

Transforming a University Course into a Two-public Sustainable MOOC

Sébastien Combéfis¹, Corentin Vande Kerckhove², and Peter Van Roy²

¹ Electronics and IT Unit, École Centrale des Arts et Métiers (ECAM)
Promenade de l'Alma 50, 1200 Woluwé-Saint-Lambert, Belgium
`s.combefis@ecam.be`

² ICT, Electronics and Applied Mathematics Institute (ICTEAM)
Université catholique de Louvain, 1348 Louvain-la-Neuve, Belgium
`{corentin.vandekerckhove,peter.vanroy}@uclouvain.be`

Abstract. This paper presents one possible sustainable evolution of MOOCs based on a permanent transformation of selected university courses into two-public courses. Two MOOCs have been developed to replace a traditional university course. They are followed at the same time by on-site students and by worldwide learners. The transformation has been spread over two years to cope with limited human resources, that were not experienced with MOOC creation. On-site students benefit from extra supervised activities to satisfy university-level course requirements. This paper summarises the transformation of the traditional course into MOOCs, and how it has been used in a hybrid pedagogy paradigm. It then presents some statistics about this year's run of the course and concludes with a proposal about how to make MOOCs sustainable.

Keywords: MOOC creation, course transformation, sustainability

1 Introduction

Creating a MOOC requires a lot of resources, both human and material. It is therefore important to find ways to make MOOC development sustainable. This paper is about the transformation of a traditional course about programming that has been taught for nine years at Université catholique de Louvain. The course is a 5 ECTS university-level course targeted to second year bachelor students in engineering (not only CS majors). The transformation has been spread over three academic semesters to make it possible to cope with the limited resources and to allow the staff to gain experience with MOOC creation. The transformation of the traditional course into a MOOCs:

- makes it possible to reach two publics with (almost) the same effort and resources, both human and material;
- opens the possibility for interactions between the two publics;
- and offers new means of education to on-site students.

The remainder of this paper is structured as follows. Section 2 summarises the transformation of the traditional course into MOOCs, and how it can be performed more generally. Section 3 then presents statistics about the two first runs of the course.

2 Transformation of a traditional course to a MOOC

The transformation of the traditional course into two MOOCs has been performed gradually and spread over three academic semesters [2]. As shown on Figure 1, the transformation has been performed in three steps.

1. The first step was the creation of a SPOC covering 3 ECTS of the traditional course, that was used for the on-site students as the traditional course has been remastered as a two-track course, mixing SPOC and traditional activities [1].
2. The second step was the opening of the SPOC to worldwide students as a MOOC. The SPOC has been improved thanks to the feedbacks received from the on-site students.
3. The third step was the full transformation of the traditional course into two MOOCs that are followed at the same time by on-site and worldwide students, with exactly the same material.

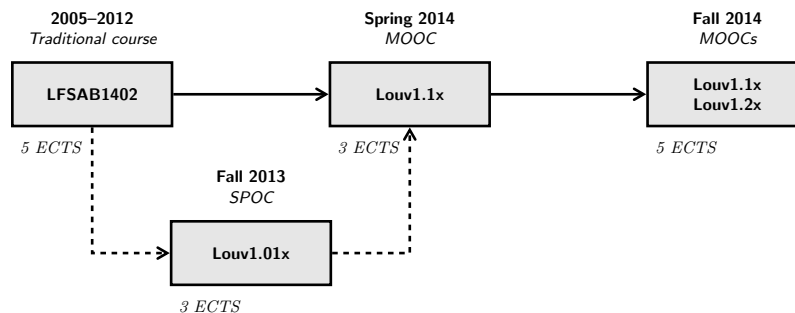


Fig. 1. Three-step transformation of a traditional course into MOOCs goes through the creation of a SPOC for on-site students.

Each step of the transformation is motivated by a set of precise goals; the ultimate goal being the complete transformation of a traditional course into MOOCs. The first step is an opportunity to use on-site students as guinea pigs, their comments and suggestions being used to improve the quality of the SPOC before opening it to the world as a MOOC. The second step is used as a first experience with MOOCs, their animation and distance teaching. The third step is the complete transformation of the traditional course into two MOOCs, since a 5 ECTS volume is too large for a single MOOC.

This gradual transformation makes it possible to create a sustainable MOOC that can be both used locally and opened to the world, at the same time. The main benefit of the proposed transformation scheme is a mitigation of the resources needed to create a MOOC. It also introduced difficulties to handle:

- There is a clear difference amongst learners, concerning their motivation, available time to spend on the MOOC, and education level. The on-site students must follow the MOOC as it is a mandatory course in their program; a direct consequence is that the MOOC must be a university-level course. The worldwide students can only spend their free time on the MOOC and a large number are professionals that cannot handle university-level requirements, such as solving the regular coding assessments, for example.
- To decrease the dropout rate, the activities proposed on the MOOC have been adapted for the worldwide students. Therefore, to satisfy the requirements attached to university-level courses, extra activities must be proposed to the students, in a traditional way. For example, on-site students had a project to realise that has no been put in the MOOCs, but kept as an extra activity in addition to the MOOC.

Apart from these facilities for on-site students, to satisfy university course requirements, both publics are following exactly the same course, with the same videos and exercises. On-site students also have to pass the MOOCs' exams, but have an additional proctored exam at the end of the semester.

3 Statistics about the two first editions

Table 1 shows the number of registered students with the number of certificates that have been generated. For the Spring 2014 edition, only honor code certificates were available. Only 21,630 students among the 29,951 registered chose an honor certificate and only 2% obtained it. This low percentage is certainly due to the fact that it was the first edition of the MOOC, with therefore attracted curious students not necessarily willing to get to the end of the course. These proportions raised to 6% and 8% for the two MOOCs held in Fall 2014, but about 300 students were on-site students.

Table 1. Statistics about registrations and certifications for the Spring 2014 and Fall 2014 editions of the MOOC.

	Registered	Honors	Audits	Certified
Spring 2014 (Louv1.1x)	29,951	435/21,630 (2%)	–	–
Fall 2014 (Louv1.1x)	12,441	374/5284 (7%)	177/4188 (4%)	24/40 (60%)
Fall 2014 (Louv1.2x)	6,755	452/5644 (8%)	–	13/25 (52%)

Table 2 shows that the highest degree hold by the MOOC students are quite similar between the two editions of the MOOC. The largest majority of students

are currently enrolled or have been graduated from a higher education institution. There is also a non-negligible amount of students having just graduated from secondary school education, but did not get a bachelor degree yet. This corresponds to both publics we have, namely the on-site and worldwide students. Looking into the higher education category shows that roughly half has obtained a bachelor student and the other half has a master degree. This shows that half of those students are maybe professional with a job.

Table 2. Statistics about the highest degree hold by the MOOC students.

	Spring 2014	Fall 2014
	Louv1.1x	Louv1.1x
Did not attend school	0.2%	0.2%
Elementary primary school or below	0.3%	0.4%
Secondary school or below	28.9%	23.6%
Higher education bachelor or master	66.5%	71.5%
PhD/doctoral degree	4%	4.2%

4 Conclusion

This paper proposes a way to create a MOOC from an existing traditional course with limited resources by spreading its creation over time and with three gradual steps. The proposed approach can be used to create sustainable MOOCs that can serve on-site students as well as worldwide learners, while mitigating the necessary resources. An hybrid approach is used for on-site students for the first and last steps of the transformation, mixing traditional activities with the MOOCs. Statistics about the two first editions of the MOOC confirm that two different publics are indeed following the MOOC.

To conclude, in our view, one possible sustainable evolution of MOOCs is the permanent transformation of selected university courses into two-public courses.

References

1. Combéfis, S., Bibal, A., Van Roy, P.: Recasting a traditional course into a MOOC by means of a spoc. In: Proceedings of the European MOOCs Stakeholders Summit 2014 (EMOOCs 2014). pp. 205–208 (Feb 2014)
2. Combéfis, S., Van Roy, P.: Three-step transformation of a traditional university course into a MOOC: a LouvainX experience. In: Proceedings of the European MOOCs Stakeholders Summit 2015 (EMOOCs 2015). pp. 76–80 (May 2015)