that women have significantly higher Zoom fatigue levels compared to men and older people have higher Zoom fatigue than younger ones.

**Table 4.** Correlates in the Level of Zoom Fatigue of Online Teachers When Grouped According to Attitude toward Videoconferencing

| Cases | Sum of Squares | df | Mean Square | F | p | Significance |
|---|---|---|---|---|---|---|
| Attitude | 7.457 | 3 | 2.486 | 5.181 | 0.003 | Not significant |
| Residuals | 24.466 | 51 | 0.480 |  |  |  |

Using one-way ANOVA, the results (Table 4) reveal that there is no significant difference in the VC fatigue experienced by teachers based on their attitude toward VC. Post-hoc analysis revealed that those who are not at all interested in attending VCs (p<.009) had significantly higher videoconferencing fatigue compared to those who are interested in attending videoconferences. This implies that attitude does not affect the level of Zoom fatigue experienced by teachers, which contradicts the results in previous studies (Fauville et al., 2021a; Fauville et al., 2021b; Oducado et al., 2021).

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

**Table 5.** Correlates in the Level of Zoom Fatigue of Online Teachers When Grouped According to Frequency, Duration, and Burstiness of Videoconference

| Cases | Sum of Squares | df | Mean Square | F | p | Significance |
|---|---|---|---|---|---|---|
| Frequency | 3.303 | 2 | 1.651 | 3.000 | 0.058 | Not significant |
| Residuals | 28.620 | 52 | 0.550 | | | |
| Duration | 2.796 | 4 | 0.699 | 1.200 | 0.322 | Not significant |
| Residuals | 29.127 | 50 | 0.583 | | | |
| Burstiness | 1.681 | 4 | 0.420 | 0.695 | 0.599 | Not significant |
| Residuals | 30.242 | 5 | 0.605 | | | |

From Table 5, we can see that there is no significant difference in the videoconferencing fatigue levels according to frequency (p=0.058), duration (p=0.322), and burstiness (p=0.599), with an alpha value of less than 0.05 alpha, therefore not rejecting our null hypotheses. This implies that the frequency, duration and burstiness of videoconference are not relevant in determining the difference in the level of Zoom fatigue experienced by teachers when teaching using VC tools.

**Table 6.** Correlates in the Level of Zoom Fatigue of Online Learners When Grouped According to Age and Sex

| Variables | Mean | SD | p-value | Significance | Decision |
|---|---|---|---|---|---|
| Age | | | | | |
| Younger (n=88) | 2.16 | 0.66 | 0.127 | Not Significant | Do not Reject Ho |
| Older (n=67) | 2.34 | 0.75 | | | |
| Sex | | | | | |
| Male (n=67) | 2.12 | 0.65 | 0.086 | Not Significant | Do not Reject Ho |
| Female (n=88) | 2.32 | 0.73 | | | |

Results obtained from the Mann-Whitney U test (Table 6) indicate that there is no significant difference in the VC fatigue experienced by learners based on age (p=0.127) and sex (p=0.086), with alpha values of less than 0.05, therefore not rejecting our null hypotheses. This implies that age and sex are not relevant in the level of Zoom fatigue experienced by online learners when using VC tools. This may not be true for Fauville et al. (2021), whose study found that women have significantly higher Zoom fatigue levels than men and older people have higher Zoom fatigue than younger people. Moreover, Ratan et al. (2022) discovered that women are more prone than men to face dissatisfaction, leading to mirror anxiety and thus developing VC fatigue.

**Table 7.** Correlates in the Level of Zoom Fatigue of Online Learners When Grouped According to Attitude, Frequency, Duration, and Burstiness of Videoconference

| Factor | Statistics | df | p | Significance |
|---|---|---|---|---|
| Attitude | 7.455 | 4 | 0.114 | Not significant |
| Frequency | 4.215 | 4 | 0.378 | Not significant |
| Duration | 1.631 | 4 | 0.803 | Not significant |
| Burstiness | 2.440 | 4 | 0.655 | Not significant |

Table 7 indicates that there is no significant difference in the VC fatigue experienced by online learners based on attitude (p=0.114), frequency (p=0.378), duration (p=0.803), and burstiness (p=0.655), where alpha values of less than 0.05 result in not rejecting our null hypotheses. This implies that the attitude of learners, frequency, duration, and burstiness of videoconferencing is not relevant in determining differences in the level of Zoom fatigue experienced by learners when learning using VC tools in their synchronous online classes.

This study investigated how much Zoom fatigue blended online teachers and learners were experiencing in the Basic Education Curriculum. Teachers and learners answered the questionnaire remotely through an online survey. The findings of this study show the overall Zoom Exhaustion & Fatigue (ZEF) score was 2.67 out of 5 suggesting that teachers are somewhat fatigued. Regardless of age, sex, frequency, and duration of the VC, teachers are somewhat fatigued when teaching online. In terms of attitude toward VC, teachers

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

who are not at all interested in participating in VC reported being moderately fatigued; comparatively, teachers who are slightly and moderately interested in participating in VC reported being somewhat fatigued. On the other hand, teachers who are very and extremely interested in participating in VC experience only slight fatigue. In terms of the five subscales, teachers experience more visual fatigue and motivational fatigue and experience emotional fatigue subscale the least. The overall ZEF score for learners in this study was 2.24 out of 5, which indicates that they are somewhat fatigued. These fatigue levels are constant across age, sex, attitude toward VC, frequency of VCs in a day, duration, and burstiness of videoconferences. In terms of the five subscales, they experience more motivational fatigue and social fatigue but experience visual fatigue the least. Furthermore, this study found that there is no correlation in the age, sex, frequency, duration, and burstiness of videoconference. These variables are not relevant in determining the difference in the level of Zoom fatigue experienced by both online teachers and learners when using VC tools during online classes.

## 5.     Conclusion

Throughout this pandemic, videoconferencing has been prevalent in the academic setting. In the blended online distance learning modality, however, VC tools have also created unforeseen difficulties and caused significant anxiety among teachers and learners. After their synchronous online classes, they have symptoms Zoom fatigue. These levels of exhaustion remain consistent regardless of age, sex, attitude toward videoconferences, frequency of videoconferences per day, duration, and burstiness of videoconferences. This study highlights that teachers and learners experience higher levels of VC fatigue when they have a negative attitude towards VC. While both learners and teachers experience motivating weariness, social fatigue affects learners more and visual fatigue affects teachers more. Age, sex, frequency, duration, and burstiness of videoconferences have little impact on the level of Zoom fatigue experienced by online teachers and learners when using VC technologies for instruction. This study recommends that in order to optimise the advantages of this teaching and learning platform, measures to prevent Zoom fatigue during synchronous online classes may be provided. This is since using VC in teaching may continue after the pandemic. This study posits that while employing VC platforms for teaching and learning, administrators and teachers should take the length of synchronous online classes into account. Schools implementing online and blended online learning should follow the strategies suggested in administering remote learning (DepEd, 2020) particularly on the management of screentime based on age as recommended by the American Academy of Pediatrics (AAP) and World Health Organization (WHO). The findings of this study contribute to the body of knowledge on videoconferencing fatigue and the growing body of research on Zoom fatigue.

ASEAN Journal of Open and Distance Learning
Vol. 14, No. 2, 2022, pp.79 – 90

Zooming in on Zoom Fatigue:
A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

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A Baseline Study Among Blended Online Learners                              Vol. 14, No. 2, 2022, pp.79 – 90
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Vol. 14, No. 2, 2022, pp.79 – 90

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A Baseline Study Among Blended Online Learners
and Teachers in Basic Education

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