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Understanding affordances and limitations in a language MOOC from an activity theory perspective

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Abstract

In the last decade, Language MOOCs have attracted a lot of interest for their potential to enhance language learning. However, how learners engage with MOOC environments and realise their benefits, remains unclear. The current study adopts activity theory (Engeström in J Educ Work 14:133–156, 2001) as a lens to comprehend the affordances and limitations in an LMOOC dealing with English presentation skills called *Presentation@work*. Data were collected via semi-structured interviews with 22 participants. The data were then analysed using thematic content analysis and triangulated with the participants' profiles using learning analytical procedures. The results showed that peer learning, personalisation, and social interaction opportunities were perceived as affordances by the participants, while lack of proficiency, lack of affinity, course content, and lack of teacher presence were seen as limitations. Relationships between the perceived affordances and limitations and different types of participants were also found. The findings demonstrate that the LMOOC activity system is dynamic and complex and that the learners play a central role in interacting with different aspects of the system. We conclude with a number of suggestions and implications for future LMOOC design, implementation and research.

Keywords: Language MOOCs, Affordances, Activity theory, Personalisation, Social learning

Introduction

Language massive open online courses (language MOOCs or LMOOCs) are a relatively recent educational innovation that provides opportunities for enhancing language learning and teaching globally (Colpaert, 2015). LMOOCs have the potential to remove barriers to education and provide learning opportunities for language learners regardless of their geographical location. Several researchers, however, have raised concerns over the use of the MOOC educational model for language learning. These concerns include low-completion rates (Jordan, 2015), lack of learning support (Gregori et al., 2018), lack of socialisation (Schulze & Scholz, 2018), the limited range of pedagogical approaches used (Godwin-Jones, 2014) and their suitability for language learning (Barcena & Martin-Monje, 2014). Also, the open nature of LMOOCs requires language learners to be

self-motivated and be autonomous enough to navigate and learn from the large amount of learning resources offered by LMOOCs (Godwin-Jones, 2014).

Despite these concerns, many institutions and language teachers have started to embrace and implement this educational model for language learning and teaching, resulting in an increasing number of LMOOCs offered worldwide (Sallam et al., 2020). To improve LMOOC design and implementation, it is vital for all stakeholders (designers, language teachers and administrators) to be aware of their affordances and limitations. Economides and Perifanou (2018) proposed the MOOC affordances model (MOOC-AM) as a common language and framework to classify and compare different types of MOOCs in general (not specifically for LMOOCs). These affordances include (1) massiveness, (2) openness, (3) interaction, communication, cooperation & collaboration, (4) personalization & adaptation, (5) autonomy, choice & control, (6) support, scaffolding, help, facilitation, assistance, feedback & recommendations, (7) mobility & ubiquity, and (8) accreditation, certification & assessment. Although this model provides a useful lens to evaluate LMOOCs, we argue that affordances should be understood from learners' perspectives rather than only or primarily be identifiable in relation to the tool itself. As Van Lier (2004) suggests, affordance is "action in potential and it emerges as we interact with the physical and social world" (p. 92).

LMOOCs form complex learning environments involving individual and collaborative modes of learning, seen and unseen learning activities, varying degrees of participation, learners with vastly different learning preferences, goals and objectives. Therefore, it is important that we seek to understand these aspects of learning from a *holistic* perspective and in relation to the context in which they occur rather than viewing them as distinct from one another. The current study adopts activity theory (Engeström, 1987, 1999, 2001) as a theoretical framework for analysis. The principal tenet of activity theory centres around the notion that human behaviours are situated within a social (learning) context in which actions are influenced by various aspects in the learning ecology (Engeström, 1987; Issroff & Scanlon, 2002). Due to its dynamic nature, activity theory provides us with a powerful lens to describe and discern learning engagement in LMOOCs as well as how affordances and limitations are perceived by the LMOOC participants. The current study explores how learners perceive affordances and limitations of an LMOOC called *Presentation@work,* which deals primarily with essential English language skills for delivering presentations and incorporates a recommendation system and personalizable and social aspects into its design. This study is, therefore, guided by one research question:

> *What are the affordances and limitations of a Language MOOC as perceived by the learners?*

Literature review

Language MOOCs: current outlook

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). Early MOOCs for language learning were mostly designed as stand-alone courses that often involved the provision of short videos, followed by closed tasks and

comprehension quizzes and as such opportunities for L2 interaction among learners were quite limited. More recent LMOOCs, however, have been viewed as one of several tools in language learners' ecologies and as a bridge between formal education and informal learning (Sallam et al., 2020). They have incorporated more opportunities for interaction and greater flexibility. LMOOCs offer significant potential for language learning. One clear opportunity is their open nature. They offer learners access to knowledge from anywhere they are. In addition, LMOOCs offer opportunities for language learners to have access to the massive community of learners and more exposure to the target language, something that is not always available in many learning contexts. As for teachers and researchers, LMOOCs generate a tremendous amount of educational data that can be analysed to better understand learning patterns and behaviours of learners so that LMOOCs designers and teachers can be better informed about LMOOC design and implementation. Such an adaptive and personalised aspect is important for constructing a MOOC for language learning purposes since the demography of language learners is often very diverse especially in terms of their proficiency (Stockwell, 2007). More practically, the available LMOOCs can be used as an integral part of an existing language course to serve a wide range of pedagogical functions such as an additional resource for face-to-face class, a remedial tool and support for independent learning (Jitpaisarnwattana et al., 2019).

Despite these benefits, several challenges have surfaced from research studies and practical experiences. The MOOC model itself has often been criticised as "problematic" for language learning (Barcena & Martin-Monje, 2014; Sokolik, 2014). This is particularly the case with LMOOCs that follow the cognitive-behaviourist pedagogy and focus on knowledge acquisition, thus being more suited for content-based subjects than skills development. Moreover, the demography of LMOOC participants is normally quite diverse due to the low barriers for enrolment especially in terms of their level of proficiency and learning goals (Agonács & Matos, 2019). Such diversity in proficiency levels, learning preferences and learning goals is not easy to cater to and often leads to high drop-out rate and unsatisfactory learning experiences. A potentially more important issue is the lack of interaction among LMOOC participants. Meaningful L2 Interaction with other learners is an essential part of language learning. LMOOCs, however, still have not been successful in encouraging their learners to capitalise upon the available opportunities (Martin-Monje et al., 2018). The massive nature of LMOOC also poses a real challenge to providing feedback and support to the learners especially in skills that require more comprehensive feedback and scaffolded support such as speaking and writing. This was identified as one of the primary reasons for high drop-out rates in many LMOOCs.

Affordances and language MOOCs

With the advent of new online language learning technologies and environments, they have been investigated for their effectiveness in language learning. As Lantolf and Thorne (2006) and Van Lier (2000, 2004) proposed, affordances (these are also referred to as facilitating factors in the literature on activity theory and online learning) (Cha & Anh, 2014; Choi & Kang, 2010; Yamagata-Lynch, 2003) can serve as a useful lens to understand the implementation of these new technologies. The notion of affordance

was originally used to describe the possibilities for action that an organism perceives in its immediate environment (Gibson, 1979, p. 127). Our understanding of affordance today, however, has become more complex than this original definition. Van Lier (2000) defines affordance as "the environment that is relevant to an active, perceiving organism in that environment. An affordance affords further action. What becomes an affordance depends on what on organism does, what it wants and what is useful for it" (p. 252). In this view, affordance is situated in the relationship between users and environment rather than being about the environment itself. In the educational context, Van Lier (2000, 2004) adds to our understanding that affordance is a relationship between learners and the environment that supports a potential or awareness of actions towards their learning goals. In other words, the educational affordance of an online learning environment is available and perceived by learners, allowing them to take further actions and accomplish their goals. However, affordances do not necessarily mean facilitation, but can also entail restrictions. Limitations or negative affordances (these are also referred to as conflicting factors in the literature on activity theory and online learning) (Cha & Anh, 2014; Choi & Kang, 2010; Yamagata-Lynch, 2003) refer to unpredictable outcomes or opposite consequences of the perceived affordances (Graver, 1991). Also, as Van Lier (2000, 2004) emphasises, in an online language learning environment, affordances encompass the capacities of an environment in facilitating or limiting different kinds of language learning.

In LMOOC contexts, there are several inherent affordances that learners can capitalise upon (see MOOC-AM model Economides & Perifanou, 2018 above). Such a model places primary emphasis on the affordances in relation to the MOOC environment itself. We are, however, in line with Van Lier's (2000, 2004) notion that affordance is the relationship between learners and environment. This study focuses specifically on the affordances and limitations that learners experienced in LMOOC environment. In addition, an LMOOC is a multi-dimensional learning ecology in which several aspects are interrelated. This study, therefore, adopts activity theory (Engeström, 1987, 1999, 2001) as a lens to comprehend the affordances and limitations and their relationship with other elements of LMOOC environment.

Activity theory and the language MOOC environment

Activity theory is defined as a tool for understanding the relationships among subjects, activities and activity systems (Engeström, 2001). The theory is based on Vygotsky's concept of mediation and emphasises the roles of material and psychological tools (signs, symbols and language) in connecting human beings with external objects and internal processes (Vygotsky, 1978). The mediation concept breaks activity down into three analytical components: *subject, tool and object*, all of which form a unit of analysis. Leontiev (1978) extends the concept and focuses on the motive, the goal and conditions of an activity being performed. Engeström (1987) expands the theory further as a way to understand social environments. He includes the construct of *community* to Vygotsky's original concept to represent the structure of a collective activity system by adding three more mediators: *community, rules* and *division of labour.* Engeström's activity theory is shown in the triangle below:

As shown in Fig. 1, *subject* is the person being studied, while *object* is the intended activity. The actions of the subject towards objects are mediated by four mediators including *mediating artefacts, rules, community and division of labour*, all of which are interrelated. The mediating artefacts comprise tools and signs. While the former are externally oriented at the object of the activity (sometimes referred to as technical tools), the latter are more internally oriented at the subject of the activity (sometimes referred to as psychological tools). Rules are broad and flexible conventions of participating and interacting within the activity system. These rules can be stated in a formal and explicit way or implied in an informal and implicit manner (Engeström, 1987). Community refers to the group of users within the activity system who normally share similar objectives. Finally, division of labour encompasses different roles and responsibilities of participants within the system. One user can take multiple roles in a particular system. Importantly, research guided by activity theory should consider interaction between these mediators holistically and view such activities as a collaborative knowledge construction process rather than perceiving each aspect separately.

Jitpaisarnwattana (2022) analysed the structure of an LMOOC and proposed how an LMOOC learning ecology can be viewed from an activity theory perspective. The subjects are learners who enrol in the course, while the object is learning of a particular topic in a given MOOC. The object can vary from one MOOC to another depending on the course objectives and its pedagogical approaches. Such activities in an LMOOC can be mediated by artefacts, which can be tools such as MOOC design and signs or cognitive resources including the target language being taught and learners' L1. Though LMOOC learners are from different locations and backgrounds, they can communicate with one another and with the course instructor through the discussion forum or their personal social networking channels. Additionally, participation in LMOOC is governed by a set of explicit and implicit rules such as expected time commitment, quiz completion, and

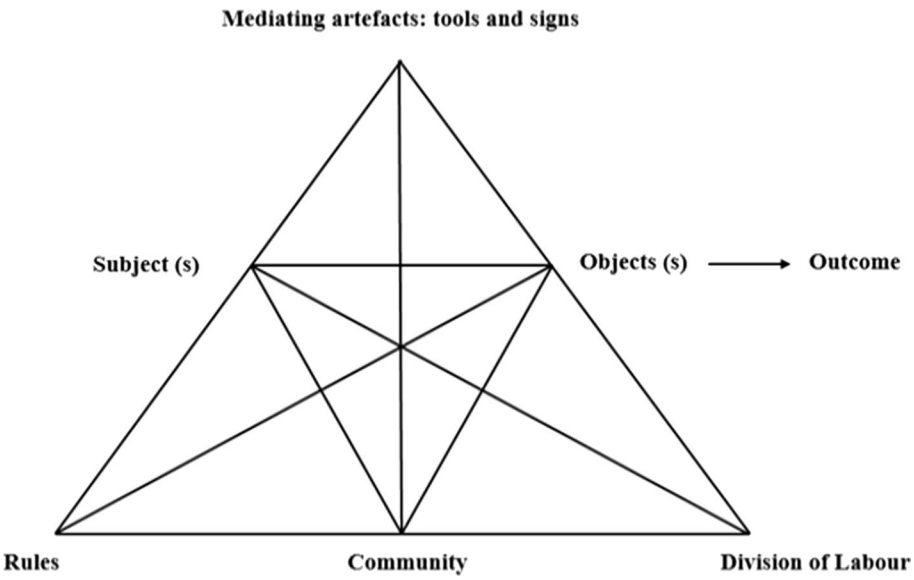

Fig. 1 The activity theory triangle

providing peer feedback. These rules, however, may be different according to the nature of the content of a given LMOOC. Finally, though the majority of learners take the roles of individual learners, some LMOOCs may encourage or even require learners to take multiple roles in their learning, such as group members, feedback providers and learning managers of their own learning. The LMOOC ecology is represented in a triangle below (Fig. 2).

Adopting activity theory as an analytical framework provides a powerful lens to capture and describe the complexity of learning in LMOOC contexts. Also, it allows us to go beyond just looking at what happens in the LMOOC environment such as participation and assignment submission (micro-view) and include what occurs outside of the LMOOC setting as learners cope with other personal, professional and social commitments (macro-view). Such a macro-view could potentially augment our understanding of how language learners participate in LMOOCs in many aspects including unseen activities and interaction as well as how they fit informal learning such as an LMOOC into their lives. Essentially, activity theory can potentially augment our understanding of language learning in LMOOCs especially with regards to the affordances and limitations learners perceive.

Methodology

The LMOOC

The LMOOC, called *Presentation@work,* was specifically designed for this study. It was delivered through *Moodle* with additional plug-ins and a recommendation system. The main objective of the course was to help EFL learners master essential English language skills for delivering presentations both in educational and professional contexts. The recommended language level of proficiency was intermediate and above (Equivalent to a B1 level based on the Common European Framework of Reference for Languages). Although there was a recommended level of English, there was no restriction

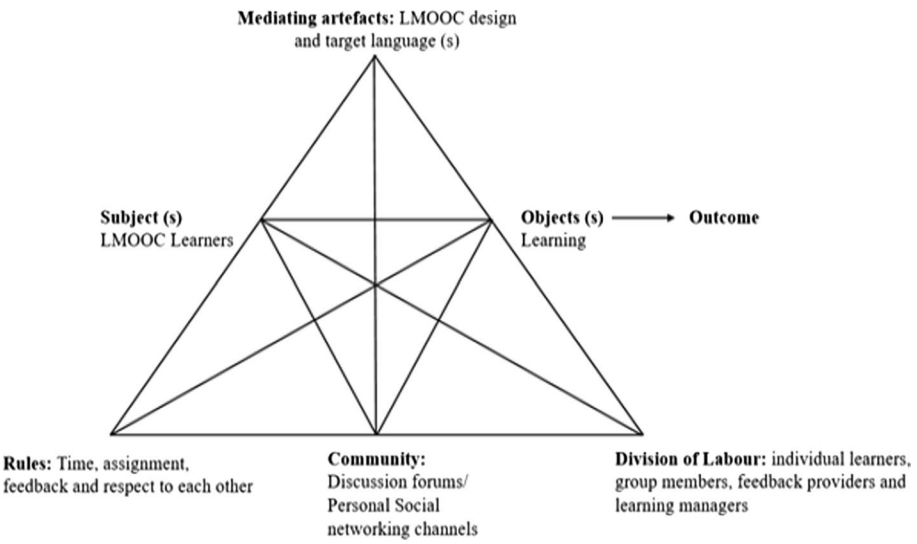

Fig. 2 LMOOC ecology based on activity theory triangle (Author, forthcoming)

as to who could register in this LMOOC. Two theoretical foundations formed the basis of its design: personalisation and social learning. For personalisation, this LMOOC attempts to combine personalised learning with personal learning (Downes, 2012, 2016). In other words, participants were both provided with learning materials suggested to them based on their learning profiles and were given freedom to make decisions on their learning journey by themselves. For social learning, the course allowed the participants to enrol individually, in a group or form a group after enrolment. Several exercises also encouraged the use of peer feedback and peer assessment using rubrics presented to the participants.

The learning process in this LMOOC was developed based on a framework for operationalisation and implementation of self-directed learning proposed by Reinders (2010). It includes seven stages in the self-directed learning process: identifying needs, setting goals, planning learning, selecting resources, selecting learning strategies, practice, monitoring progress, and assessment and revision. These stages are visualised in accordance with the learning architecture of this LMOOC in Table 1 below.

After registration, the participants familiarised themselves with the platform, its structure and features. This LMOOC incorporated a pronunciation program called "pronunciation scaffolder", in which learners can submit their English texts and receive modelled pronunciation and script annotation in terms of individual sounds (/l//r//th/), word

Table 1 Learning architecture of the LMOOC based on (Reinders, 2010)

Learning stages in the framework	Learning stages in LMOOC	Learning activities
	Registration	Create profiles
	Stage 0: general	Instruction on how to learn in the course and how to use features and tools in the platform Introduction to pronunciation scaffolder
Identifying needs + setting goals	Stage 1: identify the type of presentation	Identify the type of presentation learners want to do
Identifying needs	Stage 2: self-evaluation and Identifying needs	Self-evaluation (language, engagement and visual aids) Upload videos and get feedback from peers Reflect on past experience with the topic and identify what needs improvements
Setting goals + planning learning + selecting resources	Stage 3: creating learning plan	Set their learning goals and create their learning plan Discuss plan with their peers (for group) Find additional language learning resources outside of LMOOC
Selecting learning strategies and practice	Stage 4: language learning activities	Learn and practice English with a wide range of language learning activities Work on presentation Get feedback from their peers
Monitoring progress and assessment and revision	Stage 5: rehearsal	Upload final presentation for feedback for them to improve upon
Monitoring progress and assessment and revision	Stage 6: final presentation	Upload improved presentation Uploaded videos are rated by other learners

stress, sentence stress, and intonation (https://john6938.github.io/PronunciationScaffolder/). The learners were introduced to the program after registration and were encouraged to use the program when they later participated in language learning activities and prepared for their presentations. In learning stage 1, they chose the type of presentation that would be most useful for them. Next, they evaluated themselves on essential aspects of delivering presentations including English language use for delivery, engagement, the use of visual aids, and clarity. The participants were required to upload their first videos (5–7 min long) to get feedback from other learners, after which a personalised learning pathway (PLP) was generated for them. The participants were provided with rubrics to give feedback based on three criteria: English language use for delivery, engagement, visual aids. The PLP provided each participant with a specific learning pathway based on their profiles and perceived ability (based on their profiles and self-evaluation). In stage 3, learners created an Individual Learning Plan (ILP), which included deciding on their specific goals for the project, allocating a certain amount of time every week, and choosing whether to work alone or with others. While the system-generated PLP identified the most suitable language learning activities and sequence for completing these within the LMOOC, the ILP was learners' chosen programme of study (or to put it metaphorically, the PLP was a recommended itinerary and the ILP the travel plan learners chose to follow, including how many stops to make and what to do in each place). In stage 4, the participants were given complete freedom to choose any language learning activities that they wanted to engage in. These learning activities include English phrases and expressions that can be used in different parts of the presentation (Introduction, Main body and Conclusion), how to describe trends and figures in English, and how to effectively use phrases to create presentation slides in English. They could either opt to follow the PLP or follow their ILP or neither. In stage 5, they uploaded their presentation to get feedback from other participants. The learners could then use this feedback to improve their presentations before resubmitting them in stage 6 when all the presentations were rated and ranked as part of a competition, in which the participants submitted their work to compete for the best presentation.

Reconceptualising the activity of perceiving affordances and limitations in a language MOOC environment

Using a holistic approach, this study of affordances and limitations of LMOOC environment centres on the notion that learners' perceptions is located in the relationship between the different elements of the activity system. This way, the unit of activity is dynamic and shaped by various components of the LMOOC. Learning activities in *Presentation@work* are illustrated in the activity framework as follows (Fig. 3).

LMOOC participants are viewed as *subjects* of the activity system, in which other interrelated components contribute to understanding of their learning. In a similar vein as Anderson (2003), this study considers the participants' interpretation and reflection on the LMOOC in terms of its affordances and limitations. In working towards achieving the *object* of the course, delivering a good presentation, the participants are mediated by several *artefacts* including the design of the LMOOC, the personalised learning pathway (PLP), the individual learning plan (ILP) and content (English phrases, sentences, transitions, tone, gesture) necessary for delivering an effective presentation. The

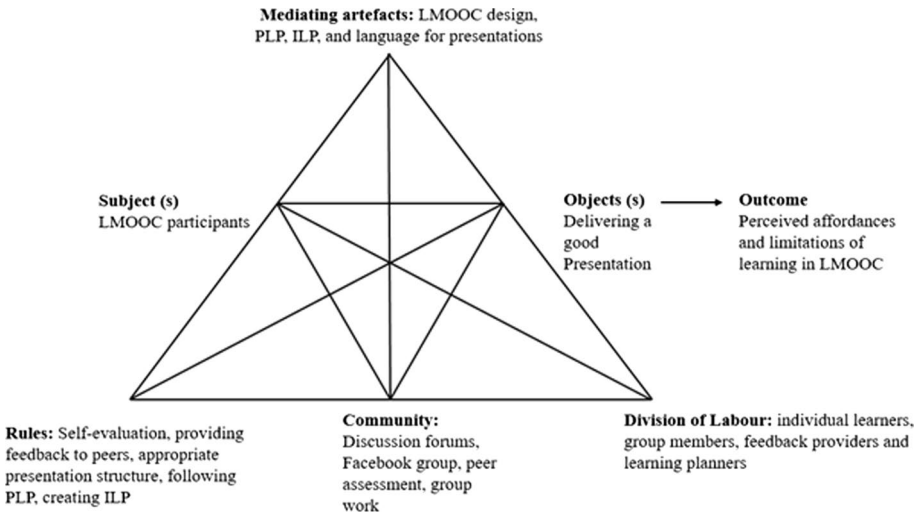

Fig. 3 Triangle illustrating the activity system in *Presentation@work*

participants are given freedom to control their own learning and choose the mediators that are most relevant to their learning styles and goals. However, the participants are not in isolation as they are provided with opportunities to interact with other participants in LMOOC *community* in various ways such as participating in the discussion forum and a Facebook group, giving feedback in peer assessment activities and working in groups with other participants who share the same goals. Although the design of this LMOOC offers great flexibility in the degree of participation, it is still governed by a few specific learning rules to control the quality and feasibility of course delivery. These include explicit rules such as completing the self-evaluation, providing feedback to other participants' presentations using the provided rubrics and adopting an appropriate presentation structure, as well as more implicit and optional rules such as following the PLP, creating an ILP and respecting others. Finally, this LMOOC is designed to allow the participants to take multiple roles both for their individual learning (individual learners and learning planners) and for communal and social purposes (feedback providers and group members). In essence, the perceived affordances and limitations are the outcome of the complex relationship between different aspects of the LMOOC that manifested and are actualised differently by different participants.

Participants

There were 270 participants who started the course and finished the self-evaluation questionnaire. Of these 270 participants, 137 engaged in the course to the point where their learning behaviours can be analysed meaningfully. At the end of the course, all 137 participants were invited via email to conduct a semi-structured interview with the first author. Twenty-two participants agreed to take part in this semi-structured interview. It is important to note here that participation in the interviews was completely voluntary. While some of them were university students (N = 7), the majority of the participants (N = 15) were working professionals from different occupations including architects, nurses, teachers, researchers and statisticians. All of the participants were Thai. Their

ages range from 18 to 46 years old. As for educational background, 7 of the participants were university students, the rest of the participants either hold a bachelor's degree (N = 5) or a master's degree (N = 10). In terms of gender, 11 participants were males and 11 were females. These participants serve as a good representation of different types of learning behaviours manifested in the course. Broadly speaking, there were two main groups of participants: those who completed the course (N = 16) and those who dropped out (N = 6). While all of the participants who dropped out of the course studied in the course individually, those who completed the course displayed a wide range of learning behaviours including:

1. Working in group, following recommended PLP and interacting with others (N = 3)
2. Working individually, following recommended PLP and interacting with others (N = 2)
3. Working individually, following recommended PLP but not interacting with others (N = 1)
4. Working in group, using their own ILP and interacting with others (N = 6)
5. Working individually, using their own ILP and interacting with others (N = 2)
6. Working individually, using their own ILP but not interacting with others (N = 2).

Data collection

The research process was informed by the way the authors view learning in LMOOCs as taking place in a complex system, which needs to be understood holistically. We adopted activity theory (Engeström, 2001) to inform both the data collection and analysis processes. Firstly, given that affordances are highly contextual and personal, a wide configuration of experiences is possible. In order to ensure we captured this full range, we analysed the participants' learning profiles logged through the analytics system of the course to identify all possible learning behaviours and invited learners who, together, represented the full range of learning behaviours to the interviews. Next, we chose to use a qualitative approach, relying on interviews. This enabled us to elicit participants' voices and pursue depth over breadth in our understanding of their learning experiences. We felt this was particularly important given the highly personal nature of learning in a relatively unstructured (compared to a traditional formal classroom environment) context, such as our course. We chose a semi-structured format to ensure our questions would cover all possible elements in the activity framework of the MOOC (Dörnyei, 2007; Saldaňa, 2013) (e.g. by including both questions about the learning community and the mediating tools in the environment to explore relations between them), while allowing participants plenty of space to elaborate or raise other issues that affected their choices and learning experiences. The guided interview questions were informed by the elements of the activity theory and written based on the participants' learning behaviours observed from the analytics system of the LMOOC. In this process, the participants' learning behaviours were analysed in the light of activity theory and guided questions were composed to ask the participants to reflect on their behaviours. The questions were generally quite broad in order to provide the participants rooms to explain their behaviours more in detail (see Additional file 1: Appendix S1). The interviews were mainly

conducted over Skype and Zoom, and only two participants expressed a preference to do the interviews in person. The interviews lasted between 15 and 26 min making a total of 478 min of interview scripts. The scripts were transcribed and presented to the participants to ensure the accuracy. The interviews were conducted in Thai and translated into English by one of the authors. The translated scripts were sent to an English lecturer at a university in Thailand for back translation.

Data analysis

Adopting thematic content analysis (Saldaňa, 2013), the interview transcripts were coded inductively based on the participants' responses using the Nvivo 12 software package and then deductively into two overarching themes, affordances and limitations. In the coding process, we were guided to look for responses that reflected, either directly or indirectly, different elements of the LMOOC activity system. For example, instances of peer learning were coded as the interrelationship between several aspects of the LMOOC activity system including rules, community, mediating artefacts and division of labour. 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 0.956 indicating acceptable inter-rater reliability. The coded scripts were then triangulated with the participants' learning profiles to see how different types of learners perceived affordances and limitations differently. The goal of the triangulation was to identify relationships between different types of learners and their perceived affordances.

Results

The analysis of the interview data yielded four perceived affordances: opportunities for peer learning, forms of personalisation, opportunities for social interaction and course design and learning support and three perceived limitations: lack of proficiency, lack of affinity and course design and lack of teacher presence. These affordances and limitations are presented in three levels: concept (MOOC)-specific, course-specific and personal. Also, the relationships between affordances and limitations are presented in the light of the participants' profiles.

Affordances

Concept (MOOC)-specific affordances

Several affordances emerged from the analysis can be classified as specific to the MOOC educational model. These include opportunities for peer learning and social interaction and forms of personalisation.

Opportunities for peer learning and social interaction One clear affordance of this LMOOC repeatedly mentioned by the participants was the opportunities to learn from their peers. In particular, learning from other participants' videos was reported by several participants. For instance, participant 44 said:

> *I think it's watching videos and rating as I could learn about the structure of the presentation, the phrases and expressions that can be used in each part from*

their videos as well. Though it's not a direct interaction, I could interact with their content (Participant 44)

In addition to learning from the presentation videos, the group learning design of this LMOOC allowed for peer learning to take place between group members in the process of working towards the final presentation. Participants felt that they could gain better understanding by exchanging ideas with other group members and that they could seek learning support from others when they needed it. Participant 86 who worked in a group reported:

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

Motivation to learn in a low-stake and free environment like LMOOCs has been a concerning issue. The participants in this LMOOC not only felt that working in a group helped them learn in the course, but also kept them motivated and contributed to their learning success, as two participants mentioned:

I learned about working as a group and my group members kept me motivated to continue learning in the course (Participant 19)
In a MOOC like this, we may not be able to contact the instructor directly, so other learners are those who could help me when I did not understand. It also helped me succeed in the course because if it was just me and the MOOC, I might not be this successful (Participant 28)

In addition to peer learning, participants in this study saw opportunities for having social interaction with other learners. Such interaction included both online interaction with other participants and their presentation videos as well as having face-to-face interaction with their group members. One design principle of this course was to allow participants to enrol with their peers from university and/or their workplace. A number of participants opted for this option and stated that doing so was facilitative for their learning process, as participant 76 indicated:

As we are from the same place, we could easily talk to each other face-to-face, allocate work and brainstorm on what sentences to choose (Participant 76)

It was clear that being in the same physical proximity was beneficial for learning in the LMOOC, an opportunity often not available in other LMOOCs. Moreover, one participant expressed enjoyment in interacting with other participant's presentation videos, as stated:

I enjoyed commenting on both my friends' videos and videos of others that I don't know. But I tried to make my comment as neutral as possible, I mean not offensive. If something is good, I complement, if something needs improvement, I make suggestions (Participant 28)

However, the participants did not mention anything related to having direct interaction with other participants online via discussion forums or Facebook group.

Forms of personalisation Various forms of personalisation were evident in this LMOOC. One of the principal design of the course was to offer personalised learning pathway (PLP) to each participant, and such a design was seen as beneficial for learning, something noted by several participants:

> *I think the pathway at the beginning was very useful because it pointed out areas where I needed to improve and I could improve based on that (Participant 25)*
> *I actually liked the fact that this course was designed to fit with different [proficiency] levels and abilities of the learners.... this course gave me a specific plan based on my [language]ability. My ability was analysed and suggested accordingly (Participant 46)*

Clearly, having a pathway to start with made the participants be more aware of their current ability and offered them a learning direction regarding the skills they needed to improve. While personalised learning was seen as useful, more prominent affordances of personalisation manifested at a personal learning level. It was clear that the participants were given freedom to tailor their learning itineraries in the way that was most suitable for their purposes. They were allowed to choose the topics and activities that are most relevant to their learning goals and to devise an individual learning plan (ILP) by themselves. Participant 32 highlighted the benefit of having freedom to create his own plan in this course:

> *Yes, the ILP allowed me to plan and develop what I really needed. For example, I have always had problems with pronunciation and vocabulary. So, I planned to practice and vocabulary and tried to learn about pronunciation using the software, look up new vocabulary online and watch a lot of videos (Participant 32)*

Closely linked with having freedom, the participants expressed that the fact they could choose to participate in activities and work on topics most suitable for them gave them a sense of relevance and relatedness in their learning, as participant 37 reported.

> *It is beneficial for me because I could only choose what I needed the most in my learning journey...Also, in my work, I had to do a lot of data presentations [in English], so sometimes, I consulted the activities about choosing the graphic to help me. It is not just about completing the whole presentation, but about how I could use it immediately when I needed it in my work (Participant 37)*

Such a choice that the participants had also encouraged them to be motivated to keep learning in the course. They attributed being able to learn and work on the topics that they liked and enjoyment as their two main contributing factors. Participant 76 explained how being able to choose her own topic motivated her:

> *I think it motivated me to learn and explore what I really wanted to know. For example, if we choose the topic that we like, we can do it well. It was also an ease for me to work on the topic I chose rather than an assigned topic (Participant 76)*

Essentially, the participants in this study experienced several clear affordances of personalisation in terms of raising awareness regarding their ability, customising their

learning journey as well as relating what they learned in the LMOOC with their immediate professional and educational situations.

Course-specific affordances

In addition to affordances that were specific to the MOOC concept, some of the participants reported affordances that were specific to this course.

Design principles of this course

The fact that the course was designed to start from being more structured at the beginning and being less structured towards the end was seen as beneficial for learning. In particular, the process learning design of the course and its content was perceived as useful by several participants. For example, participant 28 who finished all of the learning activities mentioned:

> *Actually, I do not think that the content was that difficult and I wanted to study in every activity to learn more about English and presentation. Since primary school, I was very poor in English, but this course was very clear and provided me with the structure of what to do and how to do it step by step. I felt that it was understandable and I can apply it to my real life, so I wanted to explore all of the activities (Participant 28)*

Apart from course design, the participants stated that learning support they received in the form of introductory videos in their L1 was helpful for them in understanding the course structure.

> *The introductory videos in Thai were quite helpful for the understanding of the whole learning journey as well (Participant 46).*

Overall, several affordances were perceived and actualised by the participants. These affordances included not only affordances inherent to LMOOC environment in general such as opportunities to interact with peers and their produced artefacts (videos), but also those that were related to the design specifications of this particular LMOOC. No affordances mentioned by the participants manifested at a personal level.

Limitations

Concept (MOOC)-specific limitations

Lack of affinity among the participants appears to be a limitation inherent to MOOCs in general. It was also mentioned by the participants in this study.

Lack of affinity Despite peer learning being seen as an important affordance, lack of affinity appears to have been an obstacle for a number of participants. They cited not knowing other participants as the primary reason for not participating in the course or interacting with others. This also led to participants not participating in peer assessment activities and losing motivation to continue learning in the course. Participant 137, who dropped out in the middle of the course, remarked:

> *I felt that it was because I studied alone and I did not know anyone, so I had no motivation to continue the course to the end. Like in other MOOCs that I finished, I*

studied with my friends, so I had people to talk to about the course (Participant 137)

In addition to not knowing others, the absence of face-to-face interaction with other participants both prior to and during the course prevented them from interacting with or even simply initiating a conversation with their peers. Such a notion was mentioned by a few of the participants who opted to work individually. As participant 117 stated:

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 (Participant 117)

Course-specific limitations

In addition to lack of affinity, several limitations reported by the participants can be classified as specific to this course. These limitations include design principles of the course and the lack of teacher presence.

Design principles of this course Though perceived as affordances by some participants, others saw the design of the course as an obstacle in their learning. One participant cited the complexity of learning activities and unclear instructions as factors hindering their participation in the course. Moreover, participant 136, who dropped out of the course, mentioned the mismatch between the course content and his needs as one of the reasons for not continuing:

I learned about creativity (in the videos), but other than that it didn't really match with what I wanted to learn (Participant 136)

Related to the design principle of the course, although the PLP was recommended to the participants based on their profiles and perceived abilities, two participants felt that the recommended PLP suggested too many activities for them, thus was too demanding to follow.

Lack of teacher presence The final limitation reported by the participants was lack of teacher presence. As a self-directed LMOOC, the course was principally designed for self-study. Although some of the videos were taught by the course instructor, many learning materials were drawn from open educational resources and curated into a structured course. One participant who dropped out of the course saw such a design as a limitation to their learning:

Ummm... the content of this MOOC was already good, but I would like to see instructors in the videos as well. I did watch some videos that other learners appeared in (Participant 137)

Although some limitations above were linked to the LMOOC in general as well as design specifications of the course, more frequently mentioned limitations were related to the participants themselves both in terms of their language proficiency and learning preferences.

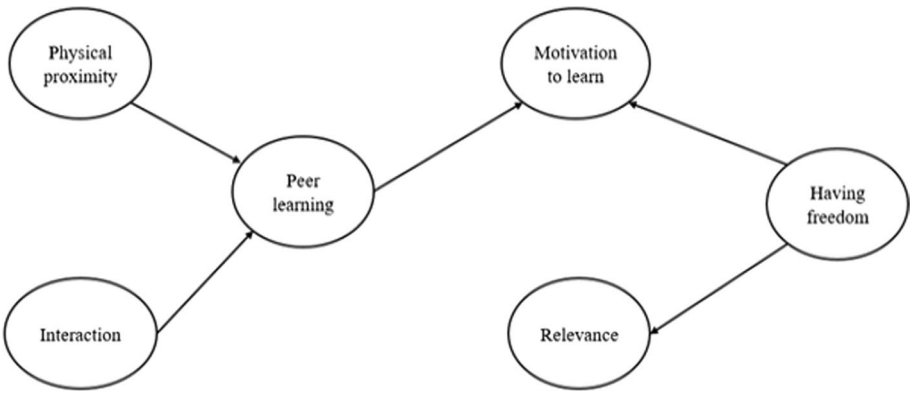

Fig. 4 Relationships among the perceived affordances

Personal limitations

Lack of proficiency As all of the participants were EFL learners, English was seen as a challenge in the course. Participants saw their lack of proficiency as an obstacle in their learning. English instructions and videos from native speakers were seen as "too difficult" for them. Participant 80 mentioned in the interview that the course might not be at the right level for him:

> *I think the course was designed for people with quite good English skills, but I am just not at that level (Participant 80)*

Although lack of proficiency was more relevant to personal limitations, rather than the limitations of the LMOOC itself, two participants did mention that having more Thai instructions and subtitles could have mitigated the language challenge they faced. Participant 21 stated in the interview that:

> *I think it is not too difficult, but I felt there should have been a translation or subtitles in each video and instruction, so that other people whose English was not so good could learn better (Participant 21)*

Other participants added that they had to seek help from resources outside of the course such as Google Translate, but admitted the quality of the translation was not good enough to help them understand the instructions.

Relationships between perceived affordances and limitations and participants' profiles

In analysing relationships among affordances and limitations, several patterns of hierarchical relationships emerged from the data. For affordances, two patterns of relationships were evident. First, opportunities for peer learning are often preceded by having interaction with other participants and being in the same physical proximity and peer learning often led to participants feeling motivated to continue learning in the course. Second, forms of personalisation, especially having freedom to learn, often led to participants being more motivated and feeling that what they learned was relevant to their immediate contexts. However, no relationships among perceived limitations were found. The relationships among the affordances are illustrated below (Fig. 4).

In triangulating the interview data with the participants' profiles, several interesting patterns of perception emerged. Not surprisingly, affordances were often perceived and reported by the participants who completed the course. Peer learning was seen as an affordance by both participants who worked individually and as a group. However, individual participants tended to see peer learning as learning *from* peers' products (watching videos), while group participants tended to view it as learning from interacting *with* peers. Forms of personalisation were regarded as an affordance by almost all of the participants who completed the course. It was, however, more prominent among the participants who opted to devise their own learning plan (ILP), indicating that self-directed participants were more likely to recognise such an affordance. In addition, the participants who enrolled in the course with their peers from the same universities and/or workplace emphasised the opportunities for having F2F interaction as one key affordance of this LMOOC design.

On the other hand, most of the limitations were reported by the participants who dropped out of the course. They were all individual participants and cited lack of affinity as their primary limitation. It was interesting, however, to find out that lack of proficiency was seen as a limitation by the participants who completed the course (Participants 223,280) and opted to work individually more than those who dropped out (Participant 14). On this measure alone, it is possible to say that lack of proficiency is not a significant factor preventing the participants from continuing learning in the course. Lack of teacher presence, however, was cited as a reason discouraging one participant, who was more familiar with the instructor-led learning environment, to continue with the course.

Discussion and implications

This study attempted to investigate LMOOC participants' perceptions of affordances and limitations in an LMOOC environment through an activity theory. In terms of affordances that were specific to the MOOC educational model, it was clear from the analysis that peer learning and social interaction were seen as an affordance by several participants. This is understandable given that the design of the course encouraged group enrolment and learning. The results on peer learning suggest that the participants' language learning process was scaffolded through group work and watching other learners' presentation videos. In particular, the fact that 16 participants mentioned that they learned from watching other learners' videos and commenting on them indicates that the participants experienced vicarious learning experience through the process and this may, in turn, help them develop their efficacy in delivering presentations in English. Peer learning is also related to participants' motivation to continue learning in the course, resulting in all of the group participants in the interviews completing the final presentation. Hence, opportunities for peer learning were not only perceived, but also actualised by the participants. Such a result resonates with previous studies on group learning that it could enhance students' satisfaction as well as reduce drop-out rates (Bayeck, 2016; Goldwasser et al., 2016; Sanz-Martınez et al., 2017). In addition to peer learning, the participants in this LMOOC recognised social interaction opportunities both through having F2F interaction with the participants in the same physical proximity and commenting on other participants' videos. This observation may be useful for future

LMOOC designers and instructors who can incorporate more peer learning opportunities for their learners, both in terms of enrolment type (group enrolment) and learning activities (peer feedback and vicarious learning from other learners).

Both personalised learning (PLP) and personal learning (ILP and having freedom) were perceived as affordances of learning in this LMOOC. Participants saw the benefits of having structure to start with and freedom to tailor their own learning pathways. It is interesting to note that all possible learning itineraries (following PLP, using ILP and combining PLP and ILP) were able to facilitate and encourage the participants to complete the course. This empirically elaborates what Martin-Monje et al (2018) state that LMOOC should be flexible in structure and different learning paths can lead to successful completion. Such freedom to personalise their own learning is related not only to more motivation to learn in the course, but also to a sense of relevance and relatedness the participants have for their immediate contexts. Such a combination of personalised and personal learning is crucial in language learning as it allows participants to be guided and pointed to the areas they need to improve, while also recognising their individual differences and various different learning needs (such as pronunciation, vocabulary, and grammar) despite enrolling in the same course. The fact that the affordance manifests itself more clearly at the personal learning level (using ILP) echoes what Downes (2012, 2016) proposes that individual preferences are more important than learning analytical-oriented recommendations. The fact that this affordance manifests itself more clearly at the personal learning level (using ILP) suggests that future LMOOC implementations should allow more flexibility in terms of their course structure so that LMOOC participants can select personal learning pathways that are beneficial and relevant to them. For example, LMOOC participants may be given freedom to set their own learning goals and to choose to engage with learning activities that best help them achieve their goals by themselves.

In terms of course-specific affordances, it was clear that the participants saw the design principles of the course as facilitative for their learning. As can be seen from the above, the affordances perceived in this study manifested at three levels: concept (MOOC)-specific, course-specific and personal. It is clear that three aspects of the MOOC affordances model (peer learning, personalisation and freedom) were seen by the participants (Economides & Perifanou, 2018). These affordances, however, are also rooted in the design specifications of the course (PLP, ILP and group enrolment) as well as the personal learning preferences and goals of the participants that make the affordances relevant to them.

In terms of limitations, one important issue at the concept (MOOC)-specific level was the lack of affinity among learners. This was mentioned by most of the participants who dropped out of the course, suggesting a possible relationship between social affinity and completion/ drop-out rates. This result might help LMOOC designers realise that despite social learning course design, encouraging participants to feel affiliated with the group remains a challenging task. In terms of course-specific limitations, given the self-directed nature of the course, it is understandable that the participants attributed the lack of teacher presence as a factor hindering learning in the course. Although lack of teacher presence in this study only pertains to the presence in instructional videos, it was absent from other parts of the MOOC, such as discussion forums in other studies

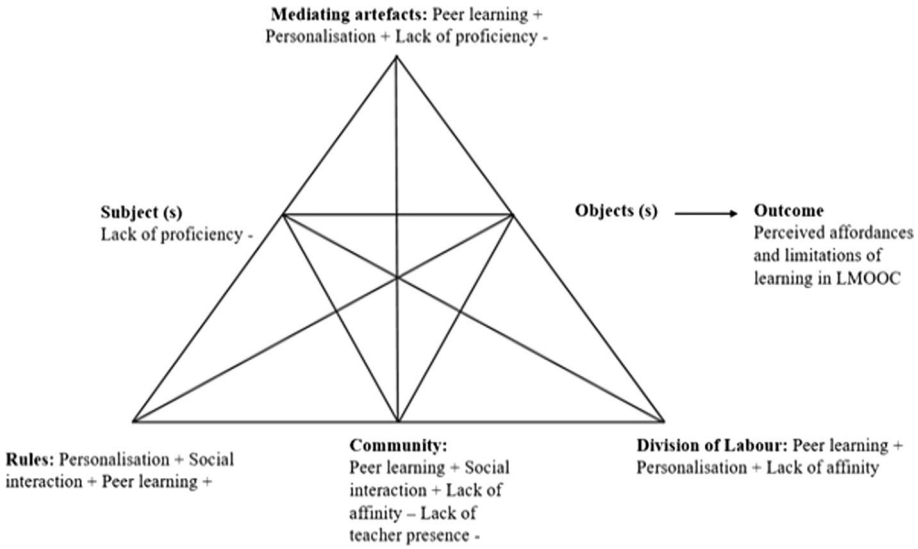

Fig. 5 The activity systems of perceiving affordances and limitations in the LMOOC

(Castillo, 2014). This means that there was a need for more teacher presence in the LMOOC learning experience. Therefore, to mitigate against the lack of teacher presence (although this may not be applicable in every context), we suggest that a collaborative teaching approach (having more than one instructor teaching a course) may help. Such a need for teacher presence also suggests that some learners may not be ready to study in a fully self-directed environment. This means that future designers may consider creating a balance between self-directed and teacher-led activities in LMOOC environment.

As for limitations that were specific to the participants themselves (personal level), the participants saw lack of proficiency as one main obstacle for learning in the LMOOC. This is not surprising given the open nature of the LMOOC that allowed virtually anyone to register. Language proficiency has been a challenge in the MOOC environment (even in the one that specified expected proficiency levels) not only for learning, but also for low level of interaction (Martin-monje et al., 2018; Sokolik, 2014). This limitation is somewhat inherent to language learning in MOOCs since it is skill-based and thus more difficult to develop in a short period of time than other so-called content-based subjects. Therefore, as several participants saw language proficiency as their main challenge, it is suggested that more target language support in the form of scaffolding is essential for courses with diverse demographies like LMOOCs. We observed that the limitations perceived in this study stem partly from the failure to capitalise or recognise the beneficial characteristics of this LMOOC such as group learning, which resulted in the feeling of not belonging to the group. It is also important to note that the openness characteristic of the MOOC affordance model (Economides & Perifanou, 2018) might have allowed for lack of proficiency to manifest as a limitation in this LMOOC.

To understand affordances and limitations of this LMOOC from an activity theory, it can be seen that the perceived affordances and limitations originated from interaction between different aspects of the LMOOC activity systems. The activity of perceiving affordances and limitations is visualised in the activity theory triangle below (Fig. 5).

Regarding affordances, peer learning is the interrelationships between the mediating artefacts (LMOOC design), rules (forming a group and interacting with others), community (commenting on peers' videos and group learning) and the division of labours (group learning), while personalisation illustrates how the mediating artefacts (PLP and ILP) interacted with rules (choice to follow PLP or create ILP) and division of labour (learning planner) to help participants see the benefits and actualise them in their learning. As for limitations, lack of proficiency is the mismatch between the subjects' linguistic ability and the mediating artefacts (language of the presentation). While lack of affinity stems from the participants' choices in the division of labour (individual learning) and failure to become a part of the learning community, the lack of teacher presence indicates disappearance of teachers from the learning community. Taking a holistic perspective, these affordances and limitations demonstrated a complex and dynamic relationship between different elements of the activity systems and the participants are central to such interaction since choices they made determine whether these elements are beneficial or restrictive for their learning. This illustrates what Van Lier (2004) proposes that learners act as agents in perceiving affordances and taking actions on them. Importantly, it should be noted that the above illustration and description represent the activity of perceiving affordances and limitations in the LMOOC, not one component of the general activity systems of this LMOOC as a whole.

Conclusion

The participants in this study perceived peer learning, personalisation, social interaction, course design and learning support as affordances of the LMOOC, while lack of proficiency, lack of affinity, course design and lack of teacher presence were seen as limitations in their learning. These findings add important information to our understanding of the potential LMOOCs hold for language learning. Using activity theory, the framework highlights the dynamic and complex nature of LMOOC environment as well as the ways in which they function to either enable or limit language learning. It is clear that the participants (learners) play central roles in engaging with several *actionable properties* of the LMOOC and make personal learning decisions to see them as affordances or limitations depending on their past experiences, preferences and abilities. We believe that activity theory can be a suitable framework for understanding learning behaviours in multi-dimensional environments like MOOCs.

There are some limitations in this study that should be noted. Although the selected participants serve as a good representation of learning behaviours displayed in this LMOOC, the number is still quite small compared with the total number of participants. Given the personal nature of learning perceptions, the results might have been different if another group had been interviewed, thus making the results of the study not generalisable. In particular, the interrelationship between these affordances and limitations was based on qualitative data, hence, needs to be further evaluated in future studies, and could be benefit from triangulation with quantitative data. Also, as this LMOOC is largely localised (predominantly Thai learners), the findings may not be applicable in a different or more diverse demography. Future research may apply activity theory to understand LMOOCs that deal with different language skills and in different LMOOCs and /or other types of online learning environments. Essentially, this study offers

LMOOC community much needed understanding of how LMOOC participants perceived and actualised affordances and limitations in their learning. Therefore, LMOOC designers and teachers should aim to create learning scenarios that help their learners recognise and take actions on the affordances, while making sure that limitations are appropriately mitigated.

Supplementary Information

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Additional file 1. Guided Interview Questions.

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NJ contributed to conceptualization, methodology, project administration, investigation, writing original draft. PD contributed to supervision, writing, review and editing. HR contributed to supervision, writing, review and editing. All authors read and approved the final manuscript.

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Availability of data materials
Data can be obtained from corresponding author.

Declarations

Competing interests
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