



Conversation Cloud: A videoconferencing learning ecology for Thai undergraduate EFL learners

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ARTICLE INFO

Keywords:

Educational technology
Videoconferencing
Conversational English
Ecological perspective

1. Introduction

A number of educators, policymakers, and employers in both the government and private sectors have expressed concerns about Thai students' limited proficiency in spoken English despite many years of English language instruction in school (Bordin, 2016; Darasawang & Reinders, 2015; Leelard & Thampradit, 2015). In Thailand and many other countries where English is not the main medium of communication, the problem has been attributed to insufficient opportunities to speak English and lack of exposure to English speakers in international environments (Boonkit, 2010; Park & Spolsky, 2017). Even in English classes, students rarely get sufficient opportunities to practice speaking naturally, as English teaching in Thai schools has been dominated by the traditional teacher-centered approach (Todd, 2005). The situation presents particular challenges for Thai undergraduates who will soon step into the world where the use of English for global communication usually contributes to success in their career (Franco & Roach, 2018; Karachedee, 2017).

In order to provide students with more opportunities for speaking practice and greater exposure to English speakers worldwide, one of the artifacts in this digital era that could serve this purpose is videoconferencing technology, which allows individuals in multiple locations to have synchronous online meetings (Danver, 2016; Spector, 2015). With cloud-based videoconferencing hosted on the Internet, less computing power is required on the end users' device (Richey, 2013), enabling users to easily and instantly connect with

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<https://doi.org/10.1016/j.system.2021.102648>

Received 23 February 2020; Received in revised form 7 September 2021; Accepted 13 September 2021

Available online 15 September 2021

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people all over the world from their computers or mobile devices (Danver, 2016; Richey, 2013). Though the tool has limitations as there could be technical breakdowns and it does not transmit all the elements of non-verbal communication (Schultz, 2006), it affords video streaming, screen sharing, whiteboarding, and text chatting, making it a multimodal environment with multiple modalities (text, images, audio, video) (Henley, Wymer, & Self, 2013). Due to its capacity, the use of videoconferencing in language education has been investigated in various aspects as discussed in the following section.

2. Literature review

2.1. Videoconferencing technology in language teaching and learning

With the growing popularity of videoconferencing technology, numerous studies have explored language learning via videoconferencing in various aspects such as participants' negotiation of meaning in Chinese (Wang, 2006), anxiety among distance learners of Spanish (de los Arcos, Coleman, & Hampel, 2009), or multimodal interaction in an online German class (Hampel & Stickler, 2012). For English as a Foreign Language (EFL), previous studies conducted in videoconferencing settings have also investigated a wide variety of specific issues: multimodal interaction in lexical word search (Cohen & Wigham, 2019), learners' speaking confidence and awareness of gaps in their interlanguage (Loranc-Paszylk, 2015), and EFL learners' perceptions regarding the use of videoconferencing in different aspects (Bee & Gardner, 2012; Hopkins, 2010; Jung, 2013). There are also a number of studies focusing on EFL students' learning outcomes in videoconferencing environments, particularly the improvement of their speaking proficiency scores (Wu, Marek, & Chen, 2013; Yeh & Lai, 2019). In the Thai context, Nilayon and Brahmakasikara (2018) investigated Thai undergraduates' improvement of speaking scores and their perceptions after conversing with English speakers via videoconferencing. The findings demonstrate improvement on some participants' speaking scores and most thought that their English speaking skills and confidence were improved.

Despite the impressive variety of issues explored in this area, which are useful in providing insights regarding different aspects, most of the studies focus on learning outcomes or only specific issues. Although some studies have identified certain influential factors in videoconferencing contexts such as learner factors, the teacher's role, multimodal affordances, or technological problems (e.g., Hampel & Stickler, 2012; Hopkins, 2010; Jung, 2013; Liu & Chao, 2018), the factors mentioned are not viewed as interconnected parts of the whole system. Örnberg Berglund's study (2009) is one of the very few empirical studies that approached videoconferencing language learning from an ecological perspective, acknowledging the interplay of technological affordances, task design, learner factors, and other people in an ecosystem of learning. However, Örnberg Berglund's study investigates the influences of these interacting factors only on participation rates and feedback strategies. Clearly, additional research is needed to cover a broader scope of students' learning experience, which, according to Huang, Spector, and Yang (2019), includes learners' perceptions and performances through interaction with various components in the learning environment.

Thus, the present study aimed to portray a videoconferencing language learning environment as a system of interacting factors influencing learner experience on a macro level. While most previous studies focused on specific issues, learning outcomes, or identified factors in relative isolation, the present study attempted to systematically glean the most frequently mentioned variables from learner experience and stressed the relationships of the elements in the system by adopting the ecological perspective and related concepts.

2.2. Ecological and sociocultural perspectives on technology-mediated language learning

Ecology is defined by the German biologist Ernst Haeckel as the investigation of "the total relations of the animal both to its organic and inorganic environment" (Hughes, 2009), while an ecosystem has been defined as "the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space" ("Ecosystem," 2021). The metaphor of ecology has been adopted by a number of scholars to highlight the role of context and the interplay between learners and other components in technology-mediated language learning environments (e.g., Lemke, 1998; van Lier, 2004; Warschauer, 1998). According to van Lier (2004, p. 4), an ecological approach to research in language education explores "the full complexity and interrelatedness of processes that combine to produce an environment". Warschauer (1998) highlights the importance of the ecological context and argues against a determinist approach, which sees a computer as an all-powerful machine that in and of itself brings about determined results. He points out that the effect of technology cannot be researched independently. In contrast, the notion of ecology captures the relationship of elements in an environment in which technology is only one part and changes in the system could affect the whole system and its components (Li et al., 2016).

In discussing the characteristics of the ecosystem of language learning, van Lier (2004) stresses the crucial concept of "affordance", which signifies a relationship between an organism (e.g., a learner or a teacher) and the environment which either signals an opportunity for or inhibition of action. The term "affordance" was originally introduced by psychologist James Gibson (1977, 1979), who defines affordances of an environment as "what it offers the animal, what it provides or furnishes" (Gibson, 1979, p. 127). For example, a leaf affords ("offers" or "allows") crawling on for a tree frog (van Lier, 2000). In language learning, Warschauer (2011) provides examples of online learning's affordances, which are what it can offer learners, such as opportunities for them to be in contact with a wide range of people and resources.

It is also important to point out that an ecological perspective values balanced diversity. According to van Lier (2004), just as diversity is essential in an ecosystem in biology, a diverse society in terms of people, language, or interests may be healthier in the long run than a homogeneous one. According to Poulsen (2001), in healthy biological ecosystems, "diversity ensures that both species and

the overall system have flexibility and the ability to adapt” (p. 31).

Another central concept related to learning from an ecological perspective is that of agency, which refers to “the person deciding to, wanting to, insisting to, agreeing to, and negotiating to, *act*” (van Lier, 2010a, p. x; emphasis in original). The organism in a learning ecology is “moving in order to live and grow” (van Lier, 2010b, p. 4). So, learners are not seen as passive; they can exert agency and make choices, taking on the responsibility of shaping their learning.

In addition, in an ecosystem it is crucial to look at social interaction between the agents. The important role of interaction in the ecological approach is in line with sociocultural theory originated in the work of Vygotsky (1978, 1981), who states that social interaction with more capable others facilitates learning. A widely-known related concept is that of scaffolding (Wood, Bruner, & Ross, 1976), which enables a novice to achieve a goal which would be beyond his unassisted efforts. Donato (1994) points out that the metaphor of scaffolding implies the expert’s active stance toward continual revisions of the scaffold in response to the novice’s emerging capabilities. In a technology-mediated environment, “scaffolds” can be enhanced not only by verbal interaction, but also, as Meskill (2005) suggests, by virtue of the physical properties of the technology used such as the use of visuals on the screen as a common reference point.

These important concepts of affordances, agency, scaffolding, and diversity have been discussed in a number of previous studies from an ecological perspective (e.g., Liu & Chao, 2018; McNeil, 2014; Song & Ma, 2021). For instance, in Liu & Chao’s study (2018) in an EFL classroom with a computer and the students’ mobile devices, the results reveal the interrelationship among technology affordances, learner agency in actively using technological affordances, and the teacher’s role in pinpointing affordances and supporting learners via their interactions. However, this study and most of the studies in relation to these concepts are not conducted in videoconferencing contexts. With multiple concepts and factors involved in a learning ecosystem, more research under this paradigm is needed to tackle a multifaceted nature of a fully interacting videoconferencing language learning ecology.

3. Purposes of the study

The purposes of the study were to identify influential elements and their relationships in a videoconferencing learning environment and explore how the whole environment could be formed to enhance Thai undergraduates’ learning experience and facilitate their progress in English conversation skills. The study aimed to address the following research questions:

1. What are the key elements in a videoconferencing language learning environment?
2. How can a videoconferencing environment be formed to have the conditions which would enhance the students’ learning experience and speaking progress?

4. Methods

4.1. The setting

The videoconferencing environment investigated in this study was called “Conversation Cloud”, designed to promote students’ English conversation skills by providing an online space for them to speak with volunteer guests from around the world. Conversation



Fig. 1. A screenshot of the Conversation Cloud website.

Cloud was first launched in 2018 as one of the extra activities offered at a public university in Bangkok, Thailand. The university's students of all majors and years of study could join in for free.

The activity was promoted as an online space where they could practice speaking English anytime, anywhere, on any device (see Fig. 1). Conversation Cloud sessions could be open from early morning until late at night and the students could log in on a computer, cell phone, or tablet from anywhere via the Internet. The videoconferencing platform used was Cisco Webex Meetings, which affords easily accessed web-based HD video and audio, meeting security, easy screen sharing, and text chatting. At a predetermined time, the students would log in and meet with a moderator, other students, and usually a foreign guest to talk casually and exchange knowledge or opinions in the target language. The moderators were usually the university's English teachers or highly proficient students, while the foreign guests were the teachers' acquaintances or volunteers who applied to join the activity. In each 1-hour session, the moderator would welcome everyone, introduce the guest, encourage the students to talk, emphasize interesting points, and help make the session run and end smoothly. The topics included cultural exchange, guests' areas of expertise, and general topics such as food, travel, movies, etc. Frequently a moderator would open the floor for the students to share ideas and ask the guest questions or vice versa. A session normally consisted of 3–8 students. The researcher also joined the activity as one of the moderators in 31 sessions out of a total of 68 sessions.

Figs. 2–3 show screenshots of a typical Conversation Cloud session. In Fig. 2, a focal student was describing a local dish from northeastern Thailand and in Fig. 3, the guest from Hawaii was talking about dolphins in Hawaii. The moderator shared pictures to go with the conversation.

4.2. Data collection

Data collection involved both quantitative data from close-ended survey responses and qualitative data from open-ended survey commentaries, interviews and field notes. For the survey data, during the period in which the study took place (September–November 2018), there were 297 reservations made by the university's undergraduates who attended the activity. After each session, an email was sent to invite them to complete the survey (Appendix A). By the end, the survey yielded 115 completed questionnaires. Also, to gain deeper insights, the researcher interviewed 8 focal students representing information-rich cases (Patton, 2015) that varied in their English oral proficiency, technological background, fields of study, interests, and personalities. Besides the students, 3 moderators and 3 guests were interviewed (see Appendix B and C). All the survey and interview questions had been reviewed by 3 scholars in the field of English language teaching. For Thai speakers, the interviews were conducted in Thai to allow the participants to fully express themselves. The interview questions were generated from the research questions with the aim to elicit rich and personalized stories (Given, 2008; Magnusson & Marecek, 2015; Maxwell, 2013). Both the broad and specific interview questions were used to cover the inquiries in the research questions regarding key elements and important characteristics of Conversation Cloud. Moreover, the researcher took field notes that were descriptive in nature, describing the details of the direct experience being in the setting and recording quotations of the people involved, the researcher's feelings and reactions, as well as field-generated insights, interpretations, and inspirations (Patton, 2015).

4.3. Data analysis

The quantitative data from close-ended survey responses to the five-point Likert scale questions were analyzed with descriptive statistics to obtain information regarding overall learner satisfaction and general opinions about the learning experience. Moreover, the open-ended part of the survey, consisting of the students' reasons for their ratings and suggestions, was subjected to content analysis, with the goal of providing "a numerically based summary of a chosen message set" (Neuendorf, 2002, p. 14). In undertaking content analysis, not only were relevant issues or variables identified, information regarding their frequency of occurrence was also presented, which, to some extent, indicated the significance of, attention to, or emphasis on the issues (Krippendorff, 2013). Therefore, the content analysis results could be used to address the research questions regarding influential factors –key elements and characteristics or conditions in Conversation Cloud. Then, the information regarding the influential factors was consolidated with data from the interviews and the field notes. Approximately 13 hours of the interviews and the researcher's field notes were coded for important themes, using the software ATLAS.ti. The researcher began by developing codes from an initial review of the data and theoretical

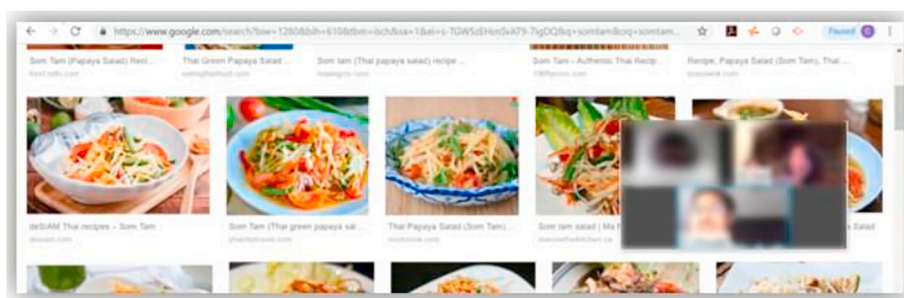


Fig. 2. A focal student was describing *som tum*, a local dish from northeastern Thailand (Image blurred to protect the participants' identity).

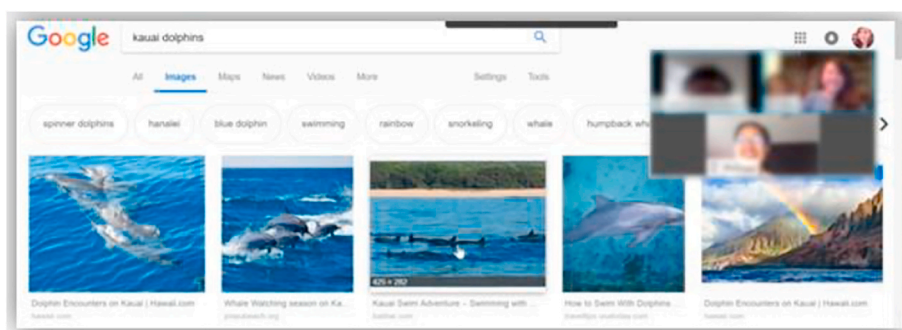


Fig. 3. The guest from Hawaii was talking about dolphins in Kauai, Hawaii (Image blurred to protect the participants' identity).

propositions, adjusted subsequent codes to adequately address the data, clustered similar codes, and formed important themes from these codes (Creswell & Poth, 2018; Patton, 2015; Yin, 2009). The insights obtained from the themes further addressed the research questions showing the relationships between the key elements and how a videoconferencing environment could be formed to have the conditions which would enhance the students' learning experience.

5. Findings

5.1. Key elements in the Conversation Cloud ecosystem

The students' ratings in the five-point Likert Scale questions ($N = 115$) were relatively high as the average values for all questions were between 4 and 5, with 5 being the highest degree (see Appendix A for details). However, given the fact that the response rate was not very high (approximately 39%), the interpretation of the close-ended items might have been misrepresented if students who felt negatively did not complete the questionnaires. In order to gain real insights from the survey data, it is more useful to closely examine the students' reasons behind their ratings in the open-ended commentaries to identify influential variables associated with each student's either high or low ratings.

Regarding the open-ended commentaries in the survey, after giving a rating on the scale of 1–5 for each of the five survey questions, the students were invited to type in the reason why they gave that rating in the text box below each rating scale. This part was optional. At the end, there were 384 completed text fields from the total possible 575 text fields (115 questionnaires x 5 questions), which was a 66.78% completion rate. These 384 units of text were subject to content analysis in order to identify key issues by frequency. The content analysis was conducted with the pool of data from the five survey questions as they were important basic questions giving the whole picture regarding learning and engagement (Appendix A). The results of the content analysis are presented in Table 1 below. The issues reported are the top 15 most frequently mentioned issues with at least 10 counts (see Appendix D for details regarding the sources of the students' responses, subcategories, and examples).

The content analysis results, shown in Table 1, reveal the frequently mentioned issues, which can be categorized into a number of

Table 1

Content analysis results: the frequencies of the top 15 recurring issues emerged in the students' open-ended survey responses.

The top 15 most frequently mentioned issues which emerged from the data	Major categories	Positive comments	Negative comments or suggestions	Total count
1. Opportunities to use English, especially speaking/listening	Context* + Technology**	117	6	123
2. Opportunities to encounter foreigners	Context* + Technology** People	56	–	56
3. Exchange of opinions/experiences/cultures with other people	People	44	–	44
4. The feeling of enjoyment	Learner	42	–	42
5. Increased inspiration/desire to improve	Learner	32	–	32
6. Increased confidence in using English	Learner	28	–	28
7. Authentic/real/practical	Characteristic	27	–	27
8. Moderators	People	19	4	23
9. Technical issues (primarily the Internet connection)	Technology	–	22	22
10. Guests	People	14	4	18
11. Social aspect of meeting people	People	18	–	18
12. Relaxing atmosphere	Characteristic	14	–	14
13. Diversity	Characteristic	12	2	14
14. Peers	People	11	2	13
15. Convenience	Technology	10	–	10

*The value of the opportunities perceived because of the Thai context.

**The opportunities facilitated by technology (less limitations of space/time/costs than meeting face-to-face).

influential variables affecting the students' learning experience. They are the key elements of the context, people, learner, and technology, as well as certain characteristics of Conversation Cloud being authentic, relaxing, and diverse.

From this set of data, the top responses were categorized under the context. In the Thai educational context, most students do not have sufficient opportunities to speak English, particularly with foreigners. As a result, they found that this online space fulfilled their needs in this respect as seen clearly in this comment: "In real life sometimes it is difficult to find foreigners we can practice speaking English with, but this activity has given students opportunities to use the language". When the students did not get much opportunity to speak in some sessions, they provided negative feedback. Also, these opportunities were facilitated by the affordance of video-conferencing in allowing people from different locations to meet online easily and instantly, and thus the category is a combination of context and technology, whereas the issues directly related to technology are convenience and technical problems, which also affect the students' learning experience.

Furthermore, the people involved emerged among the frequently mentioned issues. For the moderators, a number of students gave high ratings because the moderators in those sessions helped encourage everyone to speak and made the conversation smooth, less stressful, or enjoyable. In the cases when the moderators did not properly fulfill their role, they received lower ratings. For instance, a student who gave a rating of "3" wrote that "the moderator did not lead the activity, so the students did not talk much". Though guests and peers were not mentioned as much, they were influential for some students with varying reasons (see [Appendix D](#)). As for the issues related to the learners themselves, their feeling of enjoyment, needs, inspiration, and perceived confidence were found to be important in their experience with Conversation Cloud.

The key elements and characteristics identified from content analysis also emerged in the interviews and the field notes, consolidating the survey data, as presented in the following section.

5.2. Influential conditions in Conversation Cloud

When incorporating the data from the interviews and the field notes into the analysis, not only was the interplay of the key elements identified seen more clearly, but the question regarding the conditions that positively influenced the students' learning experience could also be addressed in more detail.

Under certain conditions observed in Conversation Cloud, all the focal students perceived progress in their speaking skills and the development of confidence. For instance, after joining Conversation Cloud, Student 3 said that she had the desire to speak out with more confidence. The data from the field notes did indicate her progress. She was able to introduce herself more fluently and describe a kind of Thai food in more lengthy detail, correctly using a structure that she had used incorrectly before (November 2 and 5, 2018). Student 4 also said she was much more confident and in her tenth session, "I was just chilling out". Student 5 could "throw in a topic" in her fifth session and Student 8 said that after many sessions, "my head and mouth were in sync." According to the field notes (November 28, 2018), Student 8 could initiate a question in his last session, while previously he could not. Student 2's progress was also recorded and one guest reported, "I can tell she's more confident now" (November 3, 2018). In addition, Student 1, 6, 7 said that after the project they were involved in real-life situations that proved their increased conversational skills and confidence such as when speaking with a foreign teacher, encountering foreigners while working, and speaking in an interview.

Although the students' improved speaking skills recorded in the data were their perceived learning gains and some observations from the field notes, their increased confidence and positive opinions were clearly observed. It is worth investigating what kind of conditions positively influenced their learning experience and progress as they gradually acquired the target language. After the data were coded, important themes regarding these influential conditions emerged as presented in this section.

5.2.1. Conversation Cloud as an "organic" learning environment

"When we did Conversation Cloud every week, it was organic. It grew very naturally. I really like that" (Interview with a guest from Hawaii, Guest 2).

The word "organic" came up in the interview data as it was used by one of the Conversation Cloud guests to describe the conversation in the sessions she joined. She clarified that what she meant referred to the activity being "natural and authentic" (Guest 2). This corresponds with the survey data as one of the issues the students often mentioned was authentic, real, and/or practical (No. 7 in [Table 1](#)). There are also supports from interviews with students and moderators. Student 5 said that previously she usually practiced speaking with herself in front of the mirror in the bathroom, but when joining Conversation Cloud, "I felt like ... whoa ... I got to use English to speak with real foreigners!". Moderator 2 also said that the activity was authentic as "there were real chances of both success and failure in communicating to foreigners and seeing whether they would understand" such as when the students tried to communicate so that a foreign guest understood about a Thai festival. He added that in a traditional classroom the students' explanation or presentation to the teacher and peers would be simulated and that was "not as exciting" or, as Moderator 1 also said, "not quite real".

As the students were given authentic opportunities to speak with foreigners casually, the interaction was unscripted and spontaneous, like real conversations in the real world. This is different from other types of instruction such as when students are expected to answer a teacher or when they prepare to speak in advance and sound scripted. An example of the focal students' spontaneous use of language was when Student 3 described her favorite Thai food *moo ping* in her own words, saying that it is street food and "you can have it with sticky rice" (field notes, November 5, 2018). This was then followed by the foreign guest's natural reactions and comments. The unscripted spontaneous use of language is also referred to as "organic" in Jenks's study (2009) where communication on Skypecasts, a voice-based CMC tool, is neither fixed nor predetermined, but an organic collaborative agreement.

The term “organic” has also been used in the organic model of education introduced by Marietta Johnson (1974, as cited in [Schiro, 2007](#)), who stressed the importance of meeting learners’ needs rather than dominating or forcing learners to accomplish certain results. The fact that Conversation Cloud offered a real and authentic experience that responded to the students’ needs for opportunities to use spoken English is in line with this.

In addition, the organic approach used by Johnson and other educators suggests providing the “right” conditions to create the atmosphere that fosters active involvement so that learners would proceed at their comfortable pace (“[Marietta Johnson School of Organic Education](#),” 2008; [Schiro, 2007](#)). In this regard, Conversation Cloud was also “organic” in the sense that it provided a relaxing atmosphere with little control, stress, or pressure, similar to how organic farming relies on natural methods. This kind of atmosphere was observed in Conversation Cloud as another frequently mentioned issue in the survey was the relaxing atmosphere (No. 12 in [Table 1](#)). An example of a student’s commentary in the survey was: “Because the conversation in Conversation Cloud is not very stressful, the students’ potential could be unleashed.”

The interview data also support this. Student 1 said in the interview that in a classroom she did not have the confidence to speak much but in a Conversation Cloud session, she felt that it was quite relaxing as the mood and tone of the activity was not as stressful and that gave her more speaking confidence. According to Guest 1, actually the experience could have been “quite daunting” because usually the students met with new people including a foreigner, but he said the moderators helped a lot in creating a comfortable atmosphere. A number of students also referred to the moderators positively in this respect. One focal student said:

“I think the moderators’ personalities, how much they encouraged students to talk and how casual they were, were important. I think whether a session would be lively and whether students would be confident to speak depended a lot on the moderators” (Student 7).

When another focal student was asked if she felt there should be a moderator, she said, “Yes, very much so” because “if there’s dead air, the moderator would come in and create a better atmosphere” (Student 6).

Guests and peers also played a role though they were mentioned less in this aspect. Student 1 and 4, for example, said they would like peers to be friendly and interact with them too, not only with the guest. She referred to an example in a session she joined:

“That person was very nice when responding ‘very interesting’ to another student. I think that was very good ... unlike in other sessions when one spoke, the others were quiet”.

Furthermore, videoconferencing technology’s affordance contributed to creating a comfortable atmosphere as the students had the freedom and comfort to be at the place they chose. The students seemed relaxed and comfortable while practicing speaking English at a coffee shop or their home (Field notes, October 5, 2018). In addition, talking behind the screen helped make Students 3 and 4 feel less shy or nervous. Student 4 was less shy online because “others were at another location”. However, this was not the case for four other focal students. Similar to van Lier’s example (2000) in which he notes that a leaf that can offer different affordances to different organisms such as food for a caterpillar but shade for a spider, talking behind the screen for only some students was perceived as an affordance that helped reduce anxiety.

It can be observed that in this Conversation Cloud “organic” environment, the students had an active role in directing their learning experiences. They had the freedom not only to choose locations and sessions that fit their needs, they could also choose what they wanted to talk with a foreign guest. For example, a focal student majoring in economics (Student 7) joined a session in which the guest was a Vietnamese student majoring in Economics like him. When the moderator encouraged the students to ask questions, Student 7 chose to ask the guest about economics. In the interview, he said, “I felt great that I got to talk about my field of study with a guest from another country.” Since the organic atmosphere fostered voluntary and active involvement with not much control, learner agency was encouraged. The students were not treated as passive learners as knowledge was not imposed on them, but rather gained through their contribution in their own learning, that is, “moving in order to live and grow” ([van Lier, 2010b](#), p. 4).

5.2.2. Scaffolding in the cloud ecology

“Just when I stopped, there would be someone who repeated it like, ‘Did you mean ...?’ and that person would reproduce the whole sentence, and that made me realize that this was how it was said” (Student 2).

When Student 2 was asked whether she was able to use that sentence pattern when she got a chance the next time, she responded, “Yes, it was like I could remember, ‘okay, it has to be this pattern’.” This kind of language support has been observed from moderators, guests, and peers. The three moderators and two guests said that they provided weaker learners with more assistance. For instance, Moderator 2 scaffolded a student who was trying to tell the Thai ghost story *Mae Nak* but couldn’t continue, “So, she’s cooking, right? And what happened? An ingredient, a lime, dropped and?” (field notes, November 19, 2018). At another time when another student stumbled on words, he said, “It’s okay. You can use simple English” (field notes, September 21, 2018). This corresponds with the metaphor of scaffolding that implies the expert’s adjustments of the scaffold in response to the capabilities of the novice ([Donato, 1994](#)).

The moderators also reported that they made use of the various features of the videoconferencing application to scaffold language learning. For example, the text chat feature was used when there were new words in the conversation (Moderator 3). Student 5 mentioned that the use of text chat while talking did help clarify what the participants were saying. In addition, screen sharing was frequently used by the moderators to share slides and related images. For image sharing, many participants provided highly positive feedback. Student 6 referred to the moment when a moderator shared images related to the conversation, saying that it “helped make us understand better and feel more involved like, ‘ah ... this is what it is!’”. An example is when Student 2 was trying to explain that

butterfly peas are an ingredient of a Thai dessert but she did not know the English word, so the moderator shared the screen of a Google image search showing the name with the pictures for everyone to see and learn instantly. About four months later, in an interview with Student 2 after the project was completed (February 14, 2019), when the researcher asked if Student 2 remembered what this kind of flower is called, she said, “butterfly flower”. Considering the fact that she was exposed to the new term only once, at least she remembered the key word. Another example (field notes, November 5, 2018) is when images were used as common reference points. When a Japanese guest was talking about the Japanese food *yakitori*, the moderator quickly shared a screen of an image search of the food. When students saw images of *yakitori* on the screen, Student 3 then said, “it looks like barbeque” and another advanced student (Student 7) said, “it’s so mouth-watering”. At that moment, the researcher as the moderator found the opportunity to highlight an expression in the target language and thus repeated, “Yes, it’s mouth-watering” to highlight the phrase that other students might not know in a meaningful context enhanced with the pictures. Here we can observe the moderator’s use of technological affordances (visuals on the screen in this case) as immediate “anchored referents” (Meskill, 2005), in order to help reinforce meaning. In fact, not all moderators made use of screensharing to go with the conversation topic. According to the field notes (November 5, 2018), one new moderator did not use screensharing, so the researcher helped sharescreen images later in that session. After the session, the new moderator said to the researcher that the use of corresponding images was “really useful”. The multimodal communication observed in Conversation Cloud reflects the current landscape of communication, which is moving from “the world told” to “the world shown” (Kress, 2003).

The data mentioned above show the vital role of interaction with others in supporting language learning via verbal strategies and the use of technological affordances, which is in consonance with ecological and sociocultural perspectives (Vygotsky, 1978, 1981; Wood et al., 1976). Students 2, 4, 5, 6, 7 reported they were able to learn new words, expressions, or pronunciations from interaction with others, especially the moderators. The results regarding the teacher’s important role in using technological affordances to scaffold learning have confirmed what Liu and Chao (2018) found in a technology-mediated physical classroom as learners may not be aware of the possibilities the technology provides. The present study also found that, not only learners, but also teachers/moderators might not utilize the technological affordances, and thus, a training session for teachers/moderators may be needed.

5.2.3. Diversity for a healthy online learning ecosystem

When one Conversation Cloud guest was asked about the advantages and disadvantages of this online activity, he said:

“The biggest advantage is diversity of people they could speak to ... Trying to get speakers from so many different places would have become very difficult if you didn’t have Conversation Cloud to do it” (An online interview with a guest from New Zealand, Guest 1).

In Conversation Cloud sessions, students got a chance to talk with not only peers from different majors around campus, but also foreigners from many countries around the world. There were a marine biologist from India, a manager from New Zealand, a professor in aerospace engineering from the U.K., a C.E.O. of a skincare company in the U.S., Chinese and Korean professors teaching linguistics in the U.S., a government officer in Cambodia, a professor and students in Japan, and enthusiastic undergraduates from Vietnam and the Philippines.

When the focal students were asked if they would still join the activity if there were no foreign guests, they either said “no” or “not sure.” Though there were guests from diverse backgrounds already, Student 7 felt that it would be better to have even more diverse backgrounds. This is in line with the survey results discussed earlier.

When the 8 focal students were asked if the foreign guests should be native speakers of English, 6 of them either said “no” or “not necessary,” while only 2 said they would prefer native speakers. Student 5 and 7 said that meeting foreigners with various accents was useful in real life situations when meeting people from different backgrounds. Student 7 who had greater confidence in speaking with his foreign teacher said:

“Having met foreigners from different countries with various accents made me feel that I would be able to talk with foreigners from many parts of the world.”

Diversity of people was observed to be beneficial in giving the opportunity for the students not only to be exposed to various accents, but also to learn from a wide variety of topics, perspectives, and opinions. This finding is similar to Jung’s study (2013) when diversity in the people and the various perspectives gained is found to be one of the favorable conditions. Many students noted in both the survey and the interviews that they benefited from conversing with different people. For example, Student 1 said that diversity was useful as she was able to learn new vocabulary and gain new knowledge in various fields. She also said:

“In the different sessions that I joined, there were people from different age groups and different countries, making it feel like it covered quite the whole world. So it was very, very interesting to be able to develop perspectives and opinions”.

In the Conversation Cloud ecology, the theme of diversity was prevalent and was observed to influence learner experience, responding to the students’ needs and individual differences. This confirms the ecological framework that values diversity.

6. Discussion

In certain aspects, the initial findings of the present study echo previous research on videoconferencing language learning. Regarding learner perceptions, the results were positive as most learners found the learning experience satisfying and useful for practicing English (Bee & Gardner, 2012; Hopkins, 2010; Nilayon & Brahmakasikara, 2018). Nevertheless, as varying degrees of efficiency and some negative results were reported or observed, influential factors were identified in certain studies and the present

study such as learner factors, the role of the teacher, and technological problems (e.g., Hampel & Stickler, 2012; Hopkins, 2010; Jung, 2013; Liu & Chao, 2018).

However, the present study is distinct from previous work on videoconferencing language learning as the study harnessed content analysis to systematically glean the most frequently mentioned variables from learner experience, revealing key elements and characteristics, and with other consolidated data, these factors were seen as interconnected pieces in a learning ecosystem. Through an ecological lens, the picture manifested would not be a list of separate influential factors, but a web of interacting elements in a system as represented in the visual model of the Conversation Cloud ecosystem below (Fig. 4).

This visual representation has been generated based on various data sources in the study. Regarding the key elements, the data have revealed them to be the context, the learner, other people, and technology (as shown in Table 1). Hence, in this visual representation, there are connections between the “ground” of the *context* where the *people* are rooted and the “cloud” –the online space enabled by videoconferencing *technology*, where the *people* come together to form a spontaneous and unpredictable “web” of social interaction.

As for the question as to how the cloud ecosystem could be formed to support language learning, the results from the emerging themes have shown that certain characteristics were observed to be facilitative: organic environment (authentic due to the role of the context, people and interaction and having less stress or control due to people and technology), scaffolding (via interaction with other people and technological affordances), and diversity (of people and their language/content). The themes identified corroborate the ecological and sociocultural perspectives that value the active agent’s authentic and spontaneous use of language (Hamilton, 2013; van Lier, 2004), learner agency in directing their learning experiences (van Lier, 2010b), scaffolding via interaction with others and technological affordances (Meskill, 2005; Vygotsky, 1978, 1981; Wood et al., 1976), and a diverse ecosystem in terms of people and language (van Lier, 2004). It is seen that the key elements identified from the data contributed in forming the environment where the important concepts under the ecological and sociological perspectives were realized.

With the understanding of the interplay of factors in the full ecology, it becomes clear that technology is an important element, but only one part among many others in the system where changes in any components or conditions could affect the dynamics of the whole. It has been acknowledged from the literature that technology offers a potential, but that does not guarantee that a given result will be obtained. Data have shown that the students’ ratings in each Conversation Cloud session were different depending on a number of variables. It is clear that each Conversation Cloud session “grew naturally” as one guest said, was not determined a priori, and each session affected learners’ experience differently. In order to address a fluid learning ecosystem, the important question would not be the effects of videoconferencing on language learning or whether the incorporation of a technology would improve learning outcomes. Instead of putting the spotlight on technology, it is useful to find out what variables and conditions need to be accounted for in a given learning environment and how language learning could be enhanced in that particular digital landscape.

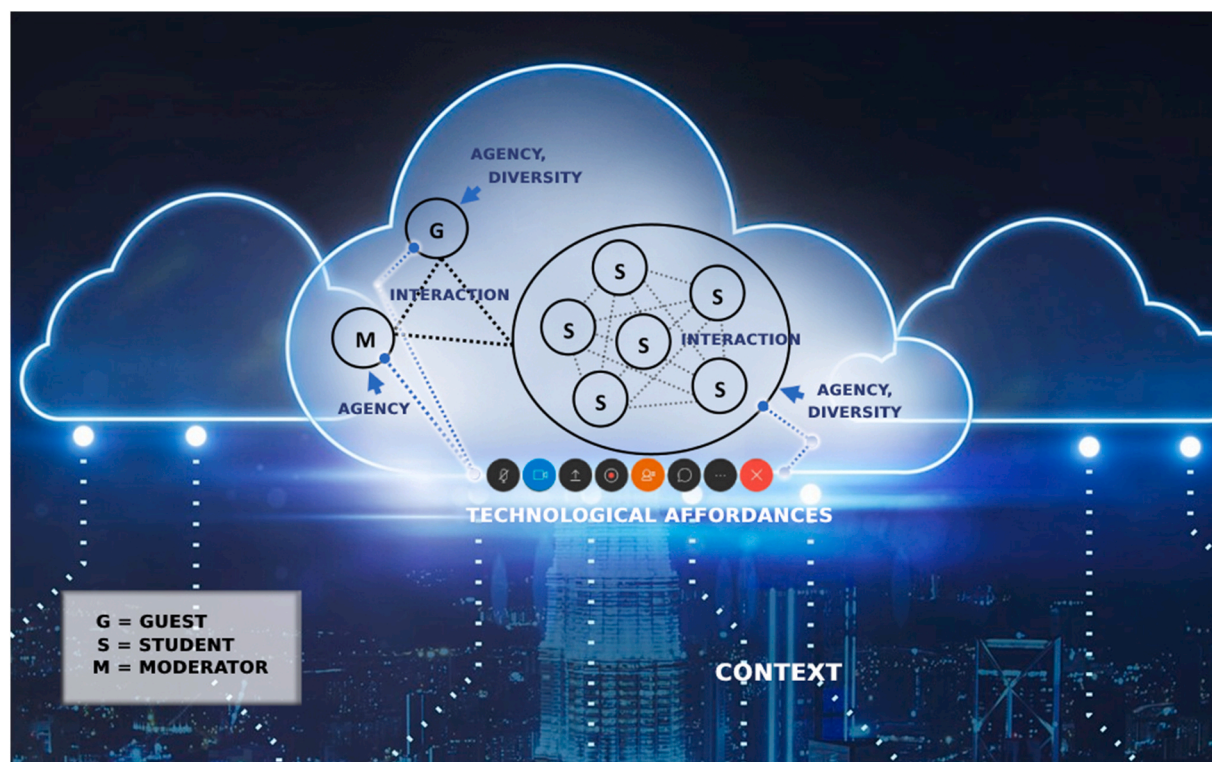


Fig. 4. The Conversation Cloud video conferencing ecosystem.

7. Conclusion

Based on various data sources, the findings have revealed an ecosystem with a number of interacting factors influencing the students' language learning experience. Certain conditions were reported and observed to facilitate the students' learning progress and confidence. The manifestation of the learning ecosystem, instead of a list of separate factors, can help educators and administrators understand the nature of a given videoconferencing learning environment and attempt to identify what variables need to be accounted for and what kind of relationships and conditions need to be created. Future research can be conducted to pursue a thorough investigation of a videoconferencing environment over a longer period of time.

All in all, this study has provided implications for the design of a technology-mediated environment in various contexts to take into account all the key elements in a particular ecology, to aim for "organic" learning, to scaffold learning via verbal strategies and technological affordances, as well as to foster diversity when appropriate. This study serves as an example of the use of videoconferencing technology for a compelling reason in a particular context, which in this case was the need to provide students with more opportunities to use English in an authentic international environment so that they will be equipped with the skills to become part of the global community with greater confidence.

Funding

This research was funded by Chulalongkorn University [Grant number CU-GR_62_05_55_01].

Declaration of competing interest

None.

Acknowledgements

The author would like to thank the volunteer guests, the moderators, and the students who participated in this study, as well as all the people who provided assistance and useful advice on various aspects of the study.

Appendix A. The students' ratings in the five-point Likert Scale questions

Most of the survey participants were freshmen ($n = 105$; 91.3%) as they could collect extra points for joining the activity. Their ages were around 18–22. Their fields of study are in social sciences and humanities ($n = 50$; 43.5%), science and technology ($n = 34$; 29.5%), and health sciences ($n = 31$; 27%). Most of them joined the activity once or twice, except for the focal students (see [Appendix B](#)). The students could complete the survey each time they joined a new session because each session is unique with different moderators, peers, or conversation topics.

Table A.1

Mean and SD values of the participants' ratings in the five-point Likert Scale questions regarding their overall experience with Conversation Cloud ($N = 115$).

	\bar{x}	S.D.
1. To what degree did you enjoy practicing conversational English through Conversation Cloud?	4.36	0.678
2. Do you think the activity was useful for learning the English language, especially conversational English?	4.55	0.625
3. Has the activity made you want to practice more?	4.52	0.667
4. How much do you like practicing conversational English through this activity?	4.42	0.713

Appendix B. The interviewees' background information

Table B.1

The focal students

Label	Gender	Age	Field of study	Experience with technologies		Number of sessions joined
				Video Conferencing	One-on-one Video Calls	
Student 1	Female	20	Arts	✓	✓	5
Student 2	Female	19	Science	✓	✓	8
Student 3	Female	19	Pharmaceutical Science	–	–	10
Student 4	Female	19	Pharmaceutical Science	–	✓	10
Student 5	Female	19	Political Science	–	–	6
Student 6	Female	19	Education	–	✓	13
Student 7	Male	18	Economics	✓	✓	11
Student 8	Male	19	Law	–	✓	10

Table B.2

The interviewed moderators

Label	Gender	Age	Teaching experience (years)	Number of sessions joined
Moderator 1	Female	Late 30s	8	4
Moderator 2	Male	Late 30s	13	4
Moderator 3	Female	Mid 30s	10	3

Table B.3

The interviewed guests

Label	Gender	Age	Country	Description	Number of sessions joined
Guest 1	Male	Mid 50s	New Zealand	A qualifications manager for an industry standards setting body	4
Guest 2	Female	Mid 20s	USA	A marketing manager	6
Guest 3	Male	Early 20s	Vietnam	A fourth-year undergraduate student majoring in Economics	9

Appendix C. The interview questions

The interview questions for focal students (translated from the original version in Thai)

1. Why did you join Conversation Cloud (instead of other activities offered by the university)?
2. Could you tell us about your experience in practicing English communication in Conversation Cloud? What do you like or dislike about it?
3. Do you think Conversation Cloud has benefits in developing your English conversation skills? Why?
4. Before joining Conversation Cloud, how often did you have the opportunity to practice conversational English and conversing with foreigners in English?
5. How would you rate your skills and confidence in speaking English before joining Conversation Cloud? You may provide examples from real situations, tests, or other people's opinions.
6. After joining the activity several times, do you think your skills and confidence in speaking English have been improved? Do you have more confidence in speaking with foreigners? Please clarify with examples.
7. Have you joined a face-to-face activity to practice conversational English? What do you think are the advantages and disadvantages in practicing conversational English online in the activity Conversation Cloud as opposed to doing so face-to-face?
8. Do you think the videoconferencing technology used in the activity helped facilitate your practice of conversational English? How?
9. Do you think different Conversation Cloud sessions have different impacts on your satisfaction? What are the important factors?
10. Do you think different Conversation Cloud sessions have different impacts on the benefits that you gained in practicing conversational English? Why?
11. What kind of conversation topics or content do you like or think would provide benefits when practicing conversational English in Conversation Cloud?
12. Do you think there should be a specific topic for each session? If so, should we specify the topic in advance?
13. Do you think that there should be a guest in each session? Why? If so, what roles and characteristics do you think the guests should have? (For example, should they be a native speaker of English? What kind of personality or abilities should they have? How much should they contribute during the conversation?)
14. Do you think that there should be a moderator in each session? Why? If so, what roles and characteristics do you think the moderators should have? (For example, should they be a native speaker of English? What kind of personalities or abilities should they have? How much should they contribute during the conversation? Should they be a teacher? Is it a good idea to have a student as a moderator?)
15. Do you think that there should be other students joining each session? If so, what roles and characteristics do you think the other students should have? (For example, what kind of personalities, interests, language or communication abilities should they have? How much should they contribute during the conversation?)
16. How many students do you think there should be in each session? Why?
17. How many sessions do you think you should attend in order to effectively improve your English conversation skills?
18. What do you think are the factors that would make you join the activity more?
19. Did you experience any problem(s) while practicing speaking English in the Conversation Cloud activity (such as technical problems, content, factors related to yourself or other participants)? How did the problem(s) affect the quality of the activity? What do you think could be possible solution(s)?
20. Do you have any suggestions to make Conversation Cloud a better English language learning activity?

The interview questions for Conversation Cloud moderators/guests

1. Why did you join Conversation Cloud?
2. Could you tell us about your experience being a moderator/guest in Conversation Cloud? What did you like and dislike about it?

3. Do you think the activity could help promote the students' English conversation skills and increase their speaking confidence? How?
4. What do you think are the advantages and disadvantages in practicing conversational English online in the activity Conversation Cloud instead of doing so face-to-face?
5. What kind of conversation topics or content do you think are suitable to be used in this activity to promote the students' conversational English skills? Why?
6. Do you think there should be a specific topic/theme for each session? If so, should we specify the topic/theme in advance?
7. Do you think the videoconferencing technology used in the activity helped support the students' development of their English conversation skills? How?
8. What do you think were important factors that made each session enjoyable or not enjoyable for you and the students?
9. What do you think were important factors affecting each session's effectiveness in enhancing the students' English conversation skills and their speaking confidence?
10. Do you think that there should be a guest in each session? Why? If so, what roles and characteristics do you think the guests should have? (For example, should they be a native speaker of English? What kind of personality or abilities should they have? How much should they contribute during the conversation?)
11. Do you think that there should be a moderator in each session? Why? If so, what roles and characteristics do you think the moderators should have? (For example, should they be a native speaker of English? What kind of personality or abilities should they have? How much should they contribute during the conversation? Should they be a teacher? Is it a good idea to have a student as a moderator?)
12. Did you behave differently when interacting with students who are different in aspects such as personalities or levels of proficiency? For example, did you adjust your language, use gestures, or provide support differently?
13. How many students do you think there should be in each session? Why?
14. Did you observe any improvements in the students' English conversation skills and/or confidence in speaking English? How?
15. How many sessions do you think a student should attend in order to effectively improve English conversation skills?
16. Did you experience any problem(s) while doing the Conversation Cloud activity? How did the problem(s) affect the quality of the activity? What do you think could be possible solution(s)?
17. Do you have any suggestions to make Conversation Cloud a more effective learning activity?

Appendix D. Details in the content analysis results (sources, subcategories, and examples of the students' responses)

Notes:

- One response might be categorized in more than one category/subcategory because each response might include more than one reason.
- The data sources were open-ended answers to the five questions in the survey ([Appendix A](#)).

Categories	Sources: Number of counts elicited from each of the 5 questions (Q1-Q5)						Subcategories and examples (The numbers in brackets present the frequency of occurrence. They are positive responses, otherwise specified.)
	Q1	Q2	Q3	Q4	Q5	Total	
1. Opportunities to use English, especially speaking or listening skills	22	65	10	22	4	123	<p>Speaking/listening skills specified (97); specific skills not mentioned (20); less chance to speak because of too many students (5 negative feedback/suggestions); did not get to speak much with no specific reason (1 negative feedback)</p> <ul style="list-style-type: none"> • "The opportunity to practice listening and speaking at first hand, which is not quite available in daily life" • "I got to speak a lot, got the opportunity for real practice" • "The number of students in a session should be less so that everyone can contribute during the conversation."
2. Opportunities to encounter foreigners	21	16	12	7	0	56	<p>Opportunities to use spoken English with foreigners (33); to meet/share experience with foreigners (19); increased desire to improve in order to speak with foreigners (5); increased confidence when foreigners understood (1)</p> <ul style="list-style-type: none"> • "In real life sometimes it is difficult to find foreigners we can practice speaking English with, but this activity has given students opportunities to use the language, listen to foreigners' accents, and speak without scripts" • "Having direct conversation with a foreigner helps expand our knowledge and English skills so much apart from in the class. It's a

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Categories	Sources: Number of counts elicited from each of the 5 questions (Q1-Q5)						Subcategories and examples (The numbers in brackets present the frequency of occurrence. They are positive responses, otherwise specified.)
	Q1	Q2	Q3	Q4	Q5	Total	
							great opportunity for students who hardly have time to study English."
3. Exchange of opinions/experiences/cultures	28	3	4	9	0	44	<ul style="list-style-type: none"> • "Got to hear many people's stories, exchange a wide range of experiences and opinions." • "Got to exchange culture with the foreign friend."
4. Enjoyment	15	0	10	17	0	42	<p>Enjoyable/fun/not boring because of the topics/content (5); the guest (2); the moderator (3); the conversation (5); the language practice (2); talking with foreigners (4); the activity in general (20); conversation activities in the session (1)</p> <ul style="list-style-type: none"> • "It was a fun and entertaining atmosphere." • "So much fun talking with the foreign friend."
5. Increased inspiration or desire to improve the language	0	0	31	1	0	32	<p>Increased inspiration or desire to improve the language, especially speaking/listening with no specific reason (23); because of proficient peers (3); because of the desire to speak with peers (1); because of the desire to speak with foreigners (5)</p> <ul style="list-style-type: none"> • "I want to be able to speak more fluently and communicate so that others understand easily and smoothly." • "I'm more inspired."
6. Increased confidence in using English	3	11	8	6	0	28	<p>Increased confidence/less fear/less nervous with no specific reason (16); opportunities to increase confidence (5); the desire to increase confidence (1); increased confidence because foreigners understood (1); because of the casual atmosphere (1); because of fun speaking activities (1); because it's online (3)</p> <ul style="list-style-type: none"> • "I have more confidence. At least a foreigner could understand what I said. This activity made me know that I could make them understand what I said." • "At first, I thought I would not be confident and would be bored, but when I joined the activity, it was very, very casual, giving me confidence to speak." • "I felt that I had more speaking confidence than in face-to-face conversations."
7. Authentic/real/practical	1	19	2	5	0	27	<ul style="list-style-type: none"> • "Most of it was daily life conversation, which we will certainly use." • "It can be adapted to real situations."
8. Moderators	15	1	2	3	2	23	<p>Favorable personalities (being friendly/lovely/casual/fun/kind/relaxed)(10); being helpful (encouraging students to speak, moderating the session, keeping it relevant, willing to interact with students)(10); not asking/encouraging students to talk much (3 negative feedback/suggestions); request for help with vocabulary (1 suggestion); stimulating the desire to improve (1)</p> <ul style="list-style-type: none"> • "The teacher was kind, making the situation not stressful and enjoyable." • "The teacher was lovely. When no one spoke, she would encourage us to speak, keeping the conversation going." • "The moderator did not lead the activity, so students did not participate much."
9. Technical issues	7	1	0	3	11	22	<p>Issues with the Internet (6); the sound quality (10); the software (5); the instructions (2); the interface (1); the log-in steps (1); technical issues with no specific reason (4)</p> <ul style="list-style-type: none"> • "Some people's Internet connection was not good so the sound was not clear, making the conversation difficult and not smooth." • "There were problems—a lot of noise and the guest was late because of a technical problem." <p>(All are negative feedback/suggestions.)</p>
10. Guests	9	2	1	2	4	18	<p>Being nice/kind/friendly/lovely (8); fun/exciting (2); trying to communicate (2); opportunities to talk/exchange something with the guest (6); requests for guests' diverse professions and accents (2 suggestions); request for more guests (1 suggestion); request for the</p>

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Categories	Sources: Number of counts elicited from each of the 5 questions (Q1-Q5)						Subcategories and examples (The numbers in brackets present the frequency of occurrence. They are positive responses, otherwise specified.)
	Q1	Q2	Q3	Q4	Q5	Total	
information about the guests (1 suggestion)							
						<ul style="list-style-type: none">•“The guest was so lovely, trying to communicate so that we understood and trying to listen to what we wanted to communicate.”•“There should be guests with more diverse accents.”	
11. Social aspect of meeting people	9	0	3	6	0	18	<ul style="list-style-type: none">•“I really, really enjoyed it and like it because I got to know new people and learn about interesting stories.”
12. Relaxing atmosphere	9	3	0	2	0	14	<p>Relaxing because of the conversation and the activity in general (6); because of the moderator (6); because of the guest (1); because of simple topics and language (1)</p> <ul style="list-style-type: none">• “It’s like coming to sit back and relax and talk to each other.”• “Because the conversation in Conversation Cloud is not very stressful, the students’ potential could be unleashed. Although we make mistakes, everyone is willing to listen, try to understand, and help us.”• “The fact that the moderator was very responsive helped reduce the tension of speaking English.”
13. Diversity	2	5	2	3	2	14	<p>A variety of ideas/opinions/stories/perspectives/experiences (5); opportunities to meet and talk to various kinds of people with different fields of study/interests/countries (3); foreigners/guests’ various accents (6 positive and 1 suggestion); request for guests’ various professions (1 suggestion); a variety of conversation topics (1)</p> <ul style="list-style-type: none">• “Conversation topics are various.”• “There should be guests with more diverse accents.”
14. Peers	6	2	4	1	0	13	<p>Opportunities to practice listening/speaking with peers (5); opportunities to join the activity with peers (2); increased desire to improve English speaking/listening skills (4); peers did not cooperate/contribute much (2 negative responses)</p> <ul style="list-style-type: none">• “Joining the activity gave us the opportunity to meet with people whose speaking skills were better, making us want to improve ourselves.”• “Each student did not contribute much so it was like listening to speeches rather than talking in a conversation group.”
15. Convenience	0	2	1	7	0	10	<ul style="list-style-type: none">• “It’s convenient because it’s online and it’s very, very useful.”• “It can be done anywhere, anytime.”

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