Introduction to the Special Section. The Digitalization of Educational Practices: How Much and What Kind?
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What's new in digitalization

Many changes are currently occurring within education systems, brought about by the evermore intensive use of ITC in teaching, learning, and social exchange networks at all levels. The increasing digitalization of schools, universities and vocational training centres provides the basis for the development of much experimentation and innovation through both bottom-up and top-down research projects. Almost a decade ago I wrote about e-learning as a great driver of change in the educational domain: both a factor in and an effect of the push for accountability and competitiveness in schooling (Colombo, 2008; Colombo & Landri, 2009). I also argued that coping with this push-factor would have required educational actors to develop some 'antidotes' (e.g. comprehension and personal agency) in order to avoid the negative setbacks that ICT could generate on the whole school system and its population. During the last decade (2000-2010), however, the propagation of ICTs in schooling was commonly understood to be a process which had only just started, as (at least in Italy) there was merely an attempt to change didactic methods and learning objects through digitalization. Today, after the launch of the European Digital Agenda (European Commission, 2014), the process has gained momentum and there is clearly no turning back. From a sociological point of view, it is thus worth asking which new effects have been generated so far and in what direction.

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The European Commission's invitation to catch up with the digital modernization in every sphere of social life, so as to maximize its potential both at an economic and at a socio-cultural level, for the school system means a whole new range of purposes which must be achieved: to increase technological infrastructures and equipment, to develop widespread digital literacy among teachers and students, to elevate citizens' digital skills endowment, and – last but not least – to reduce the digital divide among the younger generations and, more generally, in society.

Within the educational domain, the "new" institutional mandate for School 2.0 should be translated into second-level, more specific, purposes. We must avoid the misunderstanding that simply introducing new whiteboards, tablets or other specific equipment is enough to reach digital modernization in teaching and learning. Rather we must bear in mind that: 1) digital competencies develop in an integrated (and not concurrent) fashion together with teachers' and students' current "pre-digital" skill set, which can be enriched by gaining in "digital fluidity" (as evoked by EuComm/Ict Cluster, 2010); 2) digital skills are evaluated as with any other learning; 3) ICT enables the development of digital schools which, in turn, become more open (and transparent) to the local community or, in other words, more democratic (or "democratized", see: Garcia, 2004).

In this issue we aim to offer a picture of the state of propagation of Information and Communication Technologies in schooling, with a focus on the Italian context (which is quite different from that of other European countries), with the purpose of verifying the point we are at. The launch of the Italian Strategy for Digital schools in 2008-12 was a strong incentive to study the consequences of introducing and spreading ICTs in all educational settings (Avvisati et al., 2013). This plan was aimed at speeding up the uptake of ICT at all levels and reducing the gap between Italy and other OECD countries in terms of digital literacy, teaching innovation, curriculum, textbooks updating, etc.

The ways in which the spread of ICT has affected day-to-day practices within the classroom is recounted in this issue through data, analysis and reflections drawn from a range of educational settings and student age groups. The "material" as well as the "immaterial" impacts of Schooling 2.0 are analysed, as both contribute to the changing practices and social representations of teaching-and-learning in the digital era.

In material, concrete terms Schooling 2.0[1] changes the classroom layout, by introducing a new "presence" (the electronic device/s) – we could say an Other –, in the traditional setting. Elena Besozzi (2014, p. 205) argues that a comparison of sorts can be made between digital multi-modality and multi-ethnicity in terms of educational innovation in the classroom. Indeed, these two transformations in the educational landscape - albeit disparate by nature - have similar sociological and cultural meanings: they foster Otherness and heterogeneity in a space which has been traditionally perceived as a temple of homogeneity, non-differentiation, equality and reproducibility.

On the other hand, e-learning and e-teaching have huge 'immaterial' effects as they represent *alternative ways* to carry out the planning and provision of education. For teachers, the traditional repository of knowledge (on which his/her authority in the classroom is based) no longer corresponds with the library s/he consults by habit, made of books, texts, catalogues and directories. Rather it consists of a large amount of "disorganized" information, placed in an open container (the World Wide web), which lacks any clear and acknowledgeable order. For students – but also for their educators – using and making the most of all this vast body of information/knowledge matters more than ever. The Digital Era not only leads a subject to open his or herself to a myriad of new learning contents (learned, published, and transmitted) but also radically changes the way one thinks. This means teachers must re-learn the objects he/she selects, processes and transmits to students. And, for pupils, it deals means searching for a "cognitive" correspondence between his/her "natural" repository and the teacher's. In this sense, the idea of "flipping the classroom" has found a true fertilization in many countries because of its novelty, easy implementation, appeal for students, and motivating drive for both teachers and students[2].

As I have argued in 2008, School 2.0 is a great challenge for teachers and other educational actors, who still show little familiarity and much

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[1] On this topic I just want to recall the newly published special issue of "Scuola Democratica/Learning for democracy" (n. 1/2016), by the guest editors Paolo Landri and Assunta Viteritti, which focuses on the effects of socio-materiality in education.

[2] On the flipped classroom see the brief mention in Stefania Capogna's essay, but also consult for more information: Kuhn, 2014; Scheg, 2015; for its educational application: Gabbari et al., 2015.

anxiety towards digital devices and, more generally, feel suspicious towards the web's vast universe. First, teachers are scared that the digital/media culture will outmatch and overwhelm the traditional, written culture they represent and offer students. Second, they know what risks are associated with over-loading and over-exposing the child to the web's "informative storm". Finally, they fear that the continuous use of media and social media will bring about a decrease in memory, concentration and other cognitive skills, which are necessary to succeed in education.

On the one hand, it is reasonable that they tend to refrain from a world they don't fully control; on the other, it is more difficult to understand why they don't make any effort to defend ICT activities as a core task of their profession, covering the digital gap with students, affirming their superiority in terms of skills, competences, and decision making capacities in the Classroom 2.0 as well as in the traditional one[3]. One possible answer is that teachers still miss the so called "digital competency" (whose analysis is carried out in this issue by Stefania Capogna – regarding teacher's digital competence – and by Ida Cortoni and Jana Heinz – about student's digital competence), or they haven't yet mastered it. One other, more retrospective, answer is that they have forgotten the great lesson from the decades following the Second World War, when a very large sector of the illiterate population, who mainly spoke the local dialect, learned the national language and benefited from the common cultural heritage through the mass media (TV and Radio especially). What happened was that teachers, supported by the media, or media supported by teachers, worked together to achieve a historical target: literacy for all. Much unlike today when, as F. Fiorinelli argues (2010, p. 8), "the cognitivism of traditional pedagogy has been only partially criticized by a constructivist approach or by 'active teaching' […] and the organization of schooling is still loyal to tradition".

For all these reasons any measure for the digitalization of the schools, both imposed or proposed by the national plan, must be implemented gradually, as it may be accepted and, at the same time, rejected by educators. Some may express an enthusiastic reception (see the impact on

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[3] See, for example, the controversial opinion of teachers about ITC advantages gathered by the European Commission in 2013 (European Schoolnet, 2013, p. 124) especially in Norway, Belgium and Sweden.

competition among students regarding ICT use during the lesson, mentioned by Valeria Pandolfini); others may appear to adapt themselves quickly to the new layout but then shift rapidly from an attitude of curiosity to one of indifference or outright rejection.

Values and dis-values in experimental digitalization

As a matter of fact, in Italy as in many other European countries, learning in schools is not yet fully digitalized. It thus makes sense to speak of an experimental stage only. The different essays in this issue testify to the day-by-day efforts made by teachers and professors (look at the Paolo Diana and M. Carmela Catone's tale of a University pilot project), to use ICT in order to overcome most recurrent problems within the classroom: lack of self-engagement among poorly motivated students, lack of curiosity or "enthusiasm" for a given subject, difficulties in abstract, analogical and meta-reflective thinking, a passive attitude. According to almost all authors, the main benefit of ICT in the classrooms, at a *micro* level, seems to be a renewed attitude of curiosity towards knowledge among students.

At a *meso* level, the investment in ICTs seems to come with other important benefits for schooling: the idea of public education as an "old and stuffy" institution is replaced with a renewed vision of school. In this "new" place, children and youngsters can touch precious, fragile, expensive objects and gain access to the most up to date hardware and software. For once, education becomes a potential competitor of the free market (that is, at least until school devices become obsolete).

A third benefit can be derived from ICTs' implementation in education: as in any experimental condition, being under scrutiny leads, in the wider educational establishment, to exalt the positive that lies in everyone's motivation, practices and attitudes, as a sort of "Hawthorne effect".

But, if all ICT use is constructed as a never-ending experiment, this translates into a source of insecurity for both teachers and principals. Reasonably, the teacher will ask the school system to provide information regarding the continuity of ICT implementation, the upkeeping of infrastructures and machines, and on whether he/she might expect career benefits in terms of professional development as a result of his/her participation in the experiment. The feeling of uncertainty regarding ICTs

can explain why teachers are rarely the strongest defenders of the Classroom 2.0, especially in the face of parental opposition, as reported by Stefania Capogna in her essay. In the case of the Class@2.0 project, the evaluation of which is included in Valeria Pandolfini's essay on the Italian case, the aleatory nature of the experience is also a reason underpinning the opinion of participating teachers, not fully convinced of the benefits of ICTs (Campione et al., 2011, p. 55; Campione et al., 2012, p. 210): only 40% of the sample think their way of teaching has deeply changed after an intensive usage of ICTs, 50% think it has "changed enough" and there are those who feel negative externalities in ICT usage (16,3% feel that teaching in this way is "much more complicated" and 37% "quite complicated" for them).

However, many positive externalities are highlighted by more "technological" teachers and professors: the four dimensions of the change, mentioned by Capogna (organizational, didactic, communicative, and cognitive), are all implicated in the making of a more efficient, innovative learning process. First, there is an increase in the *cooperation among students* and teachers seems to benefit from this; something which should not to be taken for granted in the teacher-student relationship. According to teachers, peer relations within the classroom are often a troublesome factor, because the alliance among classmates can run counter to the work of teacher (as Parsons and Platt argued in 1973, the studentry is naturally distant from the inner values of the professor's culture, that is, cognitive rationality and instrumental activism). In this sense, the introduction and spread of ICT usage in teaching-and-learning appears revolutionary. In place of "institutionalized individualism" (Parsons, Platt, 1973), we have the affirmation of opposite ideas of sharing and collective production.

The teacher herself can observe this change from a "lateral" position, abandoning the primacy of her "chair" at the core of the classroom and looking at the development of natural interaction, participation, and mutual aid among pupils[4]. It is not a chance that the Italian sample of teachers participating in the Class@2.0 project referred enthusiastically (47,3%) that the experience has impacted "a lot" on their collaborative relationships with the students, and 45,2% reported it had impacted "sufficiently/quite a bit"

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[4] The new teacher's position in a classroom where the Interactive Whiteboard has been recently introduced is explored and commented by Pitzalis (2016).

(Campione et al., 2011, p. 55). In brief, ICTs produce a visible reduction of the ordinary distance (hierarchically ordained) between teachers and pupils.

Second, what is considered to be the best result for students (the increase of co-operation through ICT) is expected to be the same for teachers, which should have developed *team working* and *co-teaching* skills as a result of the socialization or training they may have received before (or during) the ICT project. Even the new tasks (i.e., control, surveillance, maintenance, and exploration of the hardware and software) may lead professors to share preoccupations and achievements regarding ICTs. Unfortunately, this is a rather neglected point in sociological studies and the articles presented here are no exception. Only the essay by Francesca Giambona and colleagues addresses this point, showing that among teachers, a high level of self-commitment in teaching with ICT is positively correlated with those indicators related to a "sense of belonging to the professional community". On the whole it is still unknown whether the introduction of ICTs creates a new "spirit of exchange" or collegial habits among educational professionals.

Digitalization, inclusiveness and reducing gaps

Turning from a *micro* to a *macro* perspective, a sociological analysis is not complete if it does not address the core issue, namely: does digitalization in education make schools more inclusive, egalitarian and democratic, thus reducing all social gaps? This is the great promise which underscores the spread and provision of mass media in education. In fact, along with ICT, it develops a "convergence culture", which is democratic in itself, "in which meanings circulate along unforeseen paths, contaminating each other, undergoing discontinuous processes of validation, consolidating only temporarily and always subject to constant re-evaluation". (Aroldi, 2009, p. 23).

This is true, and possible, in theory and/or in practice, only according to certain conditions of parity and acknowledgement of the inequalities at stake: I am thinking, for example, of how to cope with the inter-generational divide, which precludes, from the beginning, the success of a School 2.0. But I am also thinking about the risk of creating inequality among schools as a result of the different access to ICT materials and

resources (when they are not guaranteed by a governmental provision). In this issue we deal with only two of the main factors of social divide: gender and socio-economic status.

Regarding gender, Antonella De Feo and Clementina Casula report an an ethnographic study carried out in Sardinia, where gender roles are strongly legitimated by tradition which accords males social superiority. They compare a "traditional" classroom setting with more technological conditions (called "transitional" and "reconfigured" classrooms). They show that gender structures do not lose their strength in a Class 2.0, where tablets and interactive whiteboards are the typical learning supports. Technological expertise as a masculine "quality" still defines the distinction between the weak (girls and female teachers who don't hesitate to express their insecurity and anxiety towards technological functioning) and the empowered (boys and male teachers who compete to show themselves as competent and self-confident with ICT). If this pattern is evident mostly among adults (the so called "digital immigrants", to use Prensky's famous metaphor; Prensky, 2009), one would expect it to be less so among "digital natives". The last generations of girls outperform boys in many areas, such as learning and life planning (Colombo, 2012) bit this seems to be insufficient to eradicate the social order imposed by the hidden curriculum transmitted via the media culture (Heller, 2008) that places women at a disadvantage in the public context.

Regarding the socio-economic divide, the article by Ida Cortoni and that by Jana Heinz analyse the influences of cultural background on children and preadolescents' "digital skills", which are fundamental for their capability (Sen, 1999). According to both studies, the socio-economic profile of the family and parents' styles of media consumption (which are both correlated to their level of education) does indeed affect the impact of ICT on students' achievements. We cannot yet confirm – on the basis of these few evidences - whether the influence of the social divide exceeds the strength of pure exposure to ICT in schooling, but this is a question of great importance for further studies, as well as for future investments in the digitalization of education.

The Digital Agenda for Europe gives a clear screenshot of what kind of risks the digitalization of society (including digital schooling/education) tries to contrast.

I will mention only three of these:
- the unequal distribution of skills (between ages, for instance, but also along gender, territorial, and income lines);
- an unprotected childhood (connected to risks deriving from a child's isolation on the Internet, cybercrimes and human exploitation);
- the "ageing" of education, unable to keep up the multiple and accelerating changes in society.

As Marco Pitzalis comments in his article (The Technological Turn), there are at least three good reasons to consider Education (as an institution whose crisis is always evoked by plenty of commenters) not at all in decline.

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