

## **Schools and networked sociality. The making of new technologies for teaching-and-learning**

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*Abstract:* The article addresses the challenges of the spreading of web based technologies for teaching and learning (e-learning environments) in schools. Here, web based technologies are considered in their role of making of new forms of socialities, by looking at the processes of mutual constitution of socialities *and* technologies in a not deterministic ways. The essay unfolds as follows: a) it suggests to analyse e-learning as a form of networked sociality emerging out of a process of fabrication which implies a translation and disruption of traditional hierarchies, and a materialization in digital environments imbued by logics of attachment/detachment; b) it reflects on the issue of e-learning in schooling by highlighting the contrasts between different values (tradition vs. innovation; humanistic vs. scientific culture, linear vs. circular transmission of knowledge) which accompanies the development of e-learning practices.

*Keywords:* E-learning – Networked Sociality – Conflicting Values – Knowledge Transmission

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### **Introduction**

The spreading of web-based technologies has challenged traditional methods of teaching-and-learning in schools. We are now in the so-called

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“third phase” of e-learning: learning by utilizing the web, which follows the “second phase”: learning with pc, TV and electronic devices, and the “first phase”: distance learning. These phases perpetuate important consequences on values, attitudes and actors in education. This process is difficult to grasp through statistical or qualitative data because of its high speed of development and diffusion; nevertheless, in this brief comment we intend to analyse the spreading of web-based technologies in terms of social change, challenges to the ordinary practices in education, and more generally in social shaping.

Some social effects of e-learning are immediately evident in everyday life, such as the different degrees in adoption of ICT means and knowledge in the various institutions (school establishments, universities, enterprises, local administrations, etc.) and by actors with different roles (adults, young, babies, beginners, advanced, etc.). The attitudes towards technologies in education also show diversity (some are enthusiastic, some sceptic, and some indifferent, etc.), this creates new disparities among users when facing new educational opportunities; a digital divide.

Until now, only a few sociologists have focused on this theme (with some notable exceptions, see Haythornthwaite et alii, 2007), leaving it to studies in the field of communication and education, which are concerned more with technical changes provoked by Internet and the electronic devices than with the social consequences they carry.

In this contribution we will argue that e-learning can touch the core of social boundaries and links that are part of the society-education relationship, as much as ICT affect social roles and rules inherent to the society-technology relationship. Particularly, we can say that the diffusion of e-learning exerts a market-type influence (profit logic) on the educational (non profit) logic. It creates new technical roles within the knowledge transmission process (e-teacher, e-tutor, e-provider, e-controller, etc.), modifying also the ordinary hierarchy in academic institutions; it opens up a new set of values underpinning the knowledge taught and learnt (education-culture relation), and it contributes to the fabrication of new forms of socialities (networked sociality). Given all these links between learning technologies and social relations, we expect to highlight how the learning technologies contribute to the construction of sense in educational contexts and processes, adopting an educational sociology perspective. In doing so, we will avoid any deterministic

approach by considering both the actor-technology and technology-actor implications, as well as the learning technologies' central role - of a symbolic dimension - in the constitution of the knowledge society.

This essay will proceed as follows: first, it will discuss the notion that e-learning represents a form of networked sociality (Wittel, 2001); that is, a digital formation produced out of the intertwining of social logics outside and inside digital spaces and society. In this section, the notion of fabrication in the sense of a reshaping of the social, due to the effects of translation and disruption of the traditional settings and hierarchy, will be introduced. New meanings of learning processes are emerging in digital settings, meanings that are more materialized and sensitive to attachment/detachment dynamics.

Secondly, it will address the issue of e-learning and knowledge transmission in schooling, through the lens of the culture of education (Bruner, 1997). This section will focus on the contrast between values implicated in e-learning practices (tradition vs. innovation; humanistic vs. scientific culture, linear vs. circular transmission of knowledge); it will also propose some reflections for the understanding of the telling challenges in knowledge transmission (e-learning as a comprehension tool).

### **Internet and networked sociality: the fabrication of E-learning**

Web-based technologies of teaching and learning are becoming an essential part of the educational experience in schools, post- statutory and university as well as in informal and non--formal modes of learning. New technologies of teaching-and-learning represent a challenge to the 'traditional' school-learning activity, characterized by memorization and reproduction of texts in multi-room, multi-teacher contexts, with sequenced and standardized curricula (Miettinen, 1999; Macbeth, 2000). In some way, they first deconstruct and then start a re-structuring of the educational field of practice by substituting, replacing and accompanying off-line educational practice in new socio-technical assemblages; which contribute to renew our way of considering the mode of reproduction and transmission of knowledge in contemporary societies. Here, e-learning represent a possibility of widening the practices of learning and knowing (an enhancing of the *capacity of action*, to quote an authoritative definition of

knowledge, Stehr, 2001), and the promise 'to learn everywhere', in every place by linking to a complex socio-technical assemblage.

The common narrative about change, however, contains a rather simplistic way of considering the role of technology, in particular the new web-based technologies, as dominant forces of social change (and in educational settings). It seems to favour a technological determinism that fails to address the nuances and the complexities of the intermeshing of technology and society. In order to furnish a fine-grained description, it might be useful to mobilize the conceptual resources of social studies of technology and science, which in the last decades have provided interesting descriptions - also with a range of theoretical approaches - on the situated construction of technologies and societies (Wajcman, 2002, 2006). In these theoretical frameworks, e-learning can be conceived as an instantiation of the many forms of *networked sociality*. Elsewhere, we have defined networked sociality as emerging forms of society, and the materializations of its electronic constitution (Landri, 2008). Networked socialities are digital formations produced out of the intertwining of social logics outside and inside digital spaces and society (Latham & Sassen, 2005). This perspective sheds light on the overlapping between society and technology by reflecting critically on the 'social' and the 'technology' and looking instead at the *mutual constitution of technology and society*. E-learning becomes accordingly a laboratory for - or a unit of analysis to observe - the making and the re-making of sociality. E-learning can be viewed as a socio-technical assemblage for the appropriation, construction, or diffusion of knowledge (Benadusi, Viteritti, Valentini, 2008). In considering e-learning a form of networked sociality (or as a digital formation), it is possible to analyse its fabrication along three dimensions: 1) the materiality of sociality, 2) the imbrications of the social 'outside' Internet and the electronic space, and 3) the mode of attachment to what has been called 'virtuality'.

This reading of e-learning draws on the work of Latham and Sassen that introduced the concept of digital formations (Latham & Sassen 2005) as well Wittel's notion of network sociality (2001). These contributions are, however, complemented by the vocabulary of ANT (Latour, 2005), and a focus on attachment (Hennion, 2004) to reveal the somewhat neglected dimension of emotion work in cyberspace.

A digital formation is ‘a coherent configuration of organization, space and interaction’ (Latham and Sassen, 2005, p.10). Digital formations are constituted by three overlapping dimensions: organisation, interaction, and space. By organisation, Latham and Sassen (2005) mean the ordering of the field of practice that constitutes the formation, referring to the rules and the roles attributed to people, to machines as well as to the contents of the electronic space. By interaction, they consider the flows of exchange and communication among actors. By space, finally, they mean ‘the electronic staging of the substance (or content) and social relations at play in a digital formation’ (p. 10). These dimensions overlap, and attribute a temporary stabilization – that is to say, coherence and (contingent) identity – to digital formations. The notion of network sociality, instead, draws attention on the features of social links (and of digital formations) in the contemporary age. It is useful to pay attention to the micro-sociology of information society. In Wittel’s view (2001), sociality in the digital age is to be considered in its proper terms by acknowledging its linking features, instead of focusing on the ‘dark side’ of new information and communication technologies. Network sociality appears to be the social bond at the time of liquid modernity (Bauman, 2000). That is to say, a social expression that mixes together integration and disintegration, work and play, and limited stability. Network sociality is a historical form of sociality - partly displacing *community-based relationship* (Sennett, 1998) and emerging in specific contemporary capitalistic modes, albeit with some anticipated description in Simmel and Benjamin’ accounts. Its features are: an *increasing individualization*, the unfolding of *ephemeral and intense relations*, a displacement from a common *narrative to an informational regime*, and an *assimilation of work to play*.

It is possible to re-read these constitutive concepts through a vocabulary drawn from the ‘actor-network’ theory. In this view, the many forms of e-learning can be considered as social formations temporarily frozen in the complexities of cyberspace. Their contingent identity depends on the stabilization of the actor-networks, i.e. the fragile assemblages of a socio-technical network emerging from ongoing practices of inscribing (and performing) electronic space, translating and framing, i.e. reaching an outcome in the practice with the subjects and the learning objects entering the fabrication of digital formations (Faraj, Know & Watts, 2004).

The *materialization of this sociality* is the electronic space; the screen is its point of reference. The notion of *inscription* is useful to understand the making of electronic space. According to Latham and Sassen, “electronic space is composed of picto-textual social artefacts embodied in the electronic staging of texts, images, and graphics through hardware and software. A range of realized and potential relations and actions is opened up to produce electronic space” (p.11). Here, the picto-textual artefacts are embodiments of the designers’ configurations, of the actors’ interests and visions of the digital artefacts, and of the different assumptions of what the use will be of a digital environment. In the case of e-learning, the electronic space can have manifold instantiations, i.e. different patterns can be assumed different pattern depending on the pedagogical approach (behaviourist, constructivist, cognitivist, etc.), technical features of software and infrastructures, and the sociologies that are permitted.

Moreover, the practices of materialization involve a *work of translation*. The work of translation refers to the strategies whereby an actor tries to interest other (human and non-human) actors in order to support the construction of a claim, a fact, or a machine (Latour, 1987). The concept applies equally to the digital and the non-digital, referring to machineries aiming at enrolling actors in digital formations, and visualizing the complex imbrications among digital socialites and the ‘outside’ sociality. These imbrications refer to the social scaffolding which usually supports, accompanies and enacts web based technologies of teaching and learning, i.e. the work of tutoring and coaching that let emerge new professional identities articulated around e-learning as a field of practice. The overlapping among digital worlds and off-line socialities regards also the locus of engagement of e-learners, namely the distribution of attention that e-learners devote to learning as well as to other life activities. Their engagement produces *two ways flows*, i.e. the possibilities of exchanges between on line environment and outside sociality. As a matter of fact, students of these e-learning worlds occupy a hybrid space so that “each student is embedded in and communicating with members of a proximate local setting with its physical limitations and cultural norms while simultaneously engaging in an e-learning setting online” (Haythornthwaite, Andrews, Kazmer, Bruce, Montague, 2007). The acknowledgement of this interstitial space leads also to the definition of new socio-technical assemblages and novel theories of learning, such as for example the

development of new approaches and lines of research named community-embedded learning, which recognize the emergence of a social world by the mutual intermingling of on line and off-line social worlds (Haythornthwaite, et alii 2007). In terms of the actor-network theory, this means to look at the framing, i.e. at how ongoing negotiations and confrontations and different strategies of translation lead to temporary stabilization. The fabrication, here, reaches an ordering of the practices regarding the roles, the rules (the legal limits of use, for example), the electronic space, as well as the boundaries within which the interactions among those who are involved in digital formations exist. As a result, the framing gives rise to a form and, accordingly, to an identity of the e-learning social world.

The work of translation is not a purely technical or instrumental displacement. It involves an emotional side within the fabric of the social in the Internet. In e-learning worlds, emotions are displayed in particular and proper ways. In order to address this dimension, a relevant concept is given by the “affiliative relationships” (Suchman, 2005), and by the related conceptualisation of “attachment” (Latour, 2005; Hennion, 2004). These concepts show that social configurations present an attachment to the subjects and objects of the communities of practitioners, a relevant material repertoire, and the detachment from other – competing, or simply different – configurations of associations.

These dynamics draw attention to the affective side of the configurations of association. In recent times, this dimension is attracting the attention of a growing number of contributions (Fineman, Maitlis, & Panteli, 2007; Gherardi, Nicolini, & Strati, 2007). In this area of research, a first wave of studies described the digital environment as a site for an impoverished display of emotions, with a nostalgic tone, and a more than explicit preference to face-to face interactions. At the same time, it is also possible to find an enthusiastic, and in a way excessive, description of the novelty of emotions in the virtual world as a new revolutionary frontier (this is a revisionist view, see Fineman, 2006). In a different point of view, the configuration of associations producing and reproducing digital formations, «offer creative opportunities for individuals to experiment with the construction and expression of feeling and to negotiate novel emotion protocols, some of which will become institutionalised for the medium» (Fineman et alii, 2007, p. 556). The e-learning process includes the

disappearance of the body and of the traditional spatial arrangement of the classroom, which represents the usual frame and signals of hierarchies of off-line teaching and learning. In these settings, teachers and students have so far found the traditional locus of displaying emotions. Web teaching and learning produces an effect of disruption, and lead to a reconfiguration of the bodily cues, of the affective expressive, and of the hierarchical signs. In some respect, this reconfiguration points at a discontinuity of the display of emotions in traditional educational settings, and produces a telling sense of intimacy among teachers, tutors, and learners. Therefore, e-learning can have facilitating effects and positive influences on learners since it opens up a space, a regime of translation for language play, and playful interactions can occur among all those contributing to the learning environment by lowering the dynamics of embarrassment and shame, which is mostly visible in traditional schooling settings (Gillmore and Warren, 2007). This suggests how e-learning activities are places for – quoting the above-mentioned Wittel’s contribution – “ephemeral, but intense social relationships”.

### **E-learning and conflicts in knowledge transmission**

Technologies for teaching-and-learning are not only tools, but also cultural objects in a broad sense; including learning environments, objects, methods and skills, both for teachers and learners. As in the past, the introduction of new cultural objects in education has always constituted a lens through which one could measure the availability towards the new supported by the school-system. As with previous “revolutions by objects”<sup>1</sup>, with the e-learning diffusion we are entering a new reflective phase, which includes challenges and conflicts. These bring about relevant questions, on the quality or innovation in education but especially on the whole sense of educating.

There are three main conflicts generated by e-learning; after considering them separately, we will provide some suggestions how to confront them better.

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<sup>1</sup> See i.e. the passage from magister to pedagogue, or the reform from the programme-based school to the project-based one.

The first dualism is the one between *tradition and innovation*. Many school establishments and agents agree with the rhetoric of innovation carried by e-learning promoters (technological operators, e-learning market, etc.). There is no doubt that teaching-and-learning by Internet implies an increasing interactive density and a virtualisation of learning, which replace the traditional linear style of interaction (one-to-one) with a networked one (see above). However, many teachers feel that this setting is more complicated and problematic, and show attitudes of resistance to technologies. At this point in time, the problems perceived are predominantly associated with the “substitution” or “placement by side” of the traditional lesson with the on-line model. As a matter of fact, in Italian classrooms PCs and the Internet tend to be utilized minimally by the teachers (Rivoltella, 2006), who are convinced that with e-learning the subject is reduced and simplified (Liscia, 2007), and pupils concentrate less on their tasks. This attitude can be interpreted both as a feeling of detachment and fear for the artifice (Mounier, 1949), due to the sense of inferiority provoked by machines and their constitutive ambivalence: on one hand, machines are extensions of human beings, on the other, they are denials of the human. The radicalisation of this ambivalence leads to a polarisation within school organisations: in everyday life there is an increasing division of teachers into two parties, those for and those against technologies, with few intermediate positions; their technical skills constitute the boarder-line of division and belonging. It can therefore be stated that e-learning diffusion has brought about a difficulty for operators to make the “old” and the “new” compatible in the methods and contents of the learning process. Given the lack of definition of what “tradition” and “innovation” are and mean today, teachers have to cope daily with this irreducible tension.

The second contradiction is the one between *humanistic* and *scientific culture*, a segmentation of cultures that characterize the European curriculum since the XVIII century (Snow, 1961). The Italian educational institutions are based on the Napoleonic outlining, which was revised after some decades by Giovanni Gentile (1923); the split between the two cultures is therefore rather basic and evident, ranging from the systematic devaluation of science (guilty of leading mankind toward the practice, the materials, the utility) in contrast to philosophy, which leads instead to the truth, elevating minds by “pure” knowledge. In more recent times, science

and technology have exerted an increasing power of fascination on young minds (and not only on them), and their presence inside the school culture is less stigmatised than it once used to be.

Nevertheless, the attraction towards technologies is increasing day-by-day, and so do the worries for a new form of “technocratic dogmatism” that could emerge in the transmission of knowledge. This becomes reality when teachers completely delegate the use of the technical systems in the classroom to special operators (e-workers of various types); in these cases, teachers neglect their role as mediator in the transmission of learning objects. A sort of “labour division” is being created between humanistic and technological operators, as well as a fragmentation of learning processes, which does not help the construction of an open and global *formae mentis* in learners. A secondary effect of this labour division is, of course, the sense of alienation felt by the traditional, humanistic teachers.

Facing the risk of a re-radicalisation of the historical division between science and philosophy, this time in favour of the scientific rather than the humanistic disciplines, a disenchanted attitude towards technologies is recommended – considering them neither unfailing nor demoniacal. Engagements in e-learning activities and processes will be opportune when they combine the practice with the acknowledgement of the positive contribution in the construction of the intelligence for complexity of both science and philosophy (as Morin, Le Moigne, 1999). Humanistic culture and skills develop some basic values in learners: defence of subjectivity, preservation of diversity and comprehension of the “common sense” in terms of co-evolution of cultural and natural systems (Prigogine, Stengers, 1977). At the same time, e-learning and other technical systems in communication give the chance to apprehend some basic values of scientific culture: autonomy, concreteness, speed, application of knowledge to real problems, and a specialist view of the objects.

The third provocation caused by the e-learning processes regards the classroom experience, because they challenge traditional *teaching methods* and practices. E-learning, in substitution of or in combination with traditional communications, affirms a *non-linear paradigm* and a form of teaching rooted on peer-to-peer interaction and networked sociality. There are several specific elements involved: «more student involvement in project-oriented learning; increased learning in groups and applying a problem-solving approach; a shift of the teacher’s role and attitude from

being a source of knowledge to being a coach and mentor; a higher willingness of students to take responsibility for their own learning» (Kerr, 2004, p. 123).

This makes the weakening of the frontal educational approach quite evident, along with a higher complexity of learning, leading to e-learning infrastructures: 1) a wide repository of contents, much larger than a library or a series of books (it may be unlimited); 2) tools for personal and group communication, which amplify the breadth and speed of transmission in two-way channels (teacher-student and student-teacher), 3) complex patterns through which to interpret reality, where the focus is often the iconic language in the representation of world.

In regards to the ways in which e-learning affects the organisational life at school, one can say that a certain “vertical” digital divide (Warschauer, 2003) is at stake: the young generation is closer to these patterns of knowledge than the adult one; adults are more inclined to grasp learning objects by stage and gradualism, passing from a simple to a complex level of comprehension, from concrete to abstract, from the known to the unknown. This gradualism is rather contrasted by e-learning, as well as the division into disciplines and into “stages of comprehension”. Much of the knowledge one can reach through the Internet and the networked sociality stems from the immediate availability of contents, without artificial divisions, so that one must learn how to navigate in this complexity, how to go-and-return from one level of meaning to another. This “generation gap” can create some tension and resistance in the use of digital learning environments at school: teachers are used to consider knowledge as separate from the act of transmitting; in the e-learning approach, instead, *what* is to be learnt is overlapped with *how* to learn it, improving skills of simultaneity and global thinking.

This change of paradigm in the teaching-and-learning approach doesn't mean that traditional approaches (i.e. frontal, linear, direct, alphabetic, etc.) are totally abandoned or must be abandoned; on the contrary, to grasp the complexity of reality, the learner needs ways of thinking that are able to distinguish the whole and its parties. As Morin words it: the more the learner is short of alphabetic vision, the more he is exposed to the risk of fascination towards digital environments, and as a consequence of this, to manipulation, exploitation, and persuasion by the side of technical and economic systems (see Morin, 1999).

### **Conclusive remarks**

E-learning processes and environments show a huge potential of change, which can move educational systems facing technologies. Learning is becoming even more important for the knowledge society because it represents the tool by which its basic resource is being produced. If in the past the output of the educational system was calculated in terms of individual skills and number of “elaborated” social actors (Meyer, 1977), now the outcome of education has become more distributed and collective, less foreseen, and difficult to evaluate with old measures. Thanks to diffusion of distance learning, self-education is increasing (learning by one self, in or outside of the school establishment), leading to a new consideration of the personal responsibility in learning and of no-schooling and informal learning processes alongside the formal ones (Coffield, 2000). This implies that the e-technology diffusion in long-life learning enhances the interactivity and connectivity as basic skills for the human’s adaptation to world, in a more organic relationship between the mind and the environment (following the idea of ‘organic comprehension’ expressed by G. Bateson, H. Maturana, H. Gardner and E. Morin).

It is clear then how e-learning contributes to the building of a new subjectivity in learners: giving them the chance to apprehend together (networked sociality), protecting against the passive and “mechanic” temptation in learning, raising social actors from the dependence on classical “media” in education (books, teachers, disciplines, etc.) and related markets. Of course, these positive effects of e-learning touch not only to the students (of various ages and social positions) but also the teachers; the latter might exploit the electronic structures to reflect critically and creatively on their own pedagogical practices (Colombo, 2005), moving gradually from the focus on the construction and the usability of learning objects to a focus on sociability and professional development through the use of educational technologies.

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