Factors Affecting Japanese Students' Fatigue in Online Foreign Language Presentation Courses During the COVID-19 Pandemic

Yuichi ONO[a*]

[a]*Faculty of Humanities and Social Sciences, University of Tsukuba, Japan*
*ono.yuichi.ga@u.tsukuba.ac.jp

Abstract: This paper discusses the relationship between online class styles and students' degree of fatigue during the 2019 coronavirus disease (COVID-19). A survey was conducted on first-year students of the author's national university in Japan and the responses of 1,156 respondents were analyzed. The results indicate that time allocated for the report and/or preparation most likely contributes to the students' degree of fatigue. For reading courses, a non-video based class style could be helpful in addressing student fatigue. In addition, network comfort is another potential factor that causes fatigue.

Keywords: online distant classes, English reading/presentation course, fatigue, network comfort

1. Introduction

Due to coronavirus disease 2019 (COVID-19), many university students have extended spring holidays and consequently have to catch up with their regular school curriculum online. Accordingly, some courses have started using videoconferencing programs and the number of institutions that have adopted such measures has increased exponentially. Other courses opt for a so-called "on-demand" teaching style, which allows students to download the videos at their convenience. In Japan, educational institutions set up a wide variety of virtual meeting platforms such as Zoom, Microsoft Teams, and Cisco Webex, in addition to strengthened learning management systems. In any case, great efforts were made to avoid stopping students' learning opportunities. Although there are mechanical malfunctions and troubles caused by increased traffic, an increasing number of reports show that online learning opportunities during this pandemic appear to provide a new instruction paradigm with "reluctant" individual instructors.

Needless to say, the administrators, instructors, and researchers who are in charge of post-coronavirus instruction design must be thoroughly evaluated. It is pointed out in online teaching, particularly with MOOCs, that using short video clips should be promoted instead of full lectures interspersed with tasks. However, there seems to be little research so far on student "fatigue" caused by watching videos with higher concentration or attending virtual communities through videoconferencing in foreign language classes. Video-based materials are usually dual-modal and were found to lead to higher cognitive load for students (Sweller, Ayres, & Kalyuga, 2011). According to *The Cognitive Theory of Multimedia Learning* (Mayer, 2009) and *Multimedia Learning Principles* (Mayer, 2014), students are advised to make additional efforts in selecting, organizing, and integrating the limited cognitive resources in working with multimedia materials. Moreover, *the cognitive-affective theory of learning from media* (Moreno, 2005) claims that it enhances students' learning process by increasing or decreasing the amount of cognitive resources necessary in dealing with multimedia materials. The primary issue raised in this paper is that watching videos for an extended period on a daily basis directly causes stress, anxiety, tiredness, and even threat, coupled with social insecurity brought about by the pandemic. Therefore, our hypothesis is that almost no emotional factor does not work, as expected from Moreno's *cognitive-affective theory of learning from media*.

In fact, such report was recently published in Japan. Ito et al. (2020) found that the duration of concentrating on ICT tools is related to students' degree of fatigue among elementary and secondary students. In their study on flipped classrooms for foreign language instruction, Furukawa and Nagatsuka

(2016) reported that the fatigue caused by a large number of tasks in other subjects and being required to watch videos of preparation tasks every day causes a decline in learning motivation. Ono (2020) claims that students' ICT environment and comfortable network communication affect the learning process, as they affect the visibility and clarity of sound, which are crucial for the success or failure of foreign language instruction.

This paper aims to explore the factors that influence students' degree of fatigue caused by online distant "English academic presentation and reading" classes. In line with this, a survey was conducted asking students about their learning environment, learning volume, and degree of fatigue.

2. Survey

2.1 Procedure

A survey was conducted on first-year students of the author's national university in Japan on June 7–14, 2020. A total of 1,156 students responded to the survey and their responses were analyzed. The students' majors ranged from humanities to engineering and also included PE, art, and medicine. 76% of the students were staying at home with their families because universities prohibited the entry of all students, although the universities were not locked out. 95% of the students had unlimited Wi-Fi access.

2.2 Question Items

The following model for validation presented in Figure 1 was developed to account for students' fatigue.
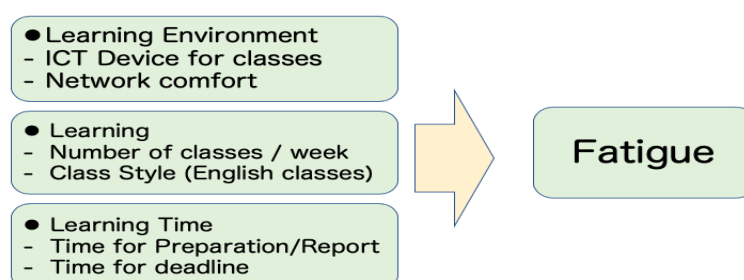

Figure 1. Assumed model for factors causing student's fatigue.

3. Results

3.1 Total number of classes and level of fatigue in a week

The average number of classes per week was M=19.5 (SD=3.2) and that of fatigue in a week was M=5.8 (a seven-point Likert Scale, SD=1.1). The correlation between these two parameters was r=.261 (p<.000). The results show that their weekly degree of fatigue was rather high and did not have a strong correlation with the number of classes in a week. It would be logical to assume that the more classes students take, the more likely they are to get exhausted because the video gets longer and they have to work with more assignments. It is important to note that 55.2% of the students indicated that they had an ache in their eyes or other parts of the body.

3.2 Class Styles and Fatigues

The results based on the number of classes for both reading and presentation classes are presented in Figure 2 below. For reading classes, some instructors chose non-video styles as shown in "PDF or paper" in Figure 2, which sharply contrasted with the presentation classes. Conversely, real-time interaction appeared to be the main priority in the presentation classes, resulting in longer videoconferences compared with reading classes.
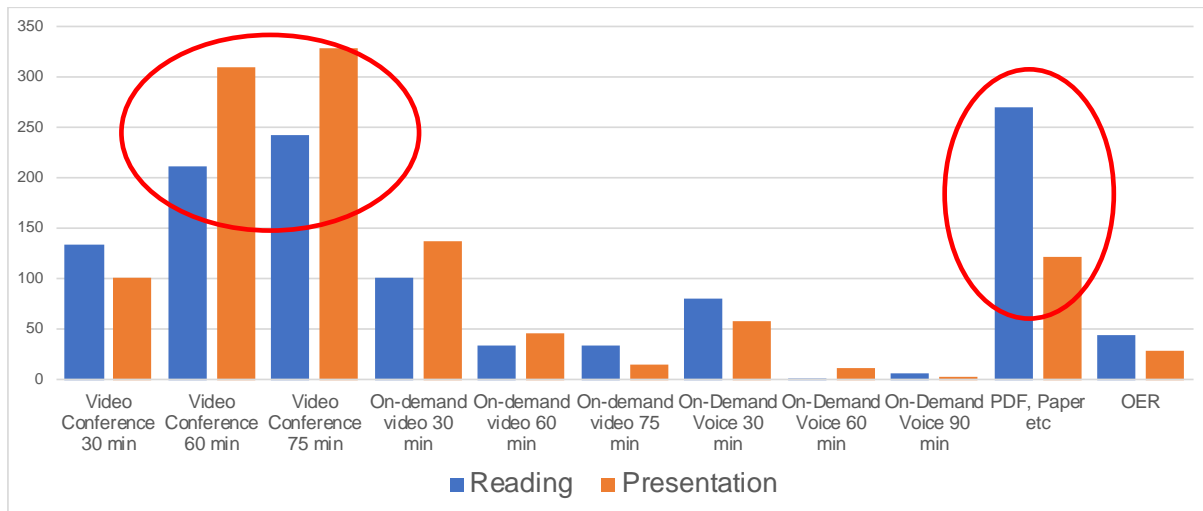
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Figure 2. Results of class styles of both reading and presentation classes.

The degrees of student fatigue depending on the class type are summarized in Figure 3.
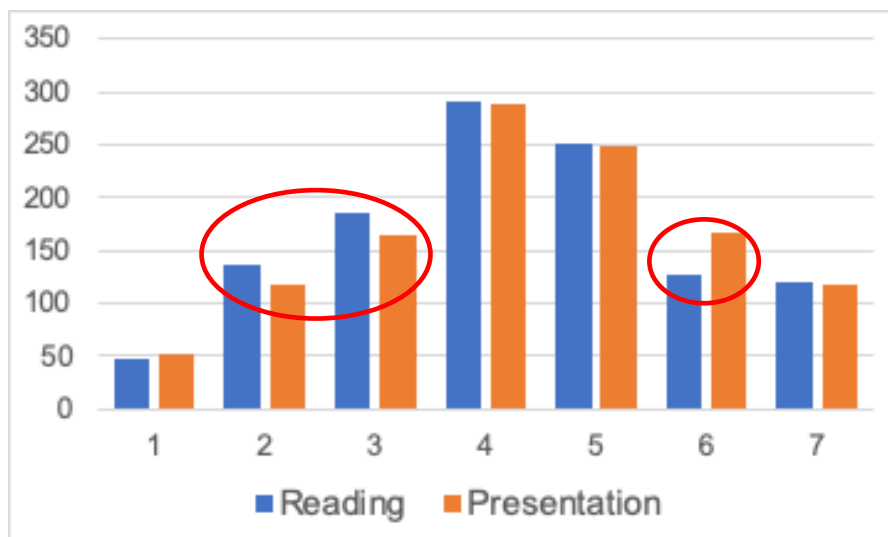

Figure 3. Results of degree of fatigue in both reading and presentation classes.

Although the fatigue tendencies of the two classes are relatively similar, it is important to note that the fatigue level for reading classes was lower than that of presentation classes in "6." This suggests that some reading class instructors avoided using video materials and some presentation class instructors opted for longer real-time videoconferencing. Therefore, it can be said that a non-video class style could reduce the students' fatigue since they are already watching videos in many other subjects.

3.3 Decision Tree Analysis

Figures 4 and 5 present the results of the decision tree analysis of reading and presentation classes. The independent variables are NETWORK (network comfort), DEADLINE (time before deadline), TIME (duration of study at home), and STYLE (class style). The dependent variable is FATIGUE. As seen on the analysis of reading classes in Figure 4, TIME first divides into two groups. For higher fatigue groups, STYLE divides into the highest and second highest sub-groups. The group with the highest degree of fatigue can be characterized as having "longer videoconferencing or on-demand video classes wherein the students study for more than 60 minutes." On the contrary, the group with the lowest degree of fatigue can be characterized as having "students who study for less than 30 minutes and have a stable Internet connection." The time before the deadline did not matter in the classification.

On the other hand, TIME appeared to be a crucial factor in accounting for student fatigue in presentation classes. TIME > 90 min led to the highest degree of groups, regardless of class STYLE. Moreover, NETWORK played a role in dividing them into subgroups. Evidently, NETWORK could be considered crucial because it can disrupt students' communication with their peers and instructors. Again, the time before the deadline did not matter.
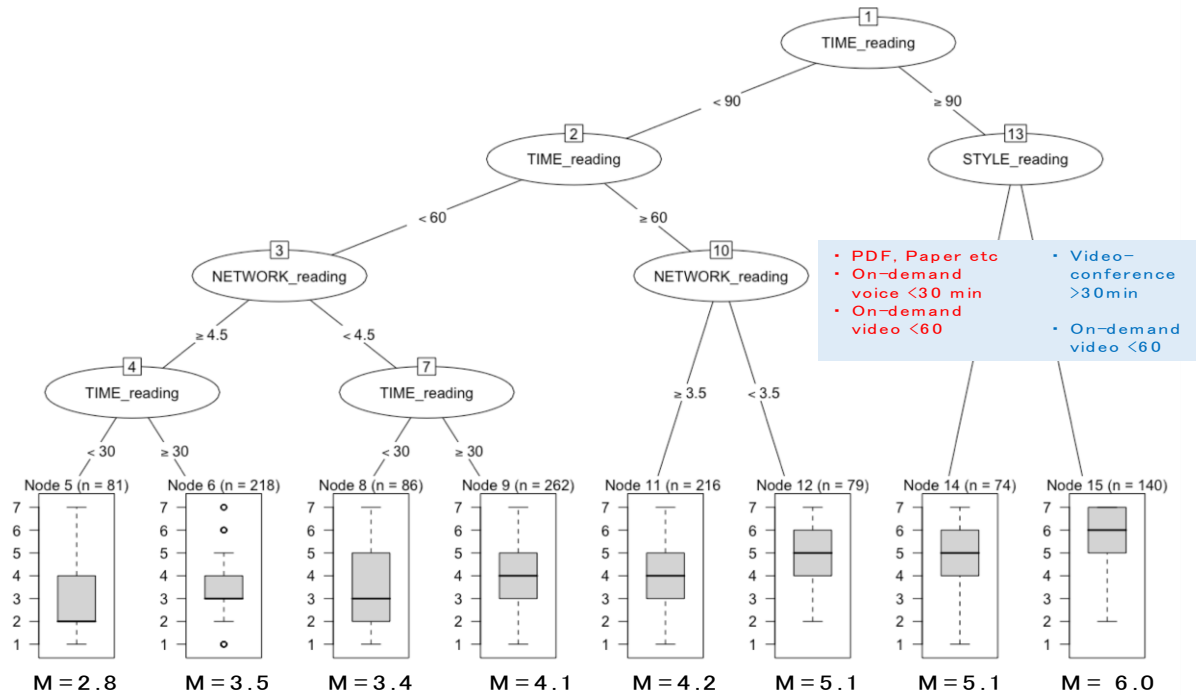

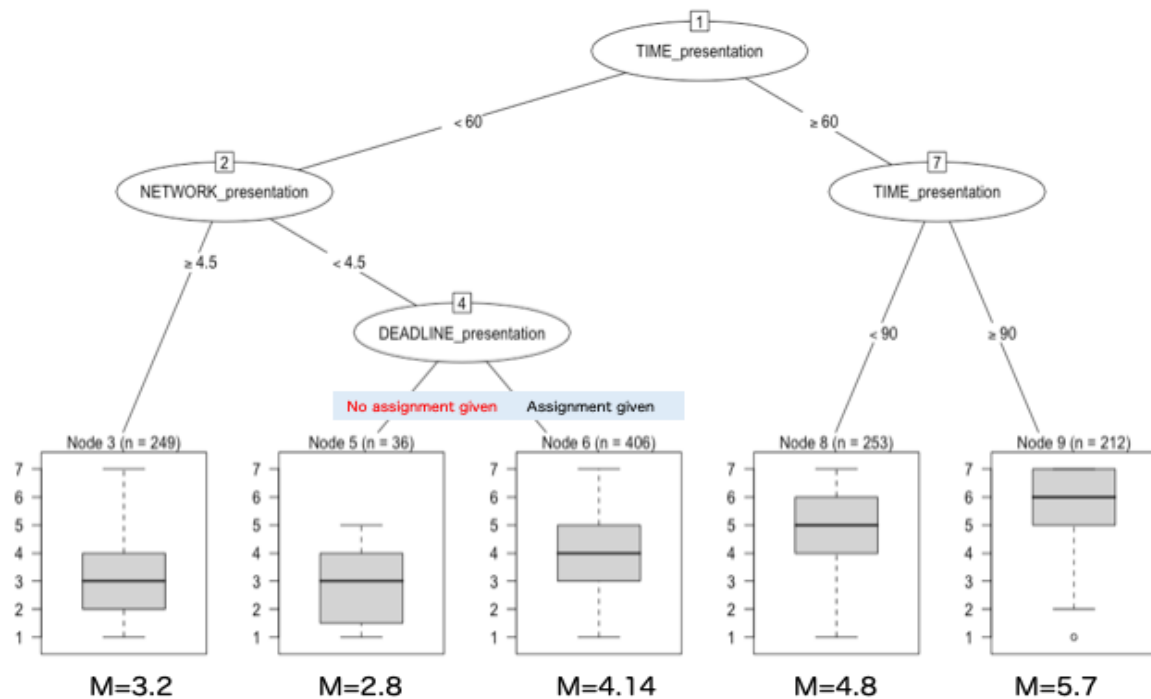*Figure 4*. Result of decision tree analysis (reading class).

Figure 5. Result of decision tree analysis (presentation class).

4. Conclusion

The survey results confirmed that the degree of fatigue could mainly be attributed to the time allocated for the report and/or preparation. A non-video-based class style could be helpful for students in reading courses. In the reading classes, students are required to read and thoroughly understand the text. On that account, too much focus on video or multimedia materials could lead to overload, as Mayer's theory suggests. Additionally, in line with Furukawa and Nagatsuka (2016) findings, concentrating too much on videos could impede their learning process in both reading and presentation courses because they have to take a lot of other subjects in addition to English classes.

In the near future, an overall evaluation is necessary, including the findings of this study. For example, the examination of the proper "content" of tasks in online classrooms could be explored. Follow-up research be conducted that is of a qualitative nature, using open-ended questionnaires and interviews rather than statistical procedures in order to get to a much deeper level of detail. Anyway, this research could help instructors develop more sophisticated online course designs.

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