



ITALIAN JOURNAL OF SOCIOLOGY OF EDUCATION

Editor-in-Chief: Silvio Scanagatta | ISSN 2035-4983

## Schools 2.0: Experiences and Expertise. Digital Teachers Wanted

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### Article first published online

June 2016

### HOW TO CITE

Capogna, S. (2016). Schools 2.0: Experiences and Expertise. Digital Teachers Wanted. *Italian Journal of Sociology of Education*, 8(2), 54-67. doi: 10.14658/pupj-ijse-2016-2-4



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PADOVA UNIVERSITY PRESS

## **Schools 2.0: Experiences and Expertise. Digital Teachers Wanted**

*Stefania Capogna\**

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*Abstract:* The knowledge of the whole education system in testing and incorporating ICT in teaching practices is preliminary and fundamental to develop a new thinking on education. All over the world we assist to an important movement to “flip the system” towards a new humanistic and holistic approach interested in returning voice and dignity to teachers and learners in defining the educational mission of the future. In Italy, one of the most significant problems affecting the incorporation of old and new media in education practices, and the reflection regarding a critical evaluation, is given by the absence of a visionary approach at different educational levels, and the lack of empirical data about how the use of these tools in teaching practices would be revolutionary. The paper aims at providing a descriptive and interpretative reflection on the spread and the use of ICT in schools, through the voice of its main character, the teacher. The study is part of a larger working progress research, but here we focus only on the qualitative exploratory analysis based on in-depth interviews with the intent to get into the ‘black box’ of ICT in schools, exploring innovative and little known processes, and glimpse the emerging practices, that develop beneath the surface of apparent immobility.

*Keywords:* ICT, school, learning, teachers, flipped classroom

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## Introduction

The knowledge regarding the state of the whole education system in comparison, testing and incorporation of information and communication technologies (ICT) in teaching practices is preliminary and fundamental to develop a new thinking reference to education. In all the world we assist at an important movement to “flip the system” (Evers & Kneyber, 2016) towards a new humanistic and holistic approach aimed at promoting a new teachers’ professionalism and higher quality teaching that is more coherent to contemporary challenges. The educational mission needs to confront with meaning and value of ICT in relation both to the integral human development and to the renewal of organizations and teaching processes.

The paper aims at providing a descriptive and interpretative reflection about the spread and the use of ICT in schools, with particular attention to the emerging strategy advanced by a “vanguard” of teachers particularly careful to this change. Research questions that guide reflection is: How are teachers’ work and class organisation changing by the regular use of ICT in the classroom?

The essay aims at intercepting the rising paradigm that guides this “vanguard”. This working progress adopts a mixture of quantitative and qualitative research<sup>1</sup>. But in this essay we focus on qualitative analysis, based on an inductive approach, to explore innovative and little known processes, and glimpse the emerging practices developed beneath the surface of apparent immobility, through the voice of its protagonists: teachers. For qualitative analysis we carried out in-depth interviews to a restricted

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<sup>1</sup> The essay is part of a wider resby quantitative recognition from secondary data. In this phase the research is continuously gathering quantitative datas about practices, uses, competences and needs, expressed by around 1250 teachers of different level of school. However, in this paper, we only demonstrate the results of qualitative analysis realized by interviews to 12 key actors with the intent to get into the ‘black box’ of ICT in school to outline the present and the future of education school 2.0. These in-depth interviews have been realized with important actors, such as coordinators or leaders in professional school associations, experimentation and research on these issues. Many of them are defined as *influencers* for both their activism in social media and forums dedicated to the digital school and their efforts in the production and sharing of educational materials and diffusive articles or promoting project about teaching in digital era. Excerpts from the interviews are always indicated by the use of italics and inverted commas. They can also be identified in accordance as following: P=English University Professor; T= Teacher; SLA=School Leader Association; SL=School Leader.

‘vanguard’ of teachers (school leaders, teachers, experts and university professors), who experiment the use of digital technologies in their daily practices. The essay begins with a brief definition of the theoretical framework (School and ICT: a difficult relation), then it examines the most common ICT experiences, skills (Dimensions of change) and teaching strategies in digital era (Embedded teachers’ skills for a “digital era”), and concludes with some reflection about the present and the future of education.

### **School and ICT: a difficult relation**

The development of the Internet, and its widespread penetration, has profoundly changed every dimension of our public and private life, time and space perception. Everything has changed, Drucker said (1978), except the way to think and realize the school. Thanks to a significant attention by the institutional side to this issue<sup>2</sup> in recent years, educational agencies made a great effort to incorporate opportunities offered by technologies into ordinary daily practices. With the advent of Internet the way to produce and manage knowledge has changed. Devices appear more and more versatile and capable of managing an increasing amount of information, through a variety of communication codes (audio, video, writing, image etc.) (Capogna, 2014a, 2014b). The opportunity to access, share and communicate via network is characterized by high socio-relational density interaction, laying the foundations for new areas of progress in the digital environment. The increasing media manipulators skills by the students require to school a quick development in media literacy (Horton, 2007) and digital literacy (Gilster, 1997) by teachers.

This mutation leads to more active role of students and teachers, within a renewed teaching paradigm. In coherence with this priority, the National Digital School Plan (NDSP) started in 2009 a process of digitalization to improve the learning environment and provide educational systems with technological equipment. For this reason, it is very interesting to follow how

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<sup>2</sup> In Italy we can remember L. 53/2003; L. 240/2010; L. 107/2015 and two *Digital School Plans* that tried to define a different educational model. The first one (2008) focused on four lines of action: the adoption of the Multimedia Interactive Whiteboards in the classroom; the promotion of Class 2.0; Digital Publishing and the School 2.0: the second one (2015) focused on infrastructure; training for teachers; content and skills for students and accompaniment.

teachers become “digital” and able to observe the real and profound change in their daily practices. Through their stories, we can draw the underground change lines, which can be seen in this difficult transition. Listening to the storytelling of this “vanguard”, we can identify some cultural dimensions of the emerging paradigm by tradition to innovation, observing how the new sociomateriality (Pitzalis & De Feo, 2016) of classroom, introduced by technological devices, modify the power relationship in the school social space.

### **Dimensions of change**

With regards to the *organizational dimension*, two of the most important innovation introduced by NDSF by way of ICT have been the electronic register and White Interactive Board (W.I.B.). With reference to the electronic register, the OCSE Report (2013) confirmed it was used in almost 58.2% of Italian schools. Since its introduction (s.y. 2012-2013), the number of schools that have introduced the electronic register keeps growing. As evidenced by the OCSE Report, there are still problems in the implementation of the electronic register. “*The poor attitude of teachers to use technology; technological school equipment and systems that do not hold up, the wi-fi that does not work*” (T). The most widespread problems, mentioned are the follows: “*not rarely, students use the electronic register in place of teachers, because they are not able to use all features*” (T). Moreover, there are difficulties linked to the access by substitute teachers who are denied the password. Many teachers struggle to replace the traditional paper register continuing to resort the old practice, doubling the work load. But a positive element is the wide use for online communication between school and families. “*There are schools where it is possible to arrange parent/teacher meetings by register and situations in which schools warn parents with a mobile text message if pupils are absent. This is much appreciated*” (T).

With regard to the W.I.B. the majority of teachers affirm that the presence of network connections and LIM do not assure their correct use. They evidence “*a patchy situation with significant internal differences between educational institutions*” (SLA). All people interviewed agreed there are excellent experiences where the investment in technology has been accompanied by a profound renewal of micro-political processes (Landri &

Queirolo, 2004), based on a positive alliance between leadership, executives and teachers' innovator; but "*There are situations whereby a million euro were invested by the region but nobody was interested in how they were used. The school bought the tablets but, at the end of the scholastic year, they were still in their wrapping, because professors did not know how to use them. Money down the drain*" (T). One of the biggest problems highlighted by respondents is "*the lack of qualified training. Not all people have the resources to keep updated, a guide is needed, at least initially*" (T). Other problems are inadequacy, lack of maintenance and obsolescence of resources. Very often, even when the school possesses necessary technology it is unable to provide assistance, maintenance and training required. Furthermore, professors' turn-over prevents in capitalizing on and disseminate timid attempts at innovation. So, "*even the best ones will become demotivated*" (T). This proofs stress that the efficient and right use of ICT is strongly influenced by context and situation.

Despite the problems illustrated, new resources introduced offer the base to innovate *didactical dimension*. One of the most important initiatives illustrated by school leaders interviewed is the INDIRE project named "Educational vanguards" (2014) which tries to offer a sharing space of ideas and best practices<sup>3</sup>, activating teachers' protagonism and their professional pride with positive effects on self-efficacy. It involves 189 schools round twelve ideas. Among these, we can remember the Disciplinary Lab<sup>4</sup>. "*It is an experimental disciplinary space where teachers have their own classroom and pupils follow them moving from one laboratory to another, breaking traditional timeline of classroom (ASL)*". Another interesting experiment regards hybrid/blended solutions, distributed along a continuum that ranges from *face to face* lesson to *online* learning (Figure 1). In all these solutions the teacher acts as a mentor by selecting the best open educational resources or instruments for study, master and research.

Somewhere the didactical experimentation is Flipped classroom (Bates, 2015), where students can study at home and has been carried out as apply in the classroom practical experiments, real cases and work collaboratively. This is possible through circumstances offered by the Open Education Resources (Open Textbooks, Open Educational Resources); Free Online Contents (Blogs, Sites, Educational Video-Radio Channels, etc.).

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<sup>3</sup> Official site: <http://avanguardieeducative.indire.it/>

<sup>4</sup> Disciplinary Lab: [http://www.fermimn.gov.it/materiali/375/materiali/classi\\_senza\\_aula.pdf](http://www.fermimn.gov.it/materiali/375/materiali/classi_senza_aula.pdf)

Figure 1. ICT didactical uses<sup>5</sup>

Very interesting is also the Book project, promoted by “Educational vanguards” (2014), that involves 122 schools (through the collaboration of 800 professors and their disciplinary departments), to realize open access digital and paper textbooks. Some experiences modify traditional didactical activities introducing new element in the curriculum, teaching teachers and students to use coding program (such as Scratch) or digital craftsmanship.

The variety of these experiments, that are not exhaustive of all processes of innovation in Italian schools, underline that the adoption of ICT in teaching is not a technological equipment problem. Therefore, it introduces the issue of power, i.e.: who decides what to teach and what to do and how to do it. All these initiatives break the traditional implementation of standard program giving back to teachers the decision power about the value and the meaning of their mission, asking them to design and adapt the program to the needs of their students. An other important question is the way by which to play, organize, manage and evaluate teaching practice through digital resources getting feedbacks from beneficiaries. So, the communication to students, families and colleagues represent the most important difficulty in ICT using. Sometimes, also in positive experimentations, ICT raise a negative reaction by families, which have difficulty in understanding the new didactical model. Some teachers declare: “*we have to face the opposition of families to experiment the innovation. They are attached to the traditional educational model; the only one they know. The risk is an intrusion*” (T). It means that some target ignores the concret context and situation in which ICT intervenes. Consequently, the integration of ICT in teaching is not to propose strict protocols but to give teachers the possibility to assess conscionsly and to value purposes, risks and opportunities of each situation.

<sup>5</sup> For SAMR Model, see Puentedura (2006).

For this reason, the *communication dimension* (internal and external) becomes essential. Very often the problem is to educate parents along with students. Similar problems affect colleagues, who should have a shared vision of ICT use in teaching. Moreover, there is the problem to capture students' attention. Students have to be motivated, guided and supported to develop *media competences*<sup>6</sup>, *media skills*<sup>7</sup> and *media literacy*<sup>8</sup>. Unless those skills the risk is to use technology as old transmissive instruments without promoting the development of an active and responsible “technological mind”.

These experimentations show that the digital era modifies both the learning process and the knowledge building, in other terms the *cognitive dimension*. Young people are faced with an anthropological change in the way through which they live their social interaction, and through which they have developed new kinds of intelligence, more appropriate to the information era. “*They are faster, able to connect different kinds of information, more flexible and plastic while, in the past, we were accustomed to thinking of more rigid, less creative*” (SL). They appear ready to adopt technology in their daily experiences. “*They work harder. They learn to share and cooperate, and perceive a different dimension of the class, without constraints of space and time*”(T). But, this can have perverse effects, because sometimes students hide behind technology and do not engage in schoolwork. “*Internet was not working, the computer is broken, the email did not arrive and so on*” (T). Internet in the classroom modifies the *classroom relationships*. As teachers' role changes, and not defined by clear boundaries, so they have to negotiate every day the respect of students and families on the basis of her/his ability in building positive relations. They have to avoid four common mistakes: “*to think of technology before pedagogy; to imagine technology as a toy; to use technology to fill time and not utilizing the technology available to them*” (P). When they use ICT in

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<sup>6</sup> Media competences refer to the knowing about different media and how to use them reflecting the role of media in society, designing media, and critical thinking (Baacke, 1998).

<sup>7</sup> Media skills refer to six dimensions of social-media-literate leadership, articulated in two principal level: the personal level which includes producer, distributor and recipient skills, and the strategic organizational level regards adviser, architect and analysis skills (Deiser, Newton, 2013).

<sup>8</sup> Media literacy refers to the ability to read many types of media has become an essential skill in the 21st Century. Media literacy is the ability to access, analyze, evaluate, and create media (Unesco, 2006).

classroom, even the student's role changes from passive to an active and responsible ones. But also the teachers' roles have to change towards a traditional and static perspective to another, towards a paradigmatic communication change as transmission to communication as participating and community. Teacher for digital era have to be able to take risks, make mistakes and learn from them, using technology as a tool to enhance learning and pedagogy and motivate their students, just like a coach. Therefore, the new education paradigm for XXI century show we need to help teachers to develop their digital, methodological, communicative and emotional skills (Capogna, 2015) more than discipline competences. In an iper-technological and restricted global space a positional leadership cannot exist, for this reason teachers need to improve their "teaching agency" (Priestley, Biesta & Robinson, 2016) and become more reflexive and aware about their professional practices.

### **Embedded teachers' skills for a "digital era"**

Teaching through multimedia is not just transfer information. This operation implies complex cognitive processes and methodological decisions passing from a traditional deductive design, centered on the predetermined goals, to an inductive design, capable to take into account and uses innovative tools through continuous confrontation with the contingencies of the context. To design a learning process, capable of integrating digital resources, teachers have to make balanced considerations in relation to: *"the kind of students attending; the ease of use of tools adoptable; the cost-effectiveness; the specificity to digital solutions adopted for discipline; the methods of organization and management of vertical, circular and horizontal interactions; the organization and management of information; the networking strategies; the guarantee, the safety and the privacy of all participants; the type of support provided by the institution to which they belong"* (P). For all these reasons, one of the fundamental problems lies in the initial and in-service teaching organization, according to traditional methods, unable to prepare new digital teachers. *"Teachers are required to study, update and experiment. The school can become a workshop of research, culture and creativity. It should offer educational models, inventions, experiences, values and the connection to both the*

*reference to the environment and to the specific application of discipline”* (P).

Teachers need to acquire and realize a methodology of design, testing, evaluating environments and learning processes. *“New technologies allow the creation of hybrid learning solutions, called differently even blended, this requires the teacher to clearly define what must be done in a physical environment and what in distance learning, with what methodology and with what resources for learning”* (P). This change in teaching practice cannot be improvised. It seems everywhere that the nudge through the privatization<sup>9</sup> have deprofessionalized teachers who need more and more of an empowerment intervention (i.e. mentoring, coaching, assessment, counseling) instead the new unpteenth system intervention.

This is the purpose of the Innovative Design project (2015)<sup>10</sup>. It points out that the initial teacher training shows significant gaps, being characterized by the absence of a specific preparation to teaching in the digital age. In the knowledge society, the definition of educational courses, has to deal with some key issues, clearly summarized by Tony Bates (2015). *“In the 21st century, characterized by a large spread of technology in every life space, schools have to prepare young people to acquire new kinds of skills such as communication skills; independent learning, ethics responsibility; thinking skills (creativity, problem solving, critical thinking); knowledge management and embedded skills in subject areas. Digital economy not only wants content but embedded skills”*. In this different context teachers face new problems and new challenges, which express training needs and renewal of skills development. Which approach do teachers want to take? Which is the target audience? What are the essential requirements and specific matter and what resources are available? Any teaching programme nowadays, with or without new technologies, can avoid taking into consideration these key factors. For all these reasons, digital teachers *“need to find situations in which they can compare with one another and have external stimulus”* (T). Very often teachers works in isolation. They are likely to be a precious minority, passionate but invisible. To combat this situation, there are several (local and international) social networking

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<sup>9</sup> On the privatization issue see, among others, also Visser (2016).

<sup>10</sup> The project involves 100 Italian schools and about 120 teachers in the implementation of a new approach and renewed skills and teaching methods which may be adopted also with ICT: <http://www.innovazioneinclassa.it/>

initiatives for promotion new culture in digital teaching. Probably, in Italy the most well-known initiative is Digital Champions<sup>11</sup>. Navigating social networks for schools, we note numerous informal teachers groups<sup>12</sup> who use social networking tools to identify themselves as a “community of practice”, capable of sharing and promoting initiatives, ideas and experimentations. Teachers are forced to change their horizons of meaning, the way of interpreting their role and responsibilities associated with it. Teachers need much support to integrate the use of technology in their teaching practice and improve their *teaching agency*, that is: a “temporally embedded process of social engagement, informed by the past (in its habitual aspect), oriented toward the future (as a capacity to imagine alternative possibilities) and ‘acted out’ in the present (as a capacity to contextualize past habits and future projects with the contingencies of the moment” (Emirbayer & Mische, 1998, p. 963).

## Conclusion

This brief explorative research shows that the ICTs redefine both the way in which the environments are organized and the practices and relationships inside and outside the classroom. First of all, teachers’ work appears more and more oriented through a *mentoring approach*. New methods introduced by ICT determine different kinds of interaction. We are passing by the knowledge paradigm to the discover paradigm, where the teacher becomes a motivator who learns and innovates with her/his students. The relations cannot count on the quiet assurance given by a predetermined hierarchical interaction, regulated by the constraints of role. In the flipped classroom, in distance learning, in the experimentation or team work, relations are horizontal and circular; learning develops by an open and an unpredictable process in which teachers have to merit respect and attention thanks to her/his

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<sup>11</sup> This is an European Union project, established in 2012, to promote digital citizenship among member countries. It involves 1330 volunteers, among experts, schools and universities teachers, which promoted a responsible and innovative use of digital resources in teaching.

<sup>12</sup> Perhaps, the most active among them is the group known as “virtual teachers”, registered on Facebook, which counts 11,451 members (many of whom participate to Digital Champion). This is followed by a closed group named “Lim 2.0 Professor” counting 3,059 members.

educational leadership; communication and emotional skills (Capogna, 2015). Like a coach able to activate motivational levers and latent resources of their students. This paradigm change requires teachers looklike reflexive professionals (Shön, 1983), capable of analysing, monitoring, planning, managing, evaluating and redesigning their teaching path. The relationships among actors, environments and learning objects are no longer involved in a predetermined process of knowledge transfer; but they become part of the adventure of knowledge construction that follows the paths of indeterminacy and deconstruction. All these factors change the interactions between students and teachers, teaching and learning assigning to teacher the role of mentor and social innovator. But, generally, lack a deep legitimacy to this role because of a bargaining system and career development that does not include neither the enhancement of skills nor the enhancement of teaching and excellence.

Secondly, technological devices modify the *institutional space*. Technological devices introduce the issue of the conflict for commanding both the symbolic power (Bourdieu, 1988) of knowledge and the innovation fate of the school. The superior role of the teacher, based on the power of knowledge to transmit, has been broken. These are no longer the only benchmarks for the school time organization; other factors come into play such as the control of technological devices (W.I.B, contents, tablet, etc), the flexibility of the timetables, the hybridization solutions, the integration of perspectives, the enhancement of informal and non formal learning spaces, the web reputation, the communication style etc.

Furthermore, in the digital era, teachers need to improve their abilities to identify necessary strategies to ensure effective, efficient and attractive learning to help students to manage digital open resources with a responsible ethic. They need to acquire *embedded skills* to identify the requirements and objectives to be achieved in the learning process through targeted teaching strategies (such as discussion, brainstorming, peer tutoring); the design of the development process (project management and plan), the application phase (monitoring the implementation to reach defined goals) and, finally, the evaluation criteria (check and act towards continuous improvement). The focus moves from notions to values, from the contents to students, to replay to learning, enhancing their creativity and divergent thinking through the exploration of the unknown. This requires new and different competences of selection, organization and integration skills but also management and coordination of working groups. So, we can ask: What prevents teachers to

be digital and acquire embedded skills? We can identify two kind of issues as follows.

The technological space is an immaterial space crowded by different actors who are in conflict to affirm their power and obtain legitimization: teachers who need a recognition of their role and professionalism; students who, very often, show a high using competences; parents who want to know the school curriculum; national and international technological producers who try to conquer the education technological market; government who try to define an education policy able to include the technological challenge; the sovranational agencies for evaluation who stress the logic of benchmarking and so on. All this reduces the margin of discretion of teachers.

Then, it seems that training courses are unable to train teachers for these range of social-emotional, communicative and methodological skills requested to move in this technological and crowded space which requires new teaching competences, new teaching habitus and new logic of teaching practice (Bourdieu, 2005), that are not yet sufficient spaces of recognition.

With the introduction of new and varied devices, it raises the question of the choice of an educational model able both to integrate formal, non formal and informal knowledge, to overcome the constraints of the digital divide (Dijk, 2011), and to foster the development of critical thinking and key skills for living in a digital society. In this sense, flipped the system means to restore trust, honour, voice and responsibility to teaching profession, rethinking curricula and teaching methods but also the path of development career to promote new teachers' habitus and practices (Bourdieu, 1980, 1994) capable to introduce technology and digital innovation in the school.

A new education policy cannot be based on the assumption of technological determinism. It is not sufficient to introduce technological equipment in the school, but it must carefully considered the human and cultural factors that characterize the evolution of each technosocial environment and the education implication to help people in using them in correct and responsible manner in educational context. It is not enough to change the curricula and technological school equipments. Equally important is the "hidden curriculum" through which the innovation passes and that is on the basis of the educational setting with its rituals, customs, practices, climate, attitudes way of doing etc. which mediate the approach to learning and to technology even before the knowledge and expertise of use. This means that to imagine the school of the future we must start from the continuing involvement and enhancement of those who make school today.

Otherwise the risk is to innovate everything to innovate nothing, because any innovation cannot ignore the real-world knowledge on which one intervenes. In fact, the even present risk is the escape in the technology (Selznick, 1976), forgetting the anthropocentric view of technology, useful and necessary to understand how to socialize persons to its conscientious and responsible use. If one of the mission for the school in the 21<sup>st</sup> century is still the socialization, we cannot miss the socialization *at*, *of* and *with*, technologies that shape our social-relational everyday life order.

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