Three-Step Transformation of a Traditional University Course into a MOOC: a LouvainX Experience

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Context

- Mature traditional course (LFSAB1402 : Informatique 2)

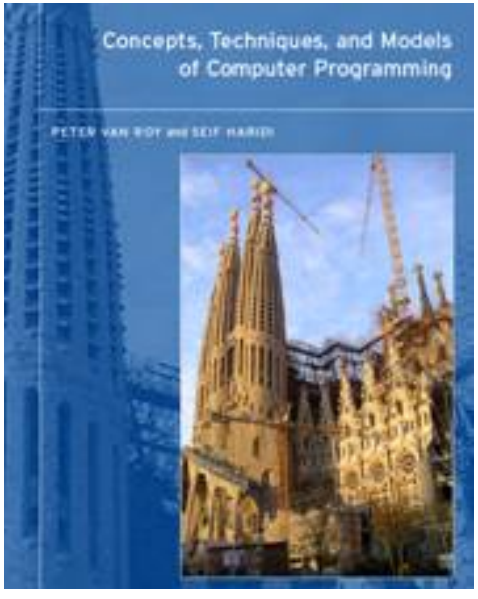
  2nd year university programming course for engineering students

- Taught since 2005

  A lot of available material:
  exercises, textbook in EN and FR...

- Transformation into MOOC

  Gradually with three steps



(MIT Press)

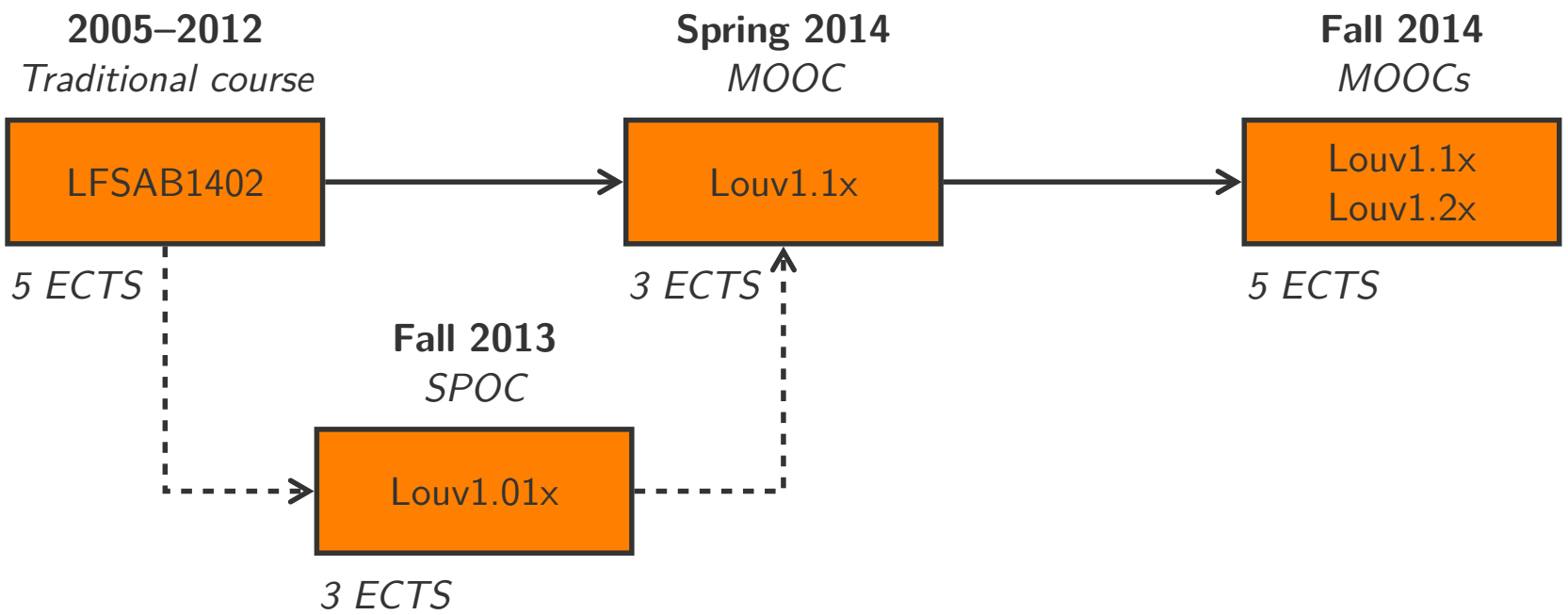
Motivations

- **Transforming the course into a MOOC**
  1. Reaching two publics with (almost) same effort and resources
  2. Opening possibility for interactions between the two publics
  3. Offering new means of education to local students
- **Migration spread over two years**

  Cope with limited human resources and MOOC experience

Three-step Transformation

- Transformation spread over three academic semesters



First step: local SPOC

- Exclusively dedicated to on-site students
- Part of the traditional course covered by a SPOC

  3 ECTS covered by the SPOC
- Two-track structure mixing SPOC and traditional activities
- First jump for the staff in the MOOC world

  Creating videos and exercises, restructuring the course

Second step: worldwide MOOC

- Exclusively dedicated to worldwide students
- Integration of coding exercises

  Automatic correction and intelligent feedbacks
- Experience with MOOC animation for the staff

  Forums animation and distance teaching

→ Session 5 @ Auditorium 3

Automatic Grading of Programming Exercises in a MOOC Using the inGinious Platform

Third step: local+worldwide MOOC

- At the same time for local and worldwide students
- Traditional course split in two MOOC courses

  Louv1.1x and Louv1.2x
- On-site students still have some on-site activities

  Restructuring lectures and lab sessions

Evolution of the on-site course

	Fall 2012	Fall 2013	Fall 2014
On-site	Lecture: 2h/week Lab session: 2h/week Project Midterm+final exam	Lecture: 2h/week Lab session: 2h/week Project Midterm+final exam	**Lecture: 1h/week** Lab session: 2h/week Project Midterm+final exam
On-line	None	1 SPOC 13 lessons/**10 weeks** 8h37 videos Midterm+final exam	2 MOOCs 6 lessons/**7 weeks** + 6 lessons/**6 weeks** 5h20 + 5h01 videos Two final exams
Resources	1 professor 4 teaching assistants 11 student monitors	1 professor 4 teaching assistants 11 student monitors **1 MOOC assistant**	1 professor 4 teaching assistants 11 student monitors **1/2 MOOC assistant**

Discussion

- Differences amongst learners

  Motivations, available time, education level and requirements

  - **On-site students**: bonus/penalty, university-level MOOC, mandatory for all engineering students (incl. non-CS majors)
  - **Worldwide students**: MOOC during free time, dropout

- On-site students still have some on-site activities

  Restructuring lecture and lab sessions

- Evaluation of on-site students

  Bonus/penalty for the MOOC, proctored exam at the end

Preliminary evaluation

- Survey for on-site students, 78 participants
- Two analyses
  - Perceived workload to solve one exercise
  - Agreement level for a set of statements

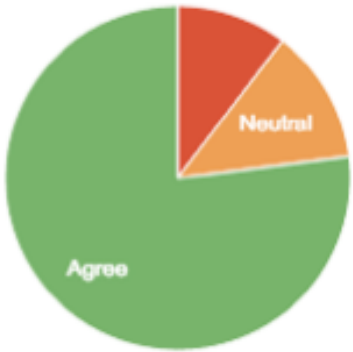
Perceived workload

- Classical exercises take less time to solve
- Coding exercises take more time to solve

	Classical exercise		**Coding exercise**	
Less than 5 minutes	33.64	**51.72**	9.01	1.15
5 minutes	61.68	**39.08**	41.44	3.45
10 minutes	3.74	4.60	26.13	5.75
15 minutes	0	3.45	0.9	**24.14**
More than 15 minutes	0.93	1.15	22.52	**65.52**

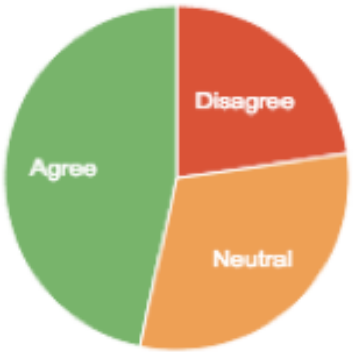
Agreement levels I

Q1) I am globally satisfied with the MOOCs.

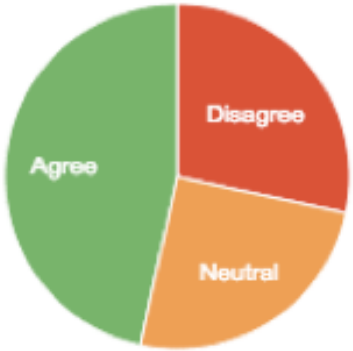


Q2) Thanks to the deadlines, I worked regularly for the programming course.

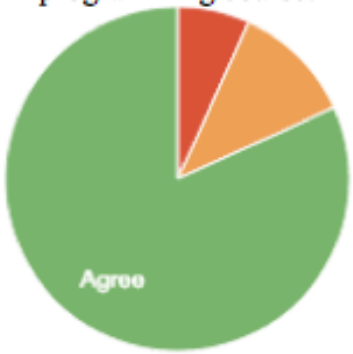
Q3) The requirements of the MOOCs are the same as those of the course.



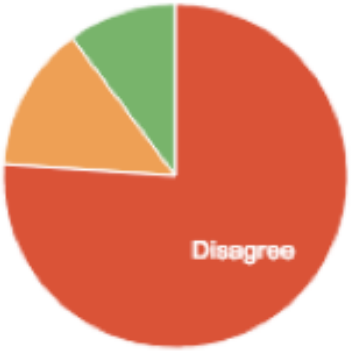
Q4) When reaching the end of the MOOCs, I felt ready for the proctored exam of the course.



Q5) I feel that I spent too much time on the course.



Q6) I did all the exercises of the MOOCs mainly to get the +2 bonus.



Q7) I was motivated by the possibility to earn certificates for the MOOCs.

Q8) I used the discussion forums on the edX platform for the MOOCs.

Agreement levels II

- Regular work ensured by deadlines

  Students felt ready for the proctored exam after the MOOC

- Difference between course and MOOC requirements not clear

- The main motivation for on-site students is the +2 bonus

  Not interested in earning certificates

- Very few interactions between on-site and worldwide students

Conclusion

- Two distinct groups in the worldwide students
  - Put in the effort to obtain a certificate
  - Stay active until the end but do not target a certificate
- Better feedback needed for coding exercises

  Coding exercises are too time-consuming
- Very satisfactory experience for the course transformation
  - On-site course will stay a MOOC for the foreseeable future
  - Extra resources necessary are manageable (1/2 TA extra)

Future evolution of MOOCs

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