

Edu World 2016
7th International Conference

USING MOOCS AS A WAY TO ENHANCE LEARNING

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Abstract

Although they appeared not long ago, MOOC type courses have soared remarkably, judging by their huge number of users. Today there are several MOOC Providers, a few of them working with well-known universities while others work with companies practicing in that field of specialty. The first part of the present paper presents in a descriptive way two of the top MOOC providers, answering the following questions: Who is learning? What is being learnt? Why is it being learnt? How is it learnt? When does the learning take place? The second part of the paper contains a research based on 230 students from the second year of study from the Politehnica University of Bucharest, which aims to emphasize the way in which two MOOC providers assure a consistent learning among students. We want to see to what extent the quality of the learning content of the two online learning platforms influences the course completion rate among investigated students. We are using as research method the social document analysis and the survey based research. The results obtained from data processing indicating the fact that the quality of the learning content influences to a moderate degree the completion rate, most often other contextual and personal factors of users being known to intervene.

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Keywords: Learning platforms; Coursera; edX; quality of the learning content.

1. Introduction

Started in 2007 such as development of distance education, MOOC became very popular from 2012 onwards, several MOOC providers appearing, that offer courses in association with top universities. In the forefront of providers exist names such as Coursera, edX, Udacity, etc. Several universities have joined this new trend and are considered pioneers (Stanford, University of Pennsylvania, University of Texas at Austin, MIT, Harvard, University of California at Berkeley, Indian Institute of Technology,



etc.). Private companies have also joined this trend with companies like Google and Pearson PLC investing in these courses. Apart from the impressive number of well-known universities that have become MOOC providers, the popularity of these is obvious from the large number of users. MOOC (abbreviation from A Massive Open Online Course) first emerged from Open Educational Resources, which are documents and media that are openly licensed and that offer free access to teachers, learners for research purposes. The openness element is a leading trend in distance education (Bozkurt, 2015) MOOC is a course taught online where any number of people can participate and have open access through a website. A lot of the content is based on video lectures, as well as text documents and exercises, quizzes and assignments. Discussions forums are also an important part in creating debates among students and teachers (Kaplan, Haenlein, 2016). Regarding MOOC characteristics, we mention the fact that MOOCs are delivered entirely online unlike online programs from universities where blended or hybrid learning is used. They are open in the sense that they are free and no admission requirements. One does not need to be a student at the university providing the MOOC in order to participate. Anyone with an internet connection can register and follow-through the course. Also MOOCs content can be free to be reused and distributed, depending on the MOOC provider. Also most MOOC courses have university-level subject matter from university faculty. edX is a massive open online course provider. It holds university-level courses on a wide array of disciplines targeting worldwide participants, delivers their courses completely online, in the form of e-learning and some of their courses are delivered for free. edX also runs research programs to detect how people learn using their platform. edX is different from other Mooc providers from an organizational point of view, since it is a non-profit organization and also its software foundation is actually open source and can be reused by any other Mooc provider providing the open source license stays intact. edX was created by Massachusetts Institute of Technology and Harvard University in 2012. Since then it was joined by more than 70 schools, non-profit organizations and corporations that offer courses on their website. AS of March 2016 there are more than 700 courses online and more than 7 million students on edX. Coursera is a for profit company specialized on educational technology that offers MOOCs. Coursera hosts courses from universities and other organizations just like other MOOC providers. Coursera is backed by venture capital investments and functions like any other commercial company and since launching in April 2012 it has gathered more than 15 million students worldwide. According to our conception, Coursera and edX are the leaders for the platforms of the courses MOOC, on one side through the authority given by the MOOC providers such as prestige universities and on the other hand through the quality of the courses with a pronounced applicability of the information received.

2. Methodology of Research

The present paper aims to emphasize the way in which the two platforms Coursera and edX assure learning among students. We are operating with the following working hypothesis: We estimate the fact that the quality of content to be learnt influences to a moderate degree the completion rate of courses by students that enroll in these 2 platforms.

2.1. Methods of Research

We have used the following research methods: document analysis and survey based research. As a research method, document analysis assures a diverse range of obtained information, the critical examination of the value and limits of these important sources of information remaining essential. The survey based research has the survey as the central element, in other words the written instrument that the person participating in the research is receiving in traditional form or by e-mail or post. The survey represents a research technique and instrument, consisting of a series of written questions and perhaps image that determine in the queried people's answers that are registered in writing (Chelcea, 2004).

2.2. Structure of the Involved Tool

In the present paper we have realized an analysis of online documents, more exactly the two platforms: Coursera and edX on a content level, thus being interested to find out: What is being learnt? Why is the learning taking place? How is the learning organized? Who is learning? When is the learning taking place? Regarding the structure of our survey, its items have targeted the quality analysis of the learning content from 2 perspectives: 1. The appeal of learning content. 2. The deepening level of the learning content by students that participated. The items used to analyze the attractiveness of the targeted learning content: the type of language used on these 2 platforms (if basic English is used or not), the explicitness of the learning content (the existents of clear and sufficient explanations) and the relevancy of the learning content (the scientific value of these and the novelty degree of the information). We have used pre-codified items that allow an optimal statistical processing. The items used to verify the degree of deepening of learning content and that come out from the options of students in going through the learning content, have been built based on the model from Stanford University's Learning Analytics group (Kizilcec, Piech, Schneider, 2013) that reveals the depth of interest as a gradual element in 4 stage as follows: *sampling* (access to the course with the aim to browse, out of pure curiosity, without a clear learning-deepening purpose); *disengaging* (access to the course is provisional from a student's point of view, in the sense where they are interested temporarily in the learning content, without finishing and graduating the course, quitting completely after a while); *auditing* (access to the course while finishing it, without choosing an evaluation method as a way to verify the acquired information); *completing* (access to the course, with the option to verify the acquired information through: assignments and final exam). We have used mixed items because they allow a hierarchy of answers, with an open multiple choice test to assess the motivation for the main option of the depth level.

2.3. Sampling

In our research the sample consist of students from the 2nd year of study. We have used random, multi-stage sampling. Multi-stage sampling: the first phase where the unit of sampling has been represented by the University, then in the 2nd phase, the unit of sampling was the faculty (we have selected 4 faculties from the Politehnica University for our study).

Table 1. The distribution per faculties of 2nd year students, included in the sample

| Faculty | Total number of students | Percentage of sample | Number of surveyed students |
|---|--------------------------|----------------------|-----------------------------|
| Engineering and Management of Technological Systems | 350 | 26,14% | 88 |
| Energetics | 236 | 19,6% | 45 |
| Transport | 311 | 12,91% | 38 |
| Mechanical Engineering | 194 | 13,91% | 32 |
| Engineering in Foreign Languages | 116 | 10,43% | 27 |

3. Results

3.1. Document Analysis

Through the analysis of online documents, following the succession of the above-mentioned questions, we have obtained the following results:

- What is being learnt?

By accessing Coursera and edX, we observe both platforms have a series of common fields of knowledge, as follows: Art & Culture, Life Sciences, Business & Management, Chemistry, Computer Science, Data Analysis & Statistics, Economics & Finance, Education & Teacher Training, Energy & Earth Sciences, Engineering, Health, History, Humanities, Language, Law, Math, Medicine, Music, Philosophy & Ethics, Physics, Science, Social Sciences. edX has a few extra fields of expertise: Architecture, Communication, Electronics, Literature, while Coursera has the extra Personal Development section compared to EdX.

- How is learning taking place?

By analyzing the structure of learning content on the 2 platforms, we observe the fact that in both case is learning done through: text documents; videos (these also have transcripts, English subtitles in the case the student doesn't understand the spoken English of the teacher, the voice playback speed can be modified for easier understanding of what is being taught); interactive assignments , for example: quizzes (multiple choice tests to verify the information assimilated by participants), assignments, case studies, forum (students can ask questions to the teacher or to the other participants); self-assessment sheet for the learning progress (the student has an emphasis on the grades he took for his assignments, of the finished modules etc.).Coursera offers in addition to participants the possibility to subscribe to the institution newsletter which promotes itself for receiving information about other courses developed by them.

- When is the learning taking place?

Analyzing the time spent for learning on both platforms, we can observe that from the viewpoint of learning frequency, weekly learning posters are posted in order to shape the model of the current week. Moreover, learning takes place synchronously (for some courses, the teachers invite the attendants to a live chat outside the platform, for instance YouTube live or webinars) and asynchronously (through a forum mainly).

- Why is the learning taking place?

According to the study realized by Stanford University's Learning analytics group (Kizilcec, Piech, Schneider, 2013) on the 3 categories of users which are: high schoolers, students, graduates in order to measure the degree of deepening of current existing MOOC content, as we as the 3 levels: sampling, disengaging, completing, it results that generally the Sampling level (the access to the purpose of simple browsing, out of pure curiosity, without a learning-deepening study) is the most frequent among the three categories of users: 39% high schoolers, 74% students, 80% evaluators. Of course there are users that learn to finish courses and that register or getting the graduation certificates. In order to obtain certificates for graduating a course, a fee is demanded. In general, the certificate is not accompanied by credit points, but for a few exceptions. The certificate becomes interesting to employers, proving interest and proactivity (for example, to enter a new field of activity, these certificates are well received by employers. A mechanical engineering graduate that wants to work in a programming position, entry level, in the future will have higher chances if they have a few certificates from Coursera and edX.

- Who is learning?

The participants of these platforms are from all age categories. Age restrictions and initial training are not imposed. The trainers are all well documented professors from University. The participants of these platforms are from the same age groups. The trainers are teachers from other Universities with rather stress.

3.2. The survey Based Research

The survey aimed to analyze the quality of the learning content from 2 perspectives: attractiveness of the learning content and the degree of depth of the learning content by the course students. From the processing of the items used for analysis the attractiveness of the learning content results in the following: From the point of view of the language used on these 2 platforms, data shows that the biggest number of students (209) consider that they use basic English, that facilitates understanding of content to be acquired.

Table 2. The two platforms are using simple English

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 209 | 90,8 | 90,8 | 90,8 |
| | No | 21 | 9,2 | 9,2 | 100,0 |
| | Total | 230 | 100,0 | 100,0 | |

Also, the clarity of the content to be acquired is facilitating in the students' opinions (198) as well as the existence of sufficiently explain features.

Table 3. The explicitness of the learning content

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------|-----------|---------|---------------|--------------------|
| Valid | Yes | 198 | 86,1 | 86,1 | 86,1 |
| | No | 32 | 13,9 | 13,9 | 100,0 |
| | Total | 230 | 100,0 | 100,0 | |

Analyzing the relevancy of the learning content from the viewpoint of their scientific value and the degree of information novelty, it turns out that there have been grades of high scientific value (132) and very high (82) and the same time a high informational value (112) and very high (83) in the opinion of respondents (table 4 and 5).

Table 4. The measure to which the learning content is scientifically valuable

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | Very high | 82 | 35,6 | 35,6 |
| | High | 132 | 57,4 | 57,4 |
| | Small | 1 | ,4 | ,4 |
| | Moderate | 15 | 6,6 | 4,4 |
| | Total | 230 | 100,0 | 100,0 |

Table 5. The information novelty of learning content

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | Very high | 83 | 36,1 | 36,1 |
| | High | 112 | 48,7 | 54,7 |
| | Moderate | 35 | 15,2 | 15,2 |
| | Total | 230 | 100,0 | 100,0 |

From processing the items used to verify the degree of depth of the learning content, it turns out the following options of students in going through the learning content were most present, while they show the depth of their interest in 4 stages: sampling (10,4%), disengaging (29,5%), auditing (49,4%), completing (10,7).

Table 6. The deepening of the learning content

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------|---------|---------------|--------------------|
| Valid | Completing | 25 | 10,7 | 10,7 |
| | Auditing | 113 | 49,4 | 49,4 |
| | Disengaging | 68 | 29,5 | 29,5 |
| | Sampling | 24 | 10,4 | 10,4 |
| | Total | 230 | 100,0 | 100,0 |

4. Interpretation

We have considered the fact that, the quality of learning content is determined by: the language used on these 2 platforms, because users are people from all categories of age and preparation, using simple English allows accessibility to existing content; explicitness of the learning content – curricular design based on clear and sufficient explanations making intelligible all the existing content; the relevancy of the learning content – information having to bring scientific and novelty added value in order to have credibility and attractiveness among users. From the viewpoint of the language used on these 2 platforms, data shows that most students (209) consider they use a simple English, that facilitates the understanding of content to be learnt. Also, how intelligible content to be acquired is, is directly

facilitated by the platforms in the students' opinions (198) as well as the existence of clear and sufficient explanations. Analysing the relevancy of learning content, it turns out that they have high scientific value (132) and very high (82), as well as a degree of high information novelty (112) and very high (83). The most attractive courses for the students, in the access point of view, were according to their responses in the following fields of knowledge: Business & Management, Computer Science, Personal development.

It results from the presented values, the fact that, for respondents, the learning content currently existing on Coursera and edX are of high and very high quality. Our work hypothesis „we estimate the fact that the quality of content to be learnt influences to a moderate degree the completion rate of courses by students that enroll in these 2 platforms” is confirmed. According to resulted data, although the quality of existing content on Coursera and edX is a high and very high one in the opinion of investigated students, the rate of completing the courses are moderate. Therefore, from the processing of the items used to verify the degree of deepening of learning content the following options of students add up: sampling (10,4%, disengaging (29,5%), auditing (49,4%), completing (10,7). Full completion of the courses, students had registered into, in other words accessing the course with the option to verify the information learnt through assignments and a final exam result in level 4 – completing, which has a share of 10.7%. Completing the courses according to level 3 – auditing, means accessing the course with finalizing it, without requesting any form of evaluation as a method of verifying acquired information, and this is the most frequent level in investigated students. 29,5% of the investigated students are on level 3 – disengaging, a level of deepening existing content on Coursera and edX which signifies accessing the course with a partial interest by the student, in the sense that the student is temporarily interesting in the learning content, without wishing to actually complete it, and quitting for good after a while. Analyzing the motivation of student participants on these 2 platforms, regarding the option of a high level of deepening of learning content (in this case level 3 – auditing), they argument that they want to follow-through information in their own rhythm, without verification, to practice the university learning type which is different to the one they have in their faculty where they are present as students (learning that is always followed by grades and exams). The students claim that their interest for the two platform courses Coursera and edX, is based upon their needs to complete the information within the fields of interest for them and not upon the suggestions and recommendations of some teachers. Students that have chosen to a share of 29.5% the level 2 – disengaging, motivate their option through the fact that their interest for learning content is lost after a while not because they would be of low quality, but because of the fact they don't give way to student-typical stimuli, forgetting or postponing until forgetting to actually finish the course.

5. Conclusions

Although the 2 platforms edX and Coursera are used frequently by students, they see these 2 platforms as the alternative learning platform, a much easier way of going through information of interest without being evaluated at the end of it. The reason for which the completion rate of courses is a moderate one is that the approach being mostly chosen is that of a rigorous procedure needed before actual completion. The most attractive courses for the students, in the access point of view, were according to their responses in the following fields of knowledge: Business & Management, Computer Science, Personal development. Full completion of the courses, students had registered into, in other

words accessing the course with the option to verify the information learnt through assignments and a final exam result in level 4 – completing, which has a share of 10.7%. Completing the courses according to level 3 – auditing, means accessing the course with finalizing it, without requesting any form of evaluation as a method of verifying acquired information, and this is the most frequent level in investigated students. Analyzing the motivation of student participants on these 2 platforms, regarding the option of a high level of deepening of learning content (in this case level 3 – auditing), they argument that they want to follow-through information in their own rhythm, without verification, to practice the university learning type which is different to the one they have in their faculty where they are present as students (learning that is always followed by grades and exams). The students claim that their interest for the two platform courses Coursera and edX, is based upon their needs to complete the information within the fields of interest for them and not upon the suggestions and recommendations of some teachers. A few of the students are users that learn to finish courses and that register or getting the graduation certificates, these certificate being very well received by their employers, proving interest and proactivity.

References

- Bozkurt, A., Ozbek, E.A., Yilmazel, S., Erdogdu, E., Hasan,E., Guler, E., ... Aydin, H.C. (2015). Trends in Distance Education Research: A Content Analysis of Journals 2009-2013. *International Review of Research in Open and Distributed Learning*, 16(1),330-341. doi:10.19173/irrodl.v16i1.1953
- Chelcea, S. (2004). *Metodologia cercetării sociologice. Metode cantitative și calitative*, ediția a II-a. București: Editura Comunicare.ro.
- Kaplan A. M., Haenlein M. (2016). Higher education and the digital revolution: About MOOCs, SPOCs, social media, and the Cookie Monster. *Business Horizons, Journal of the Kelley School of Business, Indiana University*, 59(4), 441–450. doi:10.1016/j.bushor.2016.03.008
- Kizilcec, R., Piech, C., Schneider, E. (2013). Deconstructing disengagement: analyzing learner subpopulations in massive open online courses. *Proceedings of the Third International Conference on Learning Analytics and Knowledge*, 170-179. doi:10.1145/2460296.2460330
- www.coursera.org
www.edx.org