

# Learning design of blended learning at university

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## Abstract

The suspension of the face to face teaching activities occurred with the D.P.C.M. of 04.03.2020 and the consequent activation of emergency distance learning in all levels of education in Italy represents a moment of reflection on the opportunities for innovation in educational practices in the direction of hybridization of methods and tools used. This is represented especially in the university context, which as a place of training of a particularly diverse user, has the opportunity to experiment with forms of flexibility training using intentionally designed e-learning environments, such as the Moodle platform.

## Keywords 1

Moodle, University Training, Emergency Distance Learning

## 1. Introduction<sup>2</sup>

The purpose of this contribution is to discuss the possibilities of innovation brought by emergency distance learning in Italian universities. The use of a method of distance training is presented as an opportunity for change that can lead academic institutions to implement the training offer. In fact, the emergency activation of online learning calls for an expansion of the training itself in the direction of greater flexibility of time. About methods of access to training, there is an advantage of the opportunities offered by e-learning provided, in particular, inside the Moodle platform.

In this sense, the contribution will present the design experience in Moodle of the course organized in blended learning related to the Laboratory of Learning Technologies (henceforth ICT Laboratory) of the Active Training Internship for the qualification of special needs teachers of the University of Bari. The Laboratory was initially designed in mixed mode, with face to face lessons and laboratory activities online. But with the suspension of face to face lessons, it was completed in fully online mode, by integrating the activities carried out within the Moodle platform with video-conference tools.

During the suspension of the face to face teaching due to COVID-19 from March 2020, many Italian universities have mainly used tools to play videoconferences live, useful almost exclusively to replace the frontal lessons. However, it is considered that the provision of a learning environment intentionally designed to supply training in e-learning mode (a Learning Management System - LMS), which could be Moodle, provides an opportunity for the entire institution to experiment with effective forms of distance education. This could turn a time of crisis into an opportunity to rethink traditional established practices and build hybrid learning contexts, in which technologies can become part of the instrumental equipment of the teaching staff, using it as a catalyst of educational opportunities and services for students.

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<sup>2</sup> Despite the authors have shared the whole construction of the paper, Michele Baldassarre ha written the paragraphs 1. Introduction & 4. Conclusions; Martina Dicorato has written the paragraph 3. Design of a blended learning path in a postgraduate university course; Ilaria Fiore has written the paragraph 2. Theoretical Framework

Technology and digital, in this sense, become a «third area of learning and educational mediation, which constantly interweaves personal and collective, informal and formal, disciplinary and transversal» [1].

According with Calvani [2],

«the online teaching has elements that provide the potential to result in certain areas of higher quality than that in face to face way. It is not the physical distance that acts in itself as an intrinsically negative factor, as this can be replaced by different forms of "virtual proximity" [...]: what decides the solution qualitatively more or less valid is an appropriate design, able to enhance the strengths that the specific training situation (in presence, at a distance, in the network) can offer, achieving an appropriate integration of human and technical resources, according to the pursuit of the objectives set».

However, in recent years the national literary panorama has been populated with studies relating to the potential and benefits of a blended model of teaching to deepen which refer to the studies conducted, among others, by Crispoldi [3], Albano *et al.* [4], Ardizzone and Oliveto [5], Panini and Padroni [6]. Specifically, in a continuum ranging from self-learning to cooperation in practice communities, different forms of blending can be distinguished [7]:

- Completely at a distance: the contents are organized in modules, the only tutorial form provided is the automatic one and the training takes place according to the principle of self-learning;
- Completely remote with the support of the tutor: it takes over the figure of the tutor who interacts with students in synchronous mode (chat, video/audio conference, etc.) and/ or asynchronous (e-mail, forum);
- Mixed presence/ distance with self-training at a distance: the training process that takes place purely at a distance provides for some face to face meetings, placeable at the beginning of the activity, during the training and at the end for certification evaluation.
- Mixed presence/distance with complementary distance activities: «the student uses the resources as a traditional manual would use, but in different formats: videos, quizzes, exercises, examples, mini-cases» [7].

The possibility of providing services free from rigid space-time scans requires an orientation of knowledge towards structured training environments. Using a LMS as a system that «aims to support learning content development depending on the web» [8] for online training, compared to a tool mainly useful to play videoconferences, allows to provide an integrated learning environment. This includes many possibilities, ranging from audio/ video-conference, intended as «remote transmission of what happens in a given place to other places geographically distributed on the territory» [9], to the forum, an instrument of asynchronous interaction and exchange of ideas and opinions about the topics discussed; from the figure of the tutor, the mediator and facilitator of interaction between different users (students and teachers) and between users and technology, to the chat tool, asynchronous interaction tool characterized by the exchange of short text messages in real-time and bound by the contemporaneity of connection.

## **2. Theoretical framework**

### **2.1. The characteristics of a training course in the field of e-learning**

Among the new systems used in the field of training, e-learning is a way of teaching and learning that activates a series of «educational inversions compared to the habits in the cognitive field» [10], as follows:

- From linear to reticular, with the appeal to a plurality of resources and didactic procedures;
- From one-way to a learning environment, where students work together to achieve learning goals, using a range of information tools and resources;

- From transmission to constructivist, with the guarantee of a wide negotiation of knowledge;
- From private to cooperative, with an enhancement of cooperative learning and educational interaction;
- From the program to the project, with the use of active and interactive teaching materials.

More generally, e-learning introduces the characteristics of flexibility and interactivity in the training course. Flexibility refers to a kind of openness in terms of:

- time, so that everyone can follow the courses according to their rhythms of learning and according to their own needs;
- space, so that everyone can follow the courses from their seat;
- materials proposed, generally released in a modular mode for easy and personalized use of the same.

Interactivity is given by the possibility that the student user has to influence the educational path, to interact, communicate with tutors, teachers, and the peer group to exchange information, experiences, share knowledge and compare. Hence the reference to the network not only as a tool through which to disseminate and transmit teaching materials. But the network is like an "environment" where to achieve a teaching and learning process characterized by a high level of interactivity between the actors involved, as a network of interrelations between individuals [11].

The literature of reference [2, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23], in this regard, finds among the crucial factors for the success of distance training processes «the affective involvement of the students, the quality of the immersion experience in the virtual environment, the familiarity with ICT, the methods of self-assessment and evaluation, the characteristics of materials and learning environments» [24].

Bellagente [25] theorized in 2006 the dimensions that take place in the design and implementation of a training course in the field of e-learning:

- The technological dimension, relating to the predisposition of computers, networks, platforms, programs;
- The dimension of the cultural object, relating to the design of the content to be taught, understood as orderly and structured knowledge;
- The didactic dimension, relating to the choice of the modalities and the strategies through which to carry on the formative process;
- The social dimension, relating to the «sharing of knowledge acquired through a communication at a distance with the members of their community» [25];
- The organizational dimension, relating to the contextualization of the training process in defined organizational realities;
- The overall strategic dimension, relating to the basic philosophy on which that specific training path is based.

Besides, as part of a reflection on e-learning models, Spinelli and Barbagallo [7] distinguish between two types of e-learning intervention: e-learning in mixed or blended form, that is integrated, and e-learning in open form, flexible and distributed. These are two macro-visions resulting from the combination of a set of factors, closely interdependent on the identification of the training needs of potential users to whom curricular design, from «analysis of internal (disciplinary and methodological) and external (environmental, regulatory) constraints in which it operates» [7] and the choice of a learning environment in which to operate. Other authoritative sources [26, 27, 28] have also identified two distinct realities of networked training, a more structured form of e-learning, characterized by the provision of courses through platforms, tracing and evaluation, also defined formal and another, called informal, focused more on interactive participation and aimed at the production of knowledge [29]. These realities lead to a vision according to which the student is actively involved in this process, favoring shared and collaborative creation [29].

## 2.2. Moodle: a Learning Management System integrated, accessible and open source

In higher education, a wide literature has been developed on the fundamental role played by e-learning in lifelong learning contexts [12, 30, 31, 32, 33, 34, 35, 36]. The process of innovation of the university training offer in the direction of greater adaptive flexibility of the training offer, in fact, also starts from the need to face a new university audience. An adult user, to whose specific needs e-learning responds effectively [37]. «Designing educational and training interventions aimed at adults means first of all recognizing that their learning is influenced by an important wealth of experience as well as by very specific educational expectations and needs» [38]. The heterogeneity of adult users, characterized by educational and experiential eclectic backgrounds, bearer of training needs and diverse organizational instances, entails a different training. So, the training offered to them increasingly involves online teaching methods, since e-learning allows forms of flexibility difficult to achieve in face to face teaching.

The training of adults has to inevitably be based on the principle that it is possible to mobilize and develop new skills by creating connections with existing pedagogical constructs [39]. «When adult students enter training, they become carriers of specific experiences and needs, to which [...] reflection and research on distance learning, Thanks also to the very rapid development [...] of increasingly accessible and technically refined digital technologies, it has effectively inserted itself into this dialogue between institution and adult student, providing effective and flexible training strategies» [40].

Research in the field of e-learning and learning design has highlighted the need to provide online learning environments in a specific and careful way so that the principles set out above can be respected. This is the so-called techno-pedagogy [41] which concerns learning design in virtual environments, in which there are two main dimensions:

- The technological dimension and technological tools involved in the design, such as virtual platforms and application software;
- The pedagogical dimension, which concerns «knowledge of the target reference, analysis of objectives, development of content, planning of activities, and preparation of evaluation tools» [42].

The characteristics of a technological learning environment differ qualitatively from those of a physical environment [35]. Therefore, specific arrangements should be made to enable users to relate to each other, with the hope of collaboration aimed at learning; to facilitate access to teaching resources and their navigation in an order that is intuitive for the student; to encourage knowledge-building processes supported by a research-based approach and the construction of artifacts that enable users to re-invent new knowledge; to make it meaningful and located [43, 44, 45, 46, 47, 48]. According to Rossi [49] in an online learning environment, there are three essential resources:

- The mediators of knowledge, designers and producers of the educational process and its components;
- The users to whom the learning process is addressed and on the formative needs of which the learning process is grafted;
- The educational path is realized based on a design, aimed at the achievement of certain objectives, consisting of teaching materials, activities, tests and tools.

Consequently, the courses should be prepared within Learning Management Systems to facilitate such processes. Moodle, as a repository of teaching and learning resources, is an ideal online environment in this regard. Moodle, the acronym of Modular Object-oriented Dynamic Learning Environment, is a structured web-based learning environment, which can be accessed simply with a web browser. Being a Learning Management System, as well as an e-learning platform, Moodle allows to design and implement training courses, keeping track of the training path of users and connecting the different types of users: from teachers to students, through synchronous tools such as chats and asynchronous tools, such as the forum.

Specifically, Moodle is an ideal online learning environment for its technical infrastructure. Its design is based on Vygotskian socio-constructivism that «extends the idea of constructivism to a group of people who build knowledge for each other, collaborating in the creation of a small culture of shared objects/concepts [...]. Not only do the "forms" of software tools give guidance on how online courses should work, but the activities and texts produced within the group as a unit will help shape how everyone behaves within the group» [50].

Constructivism places the learner at the center of the training process (learning-centered) and considers knowledge as the result of an active construction by the subject itself through processes of collaboration and social negotiation. Also, the constructivist model conveys the concept of situated learning, which is closely linked to the concrete situation in which it occurs [51]. Therefore, it is moving towards overcoming the design of traditional linear training paths and the setting-up of communities and learning environments [52].

### **2.3. Emergency Distance Learning as an innovation opportunity**

The suspension of frontal teaching activities in universities, following the D.P.C.M of 04.03.2020 [53], and the subsequent activation of online lessons, has led to mobilization by academic institutions. In particular, the academic institutions have capitalized on the resources already available, leading to the adoption of tools not always suitable for the provision of distance courses. Many universities have used tools designed more for the realization of videoconferences, more than intentionally designed learning environments. Consequently, in many cases, the so-called Emergency Distance Learning in Italy has attempted to replicate online practices typical of face to face teaching, without considering the differences inherent in teaching methods. In this sense, it should be emphasized that, when teaching online, technologies are not simply used as functional tools to support educational work, but mediate reality and become part of it [54]. The new technologies are not only a means for the rapid, flexible and interactive transfer of learning content, but are themselves a learning content.

The Emergency Distance Learning becomes an opportunity for innovation, able to offer potential stimuli both to teachers, dealing with digital tools and languages, and to students, «more protagonists and more responsible [...] of the digital environment in which they feel free to take charge of their learning process» [55]. But there is also a need for reflection at the university policy level so that what is an emergency teaching method can be transformed into opportunities for innovation in academic training practices; increasing the quality of the services offered to students based on e-learning environments. In this way, the system that develops in online teaching becomes «the cognitive and affective place in which technologies become a symbolic representation and at the same time educational process» [42].

The design experience in Moodle of the course organized in blended learning mode related to the ICT Laboratory of the Active Training Internship for the qualification of special needs teachers of the Department of Education, Psychology, Communication at University of Bari is proposed, as a starting point and stimulus of the above-mentioned reflection. The Laboratory, initially designed in mixed mode, with face to face lessons and laboratory activities online, was, following the suspension of face to face lessons, completed in fully online mode by integrating the activities carried out within the Moodle platform with video-conference tools.

### **3. Design of a blended learning path in a postgraduate university course**

«Designing educational and training interventions designed at adults means first of all recognizing that their learning is influenced by an important set of experiences as well as by very specific educational expectations and needs that push them to get involved when they enter the classroom» [38].

In this sense, among the educational and training interventions designed at adults there is the annual Active Training Internship for the qualification of special needs teachers, aimed at future special needs teachers. The course, organized into theoretical courses, laboratories and internships, includes four different specialization courses, one for each school grade: kindergarten, primary school, lower secondary school and upper secondary school. Among the laboratories provided within the specialization course is the ICT course, a laboratory dedicated to Information and Communication Technologies. The blended learning design of the mentioned laboratory is therefore presented below for each specialization area provided for by the Active Training Internship for the qualification of special needs teachers in the academic year 2019/2020 organized by the University of Bari Aldo Moro.

The ICT course initially included 75 hours of training of which 48 were to be held in face to face teaching, 27 online. However, due to the suspension of face to face teaching activities, 6 of the 48 hours in face to face teaching were carried out in teleteaching mode. The lessons in this mode were held for all school grades on 10<sup>th</sup> March 2020 and on 17<sup>th</sup> March 2020. The two lessons were conducted simultaneously by the teachers of each specialization area through the support of the platform of e-learning in which were loaded the tools to record attendance, links to follow the streaming and activities planned for those days. The streaming of the two lessons, instead, was conducted within the Google Meet platform belonging to the G-Suite.

The activities were conducted by dividing the classes of each specialization area into two groups according to an alphabetical order (students with the surname from A to L and students with the surname from M to Z), with face-to-face lessons every two weeks and specific activities online intercurrent.

There were 473 users involved, distinguished as follows (table 1):

**Table 1**  
Distribution of users

	TIC course for special needs teachers in kindergarten	TIC course for special needs teachers in primary school	TIC course for special needs teachers in lower secondary school	TIC course for special needs teachers in upper secondary school
Teachers	1	1	2	1
Tutor	1	1	1	1
Students	123	136	102	103

Online activities have been organized for all school grades within an LCMS e-learning Moodle platform with separate activities for each school grade. These online hours of activities have been reported based on the achievement of specific objectives, namely the implementation of activities consistent with the issues addressed during the face to face lessons and the delivery of specific artifacts. In particular, the course teachers of all specialization areas agreed that these goals for online activities were expected to be achieved by the delivery of at least 3 artifacts online.

On the platform the activities were designed following a laboratory approach, except for some initial in-depth content useful to align all groups on some common salient themes:

- Theoretical study on "ICT and assistive technologies";
- Recovery and consolidation of basic computer skills.

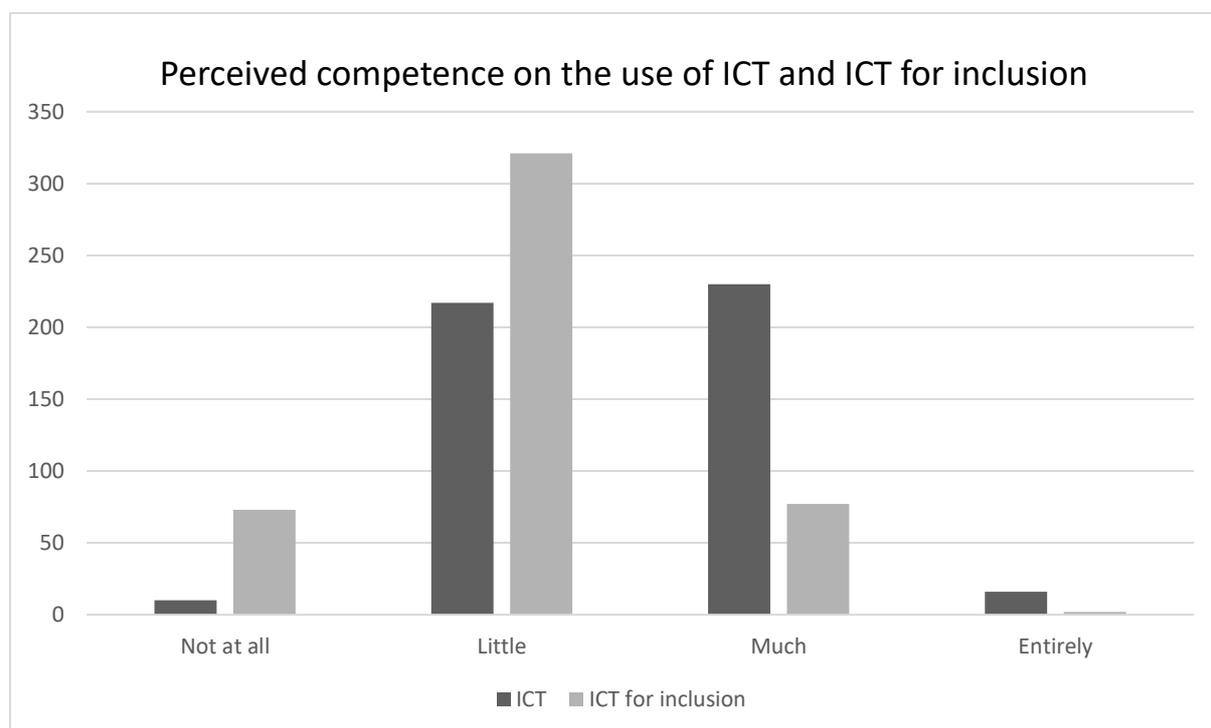
Most of the platform activities were conducted in small groups so that all students could participate actively in the individual activities planned. In particular, the activities have been calibrated on the interests and formative needs of the students ascertained through an initial questionnaire.

### 3.1. Training needs analysis

The training needs analysis has been conducted through a structured questionnaire aimed to catch expectation and training needs about 3 main aspects: competences and abilities to develop and teaching methods to learn.

The participants represent the whole of the students involved in the course: 464 students distributed in the 4 specialization areas.

Students, for almost 60% of the age between 30 and 40 years and 61% in possession of a Master's degree or five-year degree, for the most part (60.04%) had already attended courses on educational technologies and media education. Almost 70% of them have previous teaching experience. Their perceived expertise in the use of ICT and ICT for inclusion is summarised in the following graph (Figure 1).

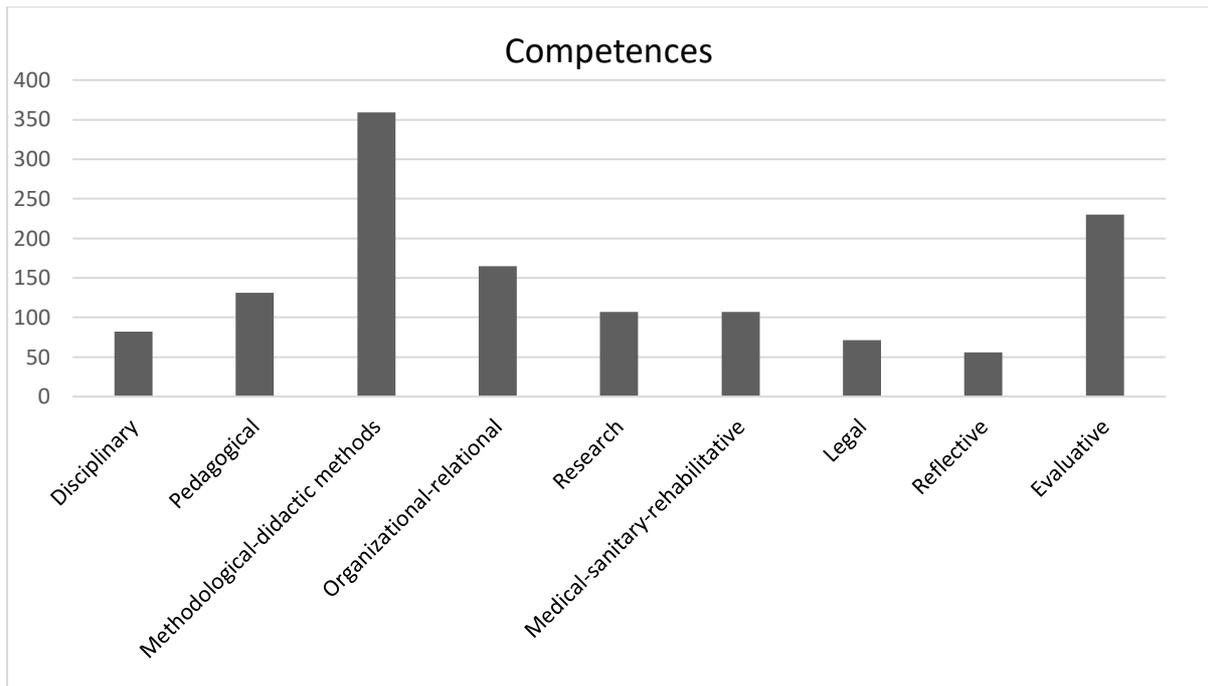


**Figure 1:** Perceived competence in the use of ICT and ICT for inclusion (rough scores)

As one can see from the graph (Figure 1), if there is a fairly high perceived competence on the use of ICT (49% feel very competent), on ICT for inclusion the trend is reversed (68% feel little competent).

For what regards the training needs, we explored what abilities, teaching methodologies and themes students wanted to deepen more.

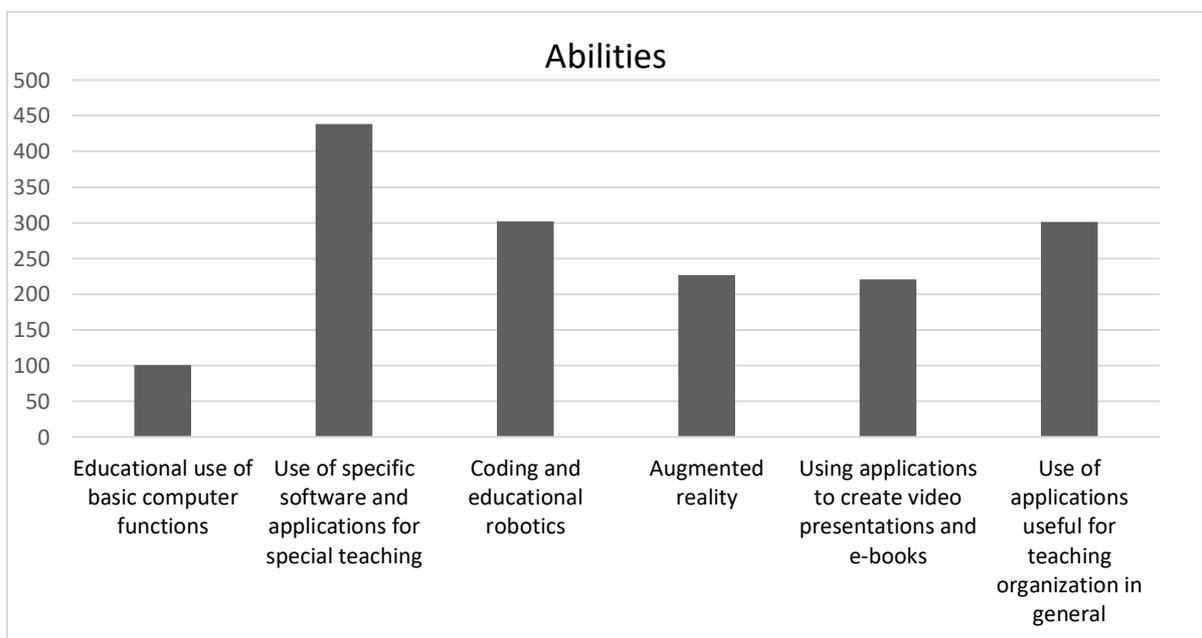
The first aspect we investigated regards the competences students needed more to develop. Data are synthesized below (Figure 2).



**Figure 2:** Competences that the participants have expressed the need to acquire (rough scores)

As can be seen in Figure 2, most of the participants expressed the need to acquire skills in teaching methods (76%) and evaluation methods (49%).

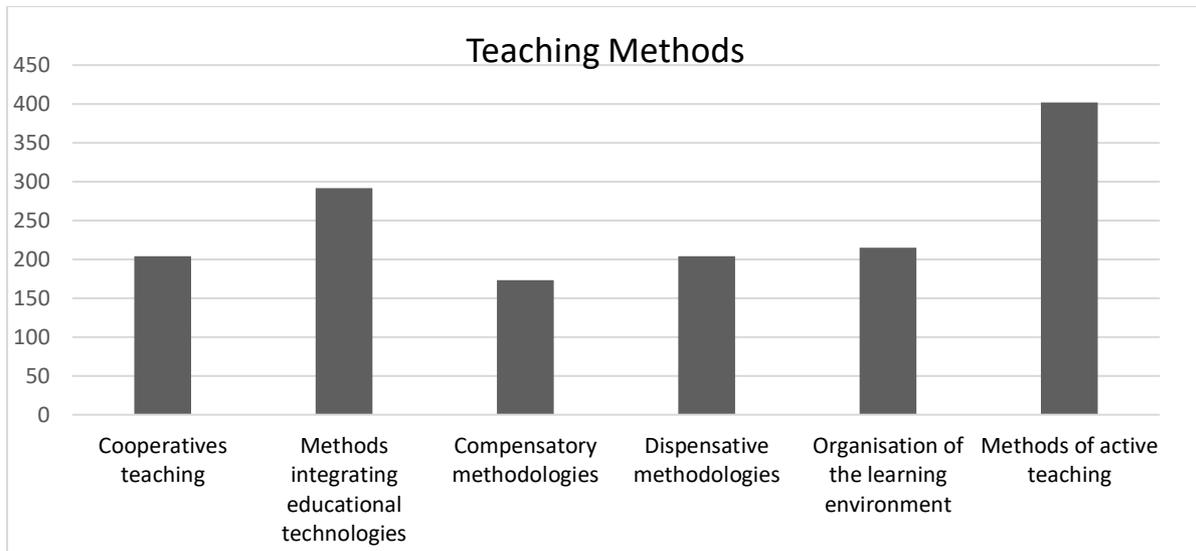
The following graph (Figure 3) shows, instead, the analysis of needs in terms of acquiring specific abilities.



**Figure 3:** Abilities that the participants have expressed the need to acquire (rough scores)

As it can be seen in the graph in Figure 3, the abilities with respect to which the students have expressed greater interest are the use of specific software and applications for special teaching (93%), the use of applications useful to educational organization in general (64%) and coding and educational robotics (64%).

Finally, for what regards teaching methods, the results are summarised in the following graph (Figure 4).



**Figure 4:** Teaching methods that the participants have expressed the need to acquire (rough scores)

As it can be seen in the graph in Figure 4, 86% of students expressed the need to deepen active teaching methods and 61.85% chose teaching methods that adequately integrate technologies.

### 3.2. Learning design of the course

Based on the findings of the training needs analysis, the course was organized by preparing classroom activities aimed at the deepening of the main active and inclusive teaching methodologies that effectively integrate the use of technologies. Online activities, on the other hand, have been organized with the aim of allowing students to develop specific abilities in the field of the design of multimedia educational environments and contents and the use of digital tools and environments for educational purposes.

Below (Table 2, 3, 4, 5) we summarize the specific activities conducted online in the different specialization areas.

**Table 2**

Activities planned for the subgroup of students for the Kindergarten area of specialization

Activity	Artefact
Know and learn how to use software and apps to create multimedia conceptual maps	Creation and delivery of a conceptual multimedia map
Acquisition of basic skills to conduct Coding activities in kindergarten	Completion of the rapid preschool course of coding on the site code.org and delivery certificate
Analysis and evaluation of educational apps for inclusion	Delivery evaluation sheet of two educational apps

Analysis of museum apps based on the principles of Universal Design and Universal Design for Learning	Delivery of an analysis sheet museum app
Use of the virtual Wakelet board and meta-reflection on distance learning and the use of technologies for support (A-L group only)	Meta-reflective post on Wakelet
Use of the virtual Padlet board and meta-reflection on distance learning and the use of technologies for support (M-Z group only)	Meta-reflective post on Padlet

**Table 3**  
Activities planned for the subgroup of students for the Primary School area of specialization

<b>Activity</b>	<b>Artefact</b>
Analysis of online learning environments for the provision of courses in e-learning mode and MOOC	Delivery of analysis sheet MOOC aggregator
Realize the macro-design for the provision of a MOOC	Delivery of macro-design
Realize the micro-design for the provision of a MOOC	Delivery of micro-design
Know and learn how to use software and apps for the creation of multimedia conceptual maps	Creation and delivery of a conceptual multimedia map
Analysis of museum apps based on the principles of Universal Design and Universal Design for Learning	Delivery of an analysis sheet museum app
Use of the virtual Wakelet board and meta-reflection on distance learning and the use of technologies for support (A-L group only)	Meta-reflective post on Wakelet
Use of the virtual Padlet board and meta-reflection on distance learning and the use of technologies for support (M-Z group only)	Meta-reflective post on Padlet

**Table 4**

Activities planned for the subgroup of students for the Lower Secondary School area of specialization

<b>Activity</b>	<b>Artefact</b>
Know and learn how to use software to create conceptual maps multimedia (group A-L only)	Creation and delivery of a conceptual multimedia map
Know and learn how to use software to create e-books (A-L group only)	Create and deliver an e-book
Know and learn how to use software to make comics (group A-L only)	Make and deliver a comic book
Know and learn how to use software to make products audio-visual (group A-L only)	Making and delivering an artefact audio-visual
Know and learn how to make courses in e-learning within different SML (A-L group only)	Open a course and insert activities within an LMS
Achieve the design of a unit training that includes the use of different technologies (A-L group only)	Design delivery of the training unit
Analysis of museum apps based on the principles of Universal Design and Universal Design for Learning (group A-L only)	Delivery of an analysis sheet museum app
Know and learn how to use the VOKI software (M-Z group only)	Knowing and describing the artefact on Padlet made with VOKI
Know and learn how to use the software Comic Life (group M-Z only)	Deliver and describe on Padlet the artefact made with Comic Life
Know and learn how to use the environment Learning Apps (M-Z group only)	Deliver and describe on Padlet the artefact made with Learning Apps
Know and learn how to use the software Photo Story (M-Z group only)	Delivering a Photo Story

**Table 5**

Activities planned for the subgroup of students for the Upper Secondary School area of specialization

Activity	Artefact
Designing educational activities carried out through the flipped classroom method	Delivery activity design with flipped classroom method
Use of the virtual Padlet board and meta-reflection on teaching a distance and the use of technologies for Support (M-Z group only)	Meta-reflective post on Padlet
Use of the virtual Wakelet board and meta-reflection on distance learning and the use of technologies for support (A-L group only)	Meta-reflective post on Wakelet
Analysis and evaluation of educational apps for inclusion	Delivery of assessment form of two educational apps
Analysis of museum apps based on the principles of Universal Design and Universal Design for Learning	Delivery analysis sheet of a museum app

Each activity has been conducted following this scheme:

- Teacher's introduction of the theme, construction of the theoretical framework and explanation of the online activity in a face-to-face lesson;
- Online activity based on the construction of the artifact given as a task to deliver online;
- Final discussion and meta-reflection about the activity in a face-to-face lesson.

Online lessons taken after the suspension of face to face lessons due to Covid-19 emergency, were conducted following the same schema but condensed in a unique lesson of three hours. The teacher's introduction and the final discussion were conducted through a Google Meet video-conference.

The online activities allowed testing the functionality of technologies where, otherwise, it would not have been possible to effectively organize significant laboratory activities in the classroom, given the number of groups-class and the structural limitations of university classrooms. The wise combination of face to face activities and online activities has created a recursive circularity between theory and practice. In particular, a teaching approach based on the principles of the socio-constructivism has been used, in which the classroom context has fostered learning processes through the mobilization of previous knowledge and the negotiation of meanings. The online environment, on the other hand, was designed and organized to become a context for the construction of digital artefacts that would allow reifying the knowledge learned.

«The most recent on-line training aims precisely to preserve a closeness with the life of the subject while seeking a certain formalization with the life of the subject while seeking a certain formalization of knowledge. The sum of situations, experiences or subjective events represent the fabric in which constructivist paths of training and learning are inserted» [38]. In this sense, the activities on the platform were strongly characterized by "doing" at the expense of a dimension of comparison. It has

not been possible to build a space for dialogue in online forums, although the forum is a strategic tool in this context. This could represent a weakness in the organization of the course. However, this orientation is attributed to the possibility of the students to meet physically in the first phase of the course, until February 2020. Although they carried out the activities on the platform, the students had risen the hours in the classroom to moments of mutual comparison and with the teachers of the course. The evaluation aspects have been managed in a double direction: on the one hand, there was a formal quantitative evaluation, aimed at awarding the final vote; on the other hand, an evaluation action was carried out to educate and motivate learning, based on the return of weighted feedback on artefacts. «The aim is to propose a significant review of the concept of evaluation which, moving away from the "objective" measurement paradigm of discrete amounts of knowledge, moves towards active, critical and participatory pedagogical models, able to promote processes of building and negotiating knowledge» [38].

One of the activities that best summarizes these aspects, was the meta-reflective writing on digital environments Padlet and Wakelet. These are digital tools of content curation and storytelling organized in the form of a showcase where it is possible to write contents collaboratively.

In particular, Padlet and Wakelet are describable as digital portfolios in which to transport, share and store different materials, such as audio files, videos, images and texts [56]. They become, therefore, a virtual whiteboard through which students can create content independently or starting from the indications provided by the teacher. The activities proposed in these environments have pursued the dual objective of experimenting with the tools and to use them to create a moment of overall reflection on the training path carried out during the course.

## 4. Conclusions

The experience conducted during the emergency has highlighted the possibility of using blended mode in the future, in particular for the design of training courses for adults, providing activities that create unity between distance learning and classroom training. The face to face teaching, in this sense, is configured for students as a moment of deepening and opportunity to clarify what is presented in the online environments, thus making a significant contribution to the learning process. At present, teaching in the academic field is carried out more following teaching methods of the transmissive type, also because of the high number of students attending the courses [57]. Hence the tendency of teachers to neglect laboratory activities and to carry out lessons and/or frontal activities, where greater importance is given to theoretical contents. An approach of this kind if on the one hand makes students very prepared from the point of view of content, on the other hand, deprives them of a learning experience of the constructivist matrix, that allows an active construction of knowledge through processes of collaboration and negotiation of meanings. The constructivist model also conveys the concept of situated learning, which is closely linked to the concrete situation in which it occurs [51]. It, therefore, moves towards overcoming the design of traditional linear learning pathways and setting up communities and learning environments [52].

In the academic panorama of recent years, however, there is no lack of examples of educational offers set based on a transmission teaching, characterized by lessons and individual activities [58] conducted within a university setting, characterized by classrooms where there are not always technological tools and even more working Internet networks. Added to this is the furnishing of traditional classrooms, often consisting of long rows of fixed and therefore immobile desks, which hinder the realization of laboratory activities and consequently of artifacts, as well as the realization of group activities.

In the organization of the course discussed within the contribution, the supply and implementation in a blended mode of the activities have made the course itself a "meta-course", where students could explore and learn how to use different digital tools and environments, developing skills and practical skills in the direction of developing know-how with technologies, experimenting with them online and in groups. The very essence of mixed teaching is found in the possibility of having environments in which to form and be trained. This coincides with Papert's constructivist theory [59]: the creation of concrete products through interaction with companions allows learners to elaborate concepts and

organize their own ideas. Moreover, the organization of a specific online learning environment and of the activities connected to it has made possible to create learning experiences. According to modalities of face to face teaching, these learning experiences could not have taken place due to the lack of time, infrastructure and adequate spaces. In its organization, the course has been recognized as useful by the students not only in the acquisition of theoretical knowledge but especially in the development of specific skills that have been acquired through online activities and consolidated through confrontation and reflection in the classroom before and online after the restrictions due to COVID-19.

At the end of the course, students from all school grades were asked to elaborate a meta-reflective post on the Padlet and Wakelet virtual bulletin boards, useful to assess the course activities conducted. In particular, it was requested to:

- Reflect on the activities and ICT experienced during the course;
- Describe what has been done individually for each of the activities carried out and the apps tested;
- Express personal considerations on the validity of each instrument tested for inclusive purposes.

Between the participations inserted from the students the following are cited, which useful synthesis of the entire distance carried out.

*"The ICT course was very interesting and enlightening. The path I took led me to reflect on the importance of training to acquire skills that can also be used in teaching. Although we are great users of technologies and therefore of different hardware and software, we still do not know how to exploit all their potential because they are poorly formed. This course allowed me to know and experiment with different tools, some of which I had never used before".*

*"During the ICT Laboratory, we experimented with several activities that allowed me to enrich my knowledge. Some of them I knew, but thanks to the course I had the opportunity to deepen, understand the usefulness and the means so that they could be usable".*

The analysis of the ICT Laboratory, however, also revealed a criticality, that is, the total absence of interactions in the platform discussion forum. The absence of interaction in the forums resulted in a loss of feedback for the course participants and teachers about the progress of online activities. Interactions were recorded only during specific activities that, to a certain extent, forced students to participate and especially as a result of the inability to physically meet for the students. Before the suspension of face to face teaching activities, since it was a blended course, the students met in the classroom every 15 days. In this way, probably, the latter perceived less the need to interact online, although this aspect must always be treated, designed and managed with care. Indeed, it is always considered appropriate to encourage the use of online forums. In fact, if used wisely, they can support the process of collaborative knowledge building [60, 61] and involve students in the three dimensions, cognitive, social and motivational fundamental to learning [62].

The organization of teaching activities in blended mode is particularly effective in university contexts, in place, above all, of post-graduate course. By making the organization of the course more flexible, it is easier to meet the working and family needs of an adult user. Also, given the diversity of previous experiences and the basic training paths of trainees, online activities aimed at the construction of artifacts are an ideal context in which to exploit the potential of each as an enriching element for all. The predisposition of a learning environment intentionally designed to supply training in e-learning mode (a Learning Management System - LMS), which could be Moodle, provides an opportunity for the entire institution to experiment with effective distance training profiles. Thus turns a time of crisis into an opportunity to rethink traditional established practices and build hybrid learning contexts. In these hybrid learning context technologies become an integral part of the teaching staff's toolkit and act as a catalyst for educational opportunities and student services. In this regard, Trentin [27] highlights the importance of "designing", providing environments, tools and activities that guide the articulation of knowledge of the parties involved, reflection on their learning processes, the construction of personal representations of meaning to promote conscious and productive thinking [29]. The learning environment, so planned, allows the creation of a hybrid social space in which formal learning,

characterized by a varied panorama of courses in remote or streaming mode, is well integrated with informal learning with its devices, that allow experimentation and online collaboration. In this way, the blended mode is proposed as a link between distance teaching and face to face teaching.

## 5. References

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