

Visible design

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ABSTRACT The presence of digital artefacts in the surrounding world holds both a structured and a structuring role that has an impact on the rationales with which we act and organise our behaviour and knowledge. The process that leads towards a major subject's agentivity and towards a primary role of the design, useful to act in a complex context, is supported by digital technologies. Media Education takes us to new operative and cognitive modalities and promotes a critical attitude. Also at school, the design process plays a central role since the complexity of contexts, their fragmentation and the lack of "meta narratives/grand narratives" (Lyotard, 1987) requires that the teacher build situated rationales. Digital technologies can support the design process. Thanks to digitalisation, the design artefact becomes a fluid object that comes from the design, which can then be used in the classroom as a mediator and make students visualise the path. It supports the teacher and the students in their actions and it is completed in the documentation.

The design artefact replaces the teacher in some routines, that is, the activities of the teacher to frame the class, to connect the present activity with past and future ones and to build a net of meaning that provides a comprehensive vision of the path. Those aspects affect the students' guidance and their motivation, but the presence of the artefact in the classroom also supports the teacher by fostering self-confidence. This is the proposal that the present article aims at deepening.

KEY WORDS: mediation, digital, teaching.

1. Introduction: the fields of Media Education

Media Education (ME) has two main areas of intervention: training the media and training with the media. In this latter case, ME has important points of contact with educational technologies. This contribution will focus on this latter field, training with the media, and will seek to analyse the impact of the presence of media not so much on the production and use of educational content as on the production and use of digital artefacts to mediate the structure of the educational pathway, an emerging topic in teaching and in ME.

If, to date, didactic mediation has mainly been concerned with the use of digital materials to represent content, its focus today is now seen to be shifting towards the mediation of the mediators, that is, the mediation of the functions characterising the teacher's actions, such as the construction of the curriculum, along with the presentation of the curriculum to the students, guidance and motivation. Such functions have always been explicitly present in the work of teachers, having emerged in online teaching through being reified by the para-text of the learning environment and its structure, as well as by certain introductory materials of the modules and curricula. In face-to-face teaching, however, the topic of the day is introduced, connecting it with past and future activities, thus guiding the students and explaining the direction of the path and the choices (Rossi, 2016). If, in the past, a teacher's activities were aimed towards introducing and guiding while framing and synthesising were given less importance (or, rather, were "transparent"¹), today, fragmentation, information overload and the wealth of available materials seem to require

¹ These were activities carried out without complete awareness and without the research being focused on them.

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explicit and structured procedures and routines, together with appropriate tools. The need to render the cognitive and emotional processes explicit, in relation to the specific procedures, is a tendency also present in other situations. Nowadays, the means for elaborating a specific type of text or one with a specific or communicative purpose is just like translating a text in an ancient or modern language or resolving a problem, all being processes undertaken via targeted didactic paths. Even in the world of work, where apprentices would learn only through being guided each day and not through having any specific training, today this has become prescribed and formalised as the subject of specific educational pathways.

The need to explain such processes required the creation of digital artefacts to support their design. We subsequently asked ourselves if it were possible to visualise the planned pathway in class, transforming the artefacts into a bridge/mediator between the teacher and the student. In online environments, the role of guiding, motivating and framing has always been played by the para-text² of each page. This feature serves as the introductory page of the course. The explanatory note included in the activity outlined or materials provided clarifies why and how to study a given material or why and how to effectuate a given delivery. What's more, in these online environments, the succession of activities displayed as an outline in an introductory page does not only have an instrumental function, this being to allow access to individual activities, but also provides an overview and guides the student.

The artefact explaining the design serve to mediate the mediators, functioning as a bridge between the teacher and the student, reifying the typical functions of the teacher, illustrating the path and the curriculum, indicating the curricular choices and the role of the didactic pathways (contents and skills) in the training of the student and in the development of the discipline.

The hypothesis explored in this article is whether the explicit presence of this artefact is useful for improving the professionalism of the teacher and favouring the guidance and motivation of the student.

Firstly, the article analyses the importance in today's society of the role of the student's agency and the construction of personal and professional identity trajectories. It then goes on to define the different meanings of mediation and remediation and, finally, to describe the transformation that teaching mediation is undergoing due to the effect of digital media, especially in relation to the mediation of mediators.

2. How knowledge and action change in the digital realm

2.1 The construction of coherence.

As I write, news is emerging regarding the painful and traumatic attack in Barcelona on 17th August 2017. Listening to the broadcasted news and compulsively searching for updates become an almost "active" form of participation, rather than simply receiving information.

The analysis of communications throughout these days provides us with elements that are useful in understanding the functioning of the media. During the Italian news broadcast, the newsreader interviews a reporter live at the scene of the attack. The reporter is asked to validate a news item. The reporter's answer: "My information is the same as yours and it is the same that is reiterated by the agencies and simultaneously usable all over the world". That is not all. When interviewing eyewitnesses, the information provided is useless and does not add any significant aspect, if not the emotional state of those present, being entirely understandable. From the Internet, television and newspapers, a thousand fragments are received: the painful and preposterous images of La Rambla, stories regarding the 15 lives cut short, the identikit of the terrorists, their websites, the tracking of their travels, the network of their friendships, the claims by

² Para-text is made up of the elements, text and graphics, that support the text and its intelligibility. These often play a pragmatic role. All the information is from one page of text or a network that is not directly part of the text, but of the structure. For example, the page number, the main titles, the points of interest.

ISIS, the reliability of these, the presence of a connection (more or less stable?) between the cells, news alerts from the secret services, the statements of the various parties, the exploitation of numerous speculators, the connection between the attack and other processes underway, the story of the van rental attributed to a number of different subjects within a few hours. But even before being denied, tomes of words and judgements on social media had been dedicated to the information that subsequently turned out to be not entirely correct.

It is a series of fragments of information relating to a global scenario, being produced in real time. It is often difficult, if not impossible, to trace them back to their origin, to the fact – consider the claims of ISIS or the warnings of the secret services.

Perhaps it is the meaning of terms such as “fact,” “event,” “information” and “representation” that is being modified. Many of the terms at the centre of the discussions do not have a “real” point of reference, but are the product of network news, analysis, data processing and complex elaboration whose transparency does not depend on the will and intention of those involved, but on the processes adopted. Consider, in moving to another context, the calculation of GDP, unemployment figures, the determining of a nation’s healthcare expenditure or, in the educational field, the pseudo-science of meta-analysis (Bergeron, 2017). Economic data and political comments are based on such figures. In the last American election, Trump often used the amount of healthcare spending for Obamacare as a subject in his favour, with the data provided not infrequently fluctuating and differing greatly from that provided by the Democratic Party. The debate also included the cost of the Obamacare site, said to be \$834 million according to the Center for Medicare and Medicaid Services, \$2.1 billion according to the Bloomberg Government, and \$5 billion according to Trump, as stated in a 2015 rally in Phoenix. Some of the previous information could be traced back to the source or the value could be calculated, but the time necessary would be so long that the outcome would no longer be useful in the debate.

2.2 Media Education and the construction of meaning

Today, it is not always possible to trace back to the facts in order to validate information. Let us go over some of the previous observations.

1. The facts we normally discuss happen in a global scene; information arrives through media products that cannot always be verified.
2. Information is often the result of recursive processes, arising and being relaunched online and on social media, such that it often becomes difficult to go back to the primary source.
3. There are no longer any great narratives, which used to be compasses for interpretation. The fragments available to us intertwine different perspectives, each with its own field of validity and potential limits.

Yet, the apparently direct relationship between humans and the world is increasingly mediated by screens, be they the consoles with which airplanes pilots interact, the screens on which surgeons operate, the coloured maps used by meteorologists or those produced for astronomers from radio telescopes.

The concept of validation has changed radically. If reality is that on the screen, validation depends on the process of mediation and derives from the coherence that subjects capture from the fragments and their ability to exchange information with others, always being available online. The operations of verification and the intersection of data require time, further research and critical meaning (Kress, 2015a). In this way, the subjectivity of the “researcher” intervenes in the process of validation, both in the way that he or she seeks and accepts each piece of information, and in the way in which he or she constructs the network and judges its consistency. As highlighted by Guba and Lincoln (1994) in relation to qualitative research, epistemology and axiology travel in unison or, as more recently stated by Silverstone, “the medial competence of the subject cannot disregard the moral agenda” (2007, p. 264).

ME supports such processes. First of all, it provides rhetorical and critical tools that help to evaluate the individual piece of information on the web: how to read it, what signs are significant in order to hypothesise about the quality of the information, what emergences should be highlighted. ME helps to identify the strategies for online research and to find convergences and confirmations intersecting with the information received. It thus supports the construction phase, that is, the assembly of networks and their visualisation. On the other hand, as Buckingham points out (2006a, p. 21; 2006b), the skills related to online reading and writing processes overlap. Finally, it permits the sharing of meanings and their negotiation with other subjects, other perspectives, other cultures. The sharing processes are linked to the participatory ones. Rivoltella (2012) identifies hospitality, justice and sincerity as the three key terms necessary to establish media education (Ibid., p. 22). Rivoltella opens up a connection between network construction and participation, emphasising that there is “a privileged relationship between media education and citizenship education” (Ibid., p. 21). The network can “become an opportunity for the construction of bonds, for the (re)construction of the community, the liberation of resources and energies of a territory” (Rivoltella, 2017). The process described not only has a cognitive value, but also a pragmatic one. It is an action both because its construction processes require the involvement of the activities of the individual, and because they require processes based - according to Aristotle’s *Categories* (1986) - more on wisdom than on knowledge.

At its core is the subject who constructs the network and creates an interpretation/produces an action.

2.3. The fragment and complexity

Drawing on Alfieri’s contention that the logic of the fragment is “the sum of modernity” (2012), it is possible to conclude that the subject is central for the construction of networks of meaning. The logic of the fragment derives from the end of great narratives (Lyotard, 1987), is present in hypertexts, structured by autonomous and connected fragments, in the lexicon (Landow, 1998), and in the first pages of newspapers (online and paper). The first page of any current newspaper presents between ten and twenty independent snippets and it is up to the reader to build a network of meaning that connects them.

The pages of hypertexts, newspapers or websites are designed, but their design “embodies and presupposes the need for the semiotic work of the reader” which “redesigns the page” (Kress, 2015, p. 48). In the past, “reading was conceived in a completely analogous manner to the model of Saussure and perhaps even more so, to the Sender>Message>Receiver design (mathematical model by Shannon and Weaver). The ‘old’ written pages embodied notions of authority and authorship that were completely compatible with those models: the author assembled and organised knowledge on behalf of readers and arranged it in a textual form. Readers were faced with that text-as-knowledge according to the order prepared by the author. It was the incarnation of a one-way and hierarchical dyadic relationship in which power resided in the author” (p. 48).

It should be emphasised that the fragment can have positive and negative values. It is at the basis of ‘fake news’ in that brevity comes at the expense of argumentation, whilst emotionality and the common place prevail over rationality (Peters, 2017). At the same time, the autonomy of the single fragment enables the ‘agentivity’ of the subject and enhances his or her role (Kress, 2015b).

A student’s piecemeal knowledge upon reaching school can also be described as fragmented, in particle form and, often, not validated. The different cultures present in the classroom amplify this situation.

2.4. Diversity, multimodality and agency

Diversity is another figure of modernity. Tursi (2011), describing the thought of McLuhan, states that it has “a complex, non-dialectical path, linked to the attempt to preserve the presence of opposites, without imposing any synthesis.” The overcoming of a vision of the world based on oppositions in favour of approaches that shift attention to the relationships between opposites and

the construction of a network between them is present in the thought of the 1900s, starting from Merleau Ponty (1965, pp. 383-385) and has more recently been taken up by a number of authors (Summa and Finetti, 2010, p. 160). It is connected to the concept of ambiguity (Searle, 1994, p. 10), to that of ambivalence (Tabboni, 2006, Touraine, 2009, p. 170) and to the coexistence or “addition” of differences (Maigret, 1994). Among the contrapositions, which are no longer such, one can add that between nature and culture (Pickering, 1995; Rouse, 2002; Latour, 2004; Wehling, 2006; Asdal, 2003), between body and brain (Gallese, 2009; Rivoltella, 2011; Sibilio, 2014; Caruana and Borghi, 2016), between real and virtual (Lévy, 1998) and between theory and practice. Today, the Hegelian concept of synthesis is contrasted with that of ambiguity, in which the elements communicate/coexist whilst retaining many of their characteristics and autonomy. Once the concept of contraposition has been overcome, the relationship between different people and their interaction emerges already with Derrida, describing such as the coexistence of difference and articulation. He uses the *brisure*/hinge metaphor (Derrida, 1998, p. 97).

The origin of the experience of space and time, this writing of difference, this fabric of the tracing allows for the difference between space and time to be articulated, to appear as such in the unity of an experience, of the same lived experience starting from the body itself (Ibid.).

Kress focuses on the theme of ambiguity in reference to linguistics, where the presence of “modes” enables the recipient of a message to adopt one of the many possible readings and provides the foundation for multiple directions, “according to the interpreter’s design” (Kress, 2015a, p. 73).

Multi-modality, being the presence of numerous modes in communication (written, oral, iconic, gestural, film, music, action), increases the difference between the fragments. Each way has its affordance and “fixes” the meaning via its own perspectives and framing. This difference impedes hierarchy and linearity, all leading to the “orbiting” of language that becomes one of the many ways to communicate. If “dominant linguistic theories in the 20th century emphasised abstraction and generalisation... a multimodal social semiotic approach to representation emphasises the material, the physical, the sensory, the body, the ‘therefority’ of things, far from abstraction, leads towards the specific and the variable” (Ibid., p. 121).

If conceptualisation was once configured like the transition from concrete to abstract functioning and textual products were the highest point of knowledge, in a multimodal perspective, this hierarchy is lost as all languages have acquired equal dignity. Meaning does not derive from the process of abstraction, but from the reticular connection between the various fragments that intertwine in action: experiences, images, graphics, texts. Each contributes elements that acquire three-dimensionality only through mutual interaction. Action and knowledge become two sides of the same process (Maturana and Varela, 1985; Rizzolati and Sinigaglia, 2006; Caruana and Borghi, 2016; Rossi, 2011).

The glue concept of construct that arises in the field of neuroscience has many similarities with Kress’s conclusions. Caruana and Borghi, reprising Murphy (2004), describe the concept as “a kind of ‘glue’ that holds our mental world together - past, present and future” (p. 2658). This glue bonds the “multimodal, experiential, motor and pragmatic components” and connects the actions through which the concept is articulated and used. The Semiotic Bundle (Arzarello and Sabena, 2014) has many similarities with this model of interpretation. From this point of view, each concept will also have a localised and positioned component in that it cannot be enclosed and expressed in a complete way within a single definition. It is connected to the actions and experiences that the subject has lived. In a class system, many elements of the concept can be shared experiences and the result of interactions and discussions between peers as well as with the teacher.

The methodological semiotic lens offered by the *Semiotic Bundle*, in fact, could be useful in considering gestures and other embodied resources as resources through which communication and conceptualisation are forged (Faggiano et al., in press).

2.5. The centrality of design

The autonomy of the fragment and the end of great narratives (Lyotard, 1968) favour the agentivity of the subject and can be read as a cause for anguish or, to the contrary, for valorisation. The agentivity of the subject feeds the centrality/necessity of design. From the standpoint of technical rationality, typical of an expert of the last century who knew how to perfectly execute the given procedures, we move on to the reflective professional who, in fact, knows how to interpret ever-differing contexts and knows how to choose the most suitable one for the context from amongst the various processes. Hence, we have training that is no longer aimed at acquiring knowledge and effective practices, but that focuses on the competencies and care for the development of one's own identity. In the current context, design does not only indicate a process present in the human action of each period, but a way of being for the subject, whatever his or her position in the company pyramid. It is related to the means of dealing with the provisional and innovative nature of the 21st century. "The term 'design' attributes recognition to the work of individuals in their social views, incorporating it into the theory. (...) Design emphasises the overcoming of an idea of communication anchored in convention as a form of social regulation. The term 'design' focuses on an individual's realisation of their interest in their world" (Kress, 2015a, p. 15. Author's trans.) and is based on the possibility of choice (Ibid., p. 38).

3. Mediation

Mediation is a bridging concept present in the field of ME and in that of educational transposition, even if with different meanings (Chevallard, 1991, Damiano, 2013).

3.1. Mediation as remediation, trans-mediation and multimodality

Bolter and Grusin (2002) speak of "remediation," a process that has multiple meanings. Remediation is hybridisation between different media, both analogical and digital, and between social agents and technological forms seen as two sides of the same coin. Hence, it is concerned with exploring digital technologies as hybrids deriving from the combination of technical, material, social and economic elements.

Bolter and Grusin's definition of a medium as "that which remedies" (2002, p. 94) lends itself to a triple reading: "a medium is something that re-mediate;" "a medium is the set of things that it remedies;" and "a medium is the remedy." In the first case, the emphasis is placed on the fact that "every act of mediation depends on other acts of mediation. The means of communication need each other in order to function" (pivi, 82). In the second case, the emphasis is placed on the media's 'therefority': the media as real objects in the world. "Mediation is the remediation of reality since the media themselves are real and because the experience of the media is the subject of remediation" (88). Finally, in the third case, Latin 'redemeri,' or 'cure,' is assumed to affirm that "every new medium finds its own legitimation, as it fills a void or corrects an error made by its predecessor, in realising a promise not maintained by the medium that precedes it" (89). By virtue of the second case, the third also states that the media are the reformers of that which is real (Tursi, 2004).

If re-mediation originates in the English-speaking world and derives from the research undertaken by McLuhan, in the French-speaking world, research on ME proposes a term that has similarities with the preceding term, "trans-literacy," which, as Jacquinet (2014) points out, does not correspond to the classical definition nor to the ability to use both analogue and digital media. The use of the prefix "trans" refers, rather, to the processes of transformation of the situations

connected to the annexed uses. It is not just a question of knowing the technologies, but of developing practices and participation.

More recently, a term has been added to the preceding ones: multimodality. This concept, arising from social semiotics, draws attention to the relationship between the different modes used for communication and more than others highlights the overcoming of the language that assigns a satellite value to non-linguistic modes. It also focuses on literacy as a fundamental process of media education, a process that is mostly based on language (Kress, 2015b; Jewitt, 2005; van Leeuwen, 2005).

3.2. Mediation and didactic transposition

For Damiano, mediation serves to articulate two autonomous and different, albeit interacting, processes: learning and teaching, an articulation that generates didactic action (the same experience, as Derrida would say) and builds the class, is an autopoietic system that exceeds the sum of its parts.

Damiano (2013) draws on Bruner, who in turn draws on Piaget. Bruner identifies three classes of representations that support mediation: direct experience, iconic representation and linguistic synthesis. Damiano describes the process of mediation as a unique and holistic system, which is structured across four levels: active mediators (direct experience), iconic ones (drawings and outlines that allow for an initial representation of the concept and its first generalisation), analogical ones (simulated experience and role-playing games) and, finally, symbolic ones, "placed at the end of the process of metaphorisation, as they constitute the crowning" (Ibid., p. 205) where language is inserted as an instrument for the more abstract representation, which is also the most distant one from reality. For Damiano, the process of conceptualisation is one of metaphorisation in which "direct experience is transformed into something else that corresponds to it in some way and which can therefore stay in its place given that the direct experience is a sign" (2013, p. 169).

Mediation in teaching, starting from the need to construct a bridge between learning and teaching, crosses the media and discovers in them the tools needed to articulate the educational process. One term is present both in teaching and in ME: metaphorisation. For Damiano:

...if the transformation in which teaching consists is the substitution of the real for that which corresponds thereto, we can also recognise it as being metaphorisation: a transfer of field - etymologically derived from the Greek 'metaphero' (to go beyond), the same function that we find at the origin of languages, which are eminently substitutes for the experience they represent (re-present, present again, in another format) (Ibid., p. 169).

Further on, it is clarified:

...the function of metaphorisation is closely associated with our bodily structure and is at the basis of fundamental assumptions such as space, time, movement, counting and other original elements of human experience (Ibid., p. 170).

But then:

By synthetically coordinating such semantics, teaching can be considered as an action of metaphorisation of reality, which maintains an analogical reference - "as if" - with the original reality, representing it through models that in any case transform it into signs of another nature. Teaching as a process of metaphorisation, or rather of denaturalisation of reality (Ibid., p. 171).

Damiano seems to oscillate between a holistic process “closely associated with our bodily structure” and a hierarchical process that goes from the concrete to the abstract, from the real to the denaturalised.

Metaphor is also central in Lakoff and Johnson (1980), to whom Damiano refers, and in Kress, for whom every complex sign is a metaphor created in the moment. “In social semiotic terms, all signs are metaphors, always made anew in the moment” (Author’s trans.) The process is no longer primarily one of abstraction, but of selection, of framing (Kress, 2015a, p. 108), of reticulation, a kind of putting into focus according to the interests and motivation that guide the “rhetorician” in the production of the message and the interpreter in its reconstruction. Each reticulation brings out a new system that presents new, different and emerging meanings alongside the meanings present in the components.

Digital technology is now reshuffling the role and function of educational mediation, not being dependent upon a greater presence of media in the current landscape. Authoritativeness has changed, as it is now possible for different agents to create and manipulate the media; the ease of production has changed too and, above all, the time of production has decreased. In most cases, many forms of media are usable and shareable as soon as they are produced. Think of images and videos created using smartphones and made immediately shareable.

Furthermore, the remediation and hybridisation of the media is overlapping with the production and sharing processes, in the sense that photographic images can undergo continuous morphing whilst transformations accompany the process of elaboration and metaphorisation, with the shots, and the meanings assigned to them, being modified in this way. With all the problems that this entails, analogy can be the basis for creative and generative processes, but also the basis for Pindaric leaps that are not always founded.

4. Mediating the mediators

The behaviourist and process-product approaches and those centred on the teacher, in which it is the quality of the teaching process that mechanically determines the quality of learning, have been overcome. We have also transcended constructivist approaches, in which attention is focused on the role of the student whilst leaving the teacher to prepare the learning environment, barely participating in the action. Today, the focus seems to be on interactionist approaches in which, whilst sharing the active role of the student in the learning processes with constructivism, the importance of didactic interaction and exchange in the classroom is claimed as a characterising element of the teaching-learning process.

Central to the interactionist approach is the unity of the didactic action (Durand and Veyrunes, 2005; Wilson, 2005; Vinatier and Altet, 2008; Altet, 2017; Laurillard, 2014; Durand and Poizat, 2017). The interactionist paradigm shows the articulation of different types of variables relative to the teacher, the student and the situation, to comprehend the teaching-learning process (Vinatier and Altet, 2008).

Durand maintains:

Research focuses on the teaching-learning process carried out as ‘an interactive situated process.’ This process refers to a unique situation in which single actors interact - teacher, pupils - in different sectors - that of didactic communication, of pedagogical relationships and of knowledge - that bring into play, in the dynamics of teaching situations the two dimensions that comprise the teacher’s work: the interactive dimension of communication and the finalised dimension of learning (2017).

Vinatier and Altet (2008) ultimately underline that in the teaching action,

...the activity of one is directed towards the activity of others, the work of one is the activity of others and this reciprocally, revolving around an object, is the knowledge in question (Ibid., p. 14).

Even Laurillard (2014) offers the same perspective and proposes the *Conversational Framework (CF)* that emerges from a complete and complex synthesis of didactic research throughout the last few decades. The *CF* clearly and precisely indicates the cycles through which didactic interaction and the teaching and learning processes are articulated. They are the cycles of communication, practice and modelling, during which teachers and students perform the necessary activities in a continuous and recursive flow, In these, feedback, both from the teacher to the student and from the student to the teacher, plays a central role.

Learning and teaching are two different and autonomous processes that interact. Once again, ambiguity is determined in the two different actions, in which, whilst remaining such, dialogue and emerging meanings contribute to both the construction of knowledge and the construction of the class as a complex system, with its own meanings, rules, relationships and conventions.

This interaction can be described as a process of alignment between two trajectories that remain different and diverse whilst asymptotically approaching each other (Rossi, 2016).

Mediation is divided into two processes:

- The first, already amply described, is that of metaphorisation, through which meanings are articulated and further analysed;
- The second concerns itself with the activities necessary to frame not only the content, but also the teaching process, rendering such a process explicit to the student for the purpose of motivation and guidance. This second process is defined as the “mediation of mediators” (Damiano, 2013), where the mediators are the teachers who carry out the role of a bridge between the student and knowledge, between the student and experience. It is on this that attention will be focused.

4.1. The roles of the teacher

One of the teacher’s functions has always been to “frame” the pathway he or she is proposing. Before addressing certain content, the teacher provides a reminder of the global path that he or she is following and how the new topic connects with it; identifies the *fil rouge* of the contents and competences; indicates the problems that have emerged along the path; and motivates students by highlighting the interests that could encourage them to approach the solution to the problems, synthetically tracing the route that will be undertaken to guide them with regards to that which awaits them in the subsequent activities. At this point, live content comes into play. Yet, also highlighted during the lesson are all the connections that each new element has with the previous elements that the students are familiar with, so as to activate all the possible links to previous experiences and knowledge. Finally, the teacher also inserts the process within the complex framework of the discipline and anticipates future developments. Such a process of classification derives from the choices made by the teacher during the planning and reification of his or her disciplinary narrative. The framework weaves a *fil rouge* through the disciplinary knowledge of the teacher and his or her knowledge of the context, of the experiences of the students and of the knowledge of the class. If the process of content mediation is also undertaken with videos or materials produced by subjects outside the classroom, the process of framing and the connection between knowledge and the context can only be the result of the teacher and his or her specific knowledge of the situation.

For the student, such a classification provides the reference on which to build new knowledge, the known elements on which to anchor the new. These are the footholds that allow

one to proceed in their ascension. It is the framing that distinguishes the teaching-learning process from a course without the mediation of a teacher, such as a course on television or on a CD ROM. It is the added value of the school and the most profound characteristics of teaching, seen as the mediation and alignment between two worlds, that of the student and that of the teacher.

The mediation of mediators plays a different role today than in the past. If it is true that the teacher has always guided the student, today the framework has a meta function that, if made explicit, directs the student along a path towards essential skills in the current context, primarily that of learning to learn.

4.2. The design

The relationship between digital culture and fragmentation, on the one hand, and between design and agency, on the other, has already been underlined. This relationship, present in all professions, is also valid in reference to teachers. Where once a teacher would interweave a *fil rouge*, that was often mental or followed by a few notes, throughout the daily activities, the complexity of today's classes, the need to customise certain processes and the presence of digital products and tools increasingly require an explicit design. At the same time, the paths that derive from this, being increasingly complex and articulated, must be explained to the students so that they understand their meaning and are able to anticipate their path.

Laurillard binds design to teaching by stating that teaching is a science of design that, unlike the hard sciences, allows us to improve the world more than to describe its rules.

For a number of years, digital tools have entered the field of educational planning (Conole et al., 2004; Laurillard, 2014). Conole indicates a series of modalities (multimodality returns) to realise, describe, share and document a project:

- textually based narrative case studies describing key features of the LA and, perhaps, barriers to and enablers of its implementation;
- more formal narratives, such as patterns, against a specified formal methodology (see, e.g., Goodyear, 2005);
- visual representations such as mind maps or formalised unified modelling language (UML) case diagrams;
- vocabulary such as taxonomies, ontologies or evolving folksonomies;
- models foregrounding a particular pedagogical approach (such as instructivism, problem-based learning or an emphasis on a dialogic or reflective approach).

Already in the 1990s, more or less standardised tools for design had emerged. The international consortium of IMS produced the first version of Learning Design in 2003, which was improved in subsequent editions in the first decade of the 21st century. The main problem that has prevented its widespread use is practical sustainability, as too much time is required for teachers to draw up a document.

Subsequently, various tools have been developed to support teacher design. Laurillard has created Learning Designer³ and Conole has developed the DialogPLUS. Other tools are: KEEP⁴ toolkits, the Pedagogic⁵ and Phoebe planners⁶. As Laurillard points out, these tools favour the professional development of the teacher and the student's agency. Problems are related to flexibility, usability for teachers and correspondence with their practices.

Before further analysing the possible use of the designs, it is necessary to clarify - following the Larnaca Declaration (Conole et al., 2004) - that it is appropriate to talk about different levels of

³ <http://learningdesigner.org/index.php>

⁴ <http://www.nettle.soton.ac.uk/toolkit/Default.aspx>

⁵ <http://www.wle.org.uk/d4l/>

⁶ <http://www.wle.org.uk/d4l/>

design granularity, namely: macro-planning (the programme or curriculum of the module) and micro-planning (the work session/lesson and the activities). The two levels have different logics and are not mechanically born from one another, even if they do form a network.

5. A summary: the artefacts for mediating the mediators and for visible design

Today, certain skills, such as knowing how to deal with digital information and how to construct networks of meaning, are essential for the citizens of tomorrow. The absence of great narratives and the fragmentary nature of information require the subject to construct/plan their paths in context. Equally, multi-modality poses different “modes” that are not connected hierarchically or following any apparent given logic and, in this case, the relationships must be organised/planned *in situ*.

Design, which implies the capacity to understand contexts and to identify strategies to solve problematic situations, becomes a process that cannot remain implicit. This is also true in teaching.

At a didactic level, the absence of homologated and homologating references determines that the paths are born as networks of meaning in context, connecting the present resources, the students’ knowledge and cultures, and the diversities present. A problem emerges. The complexity of the processes and the articulation of the proposals requires that the proposal be explicit, both to support the teacher in the action, and to guide the student. Digital mediation becomes essential, not only and not so much in relation to knowledge, but to mediate mediators, or to reify the structure of the teaching proposal and illuminate the path and the lines of meaning that cross it.

Design is embodied in an artefact that not only supports the teacher, but becomes visible in the classroom and highlights the lines of meaning present in it. In this way, the design artefact, whilst continuing to be an instrument that supports the teacher, also becomes an object of mediation visible to the students, used within the classroom in everyday tasks, as an organiser of their activities.

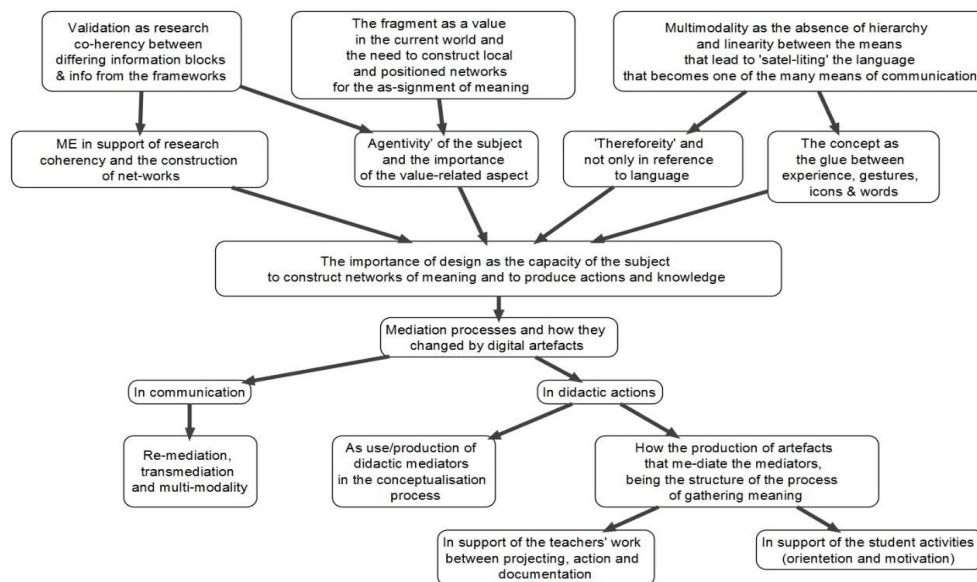


Figure 1. The pathway of the contribution

Not only. The artefact, having flexibility and the capacity to morph all that is digital into action, transforms and adapts itself to events and incorporates the materials developed by the students, even becoming a documentation tool.

Based on this logic, the PROPIT project - **P**roject for the **P**ersonalisation and **I**nclusion with **T**echnologies - emerged in Italy four years ago. The schools participating in the project reify macro-

and micro-planning with maps that are displayed in the classroom to outline the path and give it meaning (Rossi, 2016). The maps are connected to each other: connected to the curriculum map (Figure 2) are the maps of the modules from which one accesses the lesson maps (Figure 3), ensuring the fluidity between the levels. The modules of the maps relative to the lessons contain both links to the teaching materials used, be it during or after the lesson, and to the materials produced by the students during the lesson. The digital features of the product mean the maps are not a rigid product, but extremely flexible. The artefact to design also becomes an artefact to document.

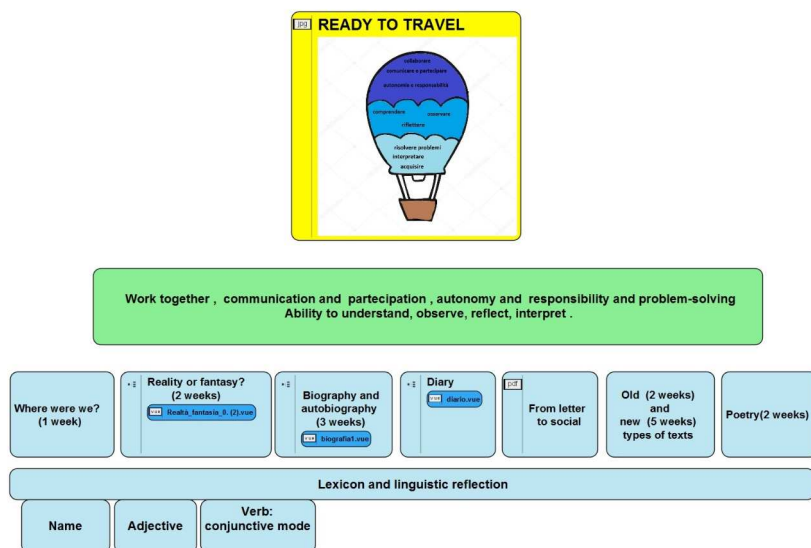


Figure 2. The curriculum

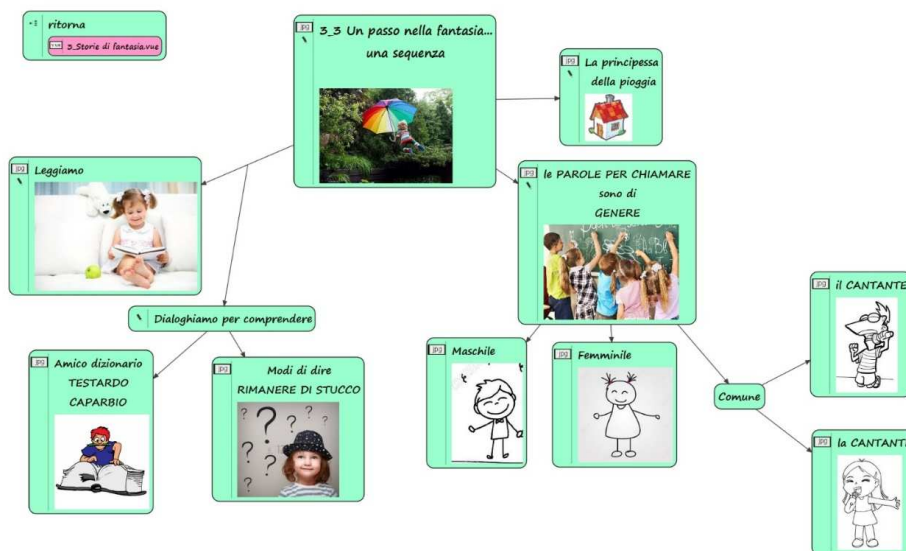


Figure 3 The map of a single lesson

Focus groups were held with the teachers in order to validate the project and identify the advantages and disadvantages of the activities. Initial concerns about the workload proved to be unfounded, in that the effort derives more from the construction of the maps and from the search for appropriate teaching materials, activities that are independent from the project. However, the

need to improve the flexibility and potential of the tool emerged⁷. Advantages emerged on two levels: in relation to teaching professionalism and in regard to the students' learning. The majority of teachers stated that they were more attentive to the design process and to their reflection and awareness of the curriculum. Their ability to predict the time needed for the various activities and their organisation has increased. Furthermore, the tool made it possible for them to manage the interaction in a more secure way ("The presence of the map gave me greater security, I was more confident") and allowed them to open up areas of personalisation. Also, in some phases of the work there were more parallel activities in which students were making choices. In other cases, there were additional activities that students performed after finishing the assigned task. In this way, it was possible to take into account the differing times necessary for each student. The presence of students' assignments directly on the map "freed" the teacher (mediated the mediator), who could devote him- or herself to the weakest pupils. In relation to learning, teachers noticed an increase in students' ability to foresee the development of the action and to organise their own time and attention. Moreover, after some time, it was the students who asked for the map to be present as they said it helped them understand the process and supported their efforts.

Regarding learning, activities were carried out with specific activities and with interviews undertaken with the students. These interviews made it possible to verify that the presence of materials produced by the students in the modules favoured conceptualisation and motivation, and also allowed for the construction of a bridge between the teacher and what the students learned via an improvement of the alignment process. Also from the interviews, it was perceived that the continued use of the maps guaranteed a greater awareness of the route followed, both in reference to the past, with an increased possibility of taking into account the *fil rouge* and the modules already created, and the future, an activation of processes that allowed students to predict what was to come. At the end of the year, checks were carried out to assess if and how the students remembered and systematised the entire pathway. In classes where no maps were used, the activities of the latest period of time were remembered above all, whilst in the PROPIT classes, the recollection of the entire journey was more evident.

The PROPIT experience derives from the DEPIT project, which commenced in September 2017 and is financed by the ERASMUS+ programme that involves the Faculty of Education of University College London, the Faculty of Education of the University of Seville, the Catholic University of Milan, in addition to ATEE and AEDE and a number of Italian and Spanish schools networks. The project concretises the proposal to mediate mediators, suggests the construction of a special app and discusses models in European schools to explain didactic design.

Today, reflections on ME in schools must include the characteristics of the digital media, which have a greater possibility to redefine the teaching-learning processes and to modify didactic action and teaching professionalism. The characteristics of many digital applications to aggregate, frame and fluidise a variety of projects could be those that are more predominantly utilised in innovative teaching. The PROPIT experience demonstrates that it is now possible to speak of digital didactics not so much in terms of the increased use of digital devices and mediators in classrooms, but because the logic of digital didactics, in its ability to frame, aggregate and network, permits the most profound teaching processes to be transformed and rendered more incisive.

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⁷ The VUE MAP programme was used, due to it being free.

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