

# ***Transforming higher education: From Flipped lessons and MOOCs to lifelong learning for archaeologists***

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## **Abstract**

This paper explores the transformative impact of flipped learning and Massive Open Online Courses (MOOCs) on higher education, specifically in the field of medieval archaeology at the University of Padova. It delves into the implementation of these innovative approaches, their effects on student performance, and the valuable insights gained from student feedback. Additionally, it highlights the global reach of MOOCs created as a complement to these courses, including their multiple functions and implications also for lifelong learning. The findings suggest that blending online and traditional teaching can create a dynamic and inclusive educational experience that caters to the needs of traditional students, professional archaeologists who want to improve their skills and competencies and enthusiasts of archaeology.

**Keywords:** innovative teaching and learning, interaction, medieval archaeology, upskilling, reskilling.

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## **1. Introduction: Creating hybrid learning environments**

The COVID-19 pandemic served as a catalyst for the adoption of online teaching tools, and even as universities returned to normality, the benefits of

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online learning have become evident. Flexibility, increased accessibility for students with disabilities, and convenience for those with multiple commitments have all contributed to the growing appeal of online education.

The interest in online education among students in Italy has been underlined by the Ministry of Culture, which has recently reported how during the Covid emergency there was a huge increase of learners in online high education universities especially from students who had already completed basic studies and wanted to develop a second-degree grade (*laurea magistrale*)<sup>1</sup>.

Educators who were receptive to exploring remote teaching technologies, beyond merely replicating traditional face-to-face methods through video conferencing, experienced the advantages of online teaching and were inspired to reevaluate and refine their lesson content and teaching strategies.

Of special interest – also fostered by some universities after the initial “return to normality” – has been the development of blended methods which merge the flexibility and inclusivity of the online experience with that of in-person classes.

One effective method to leverage the advantages of this blended learning system is the implementation of flipped teaching. Flipped teaching entails utilizing online lessons to facilitate independent student learning of course content (for instance, through pre-recorded videos) before the in-person class sessions. This approach frees up valuable class time for more engaging and interactive activities.

In this context, we introduce the flipped integrated teaching experience, which has been implemented since 2021 within the courses on medieval archaeology at the University of Padova. It combines online material and in-person activities, creating a holistic educational approach, and has demonstrated significant enhancements in structuring the lesson content, encouraging student learning and improving learners' competencies. The course

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<sup>1</sup> According to the ANVUR report on higher education and research system published in June 2023, the increase in the number of enrolments over the past decade has benefited telematic universities most significantly. While traditional universities have recorded an increase of about 2,000 students, telematic universities have seen them grow by 180,000. In the academic year 2021/22, 11.5 per cent of university students are enrolled in telematic universities, compared to 2.5 per cent in the academic year 2011/12. For traditional universities, while state universities recorded a slight decrease of about 19,000 students (-1.2%), non-state universities saw an increase of about 22,000 students (+21.3%). Certainly, the expansion of the educational offerings of telematic universities has enabled many students, especially workers, to embark on a university career. In the academic year 2021/22 as many as 101,000 students (45.2% of the total) came from a previous experience in traditional universities: a figure that is on the rise compared to the academic year 2011/12, when this percentage stood at 40.7%.

has also incorporated progressive and continuous assessment methods to certify learner's proficiency in a wide range of contents and skills.

A highly valuable instrument in refining and conceptualizing this method has been the simultaneous creation of a MOOC series on medieval archaeology, currently comprising three courses. These MOOCs have played a pivotal role in shaping the content and structure of the course by offering various activity formats for exploration. Furthermore, these MOOCs, which have the option to be incorporated as flipped learning materials within the course, have been instrumental in developing strategies for online interaction between the teaching staff and remote learners. In my experience, they have also illuminated the existence of a vast global community of learners, eager to engage with our lessons.

This insight has sparked further reflection on the influence we could wield in the realm of lifelong education - not only limited to recreational access, but also with the possibility of serving to facilitate continuous professional development in our field, archaeology. Our discipline evolves rapidly, particularly in the realm of research methodologies, and it is crucial for professionals to stay abreast of these advancements. There is an increasing imperative for educational institutions to broaden their reach and offer lifelong, skills-based training to a wider audience, catering to individuals at any stage of their lives.

## **2. A three-step model for a flipped learning experience**

Since 2021, a flipped teaching method has been tested for the Medieval Archaeology course of the degree in archaeology at the Cultural Heritage Department of the University of Padova. The course is typically held in the third year of the three-year course in archaeology (63 hours / 9 CTS), and it is mainly based on the handbook *Post-Classical Archaeologies* (Brogiolo & Chavarría Arnau, 2020). It started during the Covid period in the academic year 2019-2020, with approximately 70 students enrolled in Moodle, followed by 100 in 2020-2021, 120 in 2021-2022, and 140 in 2022-2023.

The course delves into the historical period spanning from the 5th to the 15th centuries, covering not only conventional topics like cities, countryside, trade, churches, and cemeteries but also aspects that have relevance to both our present and future. These additional subjects open the door to discussions that transcend students' existing knowledge levels, encompassing issues such as climate change, environmental shifts, dietary and health concerns, pandemics, migrations, territorial conflicts and frontiers, local and global market dynamics, and religious diversity.

As it is a course with a large number of students who possess varying levels of knowledge (it is a mandatory course for archaeologists and an optional elective for historians, art historians, and tourism students), and encompasses different age groups (with the majority falling between 18 and 25, but including some lifelong learners), it is guided by three primary objectives:

- To enable each student to customize their learning journey by progressing through gradual stages.
- To encourage active learning and student participation, not only during lessons but also through participatory exercises.
- To modify the assessment method by eliminating the final exam, thus fostering progressive learning through exercises that allow both the instructor and the students themselves to monitor their knowledge development.

The course (lasting six hours per week over three days) was organized following a more or less fixed 3 step scheme consisting of:

- STEP 1: Pre-recorded video lessons (ideally part of blended course hours but can also be pre-lesson homework) and readings;
- STEP 2: In-class interactive seminars including questions from the students on the topics of the pre-recorded lessons, discussion on these topics, and deepening of some aspects of the pre-recorded lessons. Alternatively, a specialist guest for specific lectures.
- STEP 3: Exercises (some participatory, some individual, some in pairs or groups) which can also be discussed during the in-class time.

By providing students with pre-class pre-recorded videos (in my case prepared during the lockdown) as well as readings, I ensure that students arrive in class somewhat familiar with the concepts of the lesson and ready to engage at a deeper level during the in-class time.

The most difficult part of preparing this kind of course relates to what happens in the classroom- how to avoid traditional passive lectures and make the students feel the need and advantages of coming to class, since they already accessed the content online. First of all, in-class sessions should be designed to build on the pre-class phase, addressing any student misconceptions and consolidating concepts as well as engaging students in solving problems and thinking critically about the content, creating a dynamic learning environment (Bligh, 1971; Prince, 2004; Patton, 2015).

The inclusion of guest lecturers, a feature highly appreciated by students, enriched the discourse.

In order to achieve interaction, in case spontaneous participation does not occur, it is useful to prepare activities which involve the engagement of all the students (for example through Wooclap). Various strategies can be employed to encourage participation, including:

- Creating a relaxed and welcoming atmosphere in the classroom by physically positioning oneself closer to the students to foster a sense of proximity.
- Addressing students by their names and encouraging them to use each other's names.
- Asking students to respond to their peers' questions and inviting them to challenge your ideas or those of other researchers quoted during the lessons.
- Avoiding criticism of student questions or comments in front of the class.

I strongly recommend that students refrain from taking notes, even though this may be quite challenging for them and, in some cases, lead to frustration. While note-taking is undeniably a valuable skill, likely to prove useful, if not essential, in their future workplaces, many students tend to mechanically transcribe instructors' words without engaging in critical thought or reflection on the content (French & Kennedy, 2016, p. 8). Therefore, I recommend taking notes during the pre-class phase, where they can replay the video content as many times as necessary, and instead, reserving their in-class time for active listening and thoughtful reflection. This approach enables them to actively participate in discussions, which is the primary purpose of being physically present in class.

In general, after overcoming the initial challenge of speaking in front of the class, there will always be a group of students who feel more confident about participating actively. It's crucial to make an effort to involve all students who wish to take part in discussions, even if they are hesitant to take risks. Equally important is not to pressure students who, despite enjoying the discussions and possibly contemplating answers on their own, prefer to remain silent. They can be encouraged to engage in alternative activities, such as participatory Padlet walls.

This flipped classroom approach has been found useful for instructors to devote in-class time to the students without worrying about the time otherwise needed to deliver the whole content of the course (Al-Samarraie et al., 2020). According to French & Kennedy, 2016: "Attending lectures provides students with an important opportunity to make connections and build relationships with peers. It also transforms the act of learning into a collective experience that can facilitate a shared communal understanding among students" (p. 10).

### **3. Exercises as Learning Tools: Encouraging Reflection and Integration**

Another significant innovation in the course were the exercises that replaced (by student choice) the final exam. These exercises were carried out once every

15 days (in total, eight assignments were delivered) and their main objectives were to:

- Stimulate reflection on lesson topics;
- Connect concepts from different lessons;
- Enable review of the contents through maps or tables;
- Encourage the students to research online for further information on the lesson content or on particular subjects (for example an archaeological site).
- Foster constructive criticality by having students evaluate their peers' exercises (peer-review) through a specific rubric similar to what the professor uses for student assessment.
- Serve as a final exercise (course 2023), where a short "scientific text" with notes and bibliography that they had elaborated in previous exercises is transformed into a five-to-eight-minute podcast episode about a medieval archaeological site of the territory<sup>2</sup>.

Apart from the last exercise, which was more time-consuming, all the other assessments were calculated between 2 and 4 hours work each.

Some (optional) participatory activities were also offered as relevant study tools for all the students, in particular two Padlet walls: one with a content timeline and another with a chronologically organized annotated list of the main protagonists of the period covered.

Exercises guide students back to the pre-class materials, compelling them to revisit and engage with the content. They also serve the valuable purpose of offering students consistent and constructive feedback, enabling them to assess their progress, pinpoint areas for enhancement, and fine-tune their learning strategies (Hattie & Timperley, 2007). They not only facilitate gradual content mastery but also foster the development of additional critical skills, such as synthesis abilities, peer review skills, teamwork aptitude, and digital literacy.

Assignments and their evaluations enable continuous monitoring of student advancement over the course of the semester, affording instructors the chance to implement timely adjustments to teaching and learning methodologies (Eyal, 2012).

Moreover, the Moodle platform, coupled with integrated tools (especially video management analytics), facilitated the following capabilities monitoring all student activities, providing teaching staff with real-time insights into assignment progress; assessing students' development by comparing exercise results and the frequency of video lesson views and evaluating individualized student learning and offering tailored assessments based on their initial starting points.

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<sup>2</sup> Source: <https://mediaspace.unipd.it/channel/PODCAST+Veneto+Medievale/303920292>.

#### 4. Satisfaction Levels and Perceived Learning Outcome

Although students view this teaching and assessment method as very demanding (although in reality and with the lack of a final exam they would have 162 hours for steps 1 and 3<sup>3</sup>), their overall experience was highly positive.

When surveyed both during and at the end of the course (via the Padlet platform<sup>4</sup>), students expressed the following perceptions:

- They found the level of learning achieved to be highly satisfactory.
- The novel assessment methods enabled them to acquire skills with substantial value for their future educational and professional growth, extending beyond the scope of the course.
- Their interactions with me and their fellow students became more engaging and productive.



Fig. 1 - Word cloud from the student's answers

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<sup>3</sup> A credit (ECTS) typically corresponds to 25 hours of work, including classes and self-study. Therefore, a course worth 9 credits like this corresponds to 63 hours of classes and 162 hours of self-study (including the flipped part and the exercises).

<sup>4</sup> This evaluation tool was created as a way to implement the Student Evaluations of Teaching (SET) which, as many researchers have highlighted present serious problems (Carpenter Witherby & Tauber, 2020; Harvey 2022; Heffernan 2022; Hornstein & Law, 2017; Kreitzer & Sweet-Cushman 2022; Stroebe, 2020), all of them underlining that most SET has a poor correlation with student learning, that SET is heavily influenced by factors that have little to do with course quality and effectiveness (Heffernan 2022). SET is influenced by the personal characteristics of the instructor, as well as the individual biases of students (Wallace, Lewis & Allen, 2019). Instead of rewarding those who instruct in challenging courses and grade strictly, Stroebe (2020) has asserted that SET encourages grade inflation, rewards poor teaching. Furthermore, it causes high stress among academic staff and can be adopted by colleagues as a tool to bully and target other academics.

Additionally, students observed that this approach, facilitated by digital tools, offered significant advantages in terms of time flexibility. They could comfortably absorb the course content at their own pace, a flexibility extended to the completion of assignments, accommodating various schedules.

Setting aside the **Student Evaluations of Teaching (SET)** for the course, which, while not unfavorable, didn't quite match my initial expectations, it is noteworthy that the course enrollment has doubled since I adopted this teaching method three years ago. This substantial increase in student enrollment appears to be a compelling indicator of the method's effectiveness and appeal.

## **5. Designing Success: Strategies for Effective Course Delivery and Engagement**

To ensure the success of this course, which may seem somewhat unconventional compared to traditional approaches due to the instructor's distinct role as more of a facilitator than a content deliverer, meticulous course design is essential<sup>5</sup>. Here are some key considerations:

- **Clear communication:** Communicate the course structure and expectations clearly to students from the very first class. Discuss in detail your syllabus from the first day going through the course schedule, assessment methods, and learning objectives. This transparency helps students know what to expect and how to succeed in the course.
- **Emphasis on benefits:** Emphasize the expected benefits for the students to help them understand the rationale behind an approach that may initially feel unfamiliar or uncomfortable.
- **Structured modular design:** It is crucial to structure the course into well-defined modules or units right from the beginning. This approach provides clarity and organization for both the instructor and students. Each module should have a clear learning objective and build upon the previous one, allowing students to progress logically through the material.
- **Logical sequence:** Ensure that the modules follow a logical sequence, creating a smooth flow of information. This helps students understand how concepts connect and build upon each other, promoting a deeper understanding of the subject matter.
- **Diverse presentation methods:** To engage students effectively, employ a variety of presentation methods. This includes using videos, readings, and interactive activities. By diversifying the content delivery, you can cater to different learning styles and maintain student interest throughout the course.

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<sup>5</sup> On the role of the instructor as facilitator see Patton, 2015.



In this sense, MOOCs serve as compelling examples of best practices in course planning, as they are characterized by their diverse array of activities and multimedia components, as well as their incorporation of ongoing assessments.

## 6. MOOCs as a Source of Inspiration and Best Practices

Since 2020, three Massive Open Online Courses with content related to medieval archaeology have been produced thanks to two grants for innovative teaching from the University of Padova and an Erasmus project on Innovative didactics<sup>6</sup>. All of them have been uploaded in the international platform Future Learn and are still running<sup>7</sup>. The multimedia content was also uploaded to Mediaspace<sup>8</sup> in order to make all the video contents available also in creative commons CC-BY SA open content.

The three MOOCs are focused on aspects developed in medieval archaeology classes and like a blended course, the MOOCs combine short readings with video lessons including high-quality images that echo traditional lessons with an instructor and slides (but in much more dynamic and condensed format); exercises (individual and participatory); videos of laboratories at the University of Padova; short lessons by specialists; and a couple of “trips” in the form of a video visit to some sites quoted in the course, under current excavation or research. Each “step” (which corresponds to a reading activity, video, or exercise) ends with an open forum in which students can leave comments or ask questions.

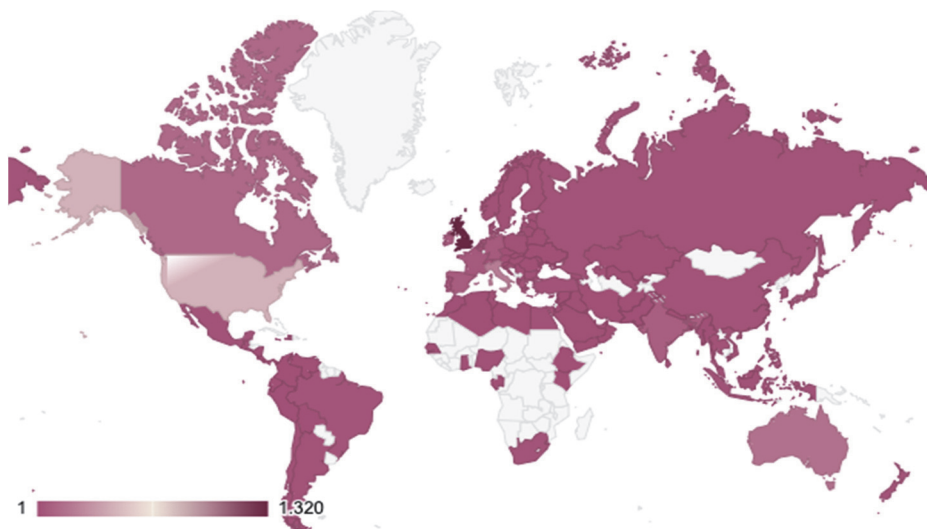
Delivered in English, the courses have attracted around 4000 students, many from anglophone countries (United Kingdom, United States, Canada, Australia) but also with good numbers from Europe, Africa, and Asia. The global reach of the internet, and in particular the ability of students from different time zones to access material at an appropriate time of day (unlike webinars broadcast during European daytime or early evening and therefore after midnight in other time zones), allowed a significantly increased internationalisation of the teaching process.

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<sup>6</sup> Editor: Learning how to Teach, Teaching how to Learn. Facing Challenges of Global Change in Higher Education Using Digital Tools for Reflective, Critical and Inclusive. Learning on European Historical Landscapes. Erasmus+ GRANT\_NUMBER: 2020-1-HR01-KA226-HE-094696.

<sup>7</sup> <https://unipd.link/enlightening-the-dark-ages>, <https://unipd.link/HistoricLandscape> Archaeology, [https://unipd.link/change\\_of\\_era](https://unipd.link/change_of_era).

<sup>8</sup> <https://unipd.link/channel-enlightening-the-dark-ages>.



*Fig. 2 - Global reach of the 3 courses of medieval archaeology produced by the University of Padova*

The courses have received very positive feedback from attendees, who appreciated the innovative nature of the content, its multidisciplinary character, and the variety of exercises. However, the element that the students emphasized the most (and one important for an online course), was the strong component of interactivity between teacher-student and student-student, encouraged by the instructor through the “comments section” by answering student’s questions, fostering discussions, and encouraging students to upload supplementary links to further material by acknowledging their contributions. Currently, more than 10,000 comments have been posted.

## **7. Bridging Gaps and Fostering Lifelong Learning in Italian Universities**

Our MOOCs have been primarily designed to serve two main objectives:

1. Support for university Courses: Originally, these MOOCs were created to complement our university-level medieval archaeology courses. Each MOOC corresponds to one of our actual courses, including medieval archaeology, Christian archaeology, and landscape archaeology. They serve as valuable materials for the blended part of these courses, enhancing the in-class experience. Additionally, they function as interactive study materials for students who may not attend the in-person classes, providing them with a comprehensive learning resource.

2. **Introductory Courses for Enthusiasts:** Another critical role of these MOOCs is to act as introductory courses for passionate individuals, often retirees, who pursue archaeology for recreational purposes. These individuals display a strong interest in exploring the captivating world of archaeology, and our MOOCs provide them with an accessible and engaging avenue to satisfy their curiosity.

We are actively exploring a third function for future courses, which involves catering to professionals who completed their studies years ago but now need to update and improve their knowledge to acquire new skills and competencies that bridge the gap between their formal education and the evolving demands of the job market.

The rapid pace at which digital innovations and hard sciences are being applied to archaeological research underscores the necessity for field archaeologists and professionals in administration and museums to continually expand their knowledge base to remain competitive in their jobs or improve their career opportunities. Some of the critical areas in archaeology where we can offer insights and updates include: digital technologies for visualization of ancient buildings, materials, and landscapes; application of chemical studies, such as archaeometries and stable isotopes, to archaeological materials; biological analyses applied to human and animal bones, seeds, or pollens, shedding light on ancient ecosystems and lifestyles; and effective public engagement, among many others. Furthermore, archaeology is a field that continuously evolves due to ongoing discoveries from new excavations and new research – a wellspring of information and discussions that professionals can leverage to their advantage.

In recent years, there has been a growing call for education and training systems to foster and support accessible and inclusive learning opportunities to a broader range of individuals, offering innovative avenues for upskilling and reskilling in the context of prior work and life experiences to help individuals to remain employable and competitive,<sup>9</sup> something which also aligns with the social mission of universities<sup>10</sup>.

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<sup>9</sup> At an international level, UNESCO, the Council of Europe and the European Commission have played an active role in promoting lifelong learning for decades, but the 2030 Agenda for Sustainable Development (adopted in 2015) has reinvigorated this concept and reconnected it with its humanistic origins, in particular with one stand-alone goal – SDG 4 – which underlines inclusive and equitable quality education and promotes lifelong learning opportunities for all (Atchoarena 2021 - with further references on the subject of longlife learning).

<sup>10</sup> See Atchoarena (2021, pp. 314-315) for longlife learning as the “third mission” of the Universities but remembers also how low fertility rates implying a shrinking recruitment base and a fast-growing population of older adults, constitutes a further

## 8. Conclusions

This paper has explored the transformative impact of flipped learning (using online resources) and Massive Open Online Courses (MOOCs) in the context of higher education, with a specific focus on the field of archaeology. The implementation of these innovative approaches has not only improved student performance but has also enriched the educational experience by promoting engagement, inclusivity, and lifelong learning.

The development of blended learning methods, combining the advantages of online and in-person classes, has shown promise. Flipped teaching has proven effective in structuring lesson content, enhancing student learning, and improving competencies. Blending online material with in-person activities offers a dynamic and interactive educational experience.

Additionally, the creation of MOOCs on archaeology has not only expanded the reach of the course but has also revealed a global community of learners eager to participate in these lessons, raising questions about the potential impact of online education on lifelong training and skills development in the field of archaeology.

Italian higher education institutions should consider embracing a wider audience than classical students, offering lifelong and skills-based training to meet the diverse needs of learners at various stages of life, especially today seen the rapid evolution of new methods, instruments and knowledge that are transforming archaeological practice and interpretation. Furthermore, human and social sciences, such as archaeology, can play a vital role in preserving and promoting local culture while fostering a strong connection between academic institutions and their communities.

Blended methods and MOOCs can serve as effective tools in achieving these goals, providing interactive and accessible learning experiences. By continuously refining teaching strategies, incorporating feedback, and embracing technological advancements, educators can ensure that higher education remains dynamic, inclusive, and relevant in a rapidly changing world.

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motivation for universities to find new “clients” and fields of action, such as targeting workers or senior citizens.

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