

English Language Students' Perceptions of Interchanged Application of Face-to-face and Synchronous Virtual Classrooms

Phanupong Thumnong, Khon Kaen University, Thailand

The Southeast Asian Conference on Education 2020
Official Conference Proceedings

Abstract

Recent research has suggested that synchronous virtual classrooms can equally or, in some cases, better enhance students' learning experience compared to the traditional face-to-face instruction. However, little has been explored within the circumstances where both of the instructional modes are applied to the same group of students. This study thus investigates students' perceptions of interchanged application of synchronous virtual classrooms via the software Zoom and the face-to-face instruction in an English Pronunciation course. The data were collected by semi-structured individual interviews with 10 university students. The qualitative content analysis using coding schemes adopted from Community of Inquiry (CoI) framework was conducted. The overall findings revealed that students have positive perceptions of learning through exchanged application of the two instructional modes, but some concerns arise when the perceptions specifically based on each of the three presences are taken into account.

Keywords: distance learning, internet-based learning, English language teaching, blended classrooms, hybrid classrooms

iafor

The International Academic Forum
www.iafor.org

Introduction

Rapid development of the Internet has made online education no longer new to the higher education context. Educational institutes across the globe consider this instructional mode highly promising, since it can attract students in remote areas and thus compensates for the currently decreasing number of on-site student enrollments (Dumont & Raggo, 2018; McPherson & Noelting, 2018). As a consequence, a wide range of internet-assisted or -based courses have been developed. Some blend the learning management system (LMS), e.g. Canvas, Edmodo, or Google Classroom, with the traditional instruction to enhance students' learning experience as the concept of 'blended learning' (Dash, 2019; Philipose & Rajagopal, 2019). Many courses fall into 'distance education', relying on fully online instruction in which all interaction between instructors and students are done, whether synchronously or asynchronously, on the Internet (Berry, 2018; Blaine, 2019).

According to Dumont and Raggo (2018), online instruction can be delivered by three different modes: asynchronous, hybrid, and synchronous. The asynchronous online instruction involves on-demand courses in which students do not regularly have on-site classrooms with their instructors but individually learn the content or engage in any activities already provided in the cloud-based LMS at their own convenient time, implying that the interaction between the instructors and students is isolated by space and time (Blaine, 2019). With the hybrid online instruction, instructors and students simultaneously have internet-based classrooms via a specific online platform at a specified time, but some activities, such as individual or group assignments, are conducted asynchronously with the results later presented onto the LMS. Lastly, the synchronous online instruction or 'synchronous virtual classrooms' involve completely real-time communication in which instructors and students do all activities, including lectures, group work, questions and answers, etc., synchronously at the designated internet-based platform (Martin, Parker & Deale, 2012). Of the three instructional modes, the synchronous online instruction demands the most technology in the sense that all participants are required to have a high-speed Internet connection as well as a camera and a headset with a microphone so that both visual and auditory information occurring in the classrooms is delivered in a manner comparable to the traditional classroom experience (Dumont & Raggo, 2018).

Research on synchronous virtual classrooms has suggested that this instructional mode can provide students with equivalent learning experience and outcomes compared to the traditional settings. Ngo (2019), for example, found that students learning through an application of synchronous online classroom as a supplement to the traditional mode showed the consistent improvement of all the four English language skills, compared to those learning through the traditionally delivered instruction alone. Furthermore, concurrent verbal communication and the live screen sharing feature in synchronous virtual classrooms have been proven to establish real-time interaction, both student-instructor and student-student, in the same sense as face-to-face encounters (Martin et al., 2012; Teng, Chen, Kinshuk & Leo, 2012). It is essential to note that immediate interaction is responsible for establishing a "sense of belonging to a learning community", which plays a vital role in promoting students' motivation and collaboration, and thus contributes to the desired learning achievement (Falloon, 2011; Garrison & Anderson, 2003; Gedera, 2014). These satisfactory implications can be concluded that synchronous virtual classrooms can substitute the

traditional instructional delivery (Barbosa & Barbosa, 2019; Dharma, Asmarani & Dewi, 2017).

The majority of previous studies on synchronous virtual classrooms emphasized the experience and outcomes of students who enrolled in complete ‘distance learning’ courses particularly designed for online educational purposes, while little attention has been paid to the application of this instructional mode as a temporary or even complete substitution for the traditional face-to-face instruction in a campus. The closest practice can be seen from the mixed-mode instruction called ‘synchronous hybrid virtual classroom’, comprising two groups of students, i.e. one on campus and the other online, participating in the same course at the same time (Raes, Vanneste, Pieters, Windey, Noortgate & Depaepe, 2020; Szeto, 2014). However, one should not ignore the fact that on-site classrooms themselves can be occasionally interrupted by several unexpected circumstances. Zevenbergen, Sigler, Duerre and Howse (2000), for instance, reported that heavy flood in the United States caused educational institutes in the affected area to suspend their classes for a long period of time. Power failure can also bring classes that heavily rely on electronic devices to a halt. Other factors such as civil unrest or a lack of rooms due to remodelling efforts at the campus can as well lead to class cancellation or postponement, which greatly affects the lesson plans or whole curricula of the affected academic year (Barbosa & Barbosa, 2019).

Taking the foregoing circumstances into account, it is worth exploring the feasibility of applying synchronous virtual classrooms as a substitution for the traditionally delivered instruction in order to seamlessly maintain teaching progress when physical access to classrooms is interrupted. To this end, this study aims to investigate the learning experience of students who are taught through both synchronous virtual classrooms and face-to-face instruction in the same course. The following research question was raised to guide the data collection: what are students’ perceptions of the interchanged application of face-to-face and synchronous virtual classrooms?

Community of Inquiry as the theoretical framework

A Community of Inquiry (CoI) broadly refers to a formally constituted group of individuals sharing the same academic focus and collaborating with each other to reach the intended learning goals (Garrison, Anderson & Archer, 2000). The notion of CoI supports “a critical, collaborative learning community” in which independent cognition and interdependent collaboration coincide (Garrison et al., 2003, p.22). To ensure such community, Garrison et al. (2000) suggested that the interrelationships between the three elements including cognitive presence, social presence and teaching presence be established.

According to Garrison et al. (2003, p.28), cognitive presence refers to ‘the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community’. This presence involves promoting a critical thinking process, in which learners pass through states of puzzlement, information exchange, connection of ideas, creation of concepts, and the testing of validity of solutions (Garrison & Vaughan, 2008, p.22). Social presence is defined as the extent to which learners are able to socially and emotionally engage in the community with their outright personality through the communicative medium being used. With this

presence, learners are able to feel free to express themselves in a risk-free manner, which therefore contributes to their sense of belonging, freedom of expression and cohesiveness in the community. Lastly, teaching presence is responsible for ensuring that cognitive presence and social presence are consistent with intended learning outcomes. Teachers are expected to provide the design, facilitation, and direction for a worthwhile educational experience, in which learners can fully participate in the educational process with a highly interactive succession of learning experiences that lead to the resolution of an issue or problem in their community. As shown in Figure 1, the three elements are inevitably interrelated, and they all together yield a learning community which could contribute to successful education experience.

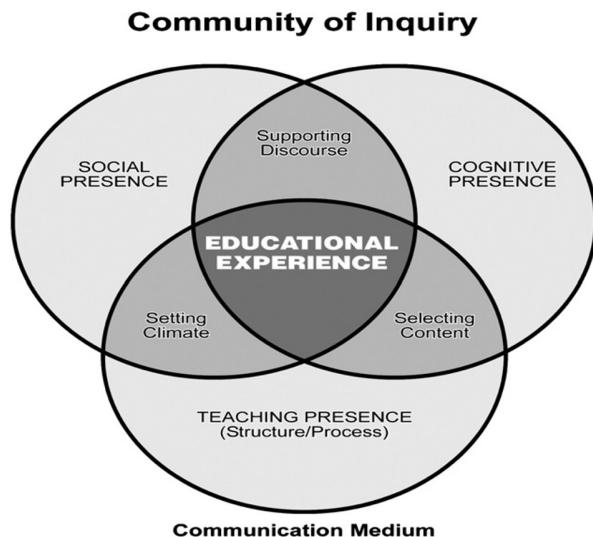


Figure 1: Community of Inquiry Framework (Garrison & Vaughan, 2008, p.18)

Community of Inquiry has been widely adopted in several studies on online or blended education. Szeto (2014), for instance, employed CoI as a preconceived framework to investigate students' and instructors' experiences of blended synchronous learning, in which onsite students and online counterparts were learning the same sessions simultaneously. Blaine (2019) also utilized this notion to examine the perceptions of students and teachers in online and blended Advanced Placement courses. Law, Geng, and Li (2019) explored the links between the three domains of CoI and students' enrollment, motivation and learning performance in a blended learning environment. CoI was adopted in data analysis of the three aforementioned studies to assess the quality or experience of the online/blended learning environment. Taking this into account, the present study adopted CoI as a theoretical lens to investigate students' perception of interchanged application of face-to-face and synchronous virtual classrooms.

Research context

The present study was conducted in an English Pronunciation class taught in a university in Thailand. Thirteen undergraduate students, including two in the third year and eleven in the second year, enrolled at this class as a mandatory course of their English minor program in the first semester of the academic year 2019. The experimental period lasted 8 weeks from August to November. The class met semi-weekly, on Mondays when students were taught via online synchronous virtual instruction and Thursdays when they had a traditional face-to-face class at the campus.

To ensure equivalent instructional procedures for both instructional modes, three variables were controlled throughout the observed duration. Firstly, each period of both modes lasted 90 minutes. Secondly, every period was carried out in the same process, including a 30-minute lecture on new lessons, 30-minute individual pronunciation practice, and 30-minute pair/group in-class assignments. Thirdly, the students were presented with the same types of teaching materials, i.e. the coursebook, audio files, and presentation slides.

The videoconferencing application Zoom was selected as a medium for synchronous virtual instruction. Although there are several choices of software for this instructional mode (e.g. Adobe Connect Virtual Classroom, Canvas or Skype), Zoom was claimed to be the most suitable for conducting a synchronous virtual class since it has several features facilitating instructional activities (Dharma, Asmarani & Dewi, 2017). Its key features, some of which are shown in figure 2, include 1) screen and audio sharing which enables the host to broadcast the visual and audio information shown on his/her device live on those of the participants, 2) live video conference which allows all participants to see and communicate with each other simultaneously through cameras and microphones, 3) chatting in which the host and participants are able to send and receive instant messages to one another whether privately or publicly, 4) breakout rooms allowing the host to split the participants of the meeting in up to 50 separate sessions automatically or manually, and 5) video recording which enables whether the host or participants to record the meeting as both video and audio files so that they can watch the meeting later on their preferred device and time. This software can be installed and used on desktop or laptop computers, mobile phones and tablets. Although Zoom was claimed to be an undemanding application, previous research on synchronous virtual classrooms found that some students had difficulty using unfamiliar software, and their lack of such technical knowledge could lead to negative learning experience (Gedera, 2014; Martin et al., 2012; Ngo, 2019). The students in the present study were thus trained how to use the aforementioned features of Zoom in the first week of the observed period.

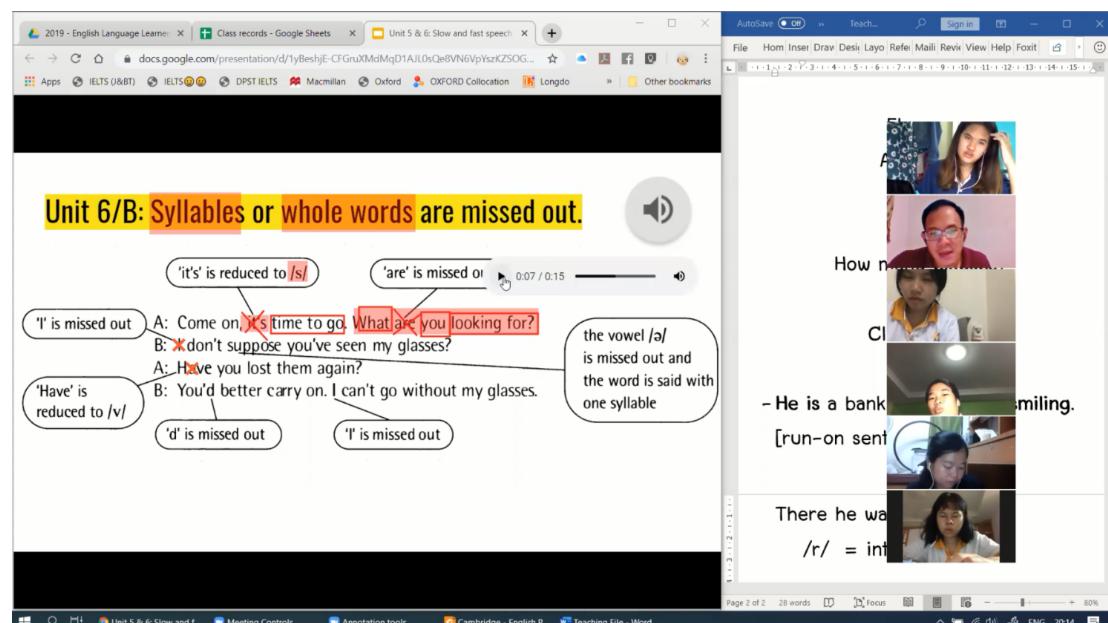


Figure 2: The display of synchronous virtual classrooms via Zoom

Data collection and data analysis

The research instrument was semi-structured individual interviews with 11 students, who granted their consent for the data collection. The interviews were conducted one week after the final week of the experimental period. Every interview was recorded as audio files, which later were imported into the program Atlis.ti, allowing the qualitative data to be analyzed without need for transcription.

The data analysis employed a combined approach of inductive and deductive coding (Drisko & Maschi, 2016). The first step involved data-driven coding in which the author listened to the recorded audios and coded responses meaningfully relevant to the research question, as a free coding process. Afterwards, the coded data were categorized into three themes based on the three presences of Community of Inquiry, as deductive coding. The data in each theme were later summarized in order to generate typology of content allowing the author to compare the participants' perceptions in each presence.

The validity and reliability of the analysis was conducted by cross-checking. Three coders, including the author and two trained qualitative researchers, were responsible for analyzing the response from the same participant, and found 71 percent of agreement, reaching the required percentage of inter-rater reliability (Mayring, as cited in Drisko & Maschi, 2016, p. 107).

Findings and discussion

The students' perceptions of attending synchronous virtual and face-to-face classes interchangeably showed high consistency in terms of cognitive presence but divergence in social presence and teaching presence, as shown in Table 1. The findings concerning each of the three presences were arranged in three columns to separately demonstrate different aspects of perceptions: 1) both synchronous virtual classrooms and face-to-face classrooms are similar, 2) face-to-face classrooms are better than synchronous virtual classrooms, and 3) vice versa. The numbers in parentheses indicate the number of students having the perceptions. The findings are discussed along with extracts from the participants, whose names are presented as pseudonyms.

Dimensions	Both modes are similar	F2F classrooms are better than SVCs	SVCs are better than F2F classrooms
Social presence	- sense of belonging (8) - real-time interaction (6) - student-student interaction (6) - student-lecturer interaction (4) - facial expressions (4)	- student-student interaction (4) - student-lecturer interaction (4) - sense of belonging (2)	- confidence in answering via chatting (7) - interaction with non-intimate classmates (5) - freedom of expressions through breakout rooms (4)

Cognitive presence	<ul style="list-style-type: none"> - learning effectiveness (10) - practice of knowledge/skills (8) - collaboration in peer/group work (8) 	<ul style="list-style-type: none"> - Physical collaboration (2) 	
Teaching presence	<ul style="list-style-type: none"> - continuity of lessons (10) - Quality of teaching materials (6) 	<ul style="list-style-type: none"> - Immediate transmission of audio/visual information (7) 	<ul style="list-style-type: none"> - Lesson rerun via video recording (9) - Noise cancellation (4) - Screen annotation (3)

Table 1 Student's perceptions based on Community of Inquiry

(F2F stands for ‘face-to-face’, and SVCs stands for ‘synchronous virtual classrooms’) The findings regarding social presence show that the students had varied perceptions of interchangeably learning through the two teaching modes. Eight out of ten students felt that they belonged to the online classes in the same manner as traditional settings, as illustrated in extract 1, while the other two reported they sensed some isolation when they had virtual classrooms (see extract 2). It was also found that immediate transmission of audio and video information in synchronous virtual classrooms allowed the students to have real-time interaction, and the camera-sharing feature also enabled them to see facial expressions of all participants in the class, promoting realistic human contact (Garrison et al., 2003).

Extract 1: “I didn't feel isolated. In Zoom, I could say anything I wanted because the lecturer always kept our microphones on, and when he taught pronunciation of words I myself could repeat those words right away, just like I did in the (actual) classroom.”

- Valencia

Extract 2: “Sometimes I felt isolated from other classmates. When I had questions, I didn't know if I could ask amid (online) classes and I didn't want to interrupt the lecturer. I wasn't also able to whisper to anyone, so I had to send messages to my friends instead.” - Farah

Although the majority of students agreed that synchronous virtual classrooms and face-to-face instructions could equivalently establish the sense of belonging, the findings vary when interaction is taken into account. Regarding student-lecturer interaction, four students claimed that they had relatively less chance of individually communicating with the lecturer in online classes (see extract 2 and 3) while other four students did not sense any difference in their interaction with the lecturer (see extract 4). In fact, the software Zoom has the feature Raise hand, allowing the participants to catch attention from the host. It was thus possible that the student of extract 3 might illustrate one who was unaware of or unfamiliar with the feature. This seems to conform with the previous literature stating that a lack of technical knowledge or instrumental familiarity could cause students' negative learning experience (Gedera, 2014; Martin et al., 2012; Ngo, 2019).

Extract 3: "In face-to-face classrooms, I could raise my hand when I had questions, but I had little chance to ask the lecturer in online classes." - Bee

Extract 4: "It's so similar. I could raise my hand to ask the lecturer in face-to-face classes, and I also press 'raise-hand' in the app in online classes." - Nut

As for student-student interaction, six students reported they were able to maintain their interaction with classmates in both teaching modes, but some felt they lost certain peer interaction in online classes since they were unable to whisper to their classmates when they had questions or would like to ask their fellow students for clarification of information, as already mentioned in extract 2. However, it is interesting to find out that interaction among non-intimate classmates was relatively better promoted in synchronous virtual classrooms. To clarify, students usually prefer to sit with their close friends in an actual classroom, discouraging them to interact with other individuals. Synchronous virtual classrooms, on the other hand, allowed them to communicate with any individuals regardless of physical locations, thus providing them with more opportunity to interact with non-intimate classmates, as exemplified in extract 5.

Extract 5: "I hardly had a chance to talk with friends from other programs in face-to-face classes so I felt shy. But when I had online classes and was assigned to work with them I somehow felt more relaxed and confident to talk." - Kiyoko

Apart from interaction among non-intimate classmates, synchronous virtual classrooms were also perceived to have promoted the students' learning experience in psychological aspects. Thanks to the software Zoom's features of instant messaging and breakout classrooms, students claimed they had more confidence in expressing opinions and giving answers in online classes, compared to face-to-face settings. As demonstrated in extract 6, the messaging feature allows students to privately submit their answers to the lecturer without having to worry whether those responses would be right or wrong or whether they would be influenced by others. Furthermore, the feature Breakout rooms enables students to discuss with their classmates without the lecturer's presence, so they reportedly were not afraid to share their opinions, as shown in extract 7. It is remarkable that this aspect of students' perceptions conform to the notion of social presence: learners are meant to be able to engage in the class with "risk-free expression" (Garrison et al., 2003).

Extract 6: "In face-to-face classrooms, when someone gave an answer different from mine I would hesitate. However, I felt more confident to give answers through the chatting feature of Zoom." - Bee

Extract 7: "I sensed more privacy when brainstorming with the classmates in breakout rooms because the lecturer wasn't with us. I could say anything without being afraid that the lecturer would hear me. In face-to-face classrooms with the lecturer being nearby, however, I was worried if I would say anything wrong." - Vivi

The findings concerning cognitive presence show high consistency in the students' perceptions. All students agreed that learning through both instructional channels could contribute to equal learning effectiveness. To elucidate, students were able to understand the lessons being taught in each class successfully regardless of the

different instructional channels. Also, most students stated that they could practice the target skills (i.e. pronunciation) in both classrooms in the same manner, as exemplified in extract 8. Similar perceptions were also found in peer collaboration. Synchronous virtual classrooms were also perceived to have encouraged the students to collaborate with their classmates as well as in face-to-face settings (see extract 9). This is well consistent with the notion of cognitive presence: successful classes are supposed to provide students with a chance for information exchange and connection of ideas through collaborative atmosphere (Garrison et al., 2008).

Extract 8: "I could equally understand what the lecturer taught through the two classrooms. When I was taught new lessons online I could learn them effectively because the lecturer could do everything with Zoom just like he did in the actual classroom." - Valencia

Extract 9: "In Zoom, when doing group exercises I could brainstorm and share my thoughts with my friends to the utmost, just like I did in the classroom." - Bonita

Although it was mostly found that both instructional channels could equally establish cognitive presence, a few perceptions found one-sided are worth discussing. Two students addressed that, even though the feature Breakout rooms allowed them to communicate and collaborate with their classmates online, some activities that require physical collaboration such as hand-writing could not be accomplished through the feature. This seemingly implies that synchronous virtual classrooms do not fully realize cognitive presence (Garrison et al, 2003).

Like social presence, the students' perceptions concerning teaching presence showed contradiction. The students all agreed that interchanged application of both teaching modes could maintain continuity of lessons. They did not sense interruption and difficulty in connecting new lessons with those previously taught in prior classes through the different modes (see extract 10). Also, as demonstrated in extract 11, the feature of video and audio sharing allow students to receive information and materials used in the course in the same manner.

Extract 10: "I think the lessons could come after one another well with the two modes. I didn't have problems connecting lessons when learning through different modes of teaching." - Bonita

Extract 11: "The lecturer could write on the screen like a whiteboard, and when he showed presentation slides I could see and read them without difficulty." - Valencia

Although the two instructional channels are seemingly perceived to equally establish teaching presence, bias arises when internet connection and specific features of the software are taken into account. Seven students found that the transmission of audio and video information was delayed when the internet connection was unstable, causing some of them to lose concentration and even understanding in the lessons being taught (see extract 12). This technical issue was commonly found in literature on online/distance learning (Gedera, 2014; Martin et al., 2012; Ngo, 2019). However, some students preferred synchronous virtual classrooms to traditional instructions for the feature of video recording, allowing them to re-watch the classes. This feature can compensate for the troublesome time concerning delayed information transmission

since students are able to review certain content that they could not follow during the technical problems (see extract 13). Other features which students found well functional include noise cancellation, allowing the lecturer to mute any sound from the students' devices, and on-screen annotation.

Extract 12: "When the internet connection wasn't strong while the lecturer was explaining, I had a problem concentrating on him. Sometimes I wasn't even able to follow the class." - Farah

Extract 13: "Uploading recorded classes allowed absent students to learn and catch up the lessons, and sometimes I could watch those videos to review certain content that I wasn't sure about." - Bee

The overall findings have revealed that the exchanged application of synchronous virtual and face-to-face classrooms are perceived to have established all the three presences of Community of Inquiry. However, there are certain concerns of which instructors are supposed to be aware when considering applying interchangeable instructions. Firstly, one needs to make sure that in-class activities in both teaching modes maintain both student-student and student-lecturer interaction. Secondly, some biased perceptions, especially in social presence and teaching presence, have suggested that one cannot fully substitute synchronous virtual classrooms for face-to-face settings. Those wishing to apply the two channels in an exchangeable manner should create lesson plans specifically intended for each channel so that students are possibly given the most suitable learning experiences throughout an entire course. Thirdly, as already suggested in previous literature, students need to be trained to use software of virtual classrooms, and they are meant to be reminded of possible technical issues, e.g. unstable internet connection and delay in information transmission. With such awareness and understanding, students would be less likely to develop a negative attitude towards synchronous virtual classrooms.

Conclusion

This study aimed to explore students' perceptions of attending an English pronunciation course through interchanged application between synchronous virtual and traditional face-to-face classrooms. The overall perceptions have suggested that all the three dimensions of Community of Inquiry, including social presence, cognitive presence and teaching presence, were realized by the students, thus suggesting that this exchanged application could lead students to the intended learning outcomes (Garrison et al., 2000). Apart from the mutual benefits, it is undeniable that, when looking more closely at each of the presences, the two modes of instruction confer their specific advantages, facilitating students' learning in their own manner. Instructors wishing to apply the two instructional modes interchangeably need to ensure that they could design activities and lessons that exploit such specific benefits of each mode and avoid any preventable issues so that students can have the most desirable learning experience.

Acknowledgements

The author would like to express his gratitude to Asst. Prof. Dr. Chomraj Pattanasorn, the head of English Language Department at Faculty of Humanities and Social Sciences, Khon Kaen University, for his approval of this research study.

References

- Barbosa, T. J. G., & Barbosa, M. J. (2019). Zoom: An Innovative Solution for the Live-online Virtual Classroom. *HETS Online Journal*, 9, May 2019, 137-154.
- Berry, G. R. (2018). Learning from the Learners: Student Perception of the Online Classroom. *Quarterly Review of Distance Education*, 19, 3, 39-56.
- Blaine, A. M. (2019). Interaction and Presence in the Virtual Classroom: An Analysis of the Perceptions of Students and Teachers in Online and Blended Advanced Placement Courses. *Computers & Education*, 132, 31-43.
<https://doi.org/10.1016/j.compedu.2019.01.004>
- Dash, S. (2019). Google Classroom as a Learning Management System to Teach Biochemistry in a Medical School. *Biochemistry and Molecular Biology Education*, 47, 4, 404-407. <https://doi.org/10.1002/bmb.21246>
- Dharma, H. R. C., Asmarani, D., & Dewi, U. P. (2017). Basic Japanese Grammar and Conversation e-learning through Skype and Zoom Online Application. *Procedia Computer Science*, 116, 267-273. <https://doi.org/10.1016/j.procs.2017.10.055>
- Drisko, J. W., & Maschi, T. (2016). *Content Analysis*. New York: Oxford University Press.
- Dumont, G., & Raggo, P. (2018). Faculty Perspectives About Distance Teaching in the Virtual Classroom. *Journal of Nonprofit Education and Leadership*, 8, 1, 41-61. <https://doi.org/10.18666/JNEL-2018-V8-I1-8372>
- Falloon, G. (2011). Exploring the Virtual Classroom: What Students Need to Know (and Teachers Should Consider). *MERLOT Journal of Online Learning and Teaching*, 7, 4, 439-451.
- Garrison, D., & Anderson, T. (2003). *E-learning in the 21st century*. London: RoutledgeFalmer.
- Garrison, D., Anderson, T., & Archer, W. (2000). Critical Inquiry in a Text-based Environment: Computer Conferencing in Higher Education. *Internet and Higher Education*, 11, 2, 1-14.
- Garrison, D., & Vaughan, N. D. (2008). *Blended Learning in Higher Education: Framework, Principles, and Guidelines*. California: Jossey-Bass.
- Gedera, D. S. P. (2014). Students' Experiences of Learning in a Virtual Classroom. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 10, 4, 93-101.
- Law, K. M. Y., Geng, S., & Li, T. (2019). Student Enrollment, Motivation and Learning Performance in a Blended Learning Environment: The Mediating Effects of Social, Teaching, and Cognitive Presence. *Computers & Education*, 126 (2019), 1-12. <https://doi.org/10.1016/j.compedu.2019.02.021>

Martin, F., Parker, M. A., & Deale, D. F. (2012). Examining Interactivity in Synchronous Virtual Classrooms. *The International Review of Research in Open and Distance Learning*, 13, 20, 227-261.

McPherson, R., & Noelting, D. T. (2018). Developing Technical Competence for the Virtual Classroom: Managing Technology-driven Pedagogy, Faculty Development, and the Hidden Workload. *The International Journal of Technologies in Learning*, 24, 3, 13-27. <http://doi.org/10.18848/2327-0144/CGP/v24i03/13-27>

Ngo, P. A. (2019). *Developing the ESP Ability of Vietnamese Students through the use of Blended Learning*. Paper presented at the 15th International Scientific Conference eLearning and Software for Education, Bucharest, April 11-12, 2019, 71-79. DOI: 10.12753/2066-026X-19-146

Philipose, C. M., & Rajagopal, S. (2019). Google Classroom as a Learning Management System (LMS) for Teaching English. *A Journal of Teaching English Language and Literature*, 23.

Raes, A., Vanneste, P., Pieters, M., Windey, I., Noortgate, W. V. D., & Depaepe, F. (2020). Learning and Instruction in the Hybrid Virtual Classroom: An Investigation of Students' Engagement and the Effect of Quizzes. *Computers & Education*, 143(2020), 103682. <https://doi.org/10.1016/j.compedu.2019.103682>

Szeto, E. (2014). A Comparison of Online/Face-to-face Students' and Instructor's Experiences: Examining Blended Synchronous Learning Effects. *Procedia - Social and Behavioral Sciences*, 116, 4250-4254.
<https://doi.org/10.1016/j.sbspro.2014.01.926>

Teng, D. C., Chen, N., Kinshuk., & Leo, T. (2012). Exploring Students' Learning Experience in an International Online Research Seminar in the Synchronous Cyber Classroom. *Computers & Education*, 58, 3, 918-930.
<https://doi.org/10.1016/j.compedu.2011.10.018>

Zevenbergen, A. A., Sigler, E. A., Duerre, L. J., & Howse, E. (2000). The Impact of a Natural Disaster on Classroom Curricula. *The Journal of Educational Thought (JET)*, 34, 3, 285-303.

Contact email: phanuth@kku.ac.th