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Language MOOCs: An Expanding Field



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Abstract

MOOCs (Massive Open Online Courses) were first introduced to the wider public in 2008, with the first language MOOCs appearing in 2012. Following the initial hype, a number of problems with the way MOOCs had been conceived and implemented have emerged from research and practical experiences. In this article we revisit some of the arguments for and against MOOCs, specifically for language education, and review some of the ways new forms of online learning environments are emerging, as well as new ways of using (elements of) MOOCs, for both teaching and research purposes. In particular, we focus on their potential for the collection, analysis and pedagogical application of large data sets through learning analytics and educational data mining. We argue that hybrid forms of online environments that better foreground social aspects of learning and that take better account of individual differences, have the potential to successfully support language learning on a large scale and to provide researchers and practitioners with unique insights into the language learning process.

Keywords: MOOCs, learning analytics, educational data mining

Introduction

Massive Open Online Courses (MOOCs) represent an important movement in distance education. Although the term MOOC was coined in 2008, it was not until late 2011 that MOOCs appeared became widely and publicly known. It was at this time that several MOOC providers such as Coursera, Udacity and Edx, emerged (Pappano, 2012). The hype surrounding MOOCs resulted in a great deal of interest

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from teachers, researchers, and administrators, as well as investors. Since then, there has been a growing interest in language MOOCs (LMOOCs; Perifanou & Economides, 2014). Currently, more than 200 LMOOCs are offered around the world (Shah, 2018).

Despite their initial promise, a number of issues have surfaced in research studies, including low completion rates, the teacher-centric nature of many courses and the little interaction among learners in most of the MOOCs. Because of these issues, MOOCs in general, and LMOOCs in particular, have been criticised for being “just” an online version of a traditional face-to-face classroom. Moreover, there are teachers and researchers who maintain that MOOCs’ format is problematic for language learning in that most MOOC platforms focus on knowledge acquisition (Martín-Monje, Bárcena, & Read, 2013), as opposed to skills development (Bárcena & Martín-Monje, 2014; Sokolik, 2014).

Despite these limitations, MOOCs do hold considerable potential. As all interaction happens online, monitoring and recording of all learning and teaching activities becomes possible (Ozarslan & Ozan, 2017). Such data can be analysed and interpreted for many purposes, including monitoring learners’ progress, predicting future performance and even identifying potential learning problems before they occur (Johnson *et al.*, 2013).

This paper reviews the development, theory and pedagogy of MOOCs, as well as experiences with and criticisms of its implementation. The paper reviews the use of MOOCs in language teaching and research and in particular consider the potential for educational data mining and learning analytics for future studies and for enhancing teaching practice. The paper also suggests some research questions that use educational data mining and learning analytics to further investigate MOOC environments.

Overview of MOOCs

The key characteristics of MOOCs, as the name suggests, are that they are *massive, open and online*. *Massive* refers to their scale, allowing thousands of learners to learn simultaneously (Lin & Chang, 2014). As an example, the Artificial Intelligence course offered by Stanford University accommodated more than one hundred thousand students when it was launched. The second and third elements, *open* and *online* suggest that the course is open for anyone in the world and (often, although certainly not always) free from fees and/or free from academic prerequisites. Finally, *course* indicates that MOOCs follow the concept of a course with specific learning objectives, a predetermined structure, and instruction.

The first MOOC, “Connectivism and Connective Knowledge,” was offered in 2008 and was based on connectivism theory. In essence, it is a learning theory that explains how Internet technologies have afforded new opportunities for people to learn and share information across the World Wide Web and among themselves. This and similar MOOCs use a learner-centred pedagogy where students are expected to learn with and from one another in a distributed network; the course is not run exclusively on a single website and controlled by one person or group (e.g., the “teachers”), rather decision-making is distributed across the online space (Mackness, 2013). In essence, participants are encouraged to organise themselves in order to seek out information on their own and share what they find with others with support from facilitators throughout the learning process.

In this sense, early MOOCs were pedagogically aspirational, deliberately attempting to overhaul traditional education in favour of a more inclusive, more connected, and more democratic form of collaborative learning. These have been termed “cMOOCs” (with c standing for connectivist). However, not all MOOCs are based on connectivist principles and a wide range of MOOC platforms nowadays exists, with some focusing simply on the provision of opportunities for individual learning

through online materials, while others prioritise social learning and interaction (Conole, 2013). Downes (2012) has referred to the latter as the “xMOOCs,” or “extended MOOCs,” which are more similar to standard online courses, but with a larger number of students. xMOOCs focus more on the transmission of knowledge, which is based on cognitive-behaviorist pedagogy and supports a teacher-centric model that establishes a one-to-many relationship to reach a large number of people (Bárcena *et al.*, 2014). In other words, xMOOCs offer more structure for learning, similar to what learners would experience in most university settings (Mackness, 2013). The xMOOC model is a more popular pedagogical approach and is represented in many popular major MOOC providers such as Udacity, Coursera, and EdX (Godwin-Jones, 2014).

These two types of MOOC entail different types of instruction and learning activities. In xMOOCs, instructions are generally more teacher-centric and learners typically follow a series of concrete activities and receive automated feedback (mainly on multiple-choice or cloze quizzes). On the other hand, cMOOCs introduce activities that encourage learners to collaborate and engage with resources in their personal learning environments (PLEs). The architecture of cMOOCs serves as a platform for learners to explore learning resources and collaborate with other learners to reach the goal of the course.

In practice, MOOCs, like most classrooms do not clearly or exclusively adopt one type of pedagogy but nonetheless the above broad categorisation seems to apply. More recent efforts to categorise MOOCs have been made by Lane (2012), who differentiates between network-based, task-based, and content-based MOOCs (See figure 1). However, it should be noted that these categorisations are based largely on the nature of the course structure rather than the pedagogy underpinning them. Therefore, they are not distinctive from the two broad categorisations (C and X) of MOOCs. Instead, they overlap between the two ends of the MOOC pedagogy spectrum to different degrees.

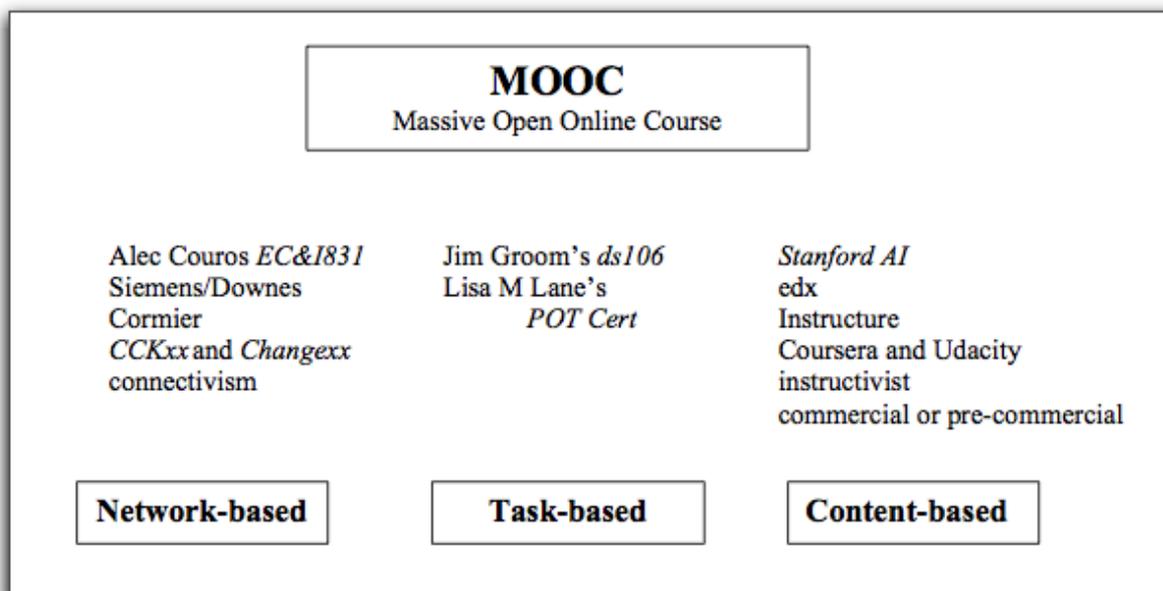


Figure 1 Three kinds of MOOCs with examples (adapted from Lane, 2012)

Network-based MOOCs are similar to cMOOCs in that they encourage the social construction of knowledge that takes place through a range of communication channels. Task-based MOOCs focus on the development of skills through the provision of a range of activities that learners are expected to work on, usually collaboratively. Content-based MOOCs are similar to xMOOCs in that they are structured around knowledge transmission from teachers and automated assessment. Although these

may provide collaborative activities, learners can successfully complete the course without having to interact with other learners. Theoretically speaking, networked-based and task-based MOOCs are likely to be located at the interface of constructivism, whereas the content-based MOOCs seem to evolve around cognitive-behaviorist and instructivist approaches. With respect to educational paradigms, it seems that the educational paradigm underlying MOOCs are still positivistic oriented and the focus of all types of MOOCs is disseminating knowledge. Even though the network-based MOOCs attempt to include constructivist educational paradigm in their design through the encouragement of knowledge construction from various channels of communication, it is still restricted due to technological limitation as well as the rationale of how MOOCs was originated.

MOOCs for Language Learning: LMOOCs

Bárcena *et al.* (2014) define LMOOCs as “dedicated web-based online courses for second languages with unrestricted access and potentially unlimited participation” (p. 1). Currently, there are more than 200 LMOOCs offered worldwide, and this number continues to grow (Class Central, 2018). These LMOOCs are offered in many different languages and on different platforms, ranging from the main MOOC providers (Such as Coursera, EdX, Udacity and Canvas) to smaller ones run on a single university’s platform (e.g., UNED COMA) (Bárcena & Martín-Monje, 2014). Although more than half of these LMOOCs are for English learning, interest in other languages is growing, with languages such as Arabic, Chinese, Japanese, and Spanish increasingly represented (Perifanou & Economides, 2014).

Challenges in LMOOCs

Although LMOOCs are still in their infancy, a number of issues have surfaced from research studies and practical experiences of the implementation of MOOCs in general and LMOOCs in particular. The ultimate goal of language teaching is how to help the learners acquire the target language through interaction and various types of activities. The output from task performance could reveal learners’ competence of using the language. Even though technology has been exploited to help language learning through CALL, there are still limitations of making the learning interactive. When the language learning is offered through MOOCs, the problems not only arise at the technical level. At a conceptual level, one component of MOOCs that has been widely criticised is their *open* aspect. According to Bárcena & Martín-Monje (2014), MOOCs offer arguably a natural progression from Open Educational Resources (OERs), which are learning resources that are freely accessible and reusable for teaching and learning purposes. Theoretically, both MOOCs and OERs offer free educational opportunities for anyone to access learning resources anywhere and anytime. Practically, they are available in different formats. While OERs are often in the form of textbooks, stand-alone video lectures, and other curricular resources, MOOCs are structured in the form of a course and often make use of OERs for different aspects of the courses. However, some CALL scholars observe that MOOCs may not be as open as they initially promised. Godwin-Jones (2014) observed that most major MOOC platforms are proprietary and closed and the availability of the course content is time-sensitive in that it can only be accessed for a limited period of time. Plus, platform regulations prohibit learning content to be reused and distributed outside of the course.

Secondly, most MOOCs appear more suited to knowledge transmission than skills development, which relies more on opportunities for receiving a wide range of L2 input, opportunities for L2 output and supported and scaffolded opportunities for L2 interaction. These, by their very nature, are far more difficult to accomplish online. Next, language learners are often extremely heterogeneous in terms of proficiency levels, prior experience in learning languages (online), interest and learning styles, and these individual differences are difficult to cater to. In other words, most LMOOCs are not (yet) very

good at *personalising* the learning experience. Finally, teaching in a MOOC, as Martín-Monje *et al.* (2013) and Read and Bárcena (2013) observed, is vastly different from classroom instruction and requires a range of facilitation skills that most teachers do not possess without plenty of training and experience, little of which is available.

In the next section we will review some of the available studies into these and other issues.

Research on LMOOCs: An Expanding Body

Essentially, LMOOCs are still in the developmental stage and research on the topic is very limited. The narratives around the concept still revolve around finding an optimal pedagogical approach to inform the design of effective LMOOCs. A handful of studies on LMOOCs do exist, yet these are primarily exploratory in nature and few of them appear in refereed journals. LMOOC research can broadly be categorised in terms of whether the MOOCs they report on are used as an integrative tool for L2 classes or as an alternative (or a replacement) of a traditional course. Most studies fall into the latter category, probably because LMOOCs are primarily intended to serve as stand-alone courses. Several learning constructs have been investigated in LMOOC research, including flipped learning (Zhang, 2017), blended learning (Titova, 2017), motivation (Beaven *et al.*, 2014; Uchidiuno *et al.*, 2017), interaction (Martín-Monje *et al.*, 2013; Martín-Monje *et al.*, 2018; Rubio, 2015), and pronunciation (Rubio, 2014). Furthermore, some content MOOCs (not a language learning MOOC) have been used in teacher education both as an integrated part of a formal Masters level course (Orsini-Jones *et al.*, 2017) and a professional development for teachers (Kormos & Nijakowska, 2017).

Flipped learning

Flipped learning is considered a unique evolution in instructional methodologies. It reverses the order of teaching by asking students to perform preparatory work before attending the class. This frees up class time to be devoted to active learning activities and discussing the concepts at a deeper level (Amiryousefi, 2017). Often, MOOCs have been utilised as flipped learning activities. In his study, Zhang (2017) carried out a study examining students' attitudes towards a MOOC-embedded flipped classroom model at a university in China. The participants were 800 highly proficient college students studying in an *English Reading and Writing* course, a compulsory subject for all students. The self-developed LMOOC was used to provide flipped learning activities for students to complete prior to coming to the weekly face-to-face sessions. The study lasted for two semesters (32 weeks) and data were gathered using a questionnaire surveying students' attitudes, perceived benefits and overall satisfaction. The results demonstrated that the majority of the students had positive attitudes toward the MOOC integration and felt that they were making progress in their English reading and writing. In addition, Titova (2017) utilised MOOC as an integration of a blended Content and Language Integrated Learning (CLIL) course. The study was carried out with 30 undergraduate students in Russia. The course itself was blended in nature and the MOOC integration was mainly to provide students with authentic collaborative community through the MOOC forums. The findings revealed that students had positive attitude towards the MOOC integration and the opportunity to communicate with other people via MOOC forum was the most important reason.

Motivation

Motivation to enrol in, participate in, and complete (three quite different decisions, as it appears from available data) a MOOC is another important line of LMOOC research. To date, there have been two studies that have investigated language learners' motivation. Beaven *et al.* (2014) investigated learners' profiles and related these to evidence of motivation in a French LMOOC, *Travailler en*

français. The LMOOC ran for 5 weeks and attracted more than 1,000 learners. Participants' motivation was measured using the Intrinsic Motivation Inventory (IMI) (Deci & Ryan, 1985). The results illustrated that participants thought that the MOOC would be interesting and useful in their development of French and ICT skills. Instrumental reason such as wanting to find a job in a French-speaking country was also mentioned. The demography of the participants was similar to many other MOOCs in that participants had a high level of education and were in education or employment. Also, they were quite international, representing 36 countries, with the majority from Europe.

Uchidiuno *et al.* (2018) carried out a larger-scale and more generic investigation into English language learners in taking not only LMOOCs, but also MOOCs in general. The data were gathered from 20,084 English language learners and interviews with 12 students. Many interesting findings emerged from the study. First of all, MOOCs were seen by learners as a platform to equip them with skills needed for future social, economic and geographical mobility. In other words, they wanted to connect with other people, improve their professional qualifications and learn about other cultures, particularly the culture they planned to migrate to. Empirically speaking, the social dimension was particularly interesting, as previous research has shown that participants rarely participate in discussion forums (Kizilcec & Schneider, 2015; Kulkarni *et al.*, 2016). This is because the social dimension mentioned in this study was seen as connecting with people around social and cultural participation rather than interacting with peers around the course content. This raises a very interesting design question for future LMOOCs. When asked about their unmet needs, survey responses indicated a lack of support in learning a language as a key factor. This suggests a need for an adaptive language support system and, more extensively, translation of MOOCs into local languages. All these findings point to a need to design MOOCs and LMOOCs that adaptively respond to learners' needs.

Results from these studies offer useful insights into participants' motivation to enrol in, participate in and complete MOOCs. Learners are clearly motivated to enrol in MOOCs both for intrinsic and instrumental reasons. Motivation to participate in MOOCs appear driven largely by social and cultural factors. Research on completion has explored the significant drop-out rates but has not yet linked this with the motivation literature to a significant extent.

Pronunciation

LMOOCs have, perhaps surprisingly, been employed as a platform to develop pronunciation. Rubio (2014) compares the gains in comprehensibility of learners in a traditional F2F Spanish pronunciation course with those taking an LMOOC, *Improving your Spanish Pronunciation*. The participants were 50 adults learners selected from a larger population in the two courses. The structure of the two courses was comparable, and they were taught by the same instructor. The results indicated that both groups improved in their pronunciation comprehensibility with a more significant gain in the LMOOC students. One explanation for this might be the greater amount of individual and peer feedback in the LMOOC and as the course analytics show, the access to feedback seems to be a major factor contributing to success in the LMOOC.

Interaction

One construct that has been seen as an important component of successful LMOOCs and online language courses is interaction and a number of LMOOCs studies have explored this issue. Martín-Monje *et al.* (2013) analysed peer-to-peer interaction in the first MOOC in Spain on Professional English, run on the Miríada X platform. This course had 19000 participants, 1120 of whom completed the course. The analysis showed that peer-to-peer interaction in the course was quite low, both in the learning modules and the discussion forum. In the learning modules, many peer-to-peer activities were

not completed by the students. Peer feedback was encouraged in the course and the analysis indicated that students invested time in giving peer feedback, however, the feedback tended to focus more on grammar and vocabulary rather than communication and meaning. Additionally, Rubio (2015) compared learners' interaction on Spanish language MOOCs on pronunciation and phonetics with the other two delivery formats (blended and online) to find out how different formats of delivery led to particular types of interaction and whether these interactions affected the student and their success on the course. Data on interaction in MOOCs were collected through the learning analytics tools available as part of the delivery platform and by counting instances of interaction in the forums. The results illustrated that the level of learner-content and learner-instructor interaction were fairly high in the MOOC format, but the level of learner-learner interaction was very low. Importantly, there was a positive correlation between the level of interaction in the course and student success across all three formats (online, blended and MOOCs).

More recently, Martín-Monje *et al.* (2018) adopted a learning analytic approach to examine online interaction in an LMOOC, *How to succeed in an English B1 level exam*. The data were collected through the MOOC system that records online activities performed by students, including access to learning objects and interactions in the forums. The analysis reveals that the learning object the students engaged with most was video followed by articles and books. The data also suggests that students in different age groups were likely to interact with the learning objects differently in that students in their forty were more likely to download learning materials more than other age groups. This implies that learners of different age groups may have different motivations to learn in LMOOCs. As for course success, it was not surprising to learn that those who were successful were those who were active in their online interaction. However, one interesting finding was that participating in forum discussion and submission of peer feedback were not contributing factors to student success in the course. In further analysis, engagement patterns were classified, and it was found that most of the students in this LMOOC were "viewers," who tended to just watch videos. Only some were "all-rounders" who also handed in assignments and participated in forums.

Language teacher education

Language teacher education has also embraced the use of MOOCs as an integral part of the training programme, albeit not necessarily a language learning MOOC. Orsini-Jones *et al.*, (2017) examined the integration of a MOOC into a postgraduate ELT curriculum. The MOOC, *Understanding Language: Learning and Teaching* was integrated into *Theories and Methods of Language Learning and Teaching* module in an MA in ELT programme. Twelve self-selected students in the course participated in the study and data were collected through survey and focus-group discussions. The blend was perceived as a positive addition to the face-to-face course. Also, participating in the MOOC positively affected students' beliefs about grammar instruction and CLIL and transformed their beliefs about online learning in general.

MOOCs have also been used as a professional development course for teachers. Kormos and Nijakowska (2017) investigated changes in language teachers' self-confidence, self-efficacy, and attitudes to using inclusive educational practices with dyslexic students before and after taking a MOOC on *Dyslexia and Language Teaching* offered through Futurelearn. Course enrolment was quite large, attracting 18,860 learners. However, only 1,187 completed the pre-course survey and 752 completed the post course survey. The results showed that the participants' attitudes were more positive, their self-confidence was higher and there were less concerns at the end of the MOOC than in the beginning. Importantly, it was reported that learners who completed a larger portion of the course tended to show a higher self-confidence at the end and that engaging in posts correlated with lower levels of anxiety.

To synthesise these research findings, there have been overall positive attitudes towards the integration of LMOOC either as a flipped learning activity or a blended portion of the existing L2 course (Zhang, 2017; Totova, 2017). As far as the LMOOC integration is concerned, the massive community and opportunity to connect with a large audience in LMOOC appears to be intriguing affordances of adopting the technology. Additionally, studies on motivation in LMOOCs indicated that participants have intrinsic reasons to join the LMOOC (Beaven *et al.*, 2014) and that social, economic and geographical mobilities are valued (Uchidiuno *et al.*, 2017). This is a good reflection for LMOOC designers to think about LMOOCs that respond to the needs of the people who are actually taking them. The role of feedback was also highlighted in the literature (Rubio, 2014; Martín-Monje *et al.*, 2013) and individualised and peer feedback may play an important role in facilitating the learning in LMOOCs. On top of that, the level of interaction may be a good indicator of whether a learner would be successful not only in LMOOC learning, but also in any online or blended course delivery (Rubio, 2015). Although Martín-Monje *et al.* (2018) did not report interaction in forums and peer feedback as important factors contributing to course success, being active in online interaction (with the learning content and exercises) is still an influential factor. At the other end of the spectrum, language teachers can also benefit from using MOOCs as a way to improve their self-confidence and self-efficacy, either as a platform for professional development (Kormos & Nijakowska, 2017) or as an accredited integration towards a formal degree (Orsini-Jones *et al.*, 2017).

All things considered, these empirical findings point to the potential of LMOOCs in various educational roles both as an integrative technology of L2 classes and an alternative or a replacement of these classes. Apart from these clear educational applications, the data that learners generate are valuable resources for both teachers and researchers to understand students' learning behaviours and be better informed about the future course design. As Long and Siemens (2011) put it, big Data and analytics are likely to revolutionise the shape of future education. LMOOCs offer valuable learning data that can be studied and understood in order to improve and optimise language learning experiences and outcomes; however, research has not yet methodologically exploited such available data. To date, only two studies (Martín-Monje *et al.*, 2018; Rubio, 2015) have adopted a learning analytics approach in understanding how learners engage with learning objects and interact with one another in LMOOCs. These attempts are a good starting point, yet we would argue that there remain many opportunities for the use of the large amounts of data LMOOCs generate. We will now look at some of these potential research avenues.

Future research directions: The use of learning analytics and educational data mining

Learning analytics involves “The measurement, collection, analysis, and reporting of data about learners and their contexts for purposes of understanding and optimising learning and the environment in which it occurs” (Long & Siemens, 2011, para 14). Clearly, learning analytics can be applied to any domain of learning and can be used by individual teachers, as well as by administrators, and indeed by regional and national educational organisations, to inform everything from daily practice to long-term policy. In language education, it can be used to record general educational data, such as prior experience, attendance and completion, grade point averages and so on, as well as data specifically related to language learning, such as the learners' increase in vocabulary, common difficulties experienced by all learners in a group with a particular linguistic feature, etc. The field of Learning Analytics is closely related to that of Educational Data Mining, which “...deals with the development of methods to explore data originating in an educational context” (Romero & Ventura, 2010, p. 601). Whereas Learning Analytics is more focused on understanding the whole learning experience holistically, Educational Data Mining is more inductive and reductionist, looking at individual

components of the learning process. Although they are separate disciplines, we will use the two terms together here as there is, at present, simply not enough existing research to warrant distinguishing between them in our field.

Educational data has, of course, long been available. What has changed is its volume, its accessibility, and its immediacy, where "...more data is now available about learners, more easily and more quickly than ever before" (Reinders, 2018, p. 28). Data pertaining to learners is now routinely captured at all stages of the educational process, from initial enrolment to job placement, and indeed, increasingly, between different educational institutions (think of test results and other data being transferred from a child's primary to his secondary school). In addition, data about learning is recorded automatically through learning management systems like Moodle and Blackboard, giving insight into the daily (or even more fine-grained) levels of engagement and performance of individual learners. This increased accessibility and its immediate availability are what makes the use of analytics particularly promising, both to practitioners and to researchers.

The large amounts of educational capture at present can have direct pedagogical application. "Synchronous analytics" involves the immediate use of data about learners' understanding, level of engagement, task completion, and so on, during a class. The class can be either online or face to face; in the latter case it requires students to be connected through a device. For example, a teacher might assign a quick quiz to see overall comprehension levels and identify students who may need more support. This type of information is often collected using tools such as classroom management programs, such as ClassDojo, Socrative or Google Classroom. The data they generate and the tools they offer for monitoring learner behaviour allow for immediate, or synchronous, analysis and intervention. Such data is particularly useful for exploratory and action research. "Asynchronous analytics" involves analysing data outside of class time, such as when planning an individual class, a course or indeed an entire curriculum. This generally includes the use of attendance data, indicators of academic performance (including both language and other subjects), a comparison with previous cohorts, and a careful analysis of individual differences and their effect on success in the course.

Essentially, given the vast amount of (online) educational data available, there are a lot of research opportunities in using learning analytics methods. As mentioned earlier, LMOOCs generate a large amount of educational data and are a good platform for investigation. We now formulate a number of research questions that future studies on LMOOCs and beyond may wish to explore.

Using a Dynamic Systems Theory perspective, what links can be identified between task characteristics, task performance and individuals' levels of engagement throughout a class?

What is the average level of task completion across an entire course and how does an individual's level of task completion relate to academic success?

What effect does higher or lower attendance have (correlationally) on academic success? By which week in a course can such data be used to accurately predict an individual's chances of passing?

SLA research can draw on both types of data but so far has mostly been limited to the asynchronous type.

What is the impact of teacher feedback on successful course completion?

Can indicators of low learner engagement enable the early identification of likely difficulties in a course? If not engagement, are there other indicators that could?

How are L2 output and interaction distributed across learners in online activities? What impact does this have on eventual course achievement?

How does the level and type of teacher talk affect L2 interaction? How does this differ between teachers?

What impact does making learning-related data available to learners have on their motivation and autonomy?

How do teachers perceive the availability of (their own and others' classes') learning data and success and retention data?

Can learning data help to identify key moments ("transition points") during a course at which time additional support may be needed?

Conclusion

LMOOCs offer a rich environment in which tremendous amounts of data can be captured and analysed using Learning Analytics and Educational Data Mining techniques. This opens up new avenues for research that can investigate deeply (looking at a large number of variables) as well as widely (comparing multiple large cohorts over a longer period of time). Early identification of learning difficulties, more targeted support, investigation of the role of specific individual differences, and large-scale cross-comparisons are now becoming possible. As Halfpenny & Procter have observed "It is possible that it will promote the use of new computational social science methods in place of more traditional quantitative and qualitative research methods."

Just as LMOOCs provide data for analytics research to give insight into language learning and teaching in general, so can analytics help to improve the quality of LMOOCs and overcome some of their problems. As an example, MOOCs suffer from very large drop-out rates and analytics data may give insight into the reasons for this and help to identify specific "trigger points" (for example, not receiving feedback from an instructor for too long a period of time). Similarly, analytics may give insight into the types of activities and groupings that are more or less likely to result in learner-learner interaction; something that of course is particularly important in LMOOCs.

In summary, as LMOOCs become more popular, it behooves SLA research to investigate their success and identify ways in which they can be improved. In addition, as we have shown above, they offer fertile ground for types of research that were previously difficult or impossible to carry out, opening up exciting opportunities for L2 research.

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