Blended learning and emergency distance learning. How to rethink learning environments at school

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Abstract
The Italian School context, in the current scenario, represent a field in which emerges many innovation possibilities. The activation of emergency distance learning due to the suspension of presence teaching activities, represents the occasion for Italian School to renovate school traditional dynamics. Aware of the fact that virtual learning environments provide different teaching and learning dynamics, it is important to reform learning design practices and organize an integrated learning environment that eases effective learning paths. In this paper we present the design of a research-training-action path in a Secondary Italian School in which it will be activated a training course for teachers and introduced the e-learning platform Moodle in teaching-learning activities.

Keywords[1]
Blended Learning, Moodle, Secondary School, Action-Research, Emergency Distance Learning

1. Introduction[2]

Education and Training Monitor [1] is a report published in September 2020 to monitor the evolution of national education and training systems across the European Union (UE). Digital education and Digital competence are the lead themes of the report. The crisis engendered by the global pandemic has brought to light structural and educational problems: the network infrastructure is insufficient; 15% of students in all EU countries do not have digital skills; teachers need training to increase digital skills in teaching. Through the *Digital Education Action Plan* 2021-2027 [2], the European Union shall develop a strategy for building an ecosystem of digital education, which will help countries in their digital transformation:

«This period of massive educational disruption has created a sense of urgency about digital education. 95% of respondents consider the COVID-19 crisis to be a "turning point" for how technology is used in education and training» [2].

Thus, the crisis and digital transformation impose a change on education systems. The priority is to promote the development of a high-performance digital education ecosystem: connectivity, infrastructure, teacher training in the use of technologies in teaching, increasing the digital skills of students.

The emergency has shown us that learning is changing: what, how, when and where we learn are changing. What does education demand of technology? To guide educational innovation, it is necessary to make explicit what the principles of good teaching and learning are [3].

[2] Despite this paper has been developed jointly by the authors, Michele Baldassarre has written the paragraphs '1. Introduction' & '4. Conclusions'; Valeria Tamborra has written the paragraph '3. A blended learning research-training project in secondary school'; Paola Lisimberti has written the paragraph '2. Innovative teaching methods between face-to-face and distance learning: blended learning ad an educational strategy'

What tools and methodology are needed to meet the challenge of change? In truth this change happened before the pandemic. Technologies make learning possible in a different space-time [4]. The school needs to be considered the place of learning enhanced by technologies: inclusion, community and educational alliance with family, involvement and relationship with learners can be enabled by ICT more than distance and presence.

The technologies belong to our everyday life: «work from home and collaborate and communicate with colleagues in real-time. We have unparalleled access to information and can connect with other people that share our interest» [5].

Luciano Floridi explains the presence of technology in our daily lives with the expression *onlife*: the *onlife* mode is made of events in which technology is essential. Communicating, learning, working, shopping, having fun and playing sports can all be done without technology [6].

Thus, presence and distance in the teaching/learning process also take on a new value. Presence is not co-presence in the same physical environment and distance is not absence. A virtual learning environment has value if it generates active learning through the construction of a learning path where the learner is the protagonist [7]. A physical learning environment has a different structure than a virtual learning environment: learning changes and teaching has to be designed. Distance learning has been activated after the lockdown in March 2020: teachers and students continued the lessons on the online platforms. The aim was to keep the educational relationship active with all students. To contain the contagion, from September 2020 schools open and close, alternating presence learning and distance learning and facing a new form of emergency.

The *Guidelines for Integrated Digital Education* [8], published in August 2020, provides schools with operational guidance to organize educational activities: each school draws up a Plan for integrated digital education annexed to the PTOF (Three-year plan for the training offer). Through the plan the school communicates to families and students methodological, strategic choices and organizational decisions of educational activities integrated with digital. In particular, the alternation of synchronous and asynchronous activities, the key topics of the disciplines, non-formal and informal learning [8].

A recent study [9] investigated teacher practice during the lockdown. Teachers consider *distance teaching an emergency teaching* (73%) and only a small part of them (27%) had previously shared teaching/learning materials with students [9]. Data collected on the use of learning environments explain that teachers make limited use of learning management systems such as Google Classroom, Edmodo, Weschool. Teachers taught with any digital tool useful to maintain the educational dialogue with all students: teachers address the problems faced by students, such as promoting their inclusion and involvement.

2. Innovative teaching methods between face-to-face and distance learning: blended learning as an educational strategy

Which methodologies strengthen teaching in this context? So, the teaching/learning process also needs innovation and blended learning methodology allows a coherent and innovative emergency approach. We must review the concepts of distance and presence in teaching/learning: digital technologies replace presence (i.e. e-learning); presence and distance alternate in blended learning; technologies in the classroom (BYOD) [10]. Blended learning at school requires rethinking spaces and learning times: the focus is on learning, relationship, communication.

Distance learning has raised many questions. Some considerations led to the school by the movement "Avanguardie Educative" are [11]: distance learning is needed beyond emergency phase; design new types of tests, instruments, subjects and methods of testing and evaluation; monitor educational action; promote active learning. But distance learning existed before the outbreak? It seems so. We can consider learning through reading the books and homework as one form of distance learning. The student uses and read the book generally alone, performs the homework without the presence of a teacher.

Blended learning at school needs balance. First of all, the appropriate balance must be found between *distance learning* and *presence learning*, without clear divisions as 50% of the lessons in attendance and 50% at a distance. The CSPI (Consiglio Superiore della Pubblica Istruzione) have a negative opinion on the organization of the class group half in the classroom and half at home: working materials,

interaction, procedures are different. A teacher cannot manage teaching in two different learning environments at the same time and the training activity would have a negative impact on the students [12]. Yet, this seems to be the solution adopted by many schools to ensure teaching.

A blended learning pedagogical pattern must be tailored on learning objectives, designing spaces and learning times, balancing synchronous and asynchronous activity. Young people of the 21st century is used to communicating through instant messaging chats: probably they appreciate the speed and formats (audio, video, image). Dialogue, confrontation, debate need an appropriate space: this is the *forum*, a virtual place for discussion on digital teaching platforms. The teaching methodology indicated for the development of participatory and communicative democracy competences is the debate. The forum allows the design of synchronous and asynchronous phases of the debate. Through debate, students learn to use tools to address complex issues, to present their own reasons and to evaluate the reasons of others. Argumentative and communication skills increase, as do transversal skills such as the exercise of active and responsible citizenship. Students play an active role of observer, moderator and referee. The forum allows the design of synchronous and asynchronous phases of the debate. The forum can be conducted in blended learning and e-learning mode:

- debate starts in the classroom and continues in the virtual forum;
- the debate takes place in the virtual classroom in asynchronous mode moderated by the teacher;
- the debate takes place in synchronous mode in the live forum moderated by the teacher.

Within the forum and through appropriate links, the student can manage the materials for the arguments, the search for content, the formulation of opinions, the discussion. All stages of the debate are always traceable: students can re-read the arguments and opinions of others. The forum is a place for the community to practice democracy.

The book and the interactive whiteboards in the same environment create positive conditions to develop the learning augmented by technologies. Different tools contribute to learning: books and notebooks as closed tools can coexist with smartphones and interactive whiteboards as open tools. Each tool will reinforce its value through interaction with the other [13].

Designing in the right direction means deciding which LMS (learning management system) to use, knowing what tools are available to students, choosing which teaching methodologies to adopt. Firstly, the creation, management and storage of content in different formats (text, audio, video, image) must be ensured. Learners should be provided with collaborative tools to produce texts, multimedia presentations, spreadsheets, websites, graphics. In this way, students acquire the communication and collaboration skills of the European citizen of the digital age contained in DigComp 2.1 [14]:

- Interacting with digital technologies
- Sharing with digital technologies
- Collaborating with digital technologies
- Developing digital contents
- Integrating and reworking digital content.

Connectivity and digital tools impose new strategies and innovative methodologies based on active learning: laboratory teaching, problem-based learning, experience-based learning, project work, debate. For example, consider the low-cost availability of open hardware and software platforms (Arduino) transforms every classroom into a virtual learning environment. The culture of makers and the Internet of things enters the classroom (physical or virtual). Students, organized in teams, can design, build and test prototypes, using a microcontroller kit and online 3D modelling platforms such as Tinkercad [15].

2.1. Classroom management between a technology-enhanced learning environment and virtual learning environment

Learning is connected to the environment: we learn not by memorising facts, but by interacting with others and with the context [16]. A technology-enhanced learning environment is a knowledge factory: here, learners are called upon to be the main actors in the learning process through a personal and active construction of their own knowledge. The presence of ICT characterises these environments and opens up the classroom space: connectivity, notebooks and interactive screens connected to the internet change the methodological approach to teaching/learning. It is not central to "have the information", but "to be able to retrieve it", make it active, structure it or process it and, ultimately, generate knowledge. Laboratory teaching, informal learning and cooperative learning are oriented towards learning by doing. As the learner constructs his knowledge, the teacher stops being the repository of knowledge, but becomes the facilitator of the learning process. The teaching model is based on coworking activities: cooperative and individualised learning processes coexist in collaborative and constructive contexts. The 2014/2020 PON FESR [17] has funded several projects on environments such as technology-enhanced classrooms and alternative spaces. In these multifunctional environments, innovative methodologies and tools are tested:

- designing open educational resources for learning;
- experiencing augmented reality;
- designing and printing artefacts with the 3D printer;
- building and programming robots.

Students' personal devices also change the learning environment: #6 Active BYOD policies of the PNSD (National Digital School Plan) authorises the use of personal Internet-connected devices at school [18]. Indeed, it is necessary to educate learners to navigate, to search for data, to filter information, to evaluate the reliability of news.

Despite the innovations, the prevailing teaching model remains transmissive and the type of lesson most commonly practiced is the frontal lesson. In March 2020, schools faced a crisis: schools closed, teaching activities were suspended, *presence learning* was replaced by *distance learning*. The Ministry of Education has set up a web page to support schools, indicating the platforms allowed for training. Each school must identify a platform that meets the necessary data security requirements to guarantee privacy, also taking into account the opportunities for managing this form of teaching that are within the electronic register's functionalities [19]. In most cases, these are platforms designed for companies and reused for teaching (such as G Suite for Education and Microsoft Teams) [20]. Thus, teachers and students moved into virtual classrooms not designed on a pedagogical model but born as a working environment for companies. These environments are a far cry from computer environments designed for delivering e-learning courses such as Moodle [21] and ADA [22]. The Moodle platform, for example, has been designed following the pedagogical approach of constructionism to enable and facilitate the social construction of knowledge. Here the teacher sets courses, controls user access, monitors interactions; the student has access to different collaborative environments such as the forum and chat. Significant active and cooperative learning experiences such as the creation and management of wiki pages are possible for students. The focus is on learning and not on controlling student attendance alone: the teacher monitors the development of skills, collects feedback and modulates the training intervention. Courses can be run in different modes:

- e-learning;
- blended learning;
- self-study.

When designing distance learning, the teacher must increase the space for planning and monitoring and limit synchronous interventions. Educational robotics helps us to understand the characteristics of both virtual and physical constructionist environments. Let's take the 5E model from Lego as an example.

The 5E educational model is developed by Lego Education [23]. It consists in 5 steps: Engage, Explore, Explain, Elaborate, Evaluate. Engage, Elaborate and Evaluate are asynchronous activities, while Explore and Explain are educational activities in presence. This pattern allows flexibility, work

for small groups, self-employment, knowledge building. Students develop soft skills: creativity, collaboration, problem solving, critical thinking. Teachers play a role as trainers, plan teaching/learning time and had more time to do things with their students.

Virtual learning environments have become part of everyday school life and can be regarded as the software engine of a technology-friendly school [24]. The whole school digital ecosystem is designed around VLEs: user accounts; virtual classrooms; repositories; forums and instant messaging chats; creation, management, storage and preservation of content and digital artefacts; tracking teacher-student interaction; monitoring and evaluation [24]. Moving from one learning environment to another means a paradigm shift. The videoconferencing systems within the platforms enabled the preservation of the traditional training paradigm. A paradigm shift in education means emphasising the social, collaborative, experimental dimension that technologies enable in learning.

INDIRE researchers investigated teaching practices during the lockdown [25]: most of the teachers have transposed typical presence practices to the distance [26]; few teachers have experienced laboratory practices in DaD [26]. Especially the teachers used videoconferencing systems to continue to relate to the students, repeating the model of transmissive teaching. Work needs to be done to reverse this trend and align teaching practices with learning environments.

Classroom management must be inspired by the principles of sustainability and accessibility in the use of ICT; slowing down the pace of teaching/learning; teacher-learner interaction; promoting authentic learning. Some teaching methods facilitate classroom management more than others. Spaced learning, for example, is a suitable methodology in both environments. It consists of dividing the teaching/learning time into small units of a few minutes. In this teaching practice, teaching phases alternate with breaks: repetition of the content alternates with distracting activities. The aim is to stimulate long-term memory. Spaced learning works both remotely and in presence. If the learning environment changes, the space-time relationship of training must be reviewed. This is clear from the pandemic for all teachers. Learning space changes: classroom/virtual classroom; school/platform; desk/desktop; physical environment/internet. Also the learning time changes: synchronous/asynchronous lecture; finished lesson/on-demand lesson; contingent time/delayed time. The roles change: the teacher is a facilitator, a coach, not a repository of knowledge; the student is the protagonist in the construction of his own learning. In this context blended learning is a decisive strategy to rethink teaching/learning. The issue of teacher training remains central: we cannot think that designing a virtual classroom asks teachers for technical expertise. The virtual classroom has a different architecture to the physical environment: firstly, the traditional classroom is already structured according to a model (the factory) and consists of familiar furniture (desk, desks, chairs); secondly, the teacher can design by breaking the traditional pattern. In fact, the virtual classroom can aggregate groups of students by open classes (horizontally and vertically) or by themes. However, it is necessary to know the alphabet of our time, the digital, in order to move within a new ecosystem characterised by the presence of technologies. The design of technology-enhanced learning pathways must become the defining content of teacher training: it is not just a matter of acquiring technical skills with apps, but of enhancing methodological skills. It is not just a question of acquiring technical skills with apps, but of enhancing methodological skills. In short, it is a question of ensuring that teachers can move around in new contexts with the mastery of a teaching architect.

3. A blended learning research-training project in secondary school

The literature discussed in the previous paragraphs calls for some reflection on the ways in which distance learning activities should be conducted.

In fact, if the closure of schools in March 2020 has forced schools to organize emergency online learning, without the time to introduce important changes in the teaching methodologies, in this second phase of distance learning, on the basis of the criticisms emerged in previous months, the school community should rethink its educational practices. In fact, providing distance training involves a paradigmatic change in the fields of design, methodologies and tools. In fact, it's not possible to conduct lessons online using almost exclusively tools useful to realize synchronous activities that follow typical face-

to-face teaching methods, such as frontal lesson. When training moves from classrooms to virtual environments, it is necessary to rethink the way in which it is done.

In a research conducted by the Laboratory of Experimental Pedagogy and Multimedia of the University of Bari, which photographed the teaching and evaluation practices in distance learning in the Apulian School, among the most important issues emerged, it was found that the frontal lesson conducted in video-conference environments involved the loss by teachers of the direct feedback that, generally, in presence, regulates their teaching action in real time. As a result, teachers felt that students were less interested and less involved [16], so much so that, despite several oppositions that emerged about the validity of online evaluation, teachers used evaluation as a tool to obtain feedback on the effectiveness of their teaching [9]. A further critical issue emerged, was the use by teachers of different tools and environments (e-mail, Whatsapp messages, various platforms) to send learning material: if, on the one hand, this type of organization showed a certain digital fluency, by teachers, in the use of different technological tools, it was observed, on the other hand, that this could be a confusing factor for students [16]. For training to be effective, it is important that students can work within a single integrated and intentionally designed learning environment that combines, in an orderly and clear way, synchronous and asynchronous activities. In fact, it is not the introduction of technologies that brings improvements in terms of knowledge acquisition. It is important, rather, that teachers are adequately trained and that technologies integrate with their actions through supervised activities and supported by feedback that allow students to have direct control over their knowledge acquisition process. Digital media act in this process by broadening and enhancing learning opportunities, through practical activities aimed at constructing artifacts that are more effective when made in groups or in pairs, rather than individually.

Providing educational activities within an online learning environment leads to a change in the communication, sharing, conservation and management of teaching resources within the school. Moreover, for what regards the organization of study activities, the contents become manipulable, editable and individualizable in relation to the different levels of learning difficulties. With regard to deeper aspects of learning processes, like creativity, media are presented as objects able to shape cognitive and cultural processes that have more evident effects on motivation and transversal skills through new dialogical or narratological models that build new forms of social belonging.

Digital environments are customizable, adaptive and offer complex design opportunities; moreover, educational research has extensively provided conceptual and operational tools to overcome transmissive approaches, naively reductionist models and techno-centric strategies. The most recent online training aims to preserve a closeness to life of students, while seeking a certain formalization of knowledge. The sum of situations, experiences or subjective events represents the fabric in which constructivist training and learning courses are inserted.

Given the complexity of dimensions that come into play in this changed scenario, the choice of the learning environment to be used becomes a critical factor in the success of an online training action. The opportunities offered by current technologies are various and not always ideal. The learning environment should be as integrated as possible in its functionality so that teachers and students could work as much as possible within a single intuitive, simple and accessible environment, that could offer diversified functionalities.

Therefore, it is necessary to prepare the activities within an integrated e-learning platform by designing the educational organization following the principles of blended learning, such as realizing a circular continuity between synchronous and asynchronous activities.

Based on these assumptions, a research-training was activated within a Secondary School in Campania with the collaboration of the research team of the Laboratory of Experimental Pedagogy and Multimedia of the University of Bari. The goal is to implement an online teaching system within the e-learning platform Moodle. To this aim, a research-training-action plan has been organized which pursues the project objective on two levels:

- Training of teaching staff;
- Conducting online learning activities in some pilot classes.

In particular, training of teachers has the following objectives:

- Learning to autonomously manage an e-learning platform that allows the conduction of educational activities within an integrated learning environment that combines distance activities in synchronous and asynchronous mode;
- Know and use properly the main tools offered by an e-learning platform;
- Understanding the main specificities that learning design assumes when one moves from physical to virtual classrooms and teaching mediators become almost exclusively digital;
- Produce autonomously multimedia teaching materials suitable for the provision of distance training within an e-learning platform, with attention to the realization of video-lessons to be used in asynchronous mode;
- Manage online learning activities using active teaching methods: cooperative learning and flipped classroom.

The expected skills to be developed are:

- Autonomous management of the e-learning platform Moodle;
- Selection and effective use of key tools integrated into an e-learning platform;
- Basic skills in Learning Design;
- Production of multimedia teaching materials, such as video-lessons;
- Manage educational activities by following the principles of flipped classroom and cooperative learning methods.

The choice to use Moodle as a Learning Management System is gathered by the fact that it is one of the most widely used e-learning platforms globally; currently translated in 100 languages, it involves millions of users worldwide. Its open-source code has also been developed to comply with the rules of accessibility on the web, making it one of the most appropriate LMS for all users, regardless of the specific skills of each. The infrastructure of the learning environment is planned, moreover, on the base of the principles of the socio-constructivism, arranging useful instruments for:

- Collaborative writing;
- Synchronous and asynchronous dialogic exchange of views;
- Navigation inside of educational resources designed in the form of e-book and video-lessons.

For what regardes video-lessons it supports the SCORM standard, acronym of Shareable Content Object Reference Model. In e-learning, this standard defines the technical specifications that learning objects must possess in order to guarantee their reuse, tracing and cataloguing, reflecting a modular teaching organization.

The experimentation of the activities with the pilot-classes, the design of the research is moved by the following objectives:

- To verify the educational effectiveness of an integrated e-learning system in terms of learning outcomes;
- To assess changes in the educational relationship between teacher and students;
- To assess intervening changes in school-family relationship.

Therefore, it will be conducted following an implementation and monitoring plan of a four-month period, according to the method summarized in the following table (Table 1).

Table 1:
Basic framework of action-research

Step	Subject matter and analytical tools
Step 1: Provision of the environment	• Content design; • Production of teaching materials;

	• Provision of the learning environment.
Step 2: Analysis of input data	• Analysis of students' training needs; • Summative evaluation of students' incoming knowledge; • First analysis of school-family relationship through focus group with teachers and families.
Step 3: Monitoring of activities	• Monitoring student activities on the platform through Moodle's reporting tools; • Monitoring the activities of the teachers on the platform through the reporting tools of Moodle; • Monitoring student learning levels through summative assessment tools; • Monitoring the progress of activities through interviews and focus groups with students and teachers; • Monitoring of the school-family relationship through focus group with the two actors.
Step 4: Closure and reporting	• Summative evaluation of students' outgoing knowledge; • Final evaluation of the effectiveness of the system implemented through focus groups and interviews with students and teachers; • Final evaluation of changes intervening in the school-family relationship through focus groups and interviews with teachers and families; • Dissemination within the school community of the results obtained and implementation at institutional level of the system.

The expected results are an improvement in the quality of education delivered measured in terms of:

• Learning outcomes for students;
• Quality of teacher-student relationship;
• Satisfaction of teachers, students and families;
• Quality of the school-family relationship;
• Ease of managing educational activities and monitoring students' progress.

4. Conclusions

Rethinking the way to make school is necessity more than ever in the current formative setting. It is neither conceivable nor sustainable that the changes that the school has experienced in recent months should remain marginalized to a parenthesis without consequences when the school can return to provide face-to-face training.

The activation of a path that leads to the implementation of a training system based on the principles of blended learning when distance learning is forced, involves acting in a prospective way to prepare

the school to welcome a permanent innovation of teaching practices that restructure the classic scheme of the training action: face-to-face lessons - exercise at home - assessment in classroom. Rather, in this way, setting the teaching activities fully realizing flipped classroom mode inside an e-learning platform, implies the possibility to realize the full integration of technologies and media in school in a conscious and educational effective way.

The introduction of technologies in the school context, in fact, implies a deep rethinking of methods and processes of educational mediation.

Setting up technological learning environments does not necessarily lead to innovation in teaching and learning processes. The process is not so much influenced from the type of ICT adopted; change is much more intimately connected with the management style, the attitudes among teachers, the pedagogical approaches and the new learning styles [17, 18]. In this sense, meanings conveyed by media rather than being acquired have to be negotiated [19]. They provide a scenario in which the learner is engaged in a work of acquisition and translation of knowledge in a dynamic and transformative continuity between formal, informal and non-formal contexts. Indeed, media should be reconceptualized as means of mediation facilitating the production processes of meanings socially situated [20], becoming the barycenter of a dynamic balance between learning contexts [21]. Because of these assumptions it is necessary to postulate two fundamental conditions:

- Technologies can't replace formal education through supposedly self-educational processes;
- Formal learning environments, embracing technologies, necessarily, have to be rethought by moving their boundaries beyond the walls of the classroom [22].

Thus, an integrated and intentionally organized learning environment is created based on the awareness that technologies, before they become educational tools, belong to and innervate the social and family contexts of students [23]. The learning environment thus notes a strong interdependence between school, family and community, so that the class goes so far that it can be defined as a "very extended environment" [24]. Thus, school becomes a node within a network, rather than the central axis on which learning is based and supported [25]. In this way, is established a scenario in which school becomes a guide that drives the processes of interconnection and exchange within this network.

Therefore, the introduction of technologies at school has to take into account the practices they convey, as well as the habits of use already established by students in the other contexts of life in which they generally use these tools in a continuous, free and non-directioned way.

The way in which online learning environments are integrated in teaching action determines success of the formative action. There are several empirical evidences which has shown little statistical significance in student improvements [26] or sometimes even adverse effects [27]. It is agreed that these outcomes are determined by the integration modalities, where, sometimes, they are used to replace traditional methods without any functional change in the organization of school activities by taking advantage of the affordances possessed by these environments [28]. It is not only the types of technologies used that count, but also the educational direction that guides their use. This orientation has to inevitably take note of the fact that knowledge conveyed by new media is widespread and socially situated, produced by a collective and distributed intelligence [29].

Research on the topic converges in finding that technologies activate creative and problem-solving processes in students and increase, even if only temporarily, their motivation to study.

As regards motivation, it should be noted that, although the introduction of new media in school can be a catalyst for a motivational drive to study, it is, in any case, a form of extrinsic motivation which, in time, it cannot feed itself. After a first enthusiastic phase, in fact, the motivation to study can be supported mainly through the enhancement of intrinsic dimensions rather than using always new tools.

The positive effects are more evident where teachers are able to insert digital mediators in a teaching action expertly organized. This inevitably implies an intensification of the procedures for designing educational activities. In any case, the most effective approaches turn out to be hybrid ones, in which, basically, technology does not completely replace more traditional tools such as paper books or notebooks. When they study, students can appreciate the momentary perception of lower workload during digital reading, but this mode is not always effective, especially in the case of the theoretical study for which, anchoring to the physical book is more reassuring and effective for the acquisition of knowledge. As regards writing practices, keyboard typing is not always effective. In this sense, mobile devices that

allow free handwriting with digital pen, simulating, substantially, writing with paper and pen are likely more effective. The fact that students prefer to use a strategy that, although digitally, uses cognitive patterns normally activated during traditional writing, is an interesting indicator of how digital devices address other cognitive structures that are exercised and developed over time through repeated use [18].

These evidences support the idea that training intervention should be planned in the definition of a wise hybridization between learning environments, presence and distance, analogue and digital, so that learning is enhanced by the potential of both. In this context the theorization of formative effectiveness of a blended learning approach based on the methodological principles of flipped classroom is inserted.

According the vision of Trentin [41] with respect to the need to acquire a new culture that provides distance training not so much in antagonism or as an alternative to presence training, but rather as a further possibility, especially where traditional training encounters serious problems of practicability [30], it can be said that the discomfort experienced by the sudden closure of schools to face the health emergency has imposed a change in the way schools are run: an open form of teaching that, crossing the boundaries of the physical classroom, uses the opportunities offered by technologies to ensure a social and communicative dimension at the basis of the success of training processes. If it is true that the most advanced technologies open new paths in the world of teaching, from the very first moments it seemed necessary a complete reorganization of methods and contents of distance teaching. We cannot limit ourselves to transposing the methods and modalities typical of traditional teaching into virtual classrooms, but we must adapt training message to the digital medium that conveys it and makes it possible. This moment, therefore, can be an opportunity to start a wider reflection on the sense of educational innovation, leading teachers to rethink their methods with serious attention, with the awareness that tools are never neutral, but always influence modes and formats of the content transmission. Therefore, a close reciprocity has to be established between the technological functionalities and the pedagogical approaches used.

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