

**State of Art: the experiences of
ArchéA's Network**

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ArchéA and the pandemic: the Cesena Campus experience

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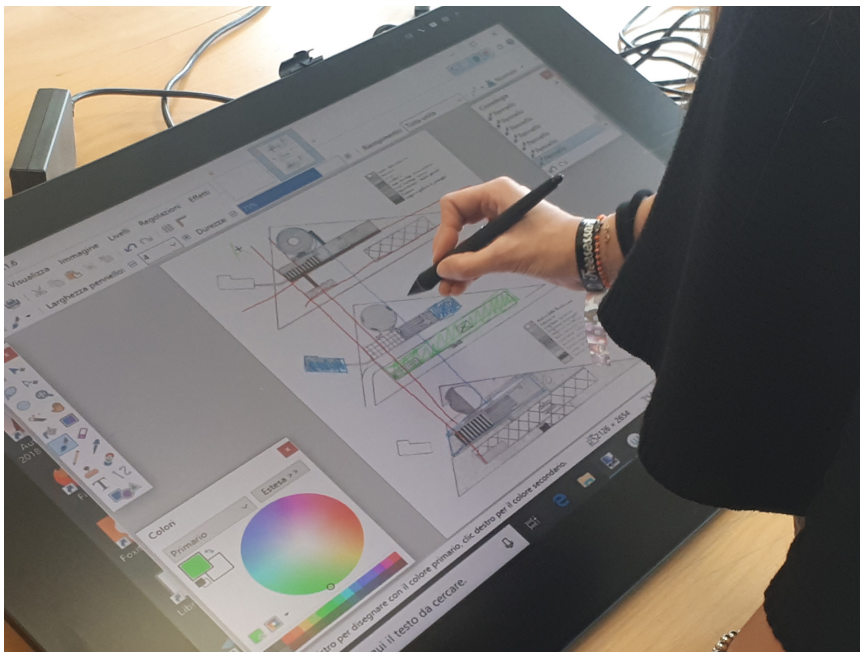


Fig.01 Drawing on a digital table to share project informations between students and teachers

During the *ArchéA* program within the single-cycle Master's Degree Course in Architecture of the University of Bologna - Cesena Campus, different Teaching/Learning methods of architectural design were tested and verified: physical attendance, entirely remote, and blended. In addition to describing these different methods, this paper intends to reflect on their effectiveness in relation to the student's educational path, on the specificity of teaching architectural and urban design, and on the future perspectives of the use of new Information Communication Technologies (ICT). If the innovation concerns the methodology of teaching architecture, some issues related to specific Higher Education training in architecture must be mentioned.

Currently the training is divided between traditional ex-cathedra teaching (used for the theoretical and technical disciplines of architecture such as History, Restoration, Urban Planning, etc.) and design disciplines that are taught, according to different methodologies, inside the Design Workshops (Architectural Design, Urban Design). On the first group of disciplines (non-design) new technologies can be applied as already experimented in many other fields of knowledge through the adoption of specific e-learning platforms and through the adoption of Open Educational Resources (OER). Teaching/learning can also take place at a distance (Distance Learning).

The design disciplines represent the core of the student architect's training as they are able to synthesize the various acquired theoretical knowledge and translate it into architectural forms. These disciplines must necessarily be imparted through the workshops in which the teachers teach the techniques of the design project and

the architectural composition according to the methodology of the atelier through a continuous dialectical exchange between teacher and learner. The *ArchéA* project has implemented a Flexible Blended Teaching/Learning path (OER, MOOC, IPLs, i.e. the Architectural Design Workshop) designed specifically for the teaching of architecture. The transmissibility of architectural knowledge has always been based on a theoretical-analytical and a practical-experimental component: the innovative character of the *ArchéA* project concerns the integration between these two moments.

A strongly innovative character of the program concerns the use of ICT and digital tools to transmit and disseminate on the *ArchéA* platform the works of the Architectural Design Workshops (IPLs). Students have performed the design experience using digital tools such as digital pens and electronic tables and the workshop work has been transmitted in real time to the *ArchéA* platform through monitor sharing software (According to EU 'Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources')

Moreover, being architecture itself a multidisciplinary knowledge, the *ArchéA* project can act as a testing ground to define a model of Good Practices regarding the interaction between technical-scientific disciplines and the field of creativity – as reported in the renewed European agenda with the transition from STEM to STE(A) M (according to la renewed EU agenda for higher education 2017).

The Teaching/Learning experience

From the very beginning the *ArchéA* project had envisaged using an experimental Teaching/

architectural design. This program entails the completion of two Intensive Programs for Learners: the architectural design workshops of Cesena and Aachen. The Cesena workshop was held at the location of the single-cycle Master's Degree Course between 23 and 30 November 2019 and included five participating schools of architecture, corresponding to the five member countries of the *ArchéA* partnership (Italy: Parma and Bologna/ Cesena; Germany; Poland; France), with a total of 10 professors and 30 students. Although on that occasion the students and teachers were present at the Cesena Campus, the practice of a remote visiting critic was experimented through the use of an electronic whiteboard and communication software. The Wacom Cintiq Pro 32 touch display was purchased with project funds and not only allowed sharing the images of the students' work on the screen, but also and above all allowed the visiting critic to intervene with his suggestions on the drawings with the use of a Wacom Pro Pen 2

high-quality, precision digital pen. Obviously, the visiting critic also had his own electronic whiteboard. Not having to foresee the simultaneous interaction of many people, the software used for this first phase was simply Skype for Business supplied to the professors from the University of Bologna.

Unfortunately, at the beginning of 2020, this first know-how of the *ArchéA* program was used to face the Covid-19 pandemic. The pandemic completely overturned the previous order of things and the experimentation of mixed and remote Teaching/ Learning methods of the architecture project, which had been held in the Cesena laboratory, became the new normal. Initially, the Degree Course in Cesena made the *ArchéA* experience its own: on the basis of its previous experience, the university financed the purchase of numerous other electronic blackboards, one for each course laboratory.

The architectural design laboratories are equipped with:

COMPUTER SICOMPUTER Q1.S2.16.05S	Productiva Quadro I3-8100T
Projector Panasonic	Proiettore LCD Panasonic PT-VMZ60EJ
Mixer AUDIO-TECHNICA	ATDM-0604
Monitor HANNSPREE	HT273HPB Monitor Touch LCD 27" con audio
WEBCAM	Logitech BRIO 4K Pro Webcam
Document camera	Ipevo 4k
Camera Panasonic	AW-HE38HKEJ
Microphone for conferences	Jabra Speak 710 (7710-309)
Monitor Touch Panasonic	TH-55CQ1W



Fig.02 A student during the online review by the digital table

Applying the national indications of the Ministry of Health, the university established the rules for mixed and distance teaching according to the stages of the pandemic.

Distance Learning

Students made the graphic drawings themselves on their PCs at home and submitted the drawings for critical review by the teacher via the Microsoft Teams university platform. The drawings were shared with the course professor and tutors, who viewed them on the screen of the electronic board or a graphic tablet, on which they intervened directly with corrections using graphic software (Adobe Photoshop, Paint, Paint 3D).

Mixed Teaching/Learning

Unlike with distance learning, a mixed Teaching/ Learning path involves having part of the students present in the classroom and part at home. This mixed situation makes teaching very tiring for the professor, as he must be able to divide his attention equally between the two groups of students. Those who follow the teaching from a distance participate in what happens in the classroom thanks to the use of a mobile camera and an environmental microphone.

The exchanges of information that take place with the students at home are instead shared through a video projector, which projects a shared PC screen on a screen hung in the classroom.

The second Intensive Program for Learners of the *ArchéA* project, the Architectural Design Workshop in Aachen, was held from 21 to 30 November 2020, i.e., in that second wave of the pandemic that did not allow transnational mobility but did allow gathering in small groups in research laboratories. Hence the activities were carried out dually: on the one hand, the internal organization of the individual national groups, on the other, the activities common to the different groups of the partnership. The activities related to the individual national groups were carried out in mixed mode, with part of the work carried out in the school's design laboratory and part carried out by each individual student at home, connected to each other via the Microsoft Teams university platform.

The workshop activities common to the transnational groups (presentations of materials related to the study-area, introductory conferences, participation of stakeholders, discussion seminars, visiting critics) were carried out remotely, again through Bologna University's MS Teams university

platform, to which guests were credited through temporary accounts.

In a further phase, during the various experiences in mixed Teaching/Learning during the pandemic period, the need arose to use a platform that would allow the work and the simultaneous exchange of graphic contents, i.e., the possibility of sharing corrections made to drawings in both directions in real time. It was solved using the combination of Zoom and Miro.

Final considerations

The didactics of architecture, or rather, the didactics of architectural design (which would be different for the history or technology of architecture or for the disciplines less related to the operational practice of design) has specific needs that can be equated, in some respects, to those of the artistic subjects taught in the Academies of Fine Arts. These aspects concern the so-called transmissibility of experience, that is, the transmissibility of those practices and behaviors that are more difficult to assimilate to scientific and logically determined knowledge. This type of teaching is conveyed through other channels, such as physiognomy: the transmissibility of the architectural experience makes use of the teacher's gestures in relation to the drawing tool and especially the architectural sketch.

Some characters, techniques, automatisms of architectural and urban composition are all the more evident in the way in which the teacher approaches the problem of from the graphic perspective, i.e., the sequence of signs that the hand traces on the drawing sheet (Focillon 1934, In Praise of Hands). This physiognomy of the hand, with the movements following one another in the description of the formal problem, together with the direct relationship between teacher and learner, are an unavoidable component in teaching architectural design. These are some of the explanations behind the resistance and difficulty in introducing distance learning for the discipline of architectural and urban composition. On the other hand, the introduction of more sophisticated communication tools and technologies, and above all the acquisition of greater familiarity with them, in part allows and suggests the possibility of overcoming these problems: digital pens more sensitive to the pressure of the hand and a system of webcams that film, transmit and share the aforementioned gestures.

Integration between Open Educational Resources (OER, MOOC) and practical activities (IPL) represents the crux of the *ArchéA* project and

involves the innovative use of Information Communication Technologies (ICT). Through ICT (both digital tools and software programmes) the work carried out during the ISP - ADWs is reported on the *ArchéA* platform, which is configured as a real Open Access interactive portal in which laboratory experiences and theoretical learning have been unified, transmitted, and disseminated at various levels.



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In 2018 he won a position as Coordinator and Chief Science Officer in the European-level call of Erasmus+ Strategic Partnerships for Higher Education, entitled "*ArchéA* Architectural European Medium-Sized City Arrangement".