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Learners' perspectives on interaction in a language MOOC

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This study examines how 136 language learners interacted with other learners in and out of a Language MOOC on English presentation. It also investigates the learner-reported reasons that encourage them to interact, and that prevent them from interacting with other learners. The results demonstrate that the level of learner–learner interaction was quite low in the LMOOC overall. More active learners cited a sense of belonging to the group and confidence in their English ability as the reasons for interacting with others, and less active learners reported a preference for F2F (face-to-face) interaction, lack of time and lack of English proficiency as factors preventing them from doing so. Learners also reported frequent use of personal communication tools to interact with other learners outside of the LMOOC. We conclude with a number of suggestions and implications for future LMOOC design, implementation and research.

Keywords: Language MOOCs, Interaction, Learner–learner interaction

Introduction

Since their emergence, Language Massive Open Online Courses (Language MOOCs or LMOOCs) have attracted a lot of interest from various stakeholders in foreign language education. Currently, there are more than 400 Language MOOCs being offered globally through several MOOC providers (Class central, 2021). LMOOCs are defined as “dedicated web-based online courses for second languages with unrestricted access and potentially unlimited participation” (Barcena & Martin-Monje, 2014 p. 1). In this sense, LMOOCs offer free and open

access to language learning opportunities for language learners regardless of their geographical location and educational level. Pedagogically, LMOOCs can be classified into two main types xMOOC and cMOOC. While the former involves the provision of short videos, followed by closed tasks and comprehension quizzes, the latter is more learner-centred and offers more opportunities for interaction and greater flexibility. There are several pedagogical and practical benefits that this education model entails. These include opportunities for personalised learning experiences, increased exposure to the target language, additional learning options to complement a F2F course and access to a large community of language learners who share similar learning goals. However, despite these potential benefits, in practice these opportunities have not yet been realised by the learners. This applies especially to the opportunities for social interaction. This resulted in a low level of interaction between learners in several LMOOCs (Martin-Monje et al., 2018; Rubio, 2015).

Interaction has been recognised as a fundamental component of online learning (Moore, 1989; Swan, 2001). Several meta-analyses report that interaction and collaboration can lead to more effective learning in distance education and that interaction correlates positively with learning outcomes (Bernard, et al. 2009). Interaction between learners is not only the cornerstone for the creation of a learning community in LMOOCs (Bernard, et al. 2009), but it can also give learners motivation to learn through collaboration (Rourke, Anderson, Garrison & Archer, 2007; Sharma, 2010). Moore (1989) identified three components of critical interaction in educational contexts: learner–content interaction (L-C), learner–instructor interaction (L-I) and learner–learner interaction (L-L). In LMOOC contexts, a fairly high level of L-C and L-I interaction has been observed, but with much lower levels of L-L interaction (Martin-Monje et al., 2013; Rubio, 2015; Martin-Monje et al., 2018). Reasons why language learners choose to interact or not to interact with other language learners in LMOOC environments remain unclear. The current study aims to fill this research gap by examining factors that encourage learners to interact and those that prevent them from doing so in the context of the LMOOC designed for this study. It also investigates how learners interacted with other learners in and outside of the LMOOC. Informed by data from questionnaire responses and interview scripts, this study is guided by four research questions:

1. How did language learners interact with other language learners in terms of frequency and channels of communication both in and outside the LMOOC?
2. What encouraged language learners to interact with other language learners?
3. What prevented them from interacting with other language learners?
4. In what ways did language learners perceive the benefits of having interaction with other language learners in a Language MOOC?

Literature review

Interaction in online learning

Although it is generally agreed that interaction is beneficial for learning (Wu et al., 2011; Yang, 2011), it is a complex phenomenon involving several key elements including types, modes and purposes of interaction. Learner–content interaction refers to the process in which learners interact with learning materials or engage in task-oriented activities. According to Moore (1989), learner–content interaction is a one-way transmission of information from the learning content to the learners. In the online learning context, L-C interaction encompasses various pedagogical tools and assignments such as informational texts, audio and video clips, study guides, simulations, individual and group projects as well as completing assignments (Bernard et al., 2009). Studies on L-C interaction using CALL materials were extensive and yielded generally positive effects on various aspects of learning including creativity in writing (Ducate & Lomicka, 2008), ability to understand oral messages (Lee, 2007) reading skills, (Marzban, 2011), and pronunciation (Tanner & Landon, 2009).

Learner–instructor interaction refers to the interaction between learners and instructors. L-I interaction can take several forms including formal evaluation, informal support, discussion in forums as well as conversations in and out of the online environment (Moore, 1989; Swan, 2002). It can also be synchronous through the use of video conferencing or real-time instant messaging or asynchronous through emails and discussion forums (Bernard et al., 2009). Studies on L-I interaction in online learning in general demonstrated that L-I interaction was a key factor contributing to learners’ satisfaction, completion rates of online language courses and positive learning environments (Jung et al., 2002; Kou et al., 2013). In online language learning, Yang (2011) suggests that L-I interaction is an essential aspect of success in language learning through computer-mediated communication (CMC). Although it remains unclear whether L-I interaction can enhance language competence, studies have shown that effective L-I interaction is a key element in facilitation L-C and L-L interaction in CMC-based learning environments (Ernst et al., 2013).

Learner–Learner interaction can be between individual learners or among learners working in groups. Current learning theories emphasise the importance of learners’ interaction with other learners as a knowledge construction process. The sociocultural theory (Lantoff, 2006; Vygotsky, 1978) believes that learning occurs between people and that L-L interaction is beneficial for language learning and motivation support (Lin et al., 2017). Previous studies on L-L interaction in online education yielded rather mixed results. While Anderson (2003) and Bernard et al. (2009) found that L-L interaction may help to increase achievement, other studies found no or very small effect of L-L interaction on learners’ satisfaction (Jung et al., 2002; Kou et al., 2014). Regarding L-L interaction in online language learning, empirical studies suggest that L-L interaction was beneficial for language learning especially in terms of learning new vocabulary and increasing learners’ confidence (Harrison & Thomas, 2009; Toetenel,



2013). In addition, L-L interaction through text-based chat was also found to have greater learning effects on oral proficiency when compared with regular F2F interaction (Blake, 2009). Interaction through text-based online could also enhance learners' willingness to communicate (Freiermuth & Jarrell, 2006). Learners' interaction with peers appears to be most effective in writing skills. Several studies on collaborative writing through Web 2.0 technology (blogs, wikis and social media) reported improvement in the writing quality of the learners both in terms of content and structure (Elola & Oskoz, 2010; Hourigan & Murray, 2010). Moreover, L-L interaction through telecollaborative learning was found to be beneficial not only for language learning, but also for intercultural exchanges (Freiermuth & Huang, 2021).

These types of interaction provide a useful framework in understanding interaction that takes place in Language MOOCs. Although Moore (1989) suggested that each type of interaction should be maximised, we argue that in LMOOC contexts where L-C interaction is almost a necessity and its 'massive' element makes L-I very challenging, L-L interaction has become a crucial element of language learning in MOOC environments. The next section discusses interaction within the context of LMOOC and provides a review of important literature on LMOOCs and interaction.

Interaction in language MOOCs

Interaction is considered an important component in the success of LMOOCs (Jitpaisarnwattana et al., 2019). This is because it is essential in the creation of a learning community in LMOOCs. Plus, it can give learners motivation to learn through collaboration (Rourke, Anderson, Garrison & Archer, 2001). Several studies have examined interaction in LMOOC contexts. Martin-Monje et al (2013) investigated learner-learner interaction in an LMOOC called Professional English. The course attracted over 19,000 participants and 1,120 of them went on to complete the course. These participants were EFL learners with CEFR (Common European Framework of Reference) A12 to B1 levels. Despite having a large number of participants, the results illustrated that interaction between learners was very low, both in the learning activities and the discussion forum. Rubio (2015) carried out a study comparing levels of interaction (L-C, L-I and L-L) in an LMOOC on Spanish Pronunciation and Phonetics with two other modes of delivery: blended and online. It was found that despite relatively high levels of learner-content and learner-instructor interaction in the LMOOC, the level of learner-learner interaction remained very low. One further interesting finding also emerged from this study; the level of interaction in the LMOOC correlated positively with students' success in the course as measured by their completion rate.

Recently, Martin-Monje, Castillo and Rodriguez (2018) utilised learning analytical procedures to investigate an LMOOC called How to Succeed in an English B1. There were 4,485 participants in the study. These participants were EFL learners with a CEFR (Common European Framework of Reference) B1 level. The findings demonstrated that the level of learner-content interaction

was generally high with videos being interacted with the most, followed by articles and books. Although the level of learner–learner interaction was not directly recorded, it was reported that participation in discussion forums and providing peer feedback were not factors associated with students’ successes. The analysis also classified the majority of the participants (nearly 50%) as “viewers”, meaning they only watched videos, but did not submit assignments nor contribute to the discussion forums. These studies were, however, mainly quantitative and factors that may influence the LMOOC participants’ choices of interacting or not interacting with other participants remain unclear. We argue that such choices need to be investigated from learners’ perspectives. This current study, therefore, aims to fill this gap in the body of literature on interaction and LMOOCs.

Method

The LMOOC

The data in this study were collected from an LMOOC at King Mongkut’s University of Technology Thonburi, Thailand called Presentation @work. The LMOOC deals primarily with English presentation skills in professional and educational contexts. The LMOOC was designed and offered through Moodle with additional plug-ins and a personalised recommendation system. The personalised recommendation system uses learners’ profiles and their perceived abilities (as measured through the self-evaluation questionnaires) to generate a personalised learning pathway (PLP) for each individual learner. The PLP suggests the sequence of learning exercises learners should follow in order to develop their English presentation skills. The LMOOC also allows learners to choose whether they want to work on their presentations either individually or in small groups. Peer feedback and peer assessment were also incorporated as a part of the course. In terms of language use, only English was allowed in the LMOOC. Although this LMOOC is largely self-paced, it was designed as a five-week course and this was made clear to the learners at registration.

Participants

There were a total of 270 learners who started the course and completed the initial self-evaluation questionnaires. Interaction questionnaires were sent to 270 learners after the course finished and 136 responses were received. Of these 136 learners, more than half were working professionals from various occupations including nurses, architects, engineers, medical scientists, teachers, and researchers (54%), while 46% were still in formal education at either undergraduate (21%) or graduate level (25%). As for gender, 62% of the learners who responded to the questionnaire were females, while 32% were males. Six per cent of the learners chose not to associate themselves with any gender. Learners were broadly classified into two groups: those who posted more than the average number of messages ($n = 25$) and those who posted fewer

than the average number of messages ($n = 111$). However, as some learners in the former group only posted a very small number of messages, we therefore believed that it is more feasible to focus only on “super users”, (who actively generated content and contributed significantly in a particular online platform) (Jarreau & Porter, 2017). In this study, we operationalised super users as learners who actively interacted with other learners in the LMOOC. We used the mode number of messages ($n = 8$) within the posted-more-than-average group as the benchmark for classification, resulting in 16 super users. We will only focus on these super users when investigating the reasons encouraging learners to interact with other learners. In addition, twenty-two learners voluntarily agreed to do a semi-structured interview with one of the authors. These learners were invited based on their learning behaviours logged through learning analytics and their responses to the questionnaires. Of 22 interviewees, 9 of them came from the group that posted more than the average number, while 13 came from the group that posted fewer than the average number. Of the 9 interviewees from the first group, 7 of them were the super users.

Data collection and analysis

The learners’ data on interaction were logged through the learning analytics system of the course. The system records all the messages learners post in the discussion forums as well as the comments made to learners’ presentation videos. We administered an interaction questionnaire consisting of three main parts. The first part asked learners about their purposes for interacting with others in the LMOOC. The second part sought to understand the reasons that encourage learners to interact or prevent them from interacting with other learners. The open-ended questions in the third part asked learners whether interaction with others helps them learn, as well as how they interact with other learners outside of the LMOOC. The items in the first two parts of the questionnaire were adapted from the interaction questionnaire designed by Pham et al. (2014) to investigate interaction in an online language course. The open-ended questions were designed specifically for this study to reflect learners’ perception of the usefulness of learner–learner interaction for their language learning. Two versions of the questionnaires were devised for two groups of learners: those who posted more than the average number of messages and those who posted fewer than the average number of messages. Both questionnaires were similar in all aspects except for part 2 (interaction-related factors). While the questionnaire for those who posted more than the average number of messages asked them about factors encouraging them to interact in the LMOOC (see Appendix A), the questionnaire for those who posted fewer than the average number of messages asked them about factors preventing them from interacting in the LMOOC (see Appendix B).

To confirm the content validity, the questionnaire was checked by three specialists in online language learning for item objective congruence (IOC). The analysis yielded a value of .898, suggesting acceptable validity. The questionnaire was sent to all registered learners after the course ended (the course ran

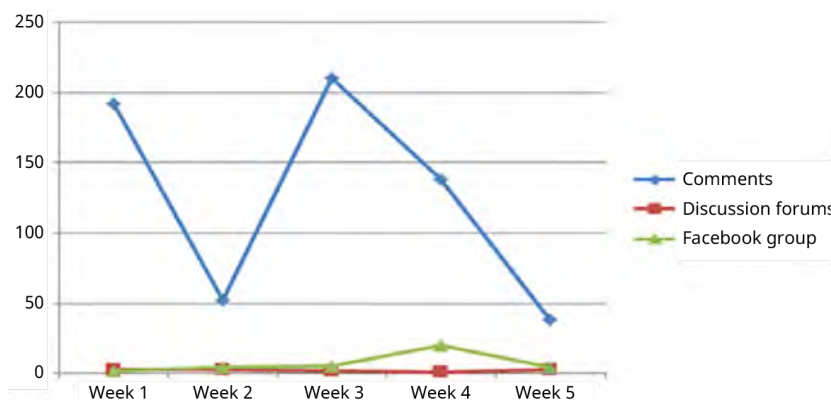
for five weeks) and 136 responses were received. Responses to the questionnaire items were analysed using SPSS and descriptive statistics were calculated. Data from the open-ended questions were coded deductively into reasons encouraging learners to interact with other learners and reasons preventing learners from interacting with other learners. The scripts that did not fit with the two above-mentioned categories were coded inductively and classified as emerging themes. The interview data were taken from a larger set of interview scripts asking learners about personalisation, interaction and success in the LMOOC. The interviews were mostly done over Skype and Zoom, with two learners asking to be interviewed in person. The interviews were conducted in Thai and the scripts were translated into English by one of the authors. The translated scripts were presented to an English lecturer at a university in Thailand for back translation. The interview transcripts were coded deductively according to the two aforementioned categories and scripts that did not fit with the two categories were coded inductively into themes. This thematic content analysis followed procedures for qualitative analysis proposed by Saldaña (2013). The analysis of both the interview scripts and the scripts from the open-ended questions were performed through Nvivo 12. To ensure the reliability of the coding process, the responses were coded by the first author and 50% of the responses were sent to an English lecturer at a university in Thailand for dual-coding. Cohen's Kappa analysis was performed using SPSS. The analysis yielded a value of .956, indicating acceptable inter-rater reliability. The interview scripts were also presented to all the interviewees, respectively, to ensure the accuracy of their answers.

Results

This section presents the analysis of the data on interaction in this LMOOC. The analysis is presented in four main parts: 1) The frequency and patterns of interaction in and out of the LMOOC, 2) The reasons encouraging super users to interact with other learners in the LMOOC, 3) The reasons preventing learners from interacting with other learners in the LMOOC and 4) The benefits of interacting with other learners on learners' language learning.

Frequency of interaction in the LMOOC. Learners were provided with a range of interaction opportunities in the LMOOC, including commenting on other learners' videos, participating in discussion forums and posting in a Facebook group. There were a total of 677 posts from the 270 learners over the five-week period, or an average of 2.51 posts per learner. The median number of posts was two and the mode was one. This means that the majority of the learners posted only once. When classified based on the communication channels, it was clear that commenting on the videos of other learners was the most common, accounting for 93% of all the messages ($n = 630$). Only a small number of messages were posted in the discussion forum and Facebook group at 1.8% ($n = 12$) and 5.2% ($n = 35$) respectively. In addition to the number of posts, it was also important to identify how these messages were distributed across the course.

Figure 1 depicts the number of messages in the three communication channels as well as how they are spread across the five-week period.



Note: X axis (the week in which messages were posted) / Y axis (the number of messages)

Figure 1. Frequency of posts in three interaction channels

It can be seen from the data that the majority of the learners' comments were posted in Week 1 and Week 3 of the course, while the number of posts in the Facebook group and the discussion forum were low throughout. When looking specifically at the types of learning activities that the learners interacted with, it was clear that over a third of the messages were posted in a learning activity where learners were encouraged to give feedback on their peers' videos in week 1 of the course ($n = 245$) followed by the activities focusing on the main part (body of the presentation) and slide presentation ($n = 80$ and 73) respectively. It was interesting to note here that despite having a similar format of learning activity in Week 5 (posting videos and giving feedback), the number of messages in that learning activity was rather low ($n = 38$). Table 1 illustrates the number of messages in different parts of the course.

Table 1. The number of messages in different learning activities.

Parts of the LMOOC	Number of messages	Percentage
Uploading your presentation (Week 1-2)	245*	36.26%
Introduction (Week 3-4)	65	9.66%
PEEP Model (Body) (Week 3-4)	80*	11.89%
Conclusion (Week 3-4)	65	9.66%
Slide presentation (Week 3-4)	73*	10.85%
Promoting your products (Week 3-4)	32	4.75%
Pitching your ideas (Week 3-4)	33	4.90%
Rehearsal (Week 5)	38	5.65%
Learning forum	9	1.33%
Facebook group	34	5.05%

Frequency and channels of communication learners used outside of the LMOOC. Learners were asked in the questionnaire to identify the communication channels they used to interact with other learners outside of the LMOOC as well as how often they used these. The multiple response analysis illustrated that instant messaging tools such as LINE and WhatsApp were the most common communication channels, as reported by 65 learners (47.8%). This was followed by F2F meetings and Facebook with 32 (23.5%) and 15 (11%) learners using these channels respectively. However, about a fifth of learners ($n = 30$) did not communicate with other learners outside the course at all. The result of the analysis is presented in Table 2 below:

Table 2. The communication channels used by learners

Communication channels	Number of responses (n = 136)	Percent of cases (n = 136)
Facebook	15	11%
Instant messaging applications (Line/WhatsApp and others)	65	47.8%
Face-to-face	32	23.5%
Phone call	0	0%
Skype	5	3.7%
Google Drive/Dropbox	8	5.9%
Email	6	4.4%
Did not communicate with others	30	22.1%

In terms of frequency, almost half ($n = 29$) of the learners who used instant messaging applications used them every day or every other day (45.61%), while almost 25% of them reported using them once a week. Nearly half of the learners ($n = 14$) had F2F meetings with their peers in the course every other day, while the rest of the learners met once a week or once in two weeks. The majority of learners who used Facebook reported using it once a week or once every two weeks ($n = 10$), while only a third of them used it every other day. Learners who used Skype, Google Drive and email used these tools at similar frequency, either once a week or once in two weeks. The data are depicted in Table 3 below.

Table 3. Frequency of communication channels usage

Communication channels	Frequency				
	Every day	Every other day	Once a week	Once in two weeks	Never
Facebook (15 responses)	-	5 (33.3%)	7 (46.7%)	3 (20%)	-
Instant Messaging Applications (Line/WhatsApp and others) (65 responses)	12 (18.46 %)	17 (26.15%)	25 (38.46%)	11 (16.92%)	-
Face-to-Face (32 responses)	-	14 (43.8%)	10 (31.2%)	8 (25%)	-
Phone Call (-)	-	-	-	-	-
Skype (5 responses)	-	-	2 (40%)	3 (60%)	-
Google Drive/Dropbox (8 responses)	-	-	3 (37.5%)	5 (62.5%)	-
Email (6 responses)	-	-	3 (50%)	3 (50%)	-

The analysis of the interview data also confirmed that the learners in this LMOOC used personal communication channels, especially the LINE application and Facebook to communicate with other learners. In addition, there were several learners who studied in this LMOOC with people from the same company/university. In the interviews, they mentioned that they communicated with their peers through F2F meetings. For example, Learner 15 who registered in the course with people from the same workplace stated:

Yes, I did talk to them both F2F and online through different social media. There were a few people in my company who registered for the course, so I talked to them about this. (Learner 15)

As can be seen from the data above, learners in this LMOOC made extensive use of instant messaging applications, especially LINE, in interacting with other learners in this LMOOC. It is important to note that F2F interaction also took place among learners who work in the same physical proximity.

What encourages learners to interact with other learners in the LMOOC?

Sixteen super users who posted significantly more than the average number of messages in this LMOOC were asked to identify the reasons behind their decisions to interact with other learners. The multiple response analysis illustrated that a sense of belonging to the group was the most important reason encouraging the learners to interact with others, cited by eight learners (50%). This is followed by their ability to communicate in English and the user-friendliness of the communication channel, reported by six learners (37.5%) and five learners (31.3%) respectively. However, timely feedback, online presence of other learners and group members and having sufficient time were not principal reasons

encouraging learners to interact with other learners in this LMOOC. The result of the analysis is depicted in Table 4 below:

Table 4. Reasons for interacting with other learners in LMOOC

Reasons	Number of responses (n = 16)	Percent of cases (n = 16)
I was able to communicate well in English	6	37.5%
I understood the content of the course	2	12.5%
I had enough time to interact with other learners	1	6.3%
I felt that I belonged to the group	8	50.0%
My goal of joining the course was to make connection with other people	3	18.8%
I liked to interact with other people online	4	25.0%
The communication tool was user-friendly	5	31.3%
Other learners were often online to talk to me	1	6.3%
My group members were often online	1	6.3%
The feedback from other learners was useful for my learning	3	18.8%
I got feedback from other learners in a timely fashion	0	0.0%
I enjoyed interacting with other learners	2	12.5%

Several super users mentioned that they chose to comment on the videos of learners who were from the same workplace/university. For example, when asked how she chose the videos to commented on, Learner 3, who posted 14 messages, stated:

I chose from the videos of the people that I know, you know people from the same university as me. (Learner 3)

In addition, having similar interests or professions was also reported as a reason encouraging learners to comment on other learners' videos, as Learners 32 and 33 mentioned:

Yes, I watched and commented on a lot of videos about architecture. I mainly watched videos on topics that are similar to my work. (Learner 32)

I chose from the topic of the video that was interesting for me. I commented because I thought I could exchange my idea with the owners of the videos. (Learner 33)

What prevents learners from interacting with other learners in the LMOOC? Learners who posted fewer than the average number of messages in this LMOOC (n = 111) were asked to identify their reasons preventing them from interacting with other learners inside the LMOOC. The multiple response analysis demonstrated that a preference for F2F interaction was the most important reason the learners chose to refrain from interacting with other learners in this LMOOC, reported by 39 learners (35.1%). This is followed by the lack of English proficiency and the lack of time, cited by 31 learners (27.9%)



and 29 learners (26.1%) respectively. However, the lack of online presence of their group members, the lack of enjoyment in interacting with other learners and the lack of useful feedback from other learners were not seen as major obstacles with only eight (7.2%), seven (6.3%) and five (4.5%) learners reporting these reasons respectively. The result of the analysis is shown in Table 5 below:

Table 5. Reasons for not interacting with other learners in LMOOC

Reasons	Number of responses (n = 111)	Percent of cases (n = 111)
I was not able to communicate well in English	31	27.9%
I did not understand the content of the course	22	19.8%
I did not have time to interact with other learners	29	26.1%
I did not feel that I belong to the group	10	9.0%
My learning goal did not involve interacting with other people	12	10.8%
I prefer to interact with people face-to-face	39	35.1%
The communication tool was not easy to use	20	18.0%
Other learners were not online to interact with me	17	15.3%
My group members were not available to interact with me when I was online.	8	7.2%
The feedback from other learners was not useful	5	4.5%
It took a long time for me to get feedback from other learners	18	16.2%
I did not enjoy interacting with other learners	7	6.3%

The qualitative data from the open-ended questions and the interviews lend support to the idea that learners preferred F2F interaction to online interaction. This was mentioned alongside the fact that they did not know anyone (lack of affinity), as Learners 113 and 117 mentioned:

Because I only got to see their posts and videos online and we never met offline, so it was strange for me to talk to anyone I have not met before (Learner 113).

I think it is because I did not know anyone, so it would be quite difficult for me to start a conversation with them. Also, it's an online course, so we didn't have the chance to meet F2F and we also learned at different times. It was just difficult. (Learner 117).

In addition, the issue of lack of time mentioned above was also echoed in the interviews. Learners 32 and 80 cited their busy schedule as their main reason for not interacting with other learners:

No, I did not. I was too busy, so I just worked on my own presentation. (Learner 32)

I was too busy, you know I am studying and working at the same time, but

I know that I should watch other learners' videos and give them feedback, but I just didn't have time. (Learner 80)

In what ways do learners think that having interaction with other learners facilitate learning in a language MOOC? Sixteen super users who posted significantly more than the average number of messages were asked to further identify whether interacting with other learners facilitated their learning in the LMOOC. The multiple response analysis demonstrated that interacting with other learners encouraged them to continue learning in the course, as identified by 12 learners (75%). Interaction with other learners was also perceived as beneficial for language improvement, both in terms of writing and presentation skills. This was reported by 7 (43.8%) and 6 (37.5%) learners respectively. However, none of the learners in this group felt that having interaction with other learners helped improve their confidence. The result of the analysis is illustrated in table 6 below:

Table 6. Perceived benefits of interacting with other learners in LMOOC for learning

Benefits for learning	Number of responses (n = 16)	Percent of cases (n = 16)
Help understand the content	6	37.5%
improve my writing skills	7	43.8%
improve my presentation skills	6	37.5%
Boost my confidence	0	0.0%
Continue learning in LMOOC	12	75.0%

The learners from both groups (those who posted more or fewer than the average number of messages) were asked both in the open-ended part of the questionnaire and in the interviews if interacting with other learners was beneficial for their learning. The analysis of the qualitative data yielded two main themes of benefit: peer learning and language practice. Some learners, nonetheless, did not find interaction with other learners facilitative for their learning.

Peer learning

One clear aspect of having interaction with other learners constantly mentioned by the learners in this study was the opportunity to learn from their peers. Many learners stated that they could learn from interacting with other learners both inside the LMOOC through comments and posts and outside of the LMOOC through group work. For example, learner 86, who worked in a group with other members, mentioned:

They could help me when I did not understand the instructions, so they were helpful. And for working as a group, exchanging ideas with them made me understand the course more. (Learner 86)

Yes, with my group members, we could share ideas and help each other.

Also, interacting with other learners' videos helped me understand what to do and how to learn in the course. (Learner 22)

However, some learners felt that they learned something from having interaction with other learners in the course, but not from working as a group, as Learner 24 stated:

Yes, if this includes watching and commenting on videos, we could learn from exchanging ideas, but not really from working in a group. (Learner 24)

It was also repeated by several learners that other learners helped clarify certain points that they did not fully understand and peer feedback was useful for them in improving their presentations.

Language practice

Another important theme that emerged from the interviews and open-ended responses was that interacting with peers allowed learners in this LMOOC to practice their language. For instance, Learners 36, 74 and 128 reported that having interaction with other learners provided them an opportunity to practice their English language and improve their communication skills:

Yes, I learned more English and understood English better (Learner 36)

Yes, I gained more communication skills working in a group (Learner 74)

Yes, talking to them gave me the chance to practice my language and enhance my confidence (Learner 128)

Clearly, interacting with other learners in and out of the LMOOC was seen as facilitating opportunities for their English language learning.

Not beneficial for learning

A group of learners, however, did not think that interacting with peers in the LMOOC was beneficial for their learning. For example, Learners 25 and 33, though having interacted in the course, felt that other factors such as watching others' videos and the process of making presentations were more facilitative for their learning:

Not really, I learned more from watching their videos, but not from interacting with other learners. (Learner 25)

Not really. I believed I learned much more from the process of making the videos than interacting with other people. (Learner 33)

Moreover, Learners 113 and 136 placed more importance on the individual/independent learning aspect of the course than the interaction with peers. When asked if interacting with other learners was beneficial for them, they mentioned:

Not really, because it depends on each learner to choose the way they want to learn, so I think independent learning is more important in an online course like this. (Learner 113)

No, because the type of presentation I chose was different from other people and the content was different. I was self-motivated to register for the course, so I did not need motivation from other learners. (Learner 136)

To summarise, learners in this LMOOC thought that having interaction with their peers encouraged them to continue learning in the course and helped improve their English language skills. They also credited interaction for creating opportunities for peer learning and language practice. However, some learners did not think that learner–learner interaction was facilitative or important for their learning as they learned more from other aspects of the LMOOC.

Conclusion

This study has attempted to investigate how learners interacted with other learners in and outside of an LMOOC environment. It also examined reasons that encouraged super users to interact with other learners as well as reasons that prevented less active learners from interacting with others. It is clear from the results that the level of learner–learner interaction was quite low, with most of the learners posting only once. This low level of L-L interaction was similar to several previous studies on LMOOCs that reported a low level of L-L interaction despite having high levels of learner–content and learner–instructor interaction (Martin-Monje et al., 2013; Martin-Monje et al., 2018; Rubio, 2015). This low level of interaction in the LMOOC can be partly explained by the fact that the learners reported using other communication channels, especially personal instant messaging tools, to communicate with others. This means that a great deal of L-L interaction might have taken place outside of the LMOOC. It was also interesting to see that many learners reported having F2F meetings with other learners who came from the same physical location (companies and universities). This can be attributed to the course design of this LMOOC that allowed learners to work on their presentations in groups with people from the same company/university. These results can encourage future LMOOC designers to not only incorporate more personal communication channels into the course, but also to provide options for learners to enroll in LMOOCs as a group and with people from the same community.

In terms of reasons that encourage super users to interact with other learners, it was clear that the sense of belonging to a group and the confidence in their ability to use English were important factors that encouraged them to interact more. In addition to the option of enrolling as a group, this could also be due to the fact that many learners who enrolled shared a similar profession (predominantly architects and engineers), thus creating a sense of community within the course for some of the learners. It was not surprising that

only learners who were confident in their English ability opted to interact in the course (as they were required to post messages in English only).

As for reasons preventing learners from interacting with other learners, a preference for F2F communication, lack of English proficiency and lack of time were cited as three main important factors. From the analysis it can be seen that although the lack of F2F interaction may not prevent people from learning online, it certainly is seen as a barrier to interacting with other learners in a fully online learning environment like an LMOOC. In addition, the fact that 29 learners cited lack of English proficiency as the reason preventing them from interacting with other learners is, perhaps, not surprising given the diverse demography of the learners. This result, in particular, was in line with previous studies in LMOOCs that highlighted the challenge in using the target language to communicate in LMOOCs (Martin-Monje et al., 2018; Sokolik, 2014).

Regarding the perceived benefits of L-L interaction on learning in this LMOOC, it can be seen clearly that among the super users interacting with other learners encouraged them to continue learning in the course. Despite being in line with research on general MOOCs (Goldwasser et al., 2016), this result was quite different from previous studies on LMOOCs that did not find a relationship between L-L interaction and course success nor completion (Martin-Monje et al., 2018; Rubio, 2015). Furthermore, learners in this LMOOC viewed interaction with other learners as opportunities to learn from their peers. One logical explanation would be that, in an open learning environment like an LMOOC, peer learning can provide a natural scaffolding process as learners navigate their learning. However, it was interesting to note some learners did not find interacting with other learners beneficial for their learning. This is, perhaps, because learners registered in this LMOOC with different learning intentions and they may benefit from other aspects of the LMOOC rather than the interaction with other learners. Therefore, although providing opportunities for interaction is crucial for learning in LMOOC environments, future LMOOC designers and teachers may also want to take into account the individual differences of learners and allow them to benefit from the LMOOC in a way that is most relevant to them.

There are some limitations in this study that should be noted. First, this current study is primarily an observational study from only one LMOOC; therefore, the result might have been different if a different LMOOC had been investigated. Furthermore, as this LMOOC is very localised, the findings may not be applicable to different demographies. Future studies may investigate reasons that encourage learners to, or prevent them from interacting with other learners from several LMOOCs to paint a clearer picture of factors affecting learner-learner interaction. Essentially, this study offers the LMOOC community much needed understanding of how and why learners interact with other learners in and outside of an LMOOC environment. Therefore, LMOOC designers and teachers may wish to take the findings from this study into account if they plan to design an LMOOC that promotes interaction among learners.

These results from this study offer several implications for future LMOOC design and implementation. First, LMOOC designers should consider



incorporating more activities that encourage learners to get to know one another at the start of the course to create a sense of community that may later facilitate interaction. Second, more F2F interaction opportunities should be provided to learners. Logistically speaking, using video conferencing-based activities can be one way to give learners a similar experience to actual F2F meetings. Finally, more language support can be provided to learners who do not feel confident enough in their ability to interact in the target language.

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Appendix A

Interaction questionnaire (Learners who posted more than the average number of messages)



Part 1: Interaction purposes in the LMOOC

1. What were your main purposes of interacting online and offline with other learners in relation to your learning in the LMOOC? Please tick the appropriate box(es) (You can tick more than one box).

	Please tick
Test to see if/how the system works	
Ask for technical support	
Provide technical support	
Get to know more about classmates / co-workers	
Acknowledge other learners' help	
Comment on other learners' posts	
Ask questions about the content of the course	
Respond to a question/comment/ feedback	
Share additional learning resource(s)	
Interact with learners from other companies/universities	
Get feedback from other learners	
Practice writing / speaking in English	

Other purpose(s) (please specify) _____

Part 2: Interaction-related reasons in the LMOOC

1. Hi there, when looking at how people interact in SPOLC, we found that you have posted a lot of messages (> average) * in the discussion from, Facebook Group, comment boxes of videos from other learners compared to the average of (2.51) messages from other learners. We are interested in finding out the reasons for your choices. Please tick the reasons that encouraged you to interact with other learners.

*Note: the number of messages specified in the questionnaire is different for every learner.

	Please tick
I was able to communicate well in English	
I understood the content of the course	
I had enough time to interact with other learners	
I felt that I belonged to the group	
My goal of joining the course was to make connection with other people	
I liked to interact with other people online	
The communication tool was user-friendly	
Other learners were often online to talk to me	
My group members were often online	
The feedback from other learners was useful for my learning	
I got feedback from other learners in a timely fashion	
I enjoyed interacting with other learners	

Other reason(s) (please specify)

As you have posted a lot of messages, how did interacting with other people in the course contribute to your learning? Please tick or write in the space provided.

	Please tick
It helped me understand the content of SPOLC more	
It helped to improve my writing skills	
It helped to improve my presentation skills	
It helped to explain things I had not understood	
It helped to boost my confidence	
It encouraged me to continue learning in SPOLC	

Other reason(s) (please specify)

Part 3: Open-ended questions

1. Did you interact (or work) with other participants outside of the LMOOC? If so, how did you communicate? (LINE, Whatsapp, Skype, face-to-face).
-

2. Did interacting (or working) with other participants help you learn in the course? If so, how? If not, why?
-

3. Did interacting with other participants encourage you to continue learning in the course? If so, how? If not, why?

Part 4: Interaction tools, frequency and modes of communication in SPOLC

1. Which communication channels do you use to interact with other learners? Please tick the ones that you used.

	Please tick
Discussion forum	
Social networking (e.g. Facebook)	
Synchronous chats (e.g. LINE, WeChat, Kakao, Whatsapp)	
Face-to-face meeting	
Phone call	
Skype	
Google Drive / Dropbox	
Others	

If you choose Others (please specify) _____

2. Please indicate how often you used these communication channels to interact with other learners

	Daily	Every other day	Once a week	Once in two weeks	Never
Discussion forum					
Social networking (e.g. Facebook)					
Synchronous chats (e.g. LINE, WeChat, Kakao, Whatsapp)					
Face-to-face meeting					
Phone call					
Skype					
Google Drive / Dropbox					
Others					

If you choose Others (please specify) _____

Appendix B

Interaction questionnaire (Learners who posted less than the average number of messages)



Part 1: Interaction purposes in the LMOOC

1. What were your main purposes of interacting online and offline with other learners in relation to your learning in the LMOOC? Please tick the appropriate box(es) (You can tick more than one box).

	Please tick
Test to see if/how the system works	
Ask for technical support	
Provide technical support	
Get to know more about classmates / co-workers	
Acknowledge other learners' help	
Comment on other learners' posts	
Ask questions about the content of the course	
Respond to a question/comment/ feedback	
Share additional learning resource(s)	
Interact with learners from other companies/universities	
Get feedback from other learners	
Practice writing / speaking in English	

Other purpose(s) (please specify) _____

Part 2: Interaction-related reasons in the LMOOC

1. Hi there, when looking at how people interacted in the LMOOC, we found that you posted (< average) * in the discussion from, Facebook Group, comment boxes of videos from other learners, compared to the average of (2.51) messages from other learners. We are interested in finding out the reasons for your choices. Please tick the reasons that prevented you from interacting with other learners.

*Note: the number of messages specified in the questionnaire is different for every learner.

	Please tick
I was not able to communicate well in English	
I did not understand the content of the course	
I did not have time to interact with other learners	
I did not feel that I belong to the group	
My learning goal did not involve interacting with other people	
I preferred to interact with people face-to-face	
The communication tool was not easy to use	
Other learners were not online to interact with me	
My group members were not available to interact with me when I am online.	
The feedback from other learners was not useful	
It took a long time for me to get feedback from other learners	
I did not enjoy interacting with other learners	

Other reason(s) (please specify)

Part 3: Open-ended questions

1. Did you interact (or work) with other participants outside of the LMOOC? If so, how did you communicate? (LINE, Whatsapp, Skype, face-to-face).

2. Did interacting (or working) with other participants help you learn in the course? If so, how? If not, why?

3. Did interacting with other participants encourage you to continue learning in the course? If so, how? If not, why?

Part 4: Interaction tools, frequency and modes of communication in SPOLC

1. Which communication channels do you use to interact with other learners? Please tick the ones that you used.

	Please tick
Discussion forum	
Social networking (e.g. Facebook)	
Synchronous chats (e.g. LINE, WeChat, Kakao, Whatsapp)	
Face-to-face meeting	
Phone call	
Skype	
Google Drive / Dropbox	
Did not communicate with others	
Others	

If you choose Others (please specify) _____

2. Please indicate how often you used these communication channels to interact with other learners

	Daily	Every other day	Once a week	Once in two weeks	Never
Discussion forum					
Social networking (e.g. Facebook)					
Synchronous chats (e.g. LINE, WeChat, Kakao, Whatsapp)					
Face-to-face meeting					
Phone call					
Skype					
Google Drive / Dropbox					
Others					

If you choose Others (please specify) _____