EFL Teaching and Learning via Zoom during COVID-19: Impacts of Students' Engagement on Vocabulary Range and Reading Comprehension Skills

Tien Thinh Vu
International University, VNU-HCM, Vietnam

Diem Bich Huyen Bui
International University, VNU-HCM, Vietnam

Bio profile

Tien Thinh Vu is head of the Testing board, coordinator of the ELT provision and vice chair of the Department of English, International University, VNU-HCM. His current research interests include applied methodologies, autonomy development and TELL. Email: vtthinh@hcmiu.edu.vn

Diem Bich Huyen Bui is currently a full-time lecturer and student affairs associate of the Department of English, International University, VNU-HCM. Her research interests include teaching methodologies, skills development, technology enhances language learning, autonomy development and peer & self-assessment. Email: bdbhuyen@hcmiu.edu.vn

Abstract

The social distancing policy by nearly 200 countries and territories (Le et al., 2020) due to the quick widespread of the COVID-19 Pandemic triggered the online learning mode via various platforms, including Zoom, MS Teams, Google Meets or Hangouts. This change left many teachers and stakeholders concerns about creating and maintaining a virtual but dynamic and engaging EFL learning environment. Since the size of vocabulary and reading comprehension play an important role in acquiring other skills in English learning (Amirzai, 2021; Hartshorn et al., 2017), this study aimed to investigate the impacts of EFL students' engagement when studying reading online through Zoom on the performance of vocabulary and reading comprehension. Forty-four intermediate-level students at a public university in Vietnam were placed into a control group and an experimental group based on the results of a pre-test. While students in the control group followed the traditional format with the teacher-centred mode, those in the experimental group experienced the student-centred mode with frequent use of breakout rooms for pair work, group work and screen sharing for giving answers, elaborating on explanations and hosting vocabulary activities. After ten weeks, all the participants were required to take the post-test and particularly those in the experimental group were asked to complete a questionnaire on their attitudes towards this new learning style. Descriptive statistics of the post-test scores indicated that the experimental students outperformed the control students in vocabulary and reading comprehension. Findings from the questionnaire

revealed overall satisfaction towards this learning style, and more interestingly, there appeared a correlation between students' attitudes and the post-test scores.

*Corresponding author

Tien Thinh Vu, Department of English, International University – Vietnam National University HCM City, Quarter 6, Linh Trung Ward, Thu Duc City, Ho Chi Minh City, Vietnam.

1. Introduction

Effectiveness in teaching and learning has always been a major concern when considering online learning in the EFL context. In a developing country like Vietnam, where online learning still exists as a learning platform with numerous risks, distractions and little published academic certainty of its effectiveness, many teachers, especially the old generation, showed their hesitation or refusal to adopt this form of learning. Although the COVID-19 Pandemic forced many teachers to reluctantly change to online teaching, the change to online learning mode raised many issues relating to connection quality (Fresen, 2018), how to keep the class under control, how to keep the students connected and focused (Davis, Gough, & Taylor, 2019), how to motivate the students to speak, and which methods or techniques should be adopted.

To respond to the call from the government to switch to online learning, a quick decision was made by the university, requesting the teachers to start online sessions with the paid version of Zoom application to utilise all the functions provided by the application's developer. However, many lecturers, especially the old ones, were still taking the first steps in online teaching and decided to be "on the safe side". They chose to apply the traditional teacher-centered approach with more control of the class, hoping that the teaching session would proceed as planned, rather than taking risks using the learner-centered approach, attempting to use the Zoom meeting functions that would even confuse them and lead them to unexpected circumstances. In the meantime, students were required to pay tuition fee, with no difference to the normal face-to-face (F2F) learning. They then requested an online teaching quality similar to that offered by the traditional F2F learning. The situation was a reflection of what was happening at the beginning of the COVID-19 Pandemic in the field of education in Vietnam.

Until now, in Vietnam, almost no research findings, particularly teaching vocabulary and reading skills exploiting the benefits of using Zoom in teaching university students with the application of learner-centered approach and an emphasis on interaction have been

officially published. This research study was an attempt to find out whether the use of learner-centered approach with a strong emphasis on students' engagement and interaction in learning had an impact on the performance on the vocabulary and reading comprehension test.

2. Literature review

Throughout the history of teaching methodologies, two main approaches including teacher-centeredness and learner centeredness have been exploited. According to Lancaster (2017), traditional teacher-centered pedagogy is defined as the practice when the teacher takes the primary responsibility for the communication of knowledge to students. Learner-centered approach, on the contrary, treats learners as the center of the class and hands learners the opportunity to be actively involved in their learning process (Lynch, 2010).

Students' engagement and interaction play a key role in the success of online learning (Martin & Bolliger, 2018). In recent years, a variety of studies have been conducted to explore different aspects of engagement and interaction in online learning. A meta-analysis of the questionnaire with 799 university students examining three key types of interaction in online learning: student-content, student-teacher, and student-student revealed that these forms of interaction were "significantly related to students' self-efficacy for learning and course satisfaction" (Cho & Cho, 2017, p. 79). Newmann (1992, p. 12) defined student engagement as "the student's psychological investment in an effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote".

Lak, Soleimani, and Parvaneh (2017) conducted a study with 120 10-to-16-year-old EFL learners in an experimental model with teacher-centered and learner-centered approaches and reported that "learner-centered instruction was more effective than teacher-centered instruction in improving Iranian EFL learners' reading comprehension performance" (p. 8). In 2018, Martin and Bolliger surveyed 155 online students at eight universities around the USA and found that working collaboratively with peers via online communication tools was selected as the most beneficial engagement strategy. In the same year, Tsai and Tsai (2018) conducted a meta-analysis on 26 empirical studies in L2 contexts and provided strong support for the use of digital games in vocabulary learning. Lai, Lin, Lin, and Tho (2019) investigated 62 university students in an 8-week pre-test post-test design. The experimental participants were engaged in an online learning community where they could interact with their peers. The finding showed that higher interaction learners from the online learning community revealed better performance in learning achievement and student engagement. A survey at a midwestern university in the USA aiming to evaluate the influence of presence and interaction on online

learning reported that teaching presence and learner-instructor interaction were the most influential factors to effectiveness in teaching and learning (Kyei-Blankson, Ntuli, & Donnelly, 2019). Obniala (2019) conducted a study to discover the impact of active learning on the capability of learning science vocabulary of Thai students. The pre-test post-test model revealed that the experimental participants outperformed those in the control group.

Research questions

This study aimed to investigate the impacts of EFL students' engagement when studying reading online through Zoom on the performance of vocabulary and reading comprehension based on the following questions:

1. Do the students in the Experimental group achieve higher scores in the post-test vocabulary section than those in the Control group?
2. Do the students in the Experimental group achieve higher scores in the post-test reading comprehension section than those in the Control group?
3. Is there a correlation between the students' post-test scores and their attitudes on the applied learning mode?

3. Methodology

Participants

Upon getting permission from the school, participants for the study were 44 intermediate-level students at a public university in Vietnam, aged 17 or 18. These students, training in the English linguistics program, were from two English reading classes with English proficiency equivalent to IELTS 6.0. The reading course was taken as the target for the research since this was an obligatory foundation course whose results might have an influence on other courses in the program. These students were asked to do a pre-test, lasting for 60 minutes, consisting of two sections: vocabulary (20 points) and reading comprehension (80 points).

Table 1 *Descriptive statistics of the pre-test*

Variable	N	Mean	StDev.	Min.	Max.	Range
Pre-C	22	63.64	11.32	42	78	36
Pre-E	22	62.18	12.15	35	79	44

Note. Pre-C stands for pre-test of the control group. Pre-E stands for pre-test of the experimental group.

Table 2 *Descriptive statistics of the pre-test vocabulary section*

Variable	N	Mean	StDev.
Pre-C.V	22	13.09	2.52
Pre-E.V	22	12.00	2.62

Note. Pre-C.V stands for pre-test of vocabulary section of the control group. Pre-E.V stands for pre-test of vocabulary section of the Experimental group.

Table 3 *Descriptive statistics of the pre-test reading comprehension section*

Variable	N	Mean	StDev.
Pre-C.R	22	50.55	9.26
Pre-E.R	22	49.9	10.9

Note. Pre-C.R stands for pre-test of reading comprehension section of the Control group. Pre-E.R stands for pre-test of reading comprehension section of the Experimental group.

The groups were then randomly named as the control group (N=22, M=63.64, SD=11.32), and the experimental group (N=22, M=62.18, SD=12.15). Judging on the two parts of the pre-test separately, the Control group showed the statistics for vocabulary (N=22, M=13.09, SD=2.52) and reading comprehension (N=22, M=50.55, SD=9.26). Similarly, the data for the Experimental group revealed vocabulary (N=22, M=12, SD=2.62) and reading comprehension (N=22, M=49.9, SD=10.9).

Procedures

The first class was reserved for asking for students' agreement to join the research. Following the course orientation, students were asked to do a 60-minute pre-test, which consists of 20 points on vocabulary and 80 points on reading comprehension.

During the entire process, students of the two groups were provided with similar input, including the lists of key vocabulary of each lesson and the learning materials (reading texts and questions). From the second-class meeting, the flow of the lessons ran quite as a routine for each group. The control group followed the teacher-centered approach with more teacher control of the classroom to assure that the class would not turn into chaos. The experimental group, on the contrary, employed the learner-centered approach with maximization of student engagement and cooperative learning. The overall framework and detailed descriptions of each group's procedure of a class are presented below.
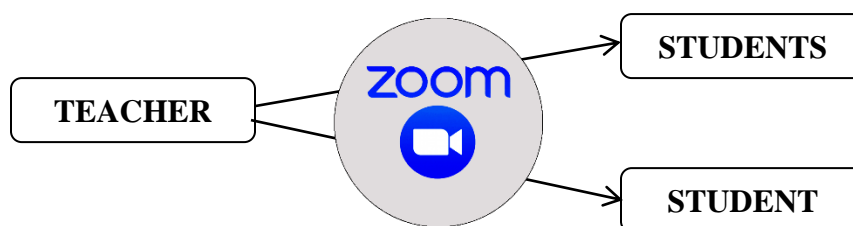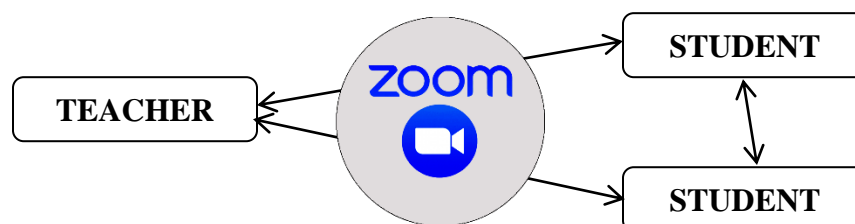
Figure 1. Interaction model of control group.

Figure 2. Interaction model of experimental group.

The Control group

Students were provided with a list of key vocabulary of the lesson one week before class time. They were required to check the meaning of the words and then write examples using the words. In class, students were guided to guess the meaning of the words through contexts or use the context to choose the right words. After listening to the teacher's instruction, students did the task individually. In the correction stage, teachers call students at random to give the correct answer.

The teacher led in the reading lesson by sharing the screen and asking some questions related to the topic. Some individuals were called to answer the questions. In the pre-reading stage, students went through the key vocabulary as described above. Then the teacher kept sharing the PowerPoint slides and taught the reading lesson. The teacher also took the primary role in giving reading skills of the lesson. During the while-reading phase, students mainly did the reading tasks individually in silence within a time limit. Then, the teacher gave correction by calling the name of some individuals to answer. Finally, students would read the passage again and try to summarize the passage individually, then present the summary to the whole class. During class time, it was the students' choice to have their camera on or off.

The Experimental group

In addition to the vocabulary tasks assigned at home similar to the control group, students working in groups were required to take turns to design vocabulary activities for classmates to play in class to learn and review the keywords before doing the vocabulary exercises.

"Educational gamification is an instructional method that makes learning into a game. Students work through or play activities to learn" (Kingsley & Grabner-Hagen, 2018, p. 545). Students could use online platforms like Kahoot, Wordwall or create PowerPoint slides to design games. Games needed to be sent to the teacher one day prior to class time. The teacher would help give some feedback on the content and interactive style, so the games would turn out to be more beneficial and professional during play. In class, the selected group led the games for the other groups to play, and the winning groups would receive two bonus points to the assignment scores. After the game session, the teacher gave instructions on the vocabulary task of the lesson. Students were then assigned into breakout rooms to do the task cooperatively. One member of the group should create a Google doc or Google slide so that every member of the group could contribute to add information to the online file. They had to take notes on the answer and discuss the reason why they chose that answer choice. When students got back from the breakout rooms, the teacher asked individuals at random to speak out the answer choice and give explanations for that choice.

The teacher started the reading lesson with a small sharing section or discussion related to the topic to arouse students' interest. Instead of doing this task separately, students worked in breakout rooms to exchange ideas and opinions. In the breakout room, students shared screen and used Google doc or Google slide to note the group's ideas. Following the discussion session, representatives of groups took turns to share screen to briefly present about what their group had discussed. Members of the class listened and asked questions after the presentation. The teacher then discussed with the students to work out the strategies or tips for the reading task. Sometimes, students were given a predicting task to develop critical/analytical thinking and higher order thinking skills (Balinon & Batang, 2020). The while-reading phase also maximized students' engagement and interaction. After listening to the teachers' instructions, students were placed into breakout rooms to do the reading tasks, look for keywords, discuss the answers and share screen to show their group's answers to classmates and teacher. Regarding the post-reading activities, breakout rooms and online tools like Google doc and Google slides were again utilised for students to summarize the reading passages. They then presented their summary using the screen sharing function. The teacher gave some comments at the end of the session. Students were strongly encouraged to keep their camera on all the time.

In week 10, students of both groups did the post-test, and those in the Experimental group did the questionnaire (see Appendix) on the overall perception of the research study.

Research instruments

Based on the concept by Taherdoost (2016) of Validity and Reliability of the Research Instrument including Criterion validity, Face validity, Content validity, Construct validity, the research instruments in this study included:

- The pre-test and post-test: in the same format, with similar items for both groups (10 vocabulary questions in the gap-filling format, worth 20 points and 3 reading passages with 21 questions in various question types, worth 80 points).
- The questionnaire with 8 questions, including 4 questions on the Likert scale to get students' perceptions on the learning mode and 4 tick-the-box questions on personal opinions about the advantages and drawbacks of the learning mode.

The test format was developed based on two objectives of the reading course: (i) improve learners' English competence oriented towards the IELTS proficiency exam, (ii) provide learners with background knowledge and vocabulary for major courses in the English linguistics program. A test specification, which was a detailed summary of the test structure and scoring rubric, was informed to the students before they took the pre-test and the post-test. This test specification had been used three times in previous years. It was important to note that the vocabulary questions focused on the vocabulary items learnt during the experiment. Regarding the reading passages, selection of the passages was based on the themes or topics covered in the experiment and the students had to use all the reading skills learnt to answer the questions.

Data collection procedure and Data analysis

Collection of data on the pre-test was taken in the first-class meeting and data on the post-test and the questionnaire in Google form were collected in week 10. A shortened link was provided to give students quick access to the questionnaire, which could be completed on desktop, laptop, iPad or smartphones. To analyse descriptive statistics from the pre-test and post-test scores, Minitab19 was used as it is lighter, faster in installation and result processing than SPSS. To process data taken from the questionnaire, the criteria on the Likert scale were coded as 1-5 (negative to positive). Then, a spreadsheet was extracted from Google form to run necessary statistical formulae.

4. Findings

Post-test scores

Descriptive statistics of the post-test in Table 4 showed the mean score and standard deviation

of the Control group at 67.68 and 10.38 respectively while the figures for the Experimental group were 89.73 and 6.36. Tables 5 and 6 showed the post-test scores of the vocabulary and reading comprehension sections separately. The Control group reported the statistics for vocabulary (N=22, M=14.50, SD=3.85) and reading comprehension (N=22, M=53.18, SD=9.06). The statistics of the Experimental group found the vocabulary section (N=22, M=17.82, SD=2.24) and the reading comprehension section (N=22, M=71.91, SD=5.60).

Table 4 *Descriptive statistics of the post-test*

Variable	N	Mean	StDev.	Min.	Max.	Range
Post-C	22	67.68	10.38	48.00	87.00	39.00
Post-E	22	89.73	6.36	74.00	100.00	26.00

Note. Post-C stands for post-test of the control group. Post-E stands for post-test of the experimental group.

Table 5 *Descriptive statistics of the post-test vocabulary section*

Variable	N	Mean	StDev.
Post-C.V	22	14.50	3.85
Post-E.V	22	17.82	2.24

Note. Post-C.V stands for post-test of vocabulary section of the control group. Post-E.V stands for post-test of vocabulary section of the experimental group.

Table 6 *Descriptive statistics of the post-test reading comprehension section*

Variable	N	Mean	StDev.
Post-C.R	22	53.18	9.06
Post-E.R	22	71.91	5.60

Note. Post-C.R stands for post-test of reading comprehension section of the control group. Post-E.R stands for post-test of reading comprehension section of the experimental group.

Questionnaire responses

Due to the focus of this study, the outcomes of only four questions on the linear scale are presented.

Table 7 *General perception of the learning style from the experimental group*

Question 1	Very ineffective	Ineffective	Neutral	Effective	Very effective
	4.55%	31.81%	63.64%	0%	0%
Question 2	Very bored	Bored	Neutral	Interested	Very interested
	0%	0%	4.55%	27.27%	68.18%
Question 3	Absolutely No	No	Not sure	Yes	Absolutely Yes
	0%	0%	0%	31.82%	68.18%
Question 4	Absolutely No	No	Not sure	Yes	Absolutely Yes
	0%	0%	0%	27.27%	72.72%

Ratings in Table 7 showed that before joining the online reading course, no students regarded this learning mode as effective. After taking the course, up to 95% of the experimental students revealed "interested" and "very interested" in this learning model. 100% of the students ticked "Yes" and "Absolutely Yes" for the questions whether the online lessons meet the learning outcomes of the course.

5. Discussion

To answer research question 1: *Do the students in the Experimental group achieve higher scores in the post-test vocabulary section than those in the Control group?* Statistical results of a few tests were considered, including (a) independent Samples t-test of the pre-test vocabulary section scores of both groups, (b) independent Samples t-test of the post-test vocabulary section scores of both groups, (c) Paired t-test of the pre-test post-test vocabulary section scores of the control group, (d) Paired t-test of the pre-test post-test vocabulary section scores of the experimental group.

Looking solely at the vocabulary section, the result of test (a) [M=1.09; p>0.05] indicated that there was no significant difference in the pre-test of the two groups. This means students of the two groups had similar English competency at the beginning of the research, which is an important criterion for reliability. Test (b) [M=3.32; p<0.05] showed a significant difference in the post-test scores of the two groups. With the finding from test (c) [M=1.41; p>0.05], it is inferred that students of the control group performed better in the vocabulary section in the post-test, compared to the pre-test. It is logical to see that students were trained with appropriate method and they got improved. However, the p-value calculated at 0.15, greater than 0.05 indicated that the improvement was not statistically different. Test (d) [M=5.82; p<0.05] confirmed that the mean difference of the post-test pre-test scores of the

experimental group reached 5.82 out of 20 points of the vocabulary section. From the results of tests (a), (b), (c) and (d), it can be confirmed that the experimental students achieved higher scores in the post-test vocabulary section than those in the Control group.

Regarding the research question 2: *Do the students in the Experimental group achieve higher scores in the post-test reading comprehension section than those in the Control group?* Similar tests used in the research question 1 were carefully examined with the following results.

– Test (e): independent Samples t-test of the pre-test reading comprehension section scores of both groups [M=0.64; p>0.05]

– Test (f): independent Samples t-test of the post-test reading comprehension section scores of both groups [M=18.73; p<0.05]

– Test (g): Paired t-test of the pre-test post-test reading comprehension section scores of the Control group [M=2.64; p>0.05]

– Test (h): Paired t-test of the pre-test post-test reading comprehension section scores of the Experimental group [M=22.01; p<0.05]

The above statistical results showed that from similar English level at the start of the study with the mean score difference of just 0.64 (test e), both groups got improved after ten weeks of training. However, the improvement discrepancy between the two groups was a significant gap of 18.73 (test f). Students in the Control group got higher scores in the post-test although MiniTab19 reported that the improvement was not statistically significant (test g). Turning to the performance of those in the Experimental group, the gap between the pre-test and post-test was obvious with the score improvement average of 22.01. Minitab19 found this improvement statistically significant. Therefore, it could be claimed that the students in the Experimental group achieved higher scores in the post-test reading comprehension section than those in the Control group.

To deal with research question 3: *Is there a correlation between the students' post-test scores and their attitudes on the applied learning mode?* The relationship between student's level of satisfaction and the performance in the post-test was considered. Question 1 showed that all the students felt skeptical about the effectiveness of learning reading online at the beginning of the course. More specifically, more than a third of the students surveyed reported this type of learning as ineffective. However, responses to questionnaire question 2 played an important role as it reflected whether students felt satisfied with the learning model. MiniTab19 ran the correlation test between question 2 responses and students' scores in the post-test. The result showed p<0.05, which means that the relationship between the students' satisfaction with the course and the post-test scores was significant. A more thorough analysis

of the correlation (r=0.835; CI [0.637,0.929]) gave an R-sq of 69.68%. This explained that up to 70% of the experimental students were affected by this regression model. The positive correlation indicated that when student's level of satisfaction increased, their performance on the post-test would increase. This might not act as strong proof of positive correlation between students' satisfaction and performance, but it was in line with a few research studies stating that affective factors like intrinsic motivation or satisfaction could be used as an indication of learning outcomes (Cartwright et al., 2020; Gray & DiLoreto, 2016; Kuo, Walker, Belland, & Schroder, 2013).
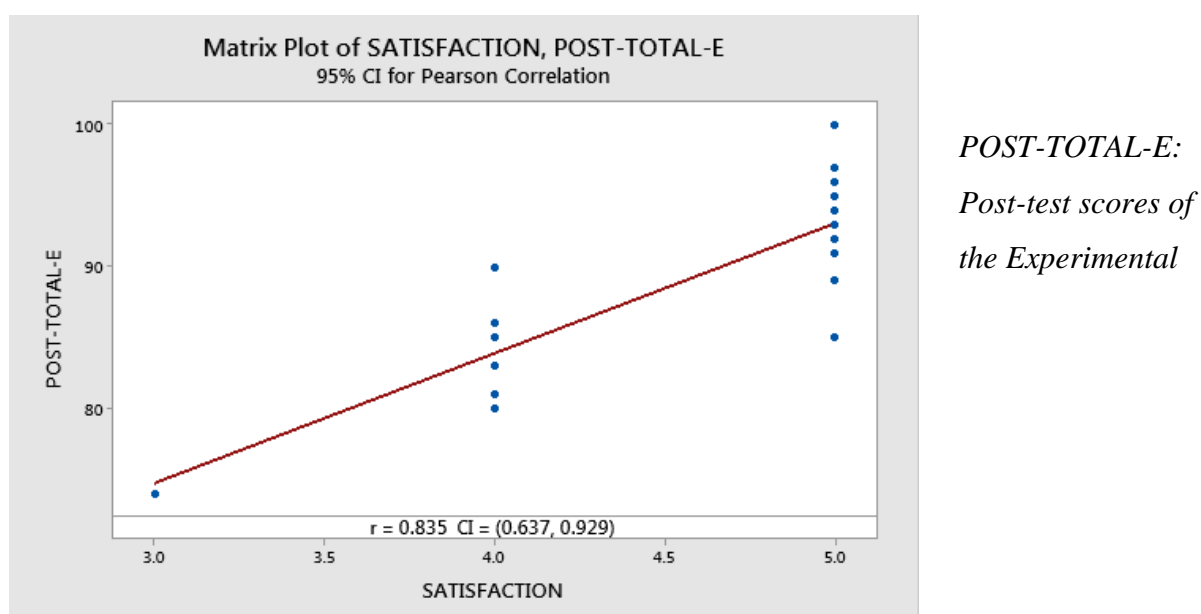

POST-TOTAL-E: Post-test scores of the Experimental

Figure 3. Correlation: Satisfaction and Post-test scores of the Experimental group

It is important to acknowledge limitations of the current research. Although the study received positive feedback and results, it was a small-scale study with only 44 students. The finding would reach higher scientific reliability with the results taken from a variety of groups of participants. Further research on a larger scale should be carried to confirm the effectiveness of the model.

6. Conclusion

The study investigated the impacts of EFL students' engagement when studying reading online through Zoom on the performance of vocabulary and reading comprehension. The descriptive statistics and correlation provided some evidence that the more satisfied students felt with the applied online learning style with various forms of interaction and engagement, the more

improvement they would achieve on the vocabulary and reading comprehension test (Jang, Kim, & Reeve, 2016). The findings foster the theoretical and practical viewpoint that learner's satisfaction is one of the key factors for success in an educational environment. Also, engagement plays a crucial role in helping learners achieve educational aims. Then, whatever methods and techniques the teacher tends to use, focusing on the learners to help them explore their potentials seems to be the most effective method (Lak et al., 2017). Although the study possesses some limitations as acknowledged in the above section of Discussion which require further consideration and investigation, the positive findings shed light on the belief that keeping learners engaged during class time via the Zoom platform might be an appropriate choice for EFL teaching and learning during the time of COVID-19 Pandemic.

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Appendix

The Questionnaire

1. Before starting the online learning mode, what do you think about this type of learning?

   ☐ Very ineffective   ☐ Ineffective   ☐ Neutral   ☐ Effective   ☐ Very effective

2. How do you feel when you learn this skill online in this course?

   ☐ Very bored   ☐ Bored   ☐ Neutral   ☐ Interested   ☐ Very interested

3. Do the online lessons meet the course learning outcomes?

   ☐ Absolutely no   ☐ No   ☐ Not sure   ☐ Yes   ☐ Absolutely yes

4. Do you want to continue learning this skill online like this in the next 5 weeks?

   ☐ Absolutely no   ☐ No   ☐ Not sure   ☐ Yes   ☐ Absolutely yes

5. What do you like about the online learning mode? (Tick all that are applicable and/or type in "Other" for different ideas.)

   ☐ can stay at home comfortably

   ☐ can save 10% tuition

   ☐ can achieve the knowledge that meet the learning outcomes of the course

   ☐ can interact and discuss with friends

   ☐ can save time from traveling to school

   ☐ can turn off the camera so that nobody can see your face

   ☐ can have well-prepared lessons from teacher

   ☐ can join interactive activities

   ☐ can receive support from teacher

   ☐ it's eco-friendly (teacher don't have to print the materials for you)

   ☐ can review the lesson easily thanks to "lesson recording"

☐ can improve computer skills

☐ can improve self-study skills

☐ can improve cooperative skills

☐ can improve academic vocabulary

☐ Others: _____

6. What do you dislike about your online class? (Tick all that are applicable and/or type in "Other" for different ideas.)

☐ Teacher always starts the lesson on time

☐ You cannot see your friends' faces because they all turn off the cameras

☐ It's tiring sitting in front of the screen for 3 periods

☐ Your internet connection is unstable.

☐ Your teacher doesn't understand what you say.

☐ It's difficult to understand the lesson because you don't receive enough explanation.

☐ Your teacher doesn't prepare the slides well.

☐ Your teacher doesn't prepare the lesson well.

☐ There is little chance of improving communication skills.

☐ There are not enough discussions and interactions.

☐ There is no variation in class activities, just the repeated routine of tasks then keys provided.

☐ You receive insufficient support from teacher.

☐ The teaching is more theoretical, not focusing on the practical side.

☐ It is hard to do reading tasks via smart phones or computers.

☐ There is a lack of teacher's feedback.

☐ Others: _____

7. What functions do you like when your teacher uses Zoom/ MS Teams to teach? (Tick all that are applicable and/or type in "Other" for different ideas.)

☐ Video conferencing to teach the lesson and communicate with students

☐ Chat room to answer students' questions or figure out students' problems to help

☐ Chat room to send materials to students

☐ Share screen to show the slides, explain the lesson and correct the tasks

☐ Share screen for making presentation

☐ Share whiteboard to take notes

☐ Share screen for checking attendance

☐ Share screen for doing tasks

☐ Share screen for other interactive activities

☐ Breakout room for group work and discussions

☐ Others: _____

8. What functions do you dislike when your teacher uses Zoom/ MS Teams to teach?

(Tick all that are applicable and/or type in "Other" for different ideas.)

☐ Video conferencing to teach the lesson and communicate with students

☐ Chat room to answer students' questions or figure out students' problems to help

☐ Chat room to send materials to students

☐ Share screen to show the slides, explain the lesson and correct the tasks

☐ Share screen for making presentation

☐ Share whiteboard to take notes

☐ Share screen for checking attendance

☐ Share screen for doing tasks

☐ Share screen for other interactive activities

☐ Others: _____