

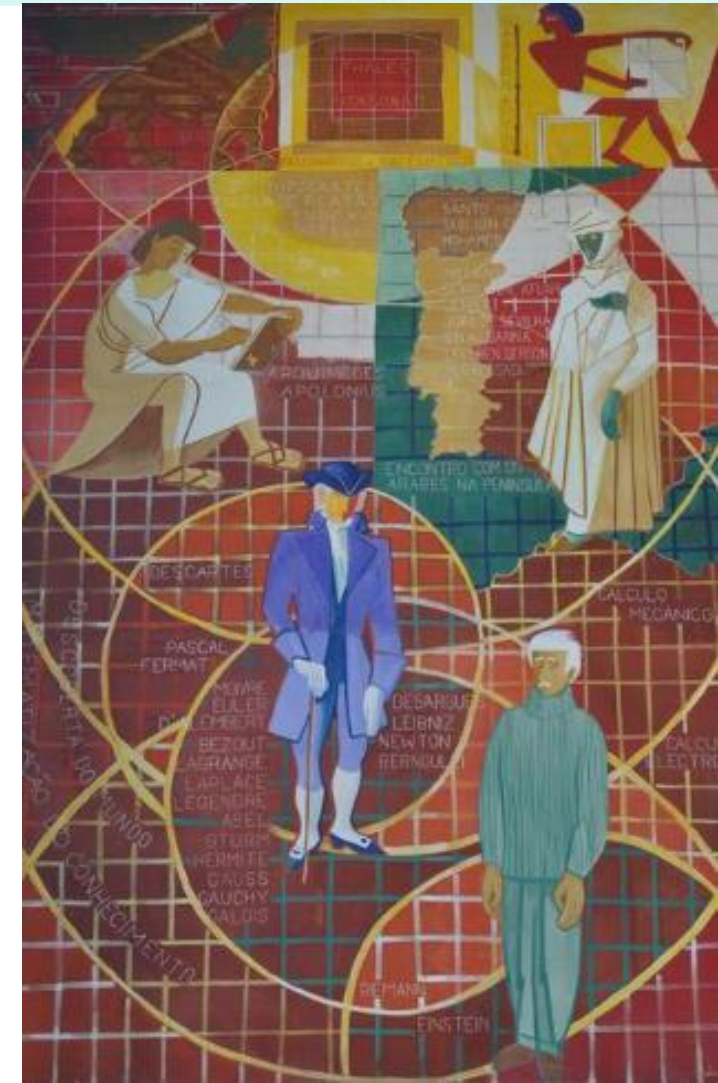
WORKSHOP

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MOOC for mathematics teacher education: a collaborative space for learning

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UNIVERSITÀ
DEGLI STUDI
DI TORINO



DIPARTIMENTO
DI MATEMATICA
GIUSEPPE PEANO
UNIVERSITÀ DI TORINO

DI. FI. MA. in Rete

PIANO NAZIONALE
LAUREE SCIENTIFICHE





MOOCs in general

Math MOOC UniTo

Sharing mathematical contents for
online teacher education

Collaboration among teachers
in online environment

Conclusion



MASSIVE
100s of thousands of participants



OPEN
No specific requirements



ONLINE
Distributed all over the world



COURSE
Virtual educational platform



cMOOC

focused on the **learning community** and **connections** between members of the community across the web, rather than on course content or the instructor (Rodriguez, 2012).

They are structured to provide a minimum of **centralised control or content**, and to develop **participants' ability to contribute** to, and learn from, the digital network. Arguably, the '**massive**' in these courses tends to refer mainly to the scale of the connections, content generation and participant activity in these courses, not their number of participants, which appears to be relatively low in comparison with xMOOCs (Bayne & Ross, 2014).

xMOOC

xMOOCs are based on **scalability of provision** (Coelho et al., 2015), i.e., they are focused on giving many students access to an online course within the same platform.

They tend to privilege **individual studying** and are commonly described as being driven by '**behaviourist principles of knowledge acquisition** through repetition and testing (Rodriguez, 2012). One argument for this approach is that it can **scale up** to cater for the numbers of people who sign up for these courses; typical enrolments reach 50,000, while the largest MOOC had 226,652 enrolments (Jordan, 2013). This scaling up is important to proponents of these larger MOOCs, who often frame their mission as being one of opening global access to education (Knox, 2013).

Despite the fact that the cMOOC/xMOOC binary is usefully descriptive of two different trajectories of development, recent literature is beginning to move away from what is increasingly seen as a simplistic categorisation.

We are starting to recognize multiplicity of MOOC designs, purposes, topics and teaching styles.

Some teachers and organisations are speaking about

- DOCCs: Distributed Open Collaborative Course (Jaschik, 2013),
- POOCs: Participatory Open Online Course (Daniels, 2013),
- SPOCs: Small Private Online Course (Hashmi, 2013),
- BOOCS: Big (or Boutique) Open Online Course (Tattersall, 2013).

Teams and institutions are reframing and reshaping the MOOC and the massive for their own purposes – for collaborations (Scholz, 2013), ‘flipping’ of classrooms (Bruff *et al.*, 2013), and more.

Each MOOC is profoundly shaped by its designers, teachers, platform and participants.

The binary terms ‘cMOOC’ and ‘xMOOC’ seems to be limited in their usefulness for those seeking to develop a MOOC, to understand how MOOCs are actually being experienced, or to draw conclusions about good practice in MOOC design and pedagogy.

2008

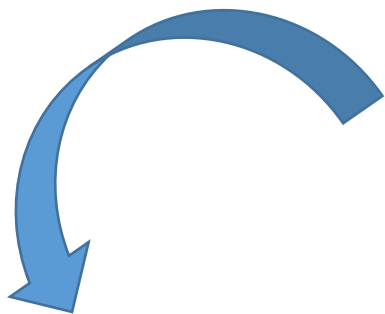


Even in Italy, from 2013, there are several open source courses, offered mainly by the Federico II University in [Naples](#), by the La Sapienza and Luiss Guido Carli University in [Rome](#), and by the Bocconi, Bicocca and Politecnico in [Milan](#).

The main target of this MOOCs are students. Currently they tend to use technology to spread a university model of mass education: the students find the online material and perform online tests.



Member of a research community



TEACHER



Dynamics of the school with his students

Some in-service teachers* **have been fascinated** by the features of the MOOCs

they are open courses

they allow autonomous management
of the times
(you get access anywhere, anytime)

they promote learning
and social cooperation

they were seen as a springboard to carry out

the refinement of
teaching practices towards
activities that include the
laboratory methodology



and a conscious use of
technologies

*(Alberti V. & Labasin S.) graduated from the 2° level Master «*Trainers in Mathematics Education*», held at the Department of Mathematics of Turin University

Math Mooc UnitO

WHAT: project aims to design and deliver MOOCs for mathematics teachers

WHY: increasing their professional competencies and improving their classroom practices

WHO: teachers in secondary school, from all over Italy

WHERE: on DI.FI.MA platform in Moodle

DI. FI. MA. in Rete



WHEN:

▼ MATHMOOC		
 MOOC Geometria	from October 2015 to January 2016	
 MOOC Numeri	from November 2016 to February 2017	
 MOOC Relazioni e Funzioni	from February 2018 to May 2018	





The MOOC offers the use of materials created by the students of the Master through technological tools, which foster communication and sharing.

Thanks to the direct use of these resources, the teachers experience how to socialize their expertise and are asked to think how implementing new practices through fresh technological format in order to improve student's learning and to stimulate their interest.

It allows digital storytelling:

it facilitates the narration of the trainer who created the contents;



It looks like a captivating mini web-site:

it allows the construction of different content and captivates the students (digital natives);

It is inter-operable:

it conforms and adapts itself to all devices.

It can be used horizontally or vertically;

It is a sharing tool that is easily

duplicated:

the participants are allowed to copy it

CREATE YOUR SWAY



<https://sway.com/gGQMYgOo00yHTGN7>

Communication message boards

In each of them there were specific question to be answered or a title that serves as talking point

TOOL	AFFORDANCES	REASON OF THE CHOICE
Forum 	For public discussion, where everyone can read and answer to messages, using nested replies.	To give teachers a friendly and known tool for discussion.
Padlet 	Board of collaboration/sharing material (images, videos, documents, text) on common tasks.	To give a talking mode different from the forum, for supporting teachers in participatory methods.
Tricider 	For easy brainstorming and voting. For decision making, crowdsourcing and idea generation.	To facilitate decision making after any discussion, with request of voting.

The **trainers' team** chose to limit interventions as much as possible, in order to support the birth of an interactive trainees-only community.

<https://goo.gl/P3atLA>



One of the major recurring issues raised in both academic literature and the popular press is the consistently high dropout rate of MOOC learners (Onah et al., 2014). Although many thousands of participants enrol on these courses, the completion rate for most courses is below 13% (see: <http://www.katyjordan.com/MOOCproject.html>).

In particular, MOOCs for mathematics teacher education has a completion rate of 12% (Panero et al., 2017). Even with our MOOCs we could not avoid this, although our completion rates are very different from those reported in the literature: 36% for MOOC Geometria, 42% for MOOC Numeri, 39% for MOOC Relazioni & Funzioni.

We believe there are 4 reasons why we recorded this educational success.

1. The training opportunity that each of our MOOCs offered was valid both in terms of time and contents.
2. The trainees have constituted more than just an online community, in fact, we can talk about communities of practice.
3. The vigilant presence of the tutors has certainly "reassured" the teacher-trainees who did not feel abandoned in an online environment.
4. Last, but not least, teacher education is a right and a duty for Italian teachers. What better chance if you do not take advantage of a MOOC: online learning space (accessible wherever and whenever) and free!



**[http://www.difima.unito.it/mooc/
moocdidattica.dm@unito.it](http://www.difima.unito.it/mooc/moocdidattica.dm@unito.it)**