Self-directed learning readiness of Language MOOC learners

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Abstract. Having a deep comprehension of the learner population in any course environment has a significant impact on the effectiveness of the course and its design. In a MOOC environment, it has greater importance because the learner population is extremely diverse in terms of their background, knowledge, skills and experiences. Individual learning characteristics such as autonomous learning skills are important to be better understood in order to be able to create more effective designs. Most of the studies in MOOC environments focusing on autonomous learning characteristics embrace the concept of self-regulated learning. However, the concept of self-directed learning, which allows more autonomy for the learners, seems to fit the MOOC better. This study aims at understanding the readiness for self-directed learning of the learner community of an Italian language MOOC. We intended to examine how self-directed learning readiness relates to age, gender and educational background. Our preliminary results show that there is no significant correlation between gender or qualification and self-directed learning readiness; however, surprisingly, we did find a significant correlation between age and self-directed learning readiness. We concluded that the elder population tends to have higher self-directed learning readiness. Our study means a significant contribution to the MOOC research field inasmuch it addresses the today highly debated question if learners are prepared enough to learn in a MOOC. This study is part of larger research project which final objective is to characterise language MOOC learners based on the pedagogy-andragogy-heutagogy continuum.

Keywords: Heutagogy, Learner Population, Self-Directed Learning Readiness Scale (SDLRS).

1 Introduction

Learner population research is one of the most popular subtopics in the research field of Massive Open Online Courses (MOOCs) [1]. Understanding the learner population is extremely important in any educational setting for effective course design; however, it is particularly important in a MOOC learning environment [2]. As Hood et al. [3] say "The openness of MOOCs and the resultant potential diversity of learners, each with different base-line knowledge and prior experience, makes the investigation of individual learners particularly important." MOOCs, in general, require a set of refined

skills on the part of learners; moreover, they are typically non-linear, barely structured, and lack teacher presence. These characteristics are quite different from those of a formal and traditional learning environment, and they can be intimidating. Surviving in a non-linear, low structured and teacher lacking learning environment requires self-regulation and self-direction. MOOCs attract a wide range of participants with different skills, background and experiences, and therefore with different variances in the ability to self-regulate or self-direct their own learning [2, 3].

With the rise of xMOOCs, the MOOC research field became more quantitative, and clickstream and observational data became primary sources also for learner population analysis (learner progression, retention, or completion rates, clickstream behaviour data) [4]. These studies provide general understandings of the MOOC learner population; however, they do not give a deeper comprehension of specific characteristics of the individual [3]. Although, there are recent studies that focus on specific learner characteristics: Hood et al. [3] investigated how participants' context and their professions influence their ability to self-regulate their learning in a MOOC. They concluded that context and professions do have an impact on one's self-regulation since participants studying for a higher educational qualification and those working in the field of the subject of the MOOC obtained higher overall scores and both groups were able to employ meaningful learning approaches and strategies in the MOOC. Maldonado-Mahauad et al. [5] combined process mining technique with a self-report instrument in order to understand self-reported self-regulated learning (SRL) strategies and behavioural patterns in MOOCs. The authors concluded that both *comprehensive learners'* (moderate activity, more self-regulated) and *targeting learners'* (less engagement, goal oriented) approaches are independent of the learner's SRL skills and those who take these approaches are more effective compared with *sampling learners* (low activity). Alario-Hoyos et al. [6] applied a modified version of the Motivated Strategies for Learning Questionnaire (MSLQ) to measure learners' motivation and self-regulated learning strategies and found that learners show a moderately high motivation and confidence to succeed in the course, but their time management strategies can be improved. Mac Callum et al. [7] examined the question of how self-directed and self-determined learning traits can impact the understanding and modelling of mobile learning adoption of learners. They came to the conclusion that self-management, self-control and desire for learning contributed to the positive perception of mobile learning and adoption.

In our search for literature, which carried out with two search strings (first with *self-regulated learning* and *MOOC*, then *self-directed learning* and *MOOC*) on the EBSCOhost platform, we found more studies related to the concept of SRL, and little results came up on self-directed learning (SDL). Our search results suggested that SRL is more researched in connection with MOOCs. There are significant differences between the two concepts. While SRL is described as a learner characteristic SDL is a broader concept that comprises design features of the learning environment [8]. Moreover, the level of learner's autonomy is higher in SDL: "it includes an additional premise of giving students a broader role in the selection of what will be learnt and critical evaluation of the learning materials that were selected. […] In SDL, the learning task is always defined by the learner" [8]. In addition to this, SDL addresses

adult learner population and has been mainly researched outside of school environments. For these reasons, SDL better fits the MOOC learning environment where the primary audience is adult learners and where learners need high autonomy to succeed.

As it has been pointed out above, the studies focusing on learners' autonomous learning characteristics are often related to other characteristics, or they examine what other factors (context, profession, and so forth) are influential and the impact they have on autonomous learning characteristics. They rarely focus on measuring the level of autonomous learning or readiness for autonomous learning of the learner population in a MOOC. This study aims at characterising a Language MOOC (LMOOC) population in terms of their readiness to SDL and understanding what factors can influence self-directed learning readiness. This study is a part of a larger project whose final objective is to characterise the LMOOC learner population based on the conceptual framework of the pedagogy-andragogy-heutagogy (PAH) continuum [9]. A battery of instruments was established to measure some characteristics of an LMOOC learner population in order to better understand the learner population from the perspective of the PAH continuum, namely: self-directed learning readiness, self-reflection, self-efficacy, and internet skills. Hereby, we present the preliminary results of the SDLR dimension of the pilot study.

2 Methods and Research design

2.1 Purpose of the study and the context

In this paper, we intend to present the preliminary findings of our first moment of data collection. Our aim was to understand a) the general tendency of SDLR of an LMOOC learning community and b) if age, gender or qualification have any impact on SDLR.

The AP Italian Language and Culture MOOC from Wellesley College was a six-unit course offered on the edX platform during an entire year. The course was offered in two modalities: independent self-paced study (recommended 12 weeks of work), or subscription to the online live instruction class with regular instruction and language practice. All the units consist of videos, texts or audios completed with different types of quiz ("Esercizi"). All students who reach an overall average score of 60% on the quizzes ("Esercizi") are eligible to receive a Verified Certificate of Completion issued by edX. In the course there is a total of 21 subsections, each containing "Esercizi"; 3 of these sets of "Esercizi" (i.e. three subsections) may be dropped. At the time of the closure of our data collection process, 7390 learners were enrolled in the MOOC, 1180 have earned at least one point on a graded "Esercizi", 790 were at that time active (at least once in the previous week they had performed an action in the course), 11 learners have done all the "Esercizi", and 31 learners have earned the passing grade.

2.2 Instrument, data collection and data analysis

For collecting data on learners' readiness to SDL, after a thorough analysis of potential instruments, we chose to apply the Self-Directed Learning Readiness Scale (SDLRS)

[10]. This instrument was initially designed for nursing, however, specific items referring to nursing were retrieved by the authors of the instrument, and so the instrument became viable to be used in other contexts, as well. The instrument was implemented according to the recommendations of the authors applying all 40 items (13 measuring self-management, 12 measuring desire for learning, 15 measuring self-control). Answers were registered on a 5-point Likert scale. The instrument's sensitivity, reliability and validity were tested. Based on the results, ten items were removed for the final analysis. For all three subscales, α was above 0,8 after having eliminated items.

The questionnaire survey was made available to all enrolled learners in the Introductory module of the course. Participation was anonymous and could be interrupted at any point. Wellesley College administered the questionnaire and provided us with disidentified data for analysis. Two hundred seventy-six learners fully completed the survey. Respondents were from 65 different countries (most of them from the USA and Brazil). The age of respondents ranged between 14 and 80 with an average of 37. The female-male distribution was 49% - 21% respectively, with a remaining 30% which did not provide information regarding the gender. Approximately 70% of respondents hold a (bachelor's or master's) degree. A bit more than half of the respondents were employed (full-time, part-time or self-employed), 21% students, the rest was homemakers, retired or unemployed. Regarding the MOOCing experience, a bit more than half of the respondents (54%) have already done MOOCs before. Most of the respondents (83%) registered to the course in order to get familiarised with the Italian language and culture.

3 Results and discussion

The total SDLRS scores for each participant were calculated by summing up the responses for the remaining 30 items with a minimum score of 30 and a maximum score of 150. The minimum and maximum scores observed were 52 and 145 respectively, with a mean of 111,95 and a median of 112. The total scores for the gender female were not normally distributed (*p-value* 0,033) due to some outliers with very low total scores. Therefore the null hypothesis is rejected at the 0,05 level, however, is not rejected at 0,01 level. Based on the values of media, median and a normal *skewness* (-0,401), we can confirm that the total score distribution is almost normal for this sample. Consequently, following the rationale of the authors of the SDLRS, we conclude that a total score of greater than 112 indicates readiness for SDL [10]. We observed that the percentage of those who scored equal or higher than 112 (52,5%) is slightly higher than of those who scored below (47,5%).

3.1 Question 1. Is there a significant correlation between gender and SDLR?

We computed a T-test in SPSS software in order to understand if there is any significant difference in the total score of male and female participants. We found no significant difference *(p-value*=0,049) between male and female participants. However, based on

the mean values (113,96 for female and 110,20 for male) we can state that there is a tendency of female participants scoring higher than male participants. However, this tendency could be biased by the fact that the female response rate for indicating gender was much higher (49%) than male response rate (21%).

3.2 Question 2. Is there a significant correlation between age and SDLR?

The results show that the correlation between age and SDLR is minimal considering that r=0,161 (p-*value*=0,007); nevertheless it is significant. Considering that r is positive, we can deduce that the higher the age, the higher the total score of SDLR is.

3.3 Is there any correlation between qualification and SDLR?

We verified through an ANOVA oneway test that the difference in the total score of SDLR depending on the qualification of participants is not significant (p-*value*=0,080), therefore there are no differences in SDLR based on participants' educational background.

4 Conclusions and future work

In this work in progress paper, we aimed at outlining some preliminary findings of our first moment of data collection. We intended to answer some primary and preparatory questions regarding an LMOOC learner population's SDLR. Our study revealed what other researchers have already pointed out regarding the MOOC learner population: "MOOC learners are predominantly adults who already possess post-secondary degrees" [11]. It is strongly argued in the literature that MOOCs, by their nature, require strong autonomous learning skills from the part of the learners, however, not all are prepared to self-direct their own learning [3]. Our preliminary results show that, indeed, those who appeared to be ready for SDL and those who were below the average, with little difference, are equally distributed. After having obtained this result, we went further and wanted to understand what factors influence the learners' SDLR. We found no significant correlation between gender or qualification and SDLR; however, surprisingly, we did find a significant correlation between age and SDLR and also concluded that the elder population tends to have higher SDLR. Drawing on the principles of the theory of heutagogy, further analysis of the results will include measuring correlations between SDLR and a) self-efficacy, b) self-reflection and insight, and c) internet skills.

When considering the results, we must remember that participation was optional, and there is a tendency of more motivated learners answering these kinds of surveys; therefore, there might a bias in the sample. Further analysis of data will focus on this question, as well. Despite its limitations, our study has a significant contribution to the MOOC research field since it examines a today highly debated question about MOOC learners: are they prepared enough to learn in a MOOC? Moreover, our preliminary finding of having an almost equal distribution of "ready" and "not ready" participants

raises an essential question of design: How to design MOOCs for a population where those who appear to be ready and those who do not are equally present?

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