Institutional Support to Provide Freshmen with Flexible Learning Paths at Course and Semester Level in Open Higher Education

Loles González, eLearn Center (eLC) / Universitat Oberta de Catalunya (UOC), Julià Minguillón, UOC, Josep Antoni Martínez-Aceituno, eLC / UOC, Julio Meneses, UOC, Spain

Summary

As an open university, at UOC there are nearly no enrolment requirements and, furthermore, students freely choose the courses they want to take each semester. But most of the students that choose UOC to combine their daily live with university studies are not really aware about the effort and workload implied. Therefore, there is a significant dropout rate after finalizing their first semester. In this paper we describe an institutional project named ESPRIA that combines the use of institutional learning analytics and the work with teachers at course design level, in order to provide students with some personalized support during their first enrolment. This guidance may help them to avoid an excessive burden due to a wrong course election, to gauge and meet their expectations by achieving their goals at the end of their first semester, and to be motivated to re-enroll in the following ones.

Introduction

Trying to answer "what are open universities for?", Alan Tait states that open universities "are for development, not just for teaching and research, nor even for adult higher education at a distance." Among their purposes, Tait (2008) emphasizes on "intervention to change the higher education system in terms of quality and innovation" (p. 92), mostly by adopting ICT and offering online learning. Butcher and Rose-Adams (2015) discuss three key factors that allegedly define open universities, namely the possibility of choice, flexibility and employability, which need to be fully redefined to meet part-time students' needs. Actually, flexibility may have different meanings according to each university. Among others, "open" means that there are no enrolment requirements that they are very weak, or that they are related to course calendar. In the case of the Universitat Oberta de Catalunya (UOC), "open" means, among others, that students freely choose the courses they want to take every semester under the guidance of a mentor, who provides non-bonding recommendations, a typical scenario in open higher education.

The number of different enrolment patterns among newcomers is surprisingly very high, despite mentor's recommendations and all the available information about course syllabus and learning paths provided by the University. This shows the large diversity of part-time students' interests. For instance, in the second semester of academic year 2016/2017, a total of 4,243 new students started an official graduate degree, generating 2,193 different enrolment patterns. From these, 1,667 (76.0%) were unique (that is, selected by only one student). On the other hand, 90 (0.02%) students selected the same combination of courses (i.e. the most popular in one degree) as their first enrolment. This flexibility may be perceived by some students as an additional barrier to determine the best courses they should take during their first semester, due to the large number of possible combinations and the lack of information about their difficulty when taken at the same time. Furthermore, institutional data shows that a wrong choice of courses taken in the first semester may lead to dropout, not only from a given course but also from the degree (Minguillón, Santanach, & Appel, 2016). Unfortunately, each course is a silo that has been carefully designed according to UOC's pedagogical model but without taking into account other courses in the same program, generating possible interactions that can only be analyzed *a posteriori* using a learning analytics strategy.

According to Siemens and Gasevic (2012), learning analytics is defined as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs." (p.1). Dropout is one of the scenarios where learning analytics can be applied. It is a multifaceted problem, which needs to be addressed from several perspectives following an institutional a multilevel approach (Mor, Garreta-Domingo, Minguillón, & Lewis, 2007), using all information available about the learner. In this paper we describe the ongoing institutional project "First-year Students"

ESPRIA (for its initials in Catalan) that uses institutional learning analytics (Minguillón, Santanach, & Appel, 2016) for providing freshmen with some personalized support during their first enrolment in their first academic semester, pursuing academic flexibility as well as improving overall course quality.

Early dropout in online higher education

A recent survey on educational data mining (Peña-Ayala, 2014) shows that there has been an increasing interest in recommendation systems at course and to minor extent in semester levels, boosted by students' data availability. More recently, Slim, Heileman, Al-Doroubi, and Abdallah (2016) have shown that course enrolment has a large impact on final student's achievements and engagement in both course and semester levels. As stated in Ognjanovic, Gasevic, and Dawson (2016), self-efficacy and efficacy expectations are well established as strong predictors of academic achievement and, conversely, dropout, especially in educational settings where students have partial or even complete freedom to select the courses they want to enroll in.

It is well known that dropout levels in distance education are usually higher than in its traditional face-to-face counterpart (Tello, 2007). It can be seen that, in both models, academic and social integration at the early stages of the relation student-institution are key issues. Lee and Choi (2011) identified and classified student, environmental, and course/program factors in online learning, being the latter the target of institutional policies against dropout, including course design and institutional support. In a recent literature review by Bawa (2016), the author enumerates several critical factors that lead to high attrition rates in online environments. One of them is the misconceptions learners have about the workload, cognitive challenges, and general expectations, which may lead to a wrong selection of courses for the first semester.

In the case of open universities, where students can take a break one or more consecutive semesters, Grau-Valldosera, Minguillón, and Blasco-Moreno (2018) have shown that doing so after the first semester is, in practical terms, equivalent to dropping out. Nevertheless, the authors have also identified several factors that differentiate between continuance intention and effective re-enrolment (i.e., not dropping out). Among them, time management during the first semester emerges as a key issue, as most students choose UOC to save time. However, a negative perception on the amount of time needed to properly follow the semester is one of the factors for no further re-enrolment. Therefore, any institutional support should address balancing students' expectations and goals during their enrolment (i.e. their selection of courses) with previous knowledge about academic results, as well as providing students with some flexibility during their first academic semester to face unexpected situations. As Rodríguez-Gómez, Meneses, Gairín, Feixas, and Muñoz (2016) showed, first enrolment is also a key issue in brick-and-mortar universities, taking into account that most students returned to the university system in the first year after dropout, but many of these students change to a different area of knowledge, which is clear evidence of dysfunctional and inefficient guidance systems during university entrance.

Providing first-year students with institutional support

The UOC is an innovative university that is rooted in Catalonia and open to the world. It offers people lifelong learning to help them and society advance, while carrying out research on the Knowledge Society. Its educational model is based on accompanying students using e-learning (Sangrà, 2002). Continuous evaluation is used to guide students through each course, by means of both formative and summative assessment. Actually, successful adherence to continuous evaluation is the best proxy for re-enrolment and vice versa. Hence, students not following the proposed continuous assessment activities are most likely to drop out. Therefore, continuous evaluation is a crucial element in UOC's educational model, which needs to be embraced by new students. It is important to state that UOC's student profile is typically 32 years old on average; she has prior university education, has a part-time or full-time job, and, usually, has family responsibilities.

In this sense, the ESPRIA project is aimed to face three typical situations faced by newcomers in their first semester, namely taking several courses with possibly overlapping schedules, reshaping their learning path if they cannot follow the proposed continuous assessment activities, and assuming an excessive burden due to a wrong course election. The main goal of ESPRIA is helping students to adhere to continuous assessment, providing them with flexible enrolment packages (i.e. subsets of courses), which have non-overlapping calendars,

a revised course syllabus and workload, as well as additional or alternative opportunities to follow continuous assessment in case the student misses one of the proposed activities. Packages have been designed in collaboration with professors taking into account previous data, namely typical enrolment patterns and course pass rates (Minguillón, Santanach, & Appel, 2016). Moreover, to create the packages in the involved graduate degrees we selected courses according to students' interests. Each package (typically containing 3 courses) is a possible learning path (at semester level) that tries to minimize the aforementioned typical situations. Recommending packages increases freedom of choice while improving flexibility, because it guarantees the aforementioned benefits to the enrolled students. Each degree offers 3 packages and the students have flexibility to choose any package and the number of courses within the package they are interested in, taking into account that UOC's typical enrolment is 2 or 3 courses.

First semester students undergo an enrolment procedure where they are guided by a mentor, who helps them to select the courses they will take in their first semester, according to their profile and interests. As part of this procedure, new comers are invited to provide additional information by means of a survey (AQD) that contains questions about their available time for studying. According to this information and students' preferences, their mentors provide a recommendation, based on the pre-designed packages or a subset of courses within the same package. The project has been designed to guide the students through their first academic year but placing more emphasis on the first semester. We expect students participating in ESPRIA to repeat the same enrolment procedure in their second semester, taking into account their actual academic results in their first semester.

To conclude, this project has been designed and implemented by the eLearn Center in coordination with degree managers, teachers, and mentors, providing them with advise and support to achieve ESPRIA objectives.

Results

In its first semester of deployment, ESPRIA has been implemented in six different graduate degrees (Business, Administration and Management, Law, Computer Engineering, Catalan Language and Literature, Communication Sciences, and Social Education), involving 51 different courses, 45 full-time teachers, 140 mentors, and 253 part-time teachers. A total of 1,647 students enrolled in their first semester in February 2018 in one of these degrees (representing the 41.6% of all new UOC students taking an official graduate degree), thus becoming potential ESPRIA participants. These figures show the importance of ESPRIA as part of UOC's strategy to improve students' support and fight early dropout while providing flexibility in their choices.

Table 1: Summary of participants in the ESPRIA project.

	ESPRIA	ESPRIA + OTHER	NON ESPRIA	TOTAL
	N (%)	N (%)	N (%)	N
BUSINESS ADMINISTRATION AND MANAGEMENT	216 (51.18%)	142 (33.65%)	64 (15.17%)	422
LAW	185 (47.19%)	103 (26.28%)	104 (26.53%)	392
COMPUTER ENGINEERING	205 (48.93%)	149 (35.56%)	65 (15.51%)	419
CATALAN LANGUAGE AND LITERATURE	9 (25.00%)	20 (55.56%)	7 (19.44%)	36
COMMUNICATION SCIENCES	61 (40.40%)	63 (41.72%)	27 (17.88%)	151
SOCIAL EDUCATION	174 (76.65%)	38 (16.74%)	15 (6.61%)	227
TOTAL	**850 (51.61%)**	**515 (31.27%)**	**281 (17.12%)**	**1,647**

Table 1 summarizes the number of students participating in the ESPRIA project according to their choice of courses in each degree. Notice that most of students take only courses within ESPRIA (51.61%), while only a minority of students chooses a combination of courses that are not part of ESPRIA (17.12%).

Discussion

As an ongoing project in its first stage (i.e. first cohort of students enrolling in accordance to the proposed enrolment packages of courses in each degree), ESPRIA will be fully evaluated in the following years, in order to determine its impact on freshmen, their academic performance and satisfaction, and their re-enrolment rate at their second semester. Nevertheless, several conclusions can be already drawn from this first semester of deployment.

Not surprisingly, the critical factors that emerged in this phase were those related to organizational changes. For instance, some teachers were reluctant to revise course syllabus and workload as well as coordinating course schedule with other teachers, breaking the traditional "siloed" way of designing courses at UOC. Another important issue was training a high number of mentors and providing them with support and new tools to supervise the new enrolment process involving packages. In order to make mentors' tasks easier, a web app with a friendly interface was developed according to their informed needs and preferences. This application helps mentors to check and look up information about each student and the courses / packages they have select, gathering also relevant information about the enrolment procedure (i.e. available time for studying). Nonetheless, preliminary results show that a large percentage of students (51.61%) chose to follow their mentors' recommendations and finally enrolled only in specific courses / packages that were revised under the ESPRIA framework.

Current and future research in this topic includes analyzing ESPRIA success with respect to continuous evaluation and effective re-enrolment of both participating and non-participating students and their level of enga-gement. On the other hand, more programs and courses will be part of ESPRIA in the next semesters, so more data about students and their course selections in a wider selection of graduate degrees will be available. Finally, all available data from ESPRIA could be also analyzed in order to measure the idoneity of the proposed packages within each degree, trying to detect possible bottlenecks and improving enrolment in further recommendations.

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