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Criteria for distance learning at the time of Coronavirus

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Abstract

The Coronavirus pandemic, forcing all schools and universities to exclusively activate distance learning (DL), has triggered an unprecedented innovative process. E-learning had remained a niche resource for a few innovators, experts and enthusiasts; but, with the forced DL due to Covid-19, teachers of all levels had to engage in a new form of teaching and in a new didactic paradigm. In this scenario, some criteria can be usefully identified – transmediality, interactivity, active learning and enhancement of experience – capable of guiding the didactic action and directing teachers towards a larger and more effective online teaching. These criteria, tested in an exceptional health situation, can be useful even beyond the emergency phase in view of a radical didactic renewal, even in classes taken live.

Keywords: *e-learning; theory of education.*

1. The health emergency and distance learning (DL)

In 2020, with the Coronavirus pandemic spreading, online learning has become not just an option addressed to specific categories such as working students or those with particular needs, but the sole practicable learning modality in times of emergency. Starting in China and then in Italy and also in all countries of the world, schools and universities have been closed in order to prevent contamination, adopting social distancing. In many countries, and among them Italy, for the first time, the totality of students and teachers had to cope with the need of using the DL of third generation and with a new way of teaching, following different paths from the traditional transmissive ways as a predominant method. Since 1800, especially in Italy, the main method has been that of instructional teaching, putting in the centre the teacher who had the role to transmit knowledge to the class. Learning was conceived in three phases: teacher's knowledge transmission, most of the times individual learning and evaluation of competencies by the teacher. Nowadays, instead, the Coronavirus emergency represents the chance to use digital technology following new paradigms. This represents a novelty, especially in the schooling sector, where the digital revolution has proceeded step by step, gradually, often seen with suspect or indifference and not always well integrated in the curricula. One has talked about a 'holidays' conception, as it has been defined, thus reserved to particular occasions, while during the lockdown, it has necessarily become 'working time', a daily method so necessary that it has no more been conceived as exceptional (Rivoltella, 2017).

Students at schooling age, anyway, already acquired the digital skills to access new media, so that this emergency has also represented an occasion to encourage the so-called digital literacy (Pennazio et al., 2013).

Nevertheless, introducing a new technology does not represent by itself a sufficient tool for the didactic innovation: models and criteria are needed in order to create an efficient learning environment that might help the teacher in his/her educational duty. Online learning (Isidori, 2003), with the run of months of schooling lockdown, gave a shake to the traditional model moving towards constructivist and interactionist models that are learner centred; the learner learns throughout collaborative and situated learning (Elia & Murgia, 2008).

Due to an insufficient teacher training about DL, and the lack of new teaching methodologies, diverse teaching institutions, both schools and universities, except rare cases (Limone, 2012b), must rush and get the basic instruments, not just technical, but methodological also, so as to support the trainers to cope with online teaching and the learning paradigm change.

Now more than ever, teachers are called to rediscover their role as teaching planners (Sarracino, 2017), not only when in presence but also online, through new tools that respond to defined criteria and logic. Therefore, the teacher's role does not consist in delivering fathomless truths, but in planning with the active involvement of the new technologies.

We hereby analyse in detail some of the criteria that might be useful to guide the online learning experience and, above all, the learning plan starting from a video made by the E-learning Centre of the Università di Foggia (Del Gottardo, 2020).

2. The framework

The theoretical framework that embraces the four proposed criteria is that of co-constructivism which, in this particular era, calls for 'a shared action and active participation within significant cultural practices; activities, tools and peer to peer interactions are the pillars for rich and complex educational environment' (Sansone, 2020, pp. 61-62).

Among all the emerging criteria for e-learning, we have selected four, which are historically more consolidated and experimented to co-build knowledge in physical environment also. They seem to be even more applicable today in live classes, thanks to their proven educational effectiveness even before digital technologies broke into society and the educational world. The crisis due to the pandemic has even more highlighted their capability to enhance the learning processes.

3. First criterion: transmediality

Transmediality can be defined as the first criterion of online learning. Semiotic and narratology analysed hypertextuality, intermediality, multimediality and transtextuality, especially starting from the 80s, in order to underline the relationships among the texts, verbal, iconic and audio-visual, and among the diverse media in the present digital society.

Semiotic used these definitions to underline that we are dealing with texts (as the etymological meaning of 'texting' suggests) that have a strong relation among them. Every medium has itself a relationship with other media in a strong link and these relationships are even more patent and stimulating today, thanks to the digital potential. Also, in learning-related fields, this concept has become central, and especially in the last few years, more and more focusing on the dialogical relationships among texts in a framework that overcomes the mere existence of many media and languages (multimediality; Maragliano, 1994), which can lead to transmediality in an integrated and conscious logic. In particular, the hypertext can be considered as the first fundamental tool used in school during the 90s (Menichetti, 2017). At the beginning, the hypertext digitally pinpointed the relationships that have always occurred among texts, but are less visible and have made way to the reticular thinking starting from the primary education (Antonietti & Carrubba, 1999). On the other hand, the hypertext, as a fundamental teaching tool, also spread in the universities and in the whole society.

Nowadays, the structure of web and electronic literary genres is that of the hypertext (Pascuzzi, 2020, pp. 26-27) and proliferation of languages has pushed the hypertext towards multimediality and transmediality.

Since we are living in a world full of diverse languages, modern teachers must be able to use them in their lessons and to underline their relationships to one another, as well as stimulate the active co-building of new multimedia and transmedia texts.

Consequently, the learning message can be delivered not only by various media related to one another, for example, in the case of multimediality, but also in a more complex logic (in the etymological meaning of 'intertwined'), dialogical and transmedia.

In transmediality, in fact, one acquires conscience, and it helps co-building the learning message following a more integrated logic. The learning narrative, especially online, takes place this way through integrated media in a more conscious dimension linked to the experience.

Moreover, transmediality helps a learner-centred approach. Through the functional integration of many languages in online learning, the student is no more passive, but can take part in the message by changing his/her role: once that of the interlocutor, once that of the creator and producer, and this passage takes place with an abductive finding (Agrati, 2016).

The learners can, thanks to a plurality of languages, access the learning narrative and, by becoming active subjects, can design and co-build their knowledge in a process where they are actively involved, also emotionally. The digital revolution allowed to 'democratise the production, editing and distribution of any textual and multimedia tool' (Limone, 2012a, p. 32), thus making it entirely accessible by the class.

As Rivoltella recalls (2014), Jenkisn (2009) identifies seven principles that characterise transmediality.

1. *Spreadability vs. drillability*. The first one is the ability of intentional extensive diffusion outside borders with posts, blogs, tweets, YouTube, etc., while the other one defines the capability of looking into the same subject in depth (Wikipedia, web, etc.)
2. *Continuity vs. multiplicity*. While the first one refers to seriality, such as for the features of graphic novel characters that always remain the same, the second one refers to the social authorship, that is, the ability of manipulating and enriching the narration with new and unexplored elements.
3. *Immersion vs. extractability*. In the transmedial, we are placed not only in imaginate worlds, but also often shown worlds. Extractability allows to extend the fictional world into the real one by cosplay shops or augmented reality.
4. *Worldbuilding*. In transmediality, building a world, an environment and characters is more important than a good plot (same as in literature or cinema). This world will be able to fluctuate from a medium to another.
5. *Seriality*. This concept is already clear in the cinema, where it is possible that a film can be inserted in a series. In transmediality seriality though, the narration is developed through diverse media (books, videogames, film, web, etc.)
6. *Subjectivity*. Subjectivity is the criterion for which narration is conducted with diverse media and from diverse points of view, also with the readers' contribution.
7. *Performance*. This is the ability of making the reader do something, thanks to cultural activators (indications spread out in the text) or cultural attractors (readers' aggregation elements).

Following these principles, the trainer can lead learning processes in schools as in universities.

4. Second criterion: interactivity

The second fundamental characteristic of online learning is interactivity. As the word suggests, interactivity (inter-actio) recalls the theories of enactive learning that direct the newest pedagogical directives. The interest in interactive learning was an important criterion in the learning process and animated the pedagogical studies (Calabrese, 2003) before the digital revolution and the DL, but increased with the first experiments of third-generation DL.

The importance of interactivity in the digital technologies and in the DL emerged clearly when the first experimentations of third-generation DL were already taking place in Italy. It was explicated in 2000, when the first university degree in informatic engineering was activated entirely online; it was managed by the centre Metid (Metodi e Tecnologie Innovative per la Didattica) of Politecnico di Milano, directed by Alberto Colorni, one of the fathers of e-learning in Italy (Colorni & Negrini, 2004). The e-learning definition proposed by Metid included, along with multimediality, the valorisation of interactivity, in the sense of 'interactivity with materials' as well as 'human interactivity' (Liscia, 2005, p. 179).

The traditional delivery teaching is usually opposed to interactive learning. By delivery teaching, we mean instructional teaching in the class, focused on the contents. Interactive learning, on the contrary, is based on knowledge co-building and the dialogical and participated interaction. This co-building can take place with in-depth studying, feedbacks, documentation, contradictories and participation. By implementing the interactive and shared processes, a community of practice, that is, a community able to share experiences and co-build knowledge, can be created online.

The experience dimension is fundamental in a virtual environment also.

Interactivity can be defined as 'open operational interventions planning, problematised, that pushes the learner to find solutions based on what the previous knowledge suggests' (Del Gottardo, 2020).

Interactivity underlines the social dimension of learning, as well as that of experience, emotions and cognition. Since the human brain is dialogical (Ponzio, 2007), interactivity stimulates thinking by one's self and, at the same time, with others. Interactivity can be obtained by using diverse tools such as guided workshops, videocalls and teacher's evaluation. Examples of interactive learning largely used are transmedia hypertexts, charts of authors and sources and charts of in-depth studying, and it provides research suggestions through guided blogs and interventions for Frequently Asked Questions (FAQs) and feedback.

The hypertext is an example of a tool that had been already used in the schools in the 90s (Grion, 2000; D'Alessandro & Domanin, 2005), but it changed in online learning. Each text is already a hypertext by itself, since it lives in 'the impossibility of a definitive designation of destination or of a complete sense, it is always a refer to something else […], a footstep of an absence' (Landow, 1998, p. 12). In online learning, this characteristic is even more obvious and used to build knowledge. It is possible, for example, to transcribe the audio-visual lesson with words that refer to other pages of digital charts.

When there is enough time, it is possible that the lesson can be followed by a publication, quoting the source. The clickable word links are recognisable by fonts easily detectable and recurring. They are usually authors, concepts, official documents and topics to be investigated, and they vary according to the specific subject to be taught. In the hypertext creation, there will be a folder for each word category and each word can be linked to a chart of maximum a

page. This way, a group of the lesson folders and subfolders is created. This way, lessons are enriched by hypertexts and are deepened in the investigations and discussions.

5. Third criterion: active learning

Active learning (Trentin, 2008) is linked to both transmediality and interactivity. The action can take place before the message, serving as stimulus, and afterwards, as a strengthening, but it can also happen during the message. In this latter case, it produces research actions, and the more effective modality is that of co-building the information. Through abductive thinking, the information is co-built with the learning procedures that imply research, documentation, learning and comparation. In this context, research is defined as 'learning operation linked to specific teaching methods' (Paparella, 2014, p. 77). In the learning action, not only the teachers implement their research improving their knowledge, but also the learners make their own research: this is one of the learning methods where the learner can be more involved, actively and emotionally.

The research process can move from postulating a problematic situation, able to attract the learner's attention; their questions are the starting point. The digital world, compared to the past, supports the research activities more since it represents a huge database of multimedia texts, both verbal and iconic and audio-visual; when used properly, it can become the basis for active researching and learning potentially unlimited.

Analysis of the documents can lead to diverse hypothesis examined with the support of the guiding teacher and through a continuous comparison, which leads to information co-building.

The evaluation is another moment in which the teacher's guide is important for active learning. The online environment facilitates not only verification and comparison with other learners, but also knowledge socialisation gained through interoperability of the systems enabled by the 'semantic web'.

The semantic web allows a new personalisation of online learning and a more flexible and interoperational use of the web resources and the learning objects in order to improve online learning and students' objectives (Ouf et al., 2017).

6. Fourth criterion: valorisation of the experience

Valorisation of the experience is another fundamental criterion. The experience can be defined as pre-reflexive conscience and its expression can be accompanied by trainers in self-confrontation sessions (Durant & Poizat, 2017, pp. 34-35). A particular form is that of simulation, in its diverse ways. Simulation allows to plan a situation where the learner can act adopting new functional modalities through the descriptive/representative mediation of the phenomenon in the object. Simulation is fundamental in each field, especially in professional learning (Magnolet, 2017, p. 376).

The Pfeiffer's & Jones's experiential learning cycle dynamics can be adopted to enhance the experience (Trinchero, 2015), that is, a lesson is planned with a cycle that includes six steps: problem, experience, communication, analysis, generalisation and application.

One can start from a problem relative to the subject and immediately involving the students in the experiential dimension in their educational environment. It can be a problem presented by the teacher that is solved by the students individually or in group through experience.

This way, by displaying the knowledge previously acquired, and all the resources that students already possess, a plausible solution is gained.

When a solution has been figured out, the second step is communication: students explain their results using languages and tools individually chosen or by electing a spokesperson, and they also ground their own choices. Then the teacher moves to the analysis and evaluates the best ideas and those more doubtful using a Google doc.

In the communication phase, analysis of the cognitive product elaborated by the students takes place. During the generalisation phase, keywords are individuated.

In this case as well, digital revolution has opened an ocean of new possibilities that helps stimulating processes. For example, virtual reality (Fedeli, 2003) and augmented reality (Erdem, 2017) are among the most modern tools that allow to represent digitally a phenomenon recreated entirely digitally (virtual reality) or partially and integrated in physical reality (augmented reality).

7. Beyond the pandemic in schools and universities

These criteria, already employed in a more restricted way before the pandemic, especially in third-generation e-learning, gain wider consideration in the era of social distancing and the restrictions that have forced usage of DL and Digital Integrated Didactic (DID). If it is during the first wave of the new Coronavirus that DL had to be improvised by

the totality of teachers of all grades, it is in the second wave starting at the end of 2020 and till the first half of 2021 that these criteria had to be implemented in a new and pervasive way due to the exceptional situation. Incertitude caused continuous stop and go openings or just in part, thus leading to dual didactic and to DID, serving as a gym for experimenting these criteria at distance and when partially or totally in presence. In this new context, these criteria had to adapt to a double reality, flexible and continuously and rapidly changing, and have become fundamental to face a didactic partially in presence and partially at a distance.

In schools, among the first results of the research on didactic during the pandemic, a huge effort of adapting emerged, and it consisted in applying these criteria do DL (Lucisano, 2020) and in adopting platforms and digital learning environments.

In universities, the e-learning centres that were already operating with their technical and methodological and researching knowledge allowed a widespread implementation and experimentation of the criteria hereby analysed. An example is the extended classroom of the Politecnico di Milano, a hybrid environment, without walls, at the same time in presence and at a distance, without physical borders; it is a mosaic of educational pieces at a distance and in presence, where significant learning processes take place based on the criteria hereby mentioned. These criteria, in fact, build 'a didactic set made up by methodologies – technologies – spaces that can be used to facilitate and promote good learning practices that extend students' learning beyond space limits of teaching in class and online, creating a community' (Sancassani, 2021, p. 13).

8. Conclusions

When the health emergency generated by the Coronavirus comes to an end, the criteria for online learning experimented during the lockdown will remain a valid tool in the learning development and learning renovation in a country like Italy that is very conservative in this specific field. Returning to normality will take along the heritage of antibodies vs. the immobility and resistance to learning evolution and the experiences of both teachers and students.

Since the Coronavirus emergency has involved not only Italy and China, but, evolving into a pandemic, has spread to the entire world, an international learning model would be desirable. In this regard, the websites of the diverse governments and institutions are proposing many initiatives not only of the scientific and academic communities, but also of individual school teachers, which publish online materials to support the teaching staff and suggest methodologies and IT resources for the new online learning. For example, it is a very interesting case that of the website of the international group Second Life Aplicado a las Tutorías en Enseñanza Superior (SLATES) coordinated by the Universidad de Valencia with a section meant for sharing suggestions about the DL.

These criteria can be applied not just for online learning, but also in live sessions, and they give new stimuli to the teachers to innovate traditional teaching, especially in the post-covid phase, when the digital literacy heritage of teachers and students will be sedimented.

Authors' contributions

Ezio Del Gottardo has contributed the first, third and eighth paragraphs. Delio De Martino has contributed the others.

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