Crowdlearning, Applying Social Collaboration in Higher Education

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Abstract

The introduction of crowdsourcing techniques in Higher Education studies finds application in two key aspects that can dramatically improve the students' performance: (i) Crowdsourced knowledge building and (ii) Crowdsourced Grant schemes or external crowdfunding.

In first place, using crowdsourcing learning (also known as "crowdlearning") a group of students (following Bologna Higher Education University curricula) work together in self-proposed collaborative projects coordinated by the lecturing staff. In this way, each student proposes to bring different skills to the main project, which is effectively crowdsourced, in order to solve a proposed task.

In second place, external crowdfunding can be applied to the students' fees so the students obtaining high ranks or showing excellent performance can easily propose to crowdsource their studies. Rising college tuitions raises the financial pressure on families, meanwhile professors repeat tasks like activities creation and grading across campuses.

These two application examples require University-wide crowdsourcing methods, administrative tools, and access platforms (web-based, by example). This paper reports different approaches available nowadays which target to introduce crowdsourcing to Engineering studies in Higher Education institutions. In particular, the crowdsourcing experiences implemented at the Universitat Politècnica de València, Spain, are presented and discussed in this work.

1. Introduction

The term "crowdsourcing" comes from the combination of words "crowd" and "outsourcing" and defines the distribution of a task among a group of people. This term was used for the first time in 2006 in Wired Magazine [1], although several factors before that date contributed to the concept of "outsource work to a group of people". In the nature of the concept, crowdsourcing does not require using online resources, but the truth is that using the Internet makes it much easier and provides access to a wider amount of people around the world in less time and at a reduced cost. The idea of working in the same collaborative project with people located at the other side of the world would be unthinkable and would require a huge cost without Internet. In recent years, crowdsourcing have been used broadly in the market by means of online platforms to complete a given task. The most common type of crowdsourcing platforms are dedicated to gather ideas about a given topic and vote on the most popular option. Some application examples are the design of a product logo or the novel ideal for an advertising campaign.

Nowadays, enhanced lecturing in Higher Education uses different pedagogical approaches combining conventional lecturing paradigms with information and communications technologies [2]. Colleges and universities can use crowdsourcing methods to enhance the students' knowledge building processes and to optimize the lecturing methods and even the administrative processes. In this way, an efficient use of time resources for high-quality learning and also a reduction of the educational costs for the students can be achieved.

Hence, crowdsourcing finds application in two key aspects in the framework of Higher Education studies: (i) Crowdsourced knowledge building and (ii) Crowdsourced Grant schemes or external crowdfunding.

In first place, crowdsourcing techniques can be applied for better knowledge building. Nowadays, this concept is referred as "crowdsourcing learning" or "crowdlearning" [3]. In crowdlearning, a group of several students from the same or different institutions (always following Higher Education curricula defined by Bologna) can work together in self-proposed collaborative projects. These collaborative projects are designed and coordinated by the lecturing staff. To complete the proposed activity, each student participates providing different personal skills to the main project, which is effectively crowdsourced.

And in second place, external crowdfunding can be applied to the students' fees so the students obtaining high ranks or showing excellent performance can easily propose to crowdsource their studies. With crowdfunding is possible to reduce the financial pressure on the students' families due to the expensive college tuitions.

These two application examples require University-wide crowdsourcing tools and platforms. This work proposes different possibilities available nowadays targeting to introduce crowdsourcing to Engineering studies in Higher Education institutions. In particular, the crowdsourcing experiences implemented at the Universitat Politècnica de València are presented and discussed in this work.

2 Crowdlearning in Higher Education

We can define "crowdlearning" as "learning through real-case projects with the participation of several students (crowd)". The advantage of crowdlearning is that each student blends in skills that already have to complete the proposed project successfully. In this way, the different students gather together different skills which permits to improve their own skills and also acquire new ones. When developing the project, the students share information and skills that are inherently learned when developing the project activities. When using crowdlearning in Higher Education, it is very important to define and propose correctly the activities to the students with the proper educational material.

Using Massive Open Online Courses (MOOCs) is supported by crowdsourcing [4], breaking the maximum size of a classroom and providing high-quality contents to a wide audience. MOOCs are online university courses which enable the access to high-quality education without having to leave home. The interest for MOOCs is not to replace conventional Higher Education [5] but to meet the needs which are not covered today for long life education.

Nowadays, MOOCs are offered to cover a wide range of topics, ranging from mathematics to economics, e-skills to e-commerce, climate change to cultural heritage, or language learning to writing fiction, to mention some examples. A clear example of these platforms is Duolingo, a free science-based language education platform with over 38 million users. In only two years, Duolingo has become the most popular way to learn languages online and it was recently selected by TechCrunch as Best Education Startup and application of the year 2013 for iPhone and Android. According to an independent study conducted by the City University of New York and the University of South Carolina, an average of 34 Duolingo hours are equivalent to a full university semester of language education [6]. Since one semester university course usually takes more than 34 hours of work, this study suggests that Duolingo is more effective than an average university course. Some other examples of online platforms are Coursera, Udacity, Canvas, Udemy, FutureLearn or Miríada X. In Spain, Miríada X was created in January 2013 by Universia (a non-profit company part of Bank of Santander, which gathers almost all Iberoamerican universities) and Telefónica Learning Services (part of the biggest telecommunication company in Spain). Its first edition was considered a success with more than 200.000 students [7]. The Universitat Politècnica de València (UPV) in Spain has also an educational online platform for MOOCs called "UPV[X]" (https://www.upvx.es/). This platform includes the use of online videos as supporting material called Polimedia. Polimedia was launched in 2007 to allow UPV lecturers to record prepared short lectures as shown in Fig. 1. This kind of crowdlearning tools reduces teacher's pressure, while creating a global learning audience.
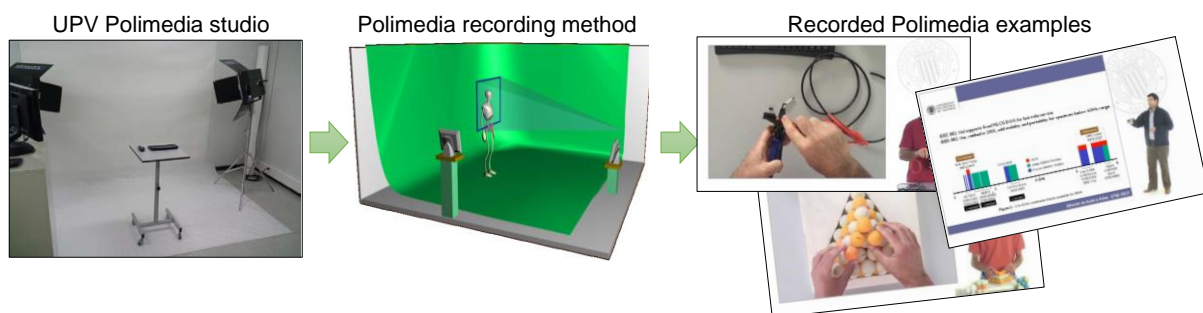
UPV Polimedia studio   Polimedia recording method   Recorded Polimedia examples

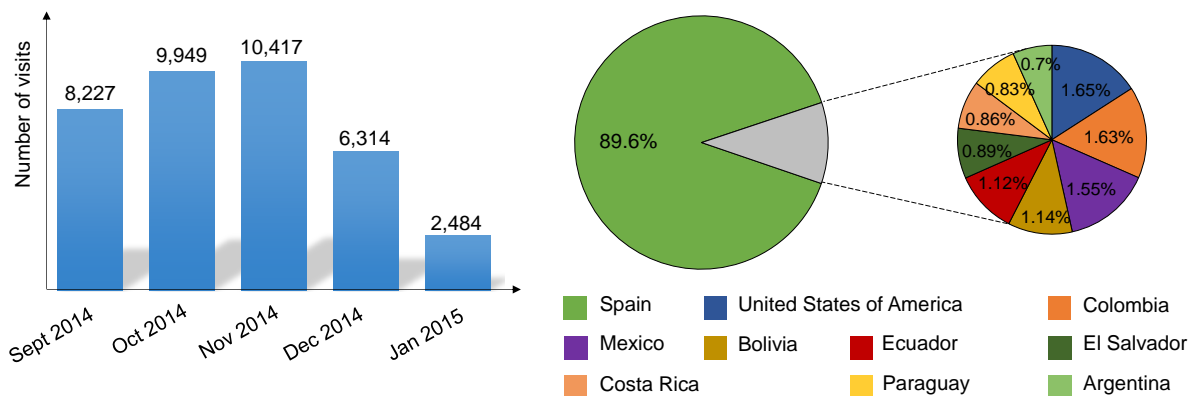Fig. 1. *Polimedia recording procedure and examples*

Fig. 2. *Number of visits and country to Polimedia in the first semester of academic course 2014/2015*

Polimedias can be also accompanied by synchronized slides, animations, screen captures and live demonstrations as shown in the example of Fig. 1. Since its creation, Polimedia has received 2,164,711 visits. In particular, the first semester of the academic course 2014/2015 received 37,391 visits (measured on the 15th January 2015) according to the distribution shown in Fig. 2. The Polimedia files are used as a supplement to the traditional live lectures or in MOOCs.

MOOCs offers flexibility to the students in terms of schedule and location. They typically involve from 20 to 200 hours of study depending on the topic and the difficulty of the course. However, preparing a MOOC requires a lot of time and effort from the professors. Preparing a MOOC is not just uploading some documentation online. The educational documentation must be fully redesigned for MOOCS. This is not, by far, a simple reuse of existing documents [8].

The suitability of MOOCs for academic credit is under evaluation and the proper way to award such credit is being investigated. This is the example of the 2013 European initiative led by the European Association of Distance Teaching Universities (EADTU) that involves universities from different countries including France, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Spain, UK, Russia, Turkey and Israel [9]. The EADTU defines that all MOOCs may lead to recognition with a completion certificate or a credit certificate that may count towards a Higher Education degree. In this latter case, students have to pay for the credit certificate with cost depending on the course size (the hours of study involved) and the institution. In order to achieve proper crowdlearning in online courses, it is necessary to categorize and propose effectively the different skills that the students should achieve in order to be able to match the competences established in the lecturing curricula.

With the proper design of MOOCs, students have access to more resources per course and with higher-quality compared with traditional courses. Previous studies suggest that well-designed MOOCs can lead to high-quality students' learning and better satisfaction levels [10].

3. Crowdfunding in Higher Education

In the last decade, education became more expensive year by year and when Higher Education tuition fees increase fewer people can access to education. In the United States, the tuition fees are at a very high level, getting over $10,000 in public universities and ranging from $40,000 up to $60,000 in private universities. This leads to a huge amount of students debt, with more than 40 million loans with an average value of $25,000 in 2012 [8].

According to the European Commission [11], national Higher Education fees vary significantly per country. The academic year 2014/15 national statistics represented in Fig. 3(a) cover full-time student fees including tuition, administrative and additional fees for students who exceed a regular length of study. De tuitions fees ranges from more than 5,000€ to no-fees as, by example, Ireland or Finland.
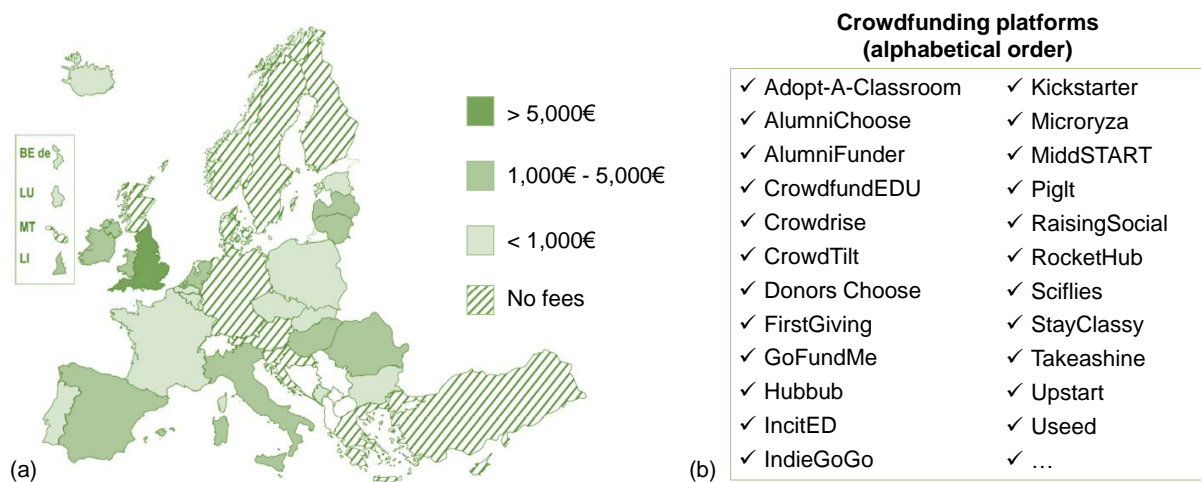
Crowdfunding platforms
(alphabetical order)

✓ Adopt-A-Classroom   ✓ Kickstarter
✓ AlumniChoose   ✓ Microryza
✓ AlumniFunder   ✓ MiddSTART
✓ CrowdfundEDU   ✓ PigIt
✓ Crowdrise   ✓ RaisingSocial
✓ CrowdTilt   ✓ RocketHub
✓ Donors Choose   ✓ Sciflies
✓ FirstGiving   ✓ StayClassy
✓ GoFundMe   ✓ Takeashine
✓ Hubbub   ✓ Upstart
✓ IncitED   ✓ Useed
✓ IndieGoGo   ✓ …

(a)   (b)

Fig. 3. (a) *Students fees in Europe by 2014/15 [11]*, (b) *crowdfunding platforms*

Crowdfunding appears as an interesting option to help students raising money to cover their tuition fees. Basically, we can distinguish four different types of crowdfunding: donation-based, reward-based, equity-based and credit-based [12].

Crowdfunding can be applied to Higher Education by helping the students to pay their tuition fees. "Crowdtuition" can be obtained launching campaigns on various crowdfunding platforms as mentioned in Fig. 3(b). Several online crowdsourced funding platforms currently provide educational support. An example of this approach is the case of the Oxford student Emily-Rose Eastop who launched a campaign to cover her Master's Degree tuition fees and managed to raise £26,581 (the 101% of her initial goal of £26,000). On the contrary, Nick Gaven used platform GoFundMe to pay for his Master's degree and achieved only about £700 (compared with Zack Danger Brown's crowdfunding project on Kickstarter, who raised more than $52,000 from an initial goal of $10 for making a potato salad) [13]. At the Universitat Politècnica de València, Spain, a first approach to crowdtuition funding was developed in 2012, where Comunitae.com offered the students the possibility of a student loan for completing their Higher Education studies.

4. Conclusion

In this work, the possibilities available nowadays to apply crowdsourcing in Higher Education are overviewed. Mainly, two key aspects in the framework of Higher Education are proposed: "crowdlearning" (for crowdsourced knowledge building) and "crowdtuition" (for crowdfunding of the tuition fees). In the first case, MOOCs are supported by crowdsourcing, breaking the maximum size of a classroom and providing high-quality contents to a wide audience. With the centralized design of MOOCs, the students can access to more resources per course and with higher-quality compared with traditional courses. As suggested by previous studies, well-designed MOOCs can lead to high-quality students' learning and better satisfaction levels than traditional courses.

In the case of external crowdfunding, a first approach to crowdtuition funding was developed at the Universitat Politècnica de València, Spain, providing the possibility of a student loan for completing their Higher Education studies. Using these crowdsourcing techniques in Higher Education can increase the efficiency of the learning workflows and optimize the curricula to obtain better and deeper learning from the student, which is the ultimate objective of Higher Education.

Acknowledgements

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