DECODE

DEvelop COmpetences in Digital Era. Expertise, best practices and teaching in the XXI century

IO2. Innovative training models, methodsand tools for teachers in the digital age

NATIONAL REPORT: Italy

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Forward

The present report is part of the IO2 of the DECODE PROJECT - DEvelop COmpetences in Digital Era. Expertise, best practices and teaching in the XXI century, an Erasmus+ KA2 - Strategic Partnerships in the field of Education.

The IO 2 focuses on National Researches Reports on "Training models and pedagogical teaching methods for teachers in the digital age" and it has been realized on the bases of IO1 prepared by University Rome Tre in the first phase, describing entire research design (IO1), in relation to: methodology, instruments and outputs.

It presents the Italian National Report conducted by Italian partner on the bases of shared Template discussed during the 1st Meeting.

National Report aims to guide next research process in the Project DECODE, giving important information about national implementation process regarding the incorporation of ICT in schools and didactical practices.

For this reason, Italian National reports focuses on national education policies, training models and successful methodologies to integrate into the school staff (teachers, headmasters, administratives, etc.) digital, methodological and socio-relational skills requested by digital era.

Following methodological and operation instructions of IO1, the Italian National Report explores the governance practices to understand:

- innovative policies implemented in Italy;
- significant experiences spread in our country;
- classification of profiles and skills of educational institutions professionals in the ICT field;
- best practices and educational successful methodologies, spread in our county.

Introduction

The development of an innovative educational model paradigm able to take into account the digital revolution involved the whole educational community at various levels. Italian National Report "Innovative training models, methods and tools for teachers in the digital age" try to build new school needs to evaluate key digital opportunities and risks in procedural and organizational perspective in our country.

To reach the objective, the national research presents:

- a reconstruction of the national scenario: trends and policies activated at national level in relation to the introduction of training models and successful methodologies to integrate into school staff digital competences;
- a framework of the main national laws and legislative funding programs;
- a framework of contractual rules and career perspective in relation to the digital challenges;
- the identification of local good or best practices.

To reach this goals, as defined in IO1, a qualitative approach has been used. Focus groups and interviews has been realized in three months (from March to May) to reach key actors (policy makers, decision makers, institutional representatives) with the objective to evaluate the steps taken by relatively governance integration of ICT in education system and teaching practices. The Report presents the main and the most relevant results of the national research; the emerging key elements of the national context.

For Italian research have been realized n. 4 Focus groups (Annex 1). Three Focus Group has been realized in presence involving around … Head Masters; whilst one Focus Group has been realized through online platform, involving …. 'animatori digitali'; finally in-deeping interviews have involved 5 persons (Annex 2).

Data	FG/In	Target	Number	Location
	FG	Head Masters	5	Rome
	FG	Head Masters	11	Genoa
	FG	Head Masters	12	Bari
	FG	AD	12	online environment
March/April	IN	Institutional Key Actors	5	Nation

The Report is articulated in three main sections. First part indicate Italian national framework with particular attention to: national legislative framework for the adoption and the development of ICTs in education (specific laws, decrees, acts); institutional and organisational processes; key institutional figures framework; financing programs of specific projects to implement innovative didactic methods with the support of ICTs; contractual framework and career perspective for School Leaders and professors, Professional Profiles and Competence,

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and systems of assessment and Quality Assurance.

The second one describes the main and most interesting experiences in the field of training teachers' digital skills and the main and most interesting pedagogical adopted models in teachers' digital skills.

The third part presents the results of the field research with particular attention to strengths, weaknesses, risks, threats and opportunities

Finally, a brief reflection about most important national results conclude the Report.

1. Description of Italian national context

1.1. National legislative framework

1.1.1. The adoption and the development of ICTs in education

The regulatory context in which the innovation of didactic with the introduction of ICT is focused is what immediately precedes the start of school autonomy, introduced into the Italian education system by Law 59/1997 art. 21, and has been developing since then up to today. With the intention of rebuilding the initiatives taken in Italy in a concise and chronological manner to encourage the development of digital skills in school, by the teachers first and then the students, it is advisable to start with the National Plan for Information Technology (Piano nazionale di Informatica - PNI in Italian), an experimental course concerning secondary schools, beginning from the 1986/1987 school year in Technical Institutes and also in 1990/1991 in High Schools and Training Institutions. The PNI was intended to ensure better scientific knowledge to students, with an increase in hours of physics and maths and with the inclusion in programming programs (algorithms) and computer languages (Pascal). The teaching of mathematics and physics was therefore enriched by the use of IT tools. The experiment came to an end during the reordering of the school system following the 2010 decrees (Minister Gelmini). The beginning of this experiment coincided with a two-year Teacher Training Plan, initially only involving the two disciplines concerned, and then extended to letters and languages. This was during the era when the computer was intended as a means to study or a tool for organising personal knowledge and IT education was still thought of as a discipline for “field experts”.

With the Ministerial Directive no.318 of the 4th October 1995 MULTILAB launched its "Development Programme of teaching technology in the school system”, a centralised project established in each region of some “school centres” (formed by two second-grade secondary schools, two first grade secondary schools, two primary schools and a nursery school). In each school, a multimedia classroom, a design lab and a media library is being created. The main objective of the project is to “bring the school closer to reality that more and more children live at home and in other environments, characterised by the interaction between spoken word, written texts, sounds and images".

From 1997 to 2000 the National Plan of Didactic Technologies (PNTD in Italian) was held, the most important initiative that for the first time introduces computer science and telematics in all classes and grades of the school and training for all teachers, with three objectives:

- education of students in multimedia and communication;
- improving the effectiveness of teaching and learning of the disciplines;
- improving the professionalism of teachers.

The Plan was carried out in two ways:

- project 1.A (Operating units for teachers): the aim was to enable teachers to attain basic training on multimedia, study application possibilities of multimedia in teaching, examine teaching materials and develop them themselves, cooperate with other teachers from the school or schools from further afield,

involve classes or groups of students in some non-systematic activities that require the use of multimedia. The schools involved in the project received financial resources for equipment and training;

- project 1.B (Multimedia in class): aimed at school-based businesses already in possession of IT equipment, which were granted a substantial investment (40 million lire) to improve the existing technology and to provide innovative teaching services and activities.

During this period, the first school networks were established, an authentic expression of school autonomy, as provided in the second paragraph of art. 7 of the Autonomy Regulation (DPR 275/1999), to implement the experiments of change more effectively and synergistically.

1.1.2. Institutional and organisational processes

The Guidelines for the implementation of the PNTD 1997/2000 provide, in addition to the financing of general projects already described, for the allocation of funds for the implementation of some pilot projects, engaging a limited number of schools, to have organisational methods and particular solutions and types of specific verification, starting with a series of ongoing or concomitant activation, of which the most significant dimensions are listed.

Multilab, which has already been mentioned, involved 141 schools of all classes and grades in an initiative aimed at experimenting with teaching models, organisation models and technical solutions related to the use of multimedia and communication. It was connected using the ISDN line of 141 schools and first used by 141 tutors, one for each school, and then around 1600 experimenting teachers.

The **WEB project**, involving the General Class Departments and Technical Education, was aimed at the use of personal computer for the development of linguistic-communicative skills (for both Italian and foreign languages) in upper secondary education. The project adopted an organizational solution based on about 50 leading schools, each of which has been formed by a team of three teachers (Italian, foreign language, computer science) who assist each year as a tutor, a group of teachers from five nearby schools.

Polaris, a project initiated by the Directorate General for Technical Education in collaboration with the Istituto di Tecnologie Didattiche (The Institute of Teaching Technologies) of the National Research Council of Genoa, aimed at experimenting with the training of teachers in the telematics network.

Telecommunicating, developed in collaboration with STET-TELECOM-FINSIEL, involving elementary, middle and high schools specialising in classical studies. This provided the use of ISDN technology for voice, motion and data transmission. Aimed to test the use of videoconferences for collaborative work between schools.

Italy and its islands. The project was initiated by the Directorate General for Classical, Scientific and Magisterial Education in collaboration with IRRSAE Sardinia and involved 70 institutes. The basic tool was INTERNET connection of the schools involved and an initial assessment was enabled of the potential of the INTERNET, e-mail and the World Wide Web.

Project MUSE, initiated by the Directorate General for Elementary Education in collaboration with the European

Education Centre (CEDE in Italian), the project was aimed at the use of multimedia tools for training and self-education of teachers on the theme of music education.

Media school project, this involved 100 First Grade Secondary Schools and was aimed at the initial training of teachers to use new information technology in teaching.

E-learning for long-term students. Launched by the General Directorate of Grade I Secondary Education, in collaboration with the Ministry of Health, ANCI and TELECOM Italia, this was aimed at ensuring that hospitalised students have the right to study. This involved the use of multimedia stations that connected the hospitalised child with "normal" middle school classes so that they could participate in fun and educational activities.

Project MILIA, launched by the General Directorate for Cultural Exchanges, this was a multimedia training package for training Italian teachers – a remote refresher initiative with particular reference to the Latin American Countries, in collaboration with RAI-International.

Project DEURE, launched by General Directorate for Cultural Exchanges, the project was aimed at connecting the BDP (Pedagogical Documentation Library) multimedia with leading schools for the dissemination of information, documentation and assistance to participate in the SOCRATES community programme – a teacher training project.

Project Globe, launched by the General Directorate for Cultural Exchanges, this was an education and environmental science project which gathered students and scientists together to analyse global environmental issues. The programme included training teachers and providing appropriate technologies to Italian schools selected to participate in the programme itself.

1.1.3. Key institutional figures framework

The 2002/2003 school year is to be considered the birth of the first online environment for systematically training teaches, called the PUNTOEDU platform, an e-learning platform managed by INDIRE (National Institute of Documentation and Educational Research) for the implementation of compulsory training courses for newly-trained teachers. The platform has, for several years, hosted training activities for tens of thousands of teachers at every class and grade, offering study and materials and in-depth analysis, *learning objects*, discussion forums, virtual classes for group activities coordinated by tutors specially identified by schools with the task of following online activity and also carrying out classroom training according to blended models, tracking tools and course certification[1]. The initiative, rather than content, is relevant to our aims to adopt a large-scale staff training method by MIUR that, by using an online environment, compels the most refractory teachers, given that courses are obligatory, to use technology tools and familiarise themselves with collaborative learning/teaching methods which may encourage the use of ICT in every day practice.

The operation may be considered a trailblazer for the ForTic Plan (National Information and Communication

[1] For a more in-depth study, see EDITIONS OF EDUCATION 110-111 / 2005, Puntoedu: a learning model (QUADERNI DEGLI ANNALI DELL'ISTRUZIONE 110-111/2005, Puntoedu: un modello di apprendimento)

Technologies Teacher Training Plan), a broader scope project launched at the end of 2002, involving about 180,000 teachers supported by approximately 8500 tutors. The plan provided three types of training courses:

- A basic training course for teachers with little or no expertise in the use of ICT (about 160,000 teachers) with training objectives, which grasps basic computer skills and ICT teaching skills;
- A training course to be an expert "consultant" teacher in the methodologies and didactic resources offered by ICT (about 13,500 teachers) with training objectives geared towards problems using technology to teach.
- A course to build the skills needed to be a "responsible" figure of the school's technological infrastructure or school network (about 4,500 teachers) with training objectives geared towards skills in managing technological infrastructure.
-

The National Training Plan on Computer Science and Technology Skills of School Staff represents the implementation of what was deliberated by the Council of Ministers by decree of 22 March 2001, as part of the Italian Action Plan for the Information Society, which in turn has responded to the European level guidelines for the e-Europe Action Plan launched in Lisbon in March 2000. Given the size of the initiative, with Ministerial Circular no. 55 of May 21, 2002, MIUR announced the Technical Project and the Implementation Guidelines that provided for a central management of Administration, which is responsible for producing materials and services, organising monitoring and ensuring coordination of the entire project. The Regional School Departments were then called to organize and manage the courses, with informative action towards managers and teachers, by identifying course locations and forming class groups. The newness of these procedures and the number of recipients have caused difficulties in production and caused disparities in results in different contexts, except for the ForTic Plan which is still a great and well-focused training initiative on the theme of digital culture implemented in our educational system.

1.1.4. Financing programs of specific projects to implement innovative didactic methods with the support of ICTs

Subsequently, projects with fewer recipients and less transformative capabilities have been established, beginning with the idea that innovating a limited number of institutions in depth would then pave the way to cover the entire system, something which has not yet happened. Before today, in fact, and before the new National Digital School Plan introduced by Law 107 of 2015, we must take into account numerous additional initiatives of which MIUR provided a concise and effective report[2]. To clarify, they range from ForTic and Fortic2 initiatives, to the DiGI School, to IWB in Class, through to Cl@ss 2.0, School@ 2.0 and Digital School Publishing and, therefore, to the creation of the MIUR-Region agreements aimed at supporting MIUR with additional financial cover and operational procedures lowered down to regional territories, to the identification of training Centres, of regional lists for trainers to initiate a first phase of training on digital skills (basic and advanced courses) and Wireless in schools in 2013.

[2] "Action for Innovation in Teaching and ICT Prior to the PNSD" Report, MIUR Directorate General for Statistics Studies and Information Systems
http://www.istruzione.it/scuola_digitale/allegati/2014_archivio/home03_140601_Piano%20Nazionale%20Scuola%20Digitale.pdf

The DIGI School project, funded by Cipe, lasted 18 months (June 2006 – December 2007) and involved 550 high schools, with a total of 33,000 students and 3,300 teachers from Abruzzo, Basilicata, Calabria, Campania, Puglia, Molise, Sardinia and Sicily. The objects of the project were: a) the introduction of innovative teaching methodologies for teachers, with adequate training of teachers regarding the use of new technologies; b) introduction to new educational content based on digital content (*learning object*); c) the creation of an electronic market for digital content for teaching; d) the development of the Italian industry for quality digital content, adopting high technological standards and educational pedagogical guidelines; e) the diffusion of digital literacy in Italy; f) the reduction of leaving school early. The basic idea was that the introduction of new technologies in teaching was of strategic importance for the development of the "Country System" in social, pedagogical and economic fields. The objectives, however, were not achieved except in a limited way at the time of the experiment and in some of the institutions involved.

Cl@sses 2.0 proposed to change learning environments through a constant and widespread use of day-to-day teaching technology. The first phase involved 156 first grade primary school classes: students and teachers could have technological devices and multimedia devices and classrooms were progressively equipped with devices for connecting to the Internet. Cl@sses 2.0 creates, with the support of the A.N.S.A.S. and a network of associated Universities, a teaching project for the experimentation of advanced teaching methodologies. In the academic year 2010-2011, this was extended to some second-grade primary and secondary schools.

IWB in class aimed to equip classrooms with Interactive Whiteboards, tools that can create the conditions for interactive, multisensory and shared lessons in and out of the classroom.

Digital Publishing: this included the acquisition of 20 prototypes, i.e. examples of “digital school publishing”, that is, a product which dealt with a substantial part of the curriculum, which was thought about from a perspective of transversality between different school disciplines, which was functional in the acquisition of skills, which would allow effective interaction with the digital technologies that are present in daily teaching and contribute to the creation of new learning environments.

Scuol@ 2.0 was aimed at being an extensive product, whose engagement with other products (IWB, Cl@sses 2.0, digital publishing), as well as contributing to a change in learning environments, led to a rethinking of models and educational organization and educational programming, family-school relations and local school-institutions. All this meant creating a complex project that could envisage the introduction and use of diverse technologies and tools including, in addition to IWB kits, digital TV, platforms for virtual class management, readers, tablets and netbooks.

The listed projects established praiseworthy experiments, but they did not have the ability to radically change, as would have been necessary, teaching practices, not even within the context of experimentation.

On the eve of implementing the new National Digital School Plan provided by the Reformation of the so-called “Good School”, over 75% of primary schools do not use web-based learning environments, the percentage drops to about 55% in secondary schools, but the figure corresponds to the presence of digital learning environments and does not take into account the pervasiveness and frequency of their use. In primary school, the connection speed is over 89% medium low, the same as for 77% if secondary schools. The average number of computer

students is 9.8 in the primary and 5.7 in secondary. Only 46.5% of the classrooms are wired up, only 26.3% have IWBs, only 5.9% have an interactive projector (MIUR Technological Observatory data). The same examination of Pisa 2012 OECD data, conducted the study "*Students, Computers and Learning. Making the connection*" in relation to Italy again underscores the scarcity of technology used in Italian schools and identifies as a determining factor the guarantee of an adequate level of teacher preparation.

By Ministerial Decree 851 of the 27th October 2015, the new PNSD (National Digital School Plan - *Piano nazionale Scuola Digitale* in Italian) was launched, which provides for the period 2015/2020 over one billion euros of investment. The overall challenge of the whole project, articulated in 35 operations, is of a cultural nature. A challenge that currently addresses the entire country in one of the opening statements, which reads: "*This Plan responds to the call for building a vision of education in the digital age, through a process that, for the school, is related to the challenges society faces in interpreting and supporting lifelong learning and in all contexts, formal and non-formal (life-wide)".* The Plan envisages four areas of intervention, on which to act in a coordinated and parallel way:

- *Tools:* to overcome the difficulties of accessing the network and to provide each class with proper connectivity, to create in every school a learning environment enhanced by up to date technology, to provide each student and teacher with a unique digital identity and digitally manage administrative processes.
- *Skills and content:* this issue is very challenging, it is a question of the students developing new literacy and transversal skills, which make them able to read and to be consciously involved in a reality that requires adaptation to the continuous and fast changes. It is also about promoting the creation and use of learning content in a quality digital format.
- *Training:* without a change in initial training and in the service of teaching staff, the initiative would certainly fail. We need to expose teachers to training situations that proceed according to the same innovative ways we want to practice in the classes, and this also requires a great deal of change in academic courses and recruitment procedures.
- *Accompaniments:* supporting and accompanying measures are often the weakest link in projects that fail. Monitoring and control, constant assessment of the results achieved progressively and possible corrective actions are essential in order to achieve specific objectives, as described clearly through the numerous planned actions and related implementation times.

The initiative is not complete and conclusions will soon be drawn and judgements made. On wanting to venture into an initial assessment, even during the course of work, it cannot be helped but to observe the weakness of the overall governance by Administration. It was certainly helpful to find a Digital Animator for each school, as a possible system figure that provides continuous contact between the central administration, its peripheral articulations, and the single autonomous school institution. However, at the beginning of the whole reform of the Good School, and with it the National Digital School Plan, a systematic information and training activity was missing and consequently the whole school process was taken over by school executives. Not only did the training executives and their involvement in the rest of the activities not proceed in chronological order, as it should have been, but it was also organised according to the model of the territorial training courses, which ensured the activation of courses but did not ensure unity of vision and operational direction. A sense of direction in training was also missing: every project intending to be transformational has a first stage to train the trainers, through which strategies, goals and even validated content are shared, and a subsequent phase where the

qualified trainers are given the task of sharing this with the rest of the subjects. The new PNSD lacks a national task force to ensure the unity of the initiatives and a quality standard that is appropriate to the goals and investment in the field. Political instability and change of government must be added to the criticalities highlighted, which resulted in the shift to the MIUR summit and a significant change in pace in the implementation of the Plan, in conjunction with a shift in the overall policy of implementing school reform under Law 107/15.

1.2. Contractual framework

1.2.1. Career perspective for School Leaders and professors

For a better understanding of the situation, an in-depth study of the professional figure of the teacher is useful, as designed by our order and on the methods of valorisation and professional development provided there. It is also worth remembering that our Constitutional Charter promotes and protects these fundamental rights:

- THE RIGHT TO HAVE EDUCATION AND TRAINING "…The Italian Republic acknowledges and guarantees the inviolable rights of man, both as a single person and in social formations where he expresses his personality, and demands the fulfilment of the intransgressable duties of political, economic and social solidarity". (Article 2 Constitution of the Italian Republic)
- ACTIVE AND RESPONSIBLE CITIZENSHIP "…It is the responsibility of the Italian Republic to remove the economic and social obstacles which, by limiting the freedom and equality of citizens, prevent the full development of the human person and the effective participation of all workers in the political, economic and social organization of the country". (Art. 3 Constitution of the Italian Republic)
- INTERCULTURAL EDUCTION "School is open to everyone …". (Art. 34 Constitution of the Italian Republic)
- PERMANENT LEARNING "…Every citizen has the duty to carry out, according to his own possibilities and choice, an activity or function that compels the material or spiritual progress of society". (Art. 4 Constitution of the Italian Republic)
- INCLUSION AND DEVELOPMENT OF EXCELLENCE "…The capable and the meritorious, even if without means, have the right to reach the highest degrees of study…". (Art. 34 Constitution of the Italian Republic)
- PROFESSIONAL AUTONOMY "Art and sciences are free and are free to teach" (Art. 33 Constitution of the Italian Republic)

The professional profile of the Italian teacher is described in the National Labour Contract for Teaching Staff, of which some of the articles are listed below.

Art.26

1. The teaching function implements the teaching / learning process aimed at promoting the human, cultural, civil and professional development of pupils on the basis of the aims and objectives set out by the school-based ordinances defined for the various orders and grades of education.

2. The teaching function is based on the cultural and professional autonomy of teachers; It is performed in individual and collegial activities and in participation in upgrading and training activities.

Art.27

1. The professional profile of teachers consists of disciplinary, psycho-pedagogical, methodological-didactic, organizational-relational competences, and correlated and interrelated research, documentation and evaluation, which develop as teaching experience, study and systematization of teaching practice is gained. The content of the professional performance of teaching staff is defined in the overall objectives pursued by the national education system and in respect of the courses outlined in the school curriculum.

1.2.2. Professional Profiles and Competence

The debate on the enhancement of the teaching profession and career development in Italy began in the 1990s and has become more and more intense with the attribution of autonomy to school institutions since 1999 (DPR 275/"99). In this context, from a distributed leadership perspective, the Headmaster, who has become the Executives, needs to delegate and assign specific and differentiated functions to a group of highly qualified and qualified teachers (deputy teachers, staff figures, and instrumental functions to achieve the goals of the Course Programme). We are talking about intermediate figures, strategic system figures for the creation of full school autonomy in a complex organizational context that envisages very different ambitions but always supports of management action. In 2015, Law 107 states that the school leader can identify, within the scope of self-employment, up to 10 percent of teachers who support him in organizational and educational support activities of the school institution, as well as other teachers who will receive assignments from the manager as class, department, laboratory, tutor coordinator etc.…).

1.2.3. Assessment Systems and Quality Assurance

The same law also strengthens school autonomy and therefore responsibility for achieving goals, introduces the valorisation of the profession, entrusting the School Manager with the choice of professors to be rewarded with a bonus on the basis of three dimensions to be rejected in criteria by a three-year evaluation committee, consisting of the chairman, who presides over it, three faculty members, two of whom are chosen by the college one by the board of directors, two parents or one student and one parent chosen by the board of directors, an external member identified by the USR among teachers, executives and inspectors. The committee elaborates the criteria for merit on the basis of: a) the quality of teaching and the contribution to the improvement of the school institution, as well as the educational and school success of the students; b) the results obtained by the teacher or the group of teachers in relation to the enhancement of pupil skills and didactic and methodological innovation, as well as collaboration in didactic research, documentation and dissemination of good teaching practices; c) the responsibilities assumed in organizational and didactic coordination and in the training of staff. The law allocates a special fund of 200 million euros annually starting from 2016 for the appreciation of the merit of the teachers, that the Executive, on the basis of the criteria identified by the Evaluation Committee, appoints, annually, to the teaching staff a sum that rewards the quality of the work.

1.3. Teaching digital skills

1.3.1. Main and most interesting experiences in the field of training teachers' digital skills

With regard to professional development through in-service training, it is interesting to note that the percentage of Italian teachers participating in training initiatives is lower than that of our partner countries in Europe, and in recent years the gap has further expanded, as well as the very limited proportion of teachers who received feedback on their didactic activity. The TALIS 2013 survey shows that only 75% of I grade secondary school teachers have been in service training against an average of 88% among the countries that participated in the survey, as well as 57% of the teaching staff who received feedback on their didactic activity (as opposed to 88% of the average of the participating countries) was very limited. Also in the case of second grade teachers, similar data is available. Only 76% of teachers carried out professional development activities against 90%, an average of the 10 OECD countries in which it surveyed, and only 55% declare that they have received feedback against the 83.8% reported in all participating countries. It is also necessary to consider the very high average age of Italian teachers, which suggests, however, to offer training opportunities for all generations of teachers, having regard to the different profiles of skills, previous experience, and different phases of the life cycle (the first 10 years of service are different from the last 10), to possible areas of criticality. Continuing education is an integral part of the teaching function (Articles 26 and 29 of the CCNL 2006-2009) and now law 107/2015 (The Good School) recognizes and strengthens this principle, corroborates some rules of operation, inserted in this Plan, and gives it financial resources.

However, it is not only the single teacher, but rather the whole set of tears which characterise a school or school system and determines their quality. The professional capital of teachers is the immaterial resource that makes a school great and its paradigm is the collaborative professional culture. This awareness is strengthened, in practice, by three tools: The Triennial Plan for the Training Offer, the School Improvement Plan and the Self-Assessment Report (RAV in Italian). First, it is the same Law 107/2015 to recognize that participation in training operations, with a variety of possible choices, must refer to the school community, specifically in the Triennial Plan of the Training Offer, which should include within it the anticipation of the training actions that the institute undertakes to design and implement for its teachers (and for all staff), in a differentiated form in relation to the needs detected. Secondly, there are tools for linking the systematic design to the training operations within the school to the priorities and the improvement goals of each institute. The Self-Assessment Report (RAV), which each school has created and updated, identifies the goals of improvement that, accordingly, each school community intends to achieve in the next three years. The RAV internal analyses are the starting point for the Improvement Plan and RAV identifies training as one of the 7 process areas on which a judgment is made about the institution and one of the project goals that the school can point and define to achieve the results. The plan of each school must consider staff training as a lever to successfully pursue the Institute's development and improvement strategy.

The full creation of the organizational and educational autonomy of schools represents the strategic horizon foreseen in Law 107/15 in order to achieve qualification, development and fairness of our educational system.

The autonomy entrusts individual and networked schools with the task of interpreting these goals through the elaboration, implementation and verification of curricular design (referring to school, disciplines, classes, pupils). This implies a proper rethinking of traditional teaching and teaching methods. The flexibility spaces foreseen by the new regulatory framework arise in classroom life, in building innovative learning environments, in the ability to involve students, in taking care of school functioning, and in relationships with parents and communities. Only in this way autonomy expresses the ability of each school to take on the responsibility of the essential training tasks entrusted to it. In view of the ability to use the staff in a functional and integrated manner, the training should enable the enhancement of the various professional skills, specific specializations, attitudes and motivations. These insertions must be accompanied by a specific training focus, which goes beyond the disciplinary knowledge and is geared towards the preparation of faculty figures with particular functions that are related to "professional profiles".

Refer to Article 1, paragraph 12, Law 107/2015, "*School institutions predispose, by October of the previous school year preceding the three-year reference period, the three-year training plan. The aforementioned plan also includes the programming of training activities for teaching and administrative staff, technical and auxiliary staff*" And, moreover, in paragraph 124, as far as the faculty is concerned, the law writes: "*In the context of the duties related to the teaching function, in-service teacher training is mandatory, permanent and structural. The training activities are defined by the individual school institutions in accordance with the three-year plan of the training offer and with the results emerging from the plans for improvement of the school institutions provided for by the decree of the President of the Republic on the 28 March 2013, no. 80, on the basis of the national priorities set out in the National Training Plan, adopted every three years by decree of the Minister of Education, University and Research, after hearing the representative trade union organizations of the category".* Mandatory, permanent and structural, three "heavy" adjectives that change the relationship between teachers and the profession, seen here as a constantly evolving process, to be treated according to needs that intertwine, among those of the person who carries out a profession and those who come from the environment.

In-service training represents, ethically and legally, the essential prerequisite for individual professional development and the entire teaching community, as well as a priority objective to be achieved by 2020 in the European area of education and training, identifying in the teaching body the key resource for improving the quality of educational systems in Europe. As indicated in Law 107/2015, from 2016 the Italian education system also aligns with the best international standards by making continuous professional development of teachers a permanent strategic goal. Training is a professional duty rather than a contractual right. Individual teachers are required to include in their professional code of conduct the care of their training as a personal choice, even as a result of the status of a public employee. The Personnel Training Plan, as an act adopted by decree of the Minister of Education, University and Research, defines the priorities and the financial resources for the three-year period 2016-2019 and outlines, starting from the school year 2016-2017 (also taking into account the training initiatives launched in 2015-2016), a strategic and at the same time operational time framework to support in a transparent, innovative and effective way a concrete policy for the growth of human and professional capital of the school. The Plan, in addition to directing the design of schools and faculty, takes on the role of addressing the training proposals of the central and peripheral administrations so as to make the training interventions coherent and systematic and create virtuous synergies between possible choices and available

resources. The training objectives are: a. Personal and professional growth goals of the individual teacher; b. School improvement goals; c. Strategy for the development of the entire country. First, the continuing professional development system allows you to strengthen and enhance the teaching profession, giving further recognition to those who work not only in their own training, but also for growth of their colleagues. Secondly, this system inevitably looks at the career prospects of the professors in terms of the structural legitimacy of the activities carried out. The Plan is an informative and strategic prerequisite for addressing the theme of career enhancement of teachers. Thirdly, a professional development system allows documenting, through devices such as the professional portfolio and the professional development plan, the gradual refinement of skills, attitudes and expertise of the faculty to give an overall representation of the teaching function.

1.3.2. Main and most interesting pedagogical adopted models in teachers' digital skills

Lifelong learning is a fundamental element of teaching professionalism, in the context of institutional quality, improvement and equity objectives, entrusted to our country's education system. In-service training is not a formal or contractual fulfilment, it is a professional choice that allows broad cultural, design, teaching, research, freedom of teaching and scientific innovation. This dimension therefore suggests the creation of a continuous professional development system, a "diffused" learning environment qualified by a variety of cultural opportunities for training: courses, community practices, journals, publications, associative experiences, research proposals, and academic activities. To do this and to achieve the goals associated with an effective decline in training in the field of teaching, the starting point is the adoption of "professional standards". As is the case in many educational systems around the world, it is necessary to link the teacher's continuous professional development goals to clear and defined professional standards. Also, through an analysis of the main models proposed at international level and as anticipated by Ministerial Decree 850/2015, the following areas of professional development will be considered as the starting point:

1. Possession and exercise of the cultural, disciplinary, didactic and methodological competences in relation to the objectives of the competence and the learning objectives envisaged by the school ordinances;

2. Possession and exercise of relational and organizational skills in relation to the best management of teaching and learning environments;

3. Participation in the organization of school, collaborative work on the network, also ensuring coordination and animation functions;

4. Care for their own training in the form of teaching research, documentation, reflection on practices, dissemination of experiences of excellence.

The attainment of adequate standards makes it indispensable to introduce tools that can accompany the career path. MIUR will make an on-line system available in which each teacher will be able to document and reorganize their "training and professional history" by building their own professional portfolio.

The macro areas on which the plan is based are:

1. Area of expertise related to teaching (didactics) a. design and organize learning situations carefully with the relationship between teaching strategies and disciplinary content; b. use appropriate strategies to personalize learning pathways and involve all students, develop paths and educational environments with personalization and inclusion; c. Observe and evaluate students; d. Evaluate the effectiveness of your teaching.

2. Skills area related to school attendance (organization) e. Working as a peer group and favouring its constitution both within the school and between schools; f. Participate in the management of the school, working in collaboration with the executive and the rest of the school staff; g. Informing and involving parents; h. Contribute to student well-being.

3. Area of skills related to training (professionalism) i. To examine in depth the duties and ethical problems of the profession; j. Maintain continuing education; k. Participate and promote research paths for innovation, also by taking care of documentation and portfolio.

Law 107/2015 identifies some of the priority objectives that, in order to be achieved, require specific actions at national level. In particular, it refers to methodological innovation in all its forms and connects to the new environments for the learning and use of teaching technology. Training of school staff on digital skills aims to ensure an effective and full correlation between didactic and organizational innovation and digital technologies. In this context, the Plan is the main tool for implementing all actions of the National Digital School Plan, based on the principles contained therein.

Other areas of intervention identified and on which the national education system is expected to work in the next three years are: foreign languages with the aim of raising the level of language-communicative skills of students, with particular attention to the CLIL methodology; opportunities for curricular, organizational and didactic autonomy; acceptance, aimed at inclusion, as a "daily" way of managing the classes; the culture of evaluation and improvement; the school-work alternation and the relationship between school and the outer world.

1.4. Final considerations

The training of teachers for the acquisition of digital skills is a problem that has never been dealt with in Italy, unless the above-mentioned projects and the Digital School Plan and PON Fortic reserved for the southern regions are excluded. The acquisition of skills in this field has been left to the free initiative of enthusiastic teachers' groups, who have sought to overcome the forms of spontaneous self-reporting, often denouncing the difficulties of connectivity problems and the lack of instrumentation at school. As a result, skills and abilities have spread like the spots on a leopard, under the thrust of curiosity to learn how to use tools that were gradually becoming widespread also in everyday personal life, but often without that there were significant impacts in teaching. The *Survey of School: ICT in Education 2013*[3] of the European Commission, which describes the backwardness of the Italian school compared to that of other European countries, is useful in tracing the picture.

Often, the limit of training and self-training initiatives has been to focus on acquiring technical skills, focusing on

[3] https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/KK-31-13-401-EN-N.pdf

the use of digital tools without reflection on their didactic effectiveness. To this, we must add that the international analysis of the results of teaching through technologies has shown that the use of technology does not automatically create positive innovations on a methodological level, also by witnessing the persistent primacy of the transmission approach. Bearing in mind that good or bad teaching can be done regardless of it being digital, one of the goals of teacher training should be to help them identify the significant and non-superficial uses of the technologies.

The foregoing considerations lead us to say that there are currently no coded and validated teacher training models for acquiring digital skills in Italy. Even the current strong investment in education, following L.107/2015 and its National Digital School Plan[4] together with the most general National Training Plan[5], are already announcing weaknesses in the implementation of a model of teacher training digital skills. In fact, the initiatives funded in the different territories, thanks to the funds allocated to the leading and territorial training divisions, although designed on the basis of a general vision that was entrusted to the reference document, are strongly affected by the lack of overall coordination and a first stage of training of trainers on common lines and on the basis of centrally validated materials. The risk we face so far is that a wide variety of paths are being made, different in terms of content and methods, but not all of them at the same level of quality.

[4] http://www.istruzione.it/scuola_digitale/index.shtml

[5] http://www.istruzione.it/allegati/2016/Piano_Formazione_3ott.pdf

2. Description of the national survey results

2.1. The main issues emerging from the focus groups

2.1.1. Introduction

In Italy, three focus groups have taken place: in Genoa, in Bari and in Rome, during March and April 2017. Twenty seven headmasters and one teacher have participated to the meetings.

Focus groups have been focused on the integration of ICT and the competences linked to this integration.

They have been conducted by Mario Pireddu (researcher of University Roma Tre) and organised in three different phases: an opening phase, a question phase and a closing phase.

The opening section has considered an introduction to:

- the project DECODE: objectives, contents, partners;
- the survey description of the second intellectual output: national research about *"Innovative training models, methods and tools for teachers in the digital age";*
- a brief presentation of the focus group method;
- the presentation of the project members (name, institution of origin, role).

The results of the different national qualitative researches consider a comparative analysis and a transnational report with the main findings pointing out similarities and disparities among the partner countries, about some relevant topics:

- ICT based Education Model;
- ICT Integration School Action Plan;
- Recommended ICT tools;
- Quality framework and evaluation of the ICT integration in education;
- Guidelines for Teachers and Education Agencies.

Principal aims of this training model will be: to enhance digital competence of teachers and its use in teaching practices and to help teachers improving their digital competence with a Project Based Learning methodology.

Digital competence is a set of knowledge, skills and attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socialising, consuming, and empowerment (Ferrari, 2012).

An introductory reflection has highlighted as the aim of the focus group has been to involve participants in a guided discussion on core themes of the research project: train to reach a global vision of ICT integration and teachers competences in the school system.

The second phase of the focus groups has been committed to the survey questions.

A first step has been committed to the presentation of participants. They have been chosen as people who have central and different roles within the institutions in which they work.

Researcher has invited them to introduce and describe their role and the school in which they work.

2.1.2. Innovation and digital revolution

As introduction reflection about the themes, the questions that have been asked are:

1. *What is your idea of school innovation?*
2. *What is innovation in your work context?*
3. *In what way digital revolution, also regarding the challenge of artificial intelligence, can modify learning and school practices/activities? (Focus mainly on digital competences and student's needs in the digital era)*

What is your idea of school innovation? What is innovation in your work context?

Innovation as technology use

It is important to understand what kind of technology is useful in a difficult contest as education (today, "teachers are in a barricade").

Innovation in didactic approach

Innovation has to be methodological and it is crucial to change perspective:

- ICTs are tools to help to work in different ways (coding, etc.);
- didactic approach has to be modify (for example in space organisation of classrooms, in the use of didactic methods - face to face lesson can not be the only way);
- a pedagogical revolution has to be encouraged: the new approach is learner-centered and not discipline-centered;
- a different mental and cognitive approach is necessary.

Teachers have not to change all the didactics, but they must learn to use ICTs as a helpful tool.

An organisational aspect is very important: today it is crucial to go beyond the traditional difference between curricular and extra curricular activities in our schools. They are all important to reach significant learning results, the second ones should be considered the first ones are. In Italy, the introduction of the device of "work-related learning"[6] goes in this direction: it represents an extraordinary opportunity. It permits to unify the knowledge and

[6] Work-related learning (in Italian: alternanza scuola-lavoro) is a didactic methodology of the Education System, which allows students

the skill to do.

Innovation in administration issue

From an administrative point of view, using digital tools can help in reviewing traditional procedures (ICTs are a stimulus). They are electronic booklet, school web sites.

Innovation and training

Innovation needs training for teachers: if the quality of the training paths is poor, teachers move away from the idea of innovation.

Technicians are more ready to adopt digital transformations.

Innovation as vision

The ethical dimension of using technologies has to be considered (for example, the LIM used to see movies is not ethical, interactivity needs to be encouraged).

Innovation arrives when something is no longer working. For some teachers there is no need for innovation. The paradigm shift occurs through tools: there is no shortage of information as before.

Crucial aspects are:

- knowing how to observe and to monitor changes in the context and to consider them, without overturn what exists;
- knowing how to use something new to give answer to emerging needs, without giving away traditional approaches that guarantee continuity and roots.
- the skill to understand reality, increase the value of what works best and to have the flexibility of change: innovation is promoting thought flexibility, opening yourself to something different.

Learning is in itself innovation, we are in a process of constant change. The process does involve not only students, but also teachers.

If school can promote these attitudes, innovation will come by itself.

Innovation is opening yourself to new knowledge. It is necessary to be open to innovation, but it is also necessary to active a “pedagogical filter”: the use of new communication devices is widespread and there is the need to develop critical skills in order to better know and discern. It is crucial to deal with communication, both from the user's and from the producer's points of view.

Among opportunities for ICT innovation, there is the possibility to create teachers practice communities and networks. It is necessary to oppose the isolation of teachers and adopt a systematic approach.

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who are more than fifteenth years old to undertake the second cycle studies also by alternating periods of study and work (http://www.indire.it/scuolavoro/index.php)

Innovation and political dimension

Today, our schools use different available methods and tools, but a level of criticality still exists: in spite of all the efforts for the development of training opportunities, we are stuck on traditional methodologies. A methodological innovation process has to be introduced permanently: it is possible to start with some disciplines (as story and philosophy) and then extend it to other matters. For example, participation in European projects are very important to promote innovation in developing new ways of thinking and for the adoption of new practices.

Maybe, in Italy, the theme of interculturalism has more attention than the digital innovation one.

There are differences between "istituti comprensivi"[7] and other kind of schools. In the "istituti comprensivi", there is a real change when teachers are able to use technologies in a useful way (with easy-to-use methodologies, in order to avoid school dispersion).

In what way digital revolution, also regarding the challenge of artificial intelligence, can modify learning and school practices/activities? (Focus mainly on digital competences and student's needs in the digital era)

In Italy, the DIGITAL SCHOOL National Plan has represented a great innovation. If it would have application, it would be a real revolution.

The AD ("Animatore Digitale") is the hub: he is probably the figure who has in mind the didactic innovation, with the set of necessary relational skills. Following the course he really will make possible for teachers to become facilitators, without losing anything in the accuracy of teaching and learning.

There are some difficulties in recruiting people as AD and as participants in groups on digital innovation.

Methodology is necessary to use ICTs: tools are present (such as LIM) but they must be used in an appropriate manner.

An important aspect is the equity: Home and Hospital Education is a great opportunity; ICT as helpful tool with BES and to struggle school dropout (because a good use of them can make school more attractive).

The impact of ICTs on these aspects is fundamental.

The direct relationship with teacher has not to be canceled, but arranging supporting materials for recovery and enhancement can be a real and good opportunity.

The ICTs use has value also in the field of guidance didactic and the promotion of school-work alternation.

[7] In Italy, the ISTITUTO COMPRENSIVO is the aggregation into a single functional structure of nursery (3-5), primary (6-10) and secondary (11-13) schools of a same territory, which have the same headmaster.

The introduction of ICT is crucial to restore order and discipline: it is also important to highlight the problematic issue linked to the use of ICT; it is important to work on critical aspects and active and aware use of ICT.

There is a chaotic situation and a there is a need to reconstruct and reestablish the order.

Today, it is necessary to develop a real meaning for using the digital tools. Teachers can help students to find the sense of what they do with them.

School should be an opportunity for students to challenge the chaos.

Technologies need to be well-used: that is to develop the sense of conscious use of these tools.

2.1.3. New competences for good practices

About the theme of *competences and best / effective practices,* the questions that have been asked are the following.

Based on your personal experience, which are the competences for the twenty-first century citizen that schools can help develop through the integration of ICT?

Resistance and resilience

Two important aspects emerged: school as competent and resilient organisation and the necessity to consider ICTs in education practice.

School is a very complex and very resilient organisation: it has many antibodies, which prevent changes based on temporary trends. School prevents this kind of changes. Some tools or practices are temporary and school cannot change constantly on their basis.

Needs have to be oriented: it does exist a necessity to give answer to needs, but it is important to solicit needs, too.

School is the last bastion of education. Cultural resistance is alive at school. We need to fight the loss of values. We have to be more and more equipped to let the new tools coexist with pedagogical attitudes. Anthropological change is very strong: memory and analytical intelligence are set aside and that is not a good solution.

Learning process is enhanced by the exchange of experiences between teachers and students.

Ethic of social media

Today, it is crucial to fight cyberbullying. Latent and creeping violence can lead us to live in a double reality: at school all seems quiet, but if we could read messages of boys and girls, we could understand there is a parallel world. There is a world of latent violence. Violence is widespread at social level and technologies can be the antidote, because they are very strong and invasive, in social practices.

Integration between formal and informal competences

Digital skills are among the 21st century skills.

However, school has to use fast tools to educate boys and girls to *slow thinking*.

Coding and programming as a mandatory matters: it is crucial to teach to program, in order to learn, to reflect and to be aware.

Imposition from high levels is always very difficult to accept, the process becomes very slow.

Teachers have to be part of the change.

A lot of resistances still exist: there is often a resistance to change, but this is also useful, as antibody of sudden changes, sometimes not important and useful, but fad-driven.

Key competences are:

- Problem solving
- Creativity
- Critical sense
- Autonomous reflection
- Selection capability
- To learn from mistakes
- To know how to find divergent solutions
- Digital competence
- To offer an ethical orientation

Resuming Prensky (2011), [with a joke], teachers are often "digital deportees".

Based on what has just emerged and on your personal experience, which are the best practices (in ICT integration) already existing in schools in your region? (specify name of project, school, URL, contact details). What makes them best/effective practices?

They are:

- Robotic school with CNR projects: students have relevant experiences with problem posing and solving
- eTwinning projects: which foresee the use of Skype to communicate with foreign students in English
- Use of LIM: they are utilized to create conceptual maps in scientific experiments
- Use of supporting materials on web
- Intelligent use of technologies as Gsuite for Education.
- School apps to inform students and parents (at the level of household communication, the electronic register has simplified the relationship with families)
- Online blogs
- E-learning platforms
- Construction of 3D prints
- Technologies applied to BES learning
- School-work activities

- Flipped classroom method: during a summer, an innovative project was developed by a school: students have teach to old people to use PC, an opportunity to reflect on something they had never considered.
- Increase slow thoughts by submitting new projects
- Citizenship competences need to be increased, in relation to digital tools, too

What is the level of transfer of these good practices, what facilitates and what does restrain them?

There is an antagonism between didactic projects and the program. The "work-related learning" shakes the cards.

We are at the beginning of a process of innovation: sometimes the formative or educational value of certain experiences is not recognized.

Sometimes families are more resistant to changes and kids with BES (special educational needs).

Today the challenge is to prepare a path where it is possible to ask students to co-design the didactics.

It is hard to archive experiences: there is no memory of what schools do. Good or best practices are not presented as cases but as normal practices. There is the need to systematize practices and disseminate more about what is done. The danger is that there is no recognition of an innovative potential in these practices, if they are not seen in a systematic approach.

Dissemination of good practices is helped by teachers networks and training courses, which allow meeting of teachers coming from different regions, exchange and sharing. But this training has to have clear objectives; it is crucial to develop competences on *learn to learn*, motivation, and innovation in didactic practices (far from transmissive teaching approaches based on the broadcast metaphor).

Self-training and self-education facilitate. It is important to work as “avantgarde” and not self-referential groups; students can become class mentors and tutors.

The lack of training opportunities represents a big restraint.

2.1.4. Professional development

On professional development, the questions that have been asked are the following.

Which are the main competences that teachers should have in order to carry on the best/effective practices mentioned before (referring also to digital, methodological and socio-relational skills)?

The main competences are:

- relational competences (characteristics of individuals that facilitate acquisition, development, and maintenance of mutually satisfying relationships);
- social competences (a set of positive social skills necessary to get along well with others and function constructively in groups, including, a) respecting and expressing appreciation for others; b) being able to work and communicate well with others and listen to others' ideas; c) demonstrating context-appropriate behaviour that is consistent with social norms; d) using a range of skills or processes aimed

at resolving conflicts);
- communication competences (they refer to the knowledge of effective and appropriate communication patterns and the ability to use and adapt that knowledge in various contexts);
- to be able to develop a divergent thinking, also with the students;
- to be able to recognize different cognitive styles, because intelligences are very different and all students need to be valorized;
- to be able to be empathic with students:
- team working.

Based on your personal experience, what does help and what does restrain the acquisition and the effective use of those competences? Focus on organizational and educational aspects: bureaucracy, logistics, timing, training models and pedagogical teaching methods.

What helps:

- To create relationships and networks that can engage people
- To work in a relaxed climate
- Transversal competences development
- Renewal should not be related only to the School headmaster
- To know how to teach to collaborate (ICT as an attempt to find ways to collaborate. There is a national cultural lag on this issue)
- National guidelines have - fortunately - eliminated the traditional "teaching programme"
- Sharing capabilities (experienced people that act individualistically do not help to create groups; it is also useful to start with small groups and then expand the practices)
- Good training opportunities
- To invest in new hires

A new statute is needed in the recruitment of teachers.

The idea that the foundations of a discipline (useful for the formal titles) cannot longer go..

What restrains:

- Resistance and individualism inhibit the spreadof skills (typical sentences are: "I have always done so", "freedom of teaching")

2.1.5. Pedagogical issues

Which are the pedagogical aspects more connected with the integration of ICT in school practices?

Development of:

- Memory
- Manual skills
- Multitasking competences
- Awareness of new opportunities
- Cooperative learning methods

- Learner centered approaches
- Incisive approach
- Critical approach
- individualisation VS socialisation

Learning is changed: today it is really everywhere and always (lifelong and lifewide).

ICTs are tools for:

- Mediation and encouragement for learning
- Encouragement for stronger motivations to learn
- Empowerment
- Support for all, not only for students with difficulties
- Developing the research skills
- let students become the protagonists of their own learning
- Supporting active didactic and discourage merely transmissive methods

There is a crucial change in the relationship with knowledge. Schools has not any more walls or schedules. Information access is “always and anyway”. But it is important to remember the competence at the base of this change: to be able to use tools to learn to evaluate in a critical way, to read and understand reality. School offers - and must offer - this kind of tools.

Risks:

ICTs have not to be tinsels, tools used to adorn and decorate old contents.

Objectives:

To develop responsibility, autonomy and auto-regulation.

How do you keep yourself up-to-date in order to acquire the mentioned competences?

The main utilised methods are:

- self-learning
- training courses
- professional communities and networks
- resources sharing
- relationship with other headmasters and teachers

The main involved attitudes are:

- curiosity

Some teachers highlight that it is very difficult to go after so rapid changes and sometimes it is really difficult to find efficient strategies to up-to-date ourselves. But teachers are constantly connected with students and with daily reality and it helps.

They search, ready and study different kind of printed resources (articles, books, professional magazines/periodicals) or available on the web.

Some important websites - of national associations or institutions - are constantly monitored.

Peer learning is very important as the participation in online communities to exchange experiences, reflections and doubts, for example on some social networks.

Finally, training activities are very useful.

Have national policies for education helped in recent years the development of teaching and methodological innovation through ICT? Can you give some examples?

They have helped the development of teaching and a methodological innovation through ICT, they have been useful especially for headmasters. Nevertheless, they have helped less than they should have to do.

The PNSD (National Digital School Plan - *Piano Nazionale Scuola Digitale* in Italian) has a correct system-based perspective. But some relevant criticalities arise in the way it has been carried out.

Many obstacles - of different type, especially from a political point of view - still remain and slow down changes. Some of them are:

- administrative problems: they refers to commitments, time/schedule, "bureaucracy", which gets slower projects development;
- absence of school networks;
- absence of adequate fundings, for example for Digital Animators;
- absence of adequate training programmes for teachers;

Several actions are often developed in a disorganised way and this is an element of less efficacy: expected results are of less quality and their impact is not clear.

Many actions take place, but a greater continuity in the political approaches should be opportune.

2.2. Deepening interviews

2.2.1. Introduction

Interviews with key actors aimed to systematically reconstruct the institutional process regarding the challenges that ICT puts into the school system. The interviews were conducted using the template shared with the partners, during the IO1 implementation (Annex 2). People involved are very interested and knowledgeable about research topics. There was significant readiness to listen and discuss. The topics addressed during the interview focus around seven central issues:

- The most important challenges faced by the national education system
- The theme of skills to teach in the digital age
- The presence of good practices

- Education policies and areas of major investment
- European guidelines
- The most important problems encountered in digital development processes at school
- The most important changes detected.

Below we describe the most important results of the interviews conducted.

2.2.2. European recommendations and current national policies

Policies related to the Digital Agenda in Italy are in line with European programs. Among the most important intervention lines, which are also of interest to the school, are the National Broadband Plan and the Digital Growth Plan which are two synergic strategies for pursuing the goals of the European Digital Agenda 2020. Another important objective, which the Italian PA is investing in, in line with the European dictum, refers to the definition of a framework of digital skills for orienting the systems.

The mission of Digital Italy Agency (AGID) is to manage the implementation of the Italian Digital Agenda's objectives, in coherence with the EU Digital Agenda

Among its various tasks, with regard to the European Framework for Digital Competence, AgID has implemented the Digital Quality Guidelines for ICT skills, which define six profiles for six different professional areas, as required by the labour market development. These guidelines give the administrations, strategic and operational guidance on the use of new professional figures in relation to the standardization of skills and competences required and the integration of the provision of professional services within ICT service contracts. These Guidelines are part of the cataloguing process of professional ICT profiles that led to the production of the UNI 11621 standard by UNINFO, the National Standards Institute for Computer Technologies and their applications. The standard, which first established Europe's specific skills in ICT, defined "Unregulated Professional Activities", Professional Profiles for ICT.

"In Europe there are 12 years of technical and scientific committees dealing with ECF and Italy has become one of the first European countries to become the ECF UNI standard. Now you are working to make it a European norm. We have had the idea of respecting a series of indications for the individualization of these professionalisms that become real guidelines "(int. 5).

The theme of competence transcends the world of school because it invests transversely throughout society and the economic, productive and cultural system.

Digital transformation invests in all sectors and the professional figures working in this field play more or less the same. These guidelines become a useful document to draw in order to identify the professional figures and their specific functions and competencies.

These LGs become an essential reference point for all public administration (so also for the schools that are part of it) and for private companies in recruiting and evaluating ICT profiles and skills. For example, they can represent an important device when you need to locate a resource and make an internal call because detailed knowledge and skills are associated with the various functions.

"If I look for a figure for managing the website ... the description of the figure is this, the mission is this, it resumes under the guidelines issued by AGIL and you can locate specific profiles" (int. 4).

But if this may be true for technical figures, perhaps for schools the problem is more complex and requires not only figures with technical skills, but concerns a transversal problem that directly involves the teaching professionality and the methodology of teaching. Before making the definitive guidelines, AGID proceeded with their public consultation, a fairly innovative approach to the Italian administrative system. However, despite the free consultation left open for two months there has been no major response from civil society and industry institutions. Perhaps there was not enough prior awareness, the fact remains that *"people don't answer, they don't know, they don't have time to go to the website. The website of consultations has an internet address that nobody knows"* (int 4). In this regard, it is important to consider the difficulty of public administration to communicate itself and its activities, especially if they propose non-standard innovations and procedures.

"The problem of public employees is to do things thinking it's the best possible. We always think – it's my experience with the municipalities - that if we have to write this manual, it is well written in Italian, it has beautiful colours, I understand all the news, all the information [that's enough] is amazing. But in the end, people do not read it. We've put it here in there, including the Guidelines, because nobody retires. We have published them these days online on the government website for public consultation but people are not responding. Nobody knows, or does not have time to go to the site and even more often the citizen lacks the notions ... to be able to read this "(int. 4).

Another item that transversely affects the school, and which is heavily involved with AgID is the promotion of digital identity through SPID. SPID (Public System for Digital Identity Management) has been designed in accordance with the eIDAS Regulation, and is one of the cross-cutting initiatives of the Digital Growth Strategy 2014-2020. In order to promote the dissemination, it was attempted to create a positive synergy between this action and L. 107/2016 (Good School) which obliged all teachers and students who reached the age of majority to activate this function to be able to spend the voucher of 500 € assigned to them. Despite significant investments on this front, the penetration supposed between teachers and students has not yet been reached. This is a big challenge and it is not yet possible to say the outcome it will have.

2.2.3. National policies for ICT and innovating education

In Italy, the school's digitalization process has developed through three priority steps. The first phase was initiated by the ex Minister Profumo who has set up an internal analysis to verify the state of implementation and digital penetration in the school. The second phase is based on this first analysis. The outcomes of this reconnaissance highlighted that the experiences were very fragmented and this would required a very heavy investment in technology, at the same time it would take a long time, it would have been a very long and costly process with the risk of being always in arrears. With the first PNSD (National Digital School Plan), the second phase was launched which aimed to define a very net investment line. The primary goal was to lay the foundations, build the information portal, provide schools. Law 107 started with the third phase and was attempted to make a cross cutting investment where digital was present in all the actions, to accompany the

innovation process in the school. This intervention was based on three essential pillars: investment in infrastructure, skills development and digital culture and investment in people, that is, training and accompanying teachers.

To date, it can be said that many initiatives have been activated and many actors in different ways converge on this ambitious goal. (int. 4). The most important challenge nowadays is the ability to make a system, build networks, so as to coordinate and promote mutually beneficial fertilization. Although from different perspectives, listening to the various respondents, it emerges that today the most important function of public institutions involved in the digital innovation processes is:

- the design of system actions;
- the revision of administrative logic capable of overcoming sectoral perspectives;
- the definition of the necessary digital framework to which the evaluation topic and the related certifications are to be followed;
- the promotion of a diffused digital identity/culture capable of expressing a conscious and responsible citizenship.

Talking about designing system actions means that public institutions are able to define (and implement) addressing and coordinating actions that are capable of creating territorial and transversal synergies so as not to disperse the many resources (human, professional, and economic) in the field. In fact, many resources have been invested in the school (also through the PONs), but not always these investments have brought the expected results. The risk associated with the implementation of complex interventions is that *"many actions need to be" pre-organized "by central and / or peripheral institutions, for example through awareness-raising, networking and accompanying systems, etc.* "(Int. 3). Unfortunately, in the public institutions, the biggest innovation projects are unrelated to staff turnover. Unfortunately, in the public institutions, the biggest innovation projects are unrelated to staff turnover. And with the shift of those who promoted the change is lacking who guarantees address, continuity and accompaniment, with the consequent slowdown or blocking of the innovation processes started. The following testimony is evident in this regard:

*"[There was a need for] a line of direction and not being abandoned to themselves, because whoever launched it, or omissis [...] left that role there and therefore there was no longer a role Direction and accompaniment, and it has ended up in a great ... - everything that had been laboriously built was lost "(*int. 3).

In this sense, the challenge overlaps the educational policy system to invest the whole public administration. In fact, reviewing the administrative logic with regard to the idea of accompanying means overcoming a typically bureaucratic vision based on a policy and sector policy intervention that concludes with the promulgation of the law to understand the strategic importance of accompanying actions and technical assistance for the practical translation of the norm. Because " it is at this stage that leaves ample spaces of interpretation and unpredictability, even in relation to contexts, that "innovation can take place" (Int. 2).

Reviewing the administrative logic in this sense means re-orienting the public administration model, to be able to overcome stiff division of departments and territories to foster integrated, multi-level, multi-dimensional policies. In fact, dealing with complex problems, as well as the challenge of digital, requires the activation of joint efforts and broad consensus.

This is a radical innovation that invests the way in which programming is planned, with the aim of building alliances with other actors who, in different respects, co-operate on the same goal as the territories, to converge on common goals and priorities. It is a complex issue if you consider the set of technical skills, functions, cultural differences and the variety of internal administrative rules you encounter when moving to territories or negotiating shared solutions with different institutional actors.

"*This is something we have tried to do at the ministry, but it is difficult because it requires the will of the region. It's necessary the territory say that if I have to put 10 teachers in the office, I put them on digital. [...] is a matter of priority. [...] But if there is no will on the part of the territory it is difficult to give this impetus*" (Int. 3).

Also the accompaniment function is closely linked "because it is useless, schools do not do it alone. It takes a guide, if I need to find the expert of ... someone who helps me and the others [who wants someone to orient and provide competent support] (Int. 3).

This is a big problem investing in the way of conceiving and writing the calls "to change the way the calls have always been made, which means changing the public administration. However, it can be said that it is not only an Italian problem, perhaps above all, but it is also European. The writing of the calls never allows for the provision of accompanying functions and actions. While innovation develops within fertile and reciprocal cultural spaces, it is very important to find the right ways to 'cultivate practice communities'.

2.2.4. Digital challenges for national education system

Compared to the challenges that the education system is facing, despite the diversity of perspectives, the witnesses interviewed broadly agree on the essential issues that characterize this time of transition and which can be summarized into three main categories which are closely interdependent..

The first element of attention concerns the infrastructure dimension. All national and international research, as the witnesses recall, underline the Italian gap on this point. A delay that in recent years, with the various interventions implemented in this field, has been attempted to overcome. However, the improvement of the infrastructure system is not the responsibility of the MIUR but of other institutional bodies: "the digital world is a key area of the central and local public administration, which if it does not invest, does not make innovative projects, it leaves to squeeze the market for years, have no ability to make projects, while it is necessary to make innovative projects "(Int. 5). The prerequisite for any development of the educational system on this issue is related to PA's ability to identify innovative projects of cross-interest on which to converge the efforts of many, but according to some respondents there are some difficulties.

Among the most important challenges the ministry faces, we can remember to put all the Italian schools in conditions of having minimum and sufficient conditions. And since investment in spatial and infrastructural development plans is not the responsibility of MIUR at the central level, it is working hard to promote horizontal integrated policies, involving other departments and vertical ones, in order to share strategic choices with the territories, with 'Goal to move everyone towards common goals. It is on this point, for example, that the MIUR is

currently engaged with the PNSD, still under implementation.

Closely related to this issue is the question of technology equipment and its investments, because the ministry has only resources for ordinary management as one of the institutional referrals highlights.

"*It is not that the ministries have infinite budgets to refine things, ministries tend to have constant budgets to do business. To make an example, the electricity budget is not that much changed, while the budget of technologies or connections, spaces are important investments. This, in my opinion, is a call for the autonomous model, where the schools that do well are those who have entrepreneurial spirit. The school manages to be upgraded much faster than what we think of, and what the times are* "(Int. 1).

It is evident therefore that the theme of technologies and infrastructures is closely related to the political one because it calls for the need to mediate between different interests, needs and visions where perhaps the most weight gains the ability to reconcile logic, rationality, different priority as those that may be of interest to the Department of education and the Ministry of Economy, but also regional calls will to promote and invest in the local development.

*"What was happening in the past was that everyone went a little on their own. Right now, we are working on building a shared policy even at the territorial level, so they basically decide to invest in the same things we invest in. We must not underestimate the fact that we have invented a new policy that the others now essentially adhere to before there was no "(*Int. 1).

From the investment dimension to the educational choices, it is evident that the ability to define the school model, underlying the introduction of digital technologies in the classroom, is very important. The most daring challenge is to define how to help the school to exploit digital technologies for the benefit of training that is capable of forming citizens capable of moving into global and hyper-technology society. The problem goes far beyond the theme of investment in investment, but invests in the crisis of the school-society integration model that requires deep rethinking. Choosing to invest in technology rather than another raises a process that invests every dimension of the educational process, requiring a radical re-design of architectural structures, spaces, sorts, etc. The problem is not only economic but Recalls the need to renegotiate priorities, disciplines, contents, rules of engagement and, consequently, the type of training that must accompany teachers and students, the skills they deem useful and necessary to form, the way they must and can be constituted and related valuation systems etc.

"*For example, in some countries, the digital time has been structured through standard measures, for example in the United Kingdom the digital time has been inserted, but there are also vertical actions in the French school. The European Union spends much on digital skills. We know that we all go in that direction, we are more or less all in the same state, from my point of view, my level of perception is that the goals are those and they are all walking towards that direction* (Int. 1).

In Italy, *"it has been attempting to put the rules into practice and define better the specific objectives, it has been attempted to integrate the training objectives organically, paying attention to the challenges of digital and at the*

same time trying to bring the contents together in relation to the different typologies of address, each of which shows specific needs". (Int. 2). Finally, it can be considered as a further issue concerning the ability to promote and support innovation within the territories and individual schools "*Many initiatives have been taken but the most important challenge now is to give life and continuity to many actions started. The central level ends its propulsive drive in the supply of technology and address equipment "but the innovation and development it needs now needs to come from within, serving the energies, resources and competences of those who School lives and does it every day DS and teachers* "(Int. 3). If you can not start this new phase, the risk is that you have to record the failure of so much effort.

"Many initiatives have been taken but the most important challenge now is to give life and continuity to the many actions taken. The central level ends its propulsive drive in the supply of technology and address equipment" but innovation and development which now needs to come from within, serve the energies, resources and skills that the school lives and does everyday: DS and teachers "(Int. 3) If this new phase is not able to start the risk is to record the failure of so much efforts.

A more complex issue, which traverses the school system, is the need to create a system of certifications capable of recognizing and harmonizing the competence profiles that characterize the digital world. A very complex challenge to respond to the AGID Guidelines. However, the issue of competence certification is an ambiguous and slippery subject, as there is always a risk of stiffening behind the necessary structuring, which leads to the reduction of the margins of flexibility and experimentation, by depriving the autonomy of the school, of teachers and the student's freedom of learning.

2.2.5. Problems in implementation process

The most important implementation problems related to digital enhancement in educational systems and teaching practices are, in some ways, a reflection of the challenges mentioned in the preceding paragraphs and can be summarized in two essential dimensions: the ability to innovate and the limits of the implementation logic.

When the first PNSD was launched, a recognition of the state of technology penetration in schools was made and it was soon realized that an investment in this sector would take too long and a lot of economic resources. Also *"because the technologies quickly become obsolete. For this reason, we tried to favour light and pervasive infrastructures, minimal but widespread and penetrating equipment on the territory. This also to reduce the amount of investment"* (Int. 2), you need to make a choice on the type of investment/ innovation that you are going to pursue: "*either spend on canon or content or pay for new installations . Costs change, but they always remain high but ministries do not have endless budgets* " (Int. 1).

For this reason, it is absolutely necessary to promote appropriate monitoring, evaluation and follow-up of investment in digital innovation in order to avoid what Selzenick (....) describes as 'the risk of escape into technology'. It can produce more problems than it solves. The introduction of digital innovation in a process / context is never only a matter of technology, but brings with it a whole set of much deeper and more complex side-issues (cultural, organizational, relational, identity, power, etc.) Who demand a careful analysis and transition support capability, which is conducive to empowerment processes of people, organizations and

communities involved in change. A useful example in this regard comes from the experience of convergence regions (Apulia, Calabria, Sicily and Campania) where the presence of dedicated funding channels has made it possible in recent years to make significant investments in equipment and training of the teaching staff. In general, widespread perception is that there has not been a significant improvement as the following testimony points out:

"*Over the years there have been equipment but also training but in fact there was no jumping, a break, as you imagined and believed. I'm surprised that there was an investment, there was work, there were tools to work, there was a background but there was no such jump, except as usual in some realities* "(Int. 3).

Compared to the theme of implementative logic we must also consider the adverse effects of many interventions lowered from above, according to a linear, deterministic logic, and unable to read and respond to real needs. This type of intervention, amongst the major unwanted effects, depletes the people, organizations, and territories of valuable resources to tackle the problems encountered constructively. However, there are positive examples that have managed to involve local communities in the practical translation in digital innovation processes in schools, for example, Lombardy and Emilia Romagna, which at different times and in different way, have pursued and achieved the same goal, that of enhancing the local network.

"*Lombardy has a large development network at provincial level because there are Provincial networks that help to develop the various realities. Over the years the school office has invested in people. They have put in all the Provinces a person who followed this theme, even when in the other regions it was cut in the resources allocated. Lombardy is the most significant example from the point of view of the Province; while Emilia Romagna is undoubtedly an example from the point of view of the Region. In Emilia Romagna the territories are very active, the municipality is very active but also the parental committee. LIMs were purchased thanks to the contributions of parents and bank foundations. The first LIM in Italy arrived in Bologna, then realized that nobody used them. But in Bologna in 2005 - when nobody knew what they were - Cassa Risparmio di Bologna Foundation set a LIM in each of the 100 schools in Bologna* "(Int. 3).

Among the problems associated with the implementation we must also emphasize the communication management that characterizes the administrative processes.

First, there is a problem of language that very often appears distant from immediate comprehension and applicability to real contexts. Secondly, the limitation of an informational system, which is connatural to the linear and transmissible logic of the public administration, emerges, where the information can not penetrate and reach the potential interested and concerned recipients, as evidenced by this testimony.

It therefore outlines the need to establish a system of information capable of acting as an accompaniment and action of empowerment of citizens, organizations and territories. A communication action capable of overcoming the traditional linear and transmissive paradigm that has always characterized the PA can embrace a participative and inclusive paradigm that recognizes in communication the main vector of information and change. Moreover, the law on the transparency of communication in the PA assigns this function to a central task in its function of serving the citizen but we are still far from achieving quality standards and habits on this subject. For this reason, the territorial dimension is important: because it is closer to local needs and it has

greater ability to read and interpret its needs, set up initiatives that meet these needs and entertain a fruitful dialogue with the resources and energies in the territory. For example, in Emilia Romagna there has been a real "accompanying group present on the website of the Regional School Office where there are all the initiatives they are doing" (Int. 3).

2.2.6. National specificity that is considered useful to enhance

From all the interviews carried out, there are at least three national prerogatives, which we will try to illustrate below:

- territorial diversity
- polarization of practices
- the question of the rules
- the 'restart' in innovation processes.

Territorial diversity

First, it is to be considered that the degree of digital penetration and innovation is very diverse, "with a leopard spots distribution". The local component characterized by the capacity of the implementation structures to play an institutional leadership role and addressing and coordinating the territory is very important. The open spaces of autonomy with the processes of decentralization to the regions (L. 59/1999) have contributed to highlighting these territorial disparities. So there are regions that, despite the shortage of resources, have invested in this sector and have managed to build a certain sensibility and to valorise and capitalize on the skills and experience gained in this sector. Other regions are lagging behind. The effort thus made through L. 107, which marks the last step in the ministry's intervention to introduce and enhance digital education within educational systems, has tried to intervene precisely on this disparity to standardize opportunities in a widespread and pervasive way . In this line is also moving the search for the definition of territorial agreements in which regions and ministries agree on the lines of action to be pursued jointly.

"*We are signing a lot of agreements with the territories, for co-investment. This also seems a trivial matter, but the creation of territorial partnerships has a very significant value. We generally sign agreements with the regional presidents and metropolitan city monitors and this is one of those things that we are also aiming to multiply the investments of the plan*"(Int. 1).

If this is good on the one hand, the unwanted risk to overcome is to suffocate excellence.

For example, one of the strengths of Emilia Romagna was to invest in empty space left by the centre. "*Being abandoned by the centre has allowed the region to take over the plan and govern it. For several years, the Regional School Office has been pursuing a technology-related policy that is born with the service of the old provincial government in Bologna, which served schools already in '95. Unfortunately, when the National Plans were born these services have lost a lot. It has succeeded in recreating the group following the earthquake because it has been given the opportunity to have detached human resources to accompany the reorganization*

processes and to make substantial funding for the rebuilding of schools." In this sense, the drama of the earthquake has been transformed into an opportunity to rethink the school altogether. "This group started to work to set everything up. Right now I'm a reference if you want a support, for example if you want to work on BYOD, call them, and they come to you for a course, free obviously. There are 7 people and not 200 " (Int. 3).

In order to be able to share digital innovation policies at school with individual territories, with individual regions, it must be assumed that probably "*the only winning thing can be a boost to a model and a valorisation of local autonomy*" (Int. 2).

For this purpose, we have tried to develop an integrated plan aimed at enhancing a multidimensional and multi-stakeholder approach by pushing the territories to participate in the calls through co-financing actions to work with a jointly integrated logic. This push towards aggregating resources and interests is aimed at building intersistemic networks (Granovetter) that represent a significant value for the territory. From what we know, in fact, "*often even when the call was not won, people continued to work together*" (Int. 2).

Polarization of practices

With regard to the polarization theme, one must consider that two quite widespread dynamics are observed. "*On the one hand there is the single innovator, the one who makes crazy stuff in his class and ends up in magazines, conferences, and so on. [On the other side, nothing]* "(Int. 3).

Often those who make educational innovation in a school is isolated is considered "*one who does strange things. There are people who work in classes and the headmasters do not even know it* "(Int. 3).

There are some schools where "*thanks to the will of the few, especially the headmasters, and this must be said*" (Int. 3), it is possible to give a sign of discontinuity to the school.

To counter this phenomenon, one of the most important actions introduced by L. 107 was the figure of the digital animator who was immediately transformed into digital animator team because he realized that the school needed more resources on this side. The discovery of the digital animator allowed to legitimize and bring out a number of figures who worked in school but were isolated, not legitimate. This has allowed to bring to light some of the skills already present in the system.

"The greatest satisfaction was that of giving recognition and legitimacy to these 8,300 people. This allows them to be a reference point for the school. Obviously not everyone was convinced digital animators, are not all innovators but this helps to support the process of enlargement of the base of experimentation" (Int. 2). It is essential to work to create an extended community and share good practices and experiences. For this reason, even if the administration is not in this logic, have searched some 'trick' to facilitate this fruitful dialogue such as, for example, the identification of the polo school; the birthday of the digital animators at one year of their appointment; the organization of conferences where people can share practices etc.

"*We are introducing mechanisms of this type, for example, on digital libraries. At the school that does a special*

project, an additional budget is recognized to coordinate all the others. We try to give economic resources to do this, but it is a mechanism that does not change from one moment to the next. Or we invent the birthday of PNSD in Caserta where we come to all people, the community of animators, let's talk about it, give support, even peers "(Int. 2).

Another interesting attempt is that of contamination of different worlds and languages. To this end, the Ministry "*started working with the video game association for educational purposes, started talking to the youtuber, it is true that it is a language not necessarily more noble but is trying to insert, contaminate the educational system with worlds that are perceived as external, but which are in the natural language of the boys, to shorten the distance between students and school*"[Int. 2]. That distance that has always been recognized in the difference between 'high and low culture' (...).

The question of curricula

As far as the ordinance dimension is concerned, the most serious issue that is currently under discussion and on which the government is working is the review of the curricula, as has been done in other countries, in order to clearly integrate the teaching of digital as “culture and digital citizenship”.

"*I don’t want to be repetitive, we have to put it seriously in the curriculum, we still have time to computing using Excel, Word or Power Point. It must be understood that it should be included in the first cycle and it is necessary to make mandatory a certificate of digital skills at the end of fifth grade and eighth grade. A few days ago, the minister republished the card, it still shows that the boy has digital skills because he has done a laboratory hour, we are still far away "(Int. 3).A few days ago, the minister republished the card, it still shows that the boy has digital skills because he has done a laboratory hour…we are still far away*"(Int. 3).

The 're-launch' in innovation processes

Regarding the need for a re-launch in innovation processes, all interviews show that the driving force that could be carried out by the centre with investment in infrastructure, equipment, training, etc, has lost his strength. It is now necessary that the strength of renewal be welcomed by schools, in all its components, in synergy with the territories and with the whole reference educative community, in order to rethink a space and model of school that are adherent to the needs and local reality. This means that:

"*The school now, every single school, must be questioned. There is no other way. We can not think that since the National Plan was made then innovation was realized. In all activities, the work carried out by the Ministry weighs about 80% but the remaining 20% is [it must be] at the school. This is also the case with the evaluation, the most classic example is the RAV [AutoValutation Report]. The Ministry provides all the information, but the school must identify some resources that analyze those data. Even with digital, the Ministry has provided 80% of equipment and training but the real change is in the 20% of the school. And this is hard to pass. The real success of this change lies in this last millet and how it is filled*” (Int. 3).

However, everyone agrees that the schools can not face this epochal change. "*It is not a movement that can be born from below is a movement that needs a leadership*" (Int. 3). And this introduces the theme of the role and institutional leadership related to the local implementation bodies and the role and leadership attributed to the

Headmasters.

2.2.7. Opportunities in teacher training for the enhancement of their digital skills

From what has been said above, the training of teachers and school leaders is considered transversally the central problem of promoting digital innovation in schools. For this reason, one of the central axes of the Good School Reform insists on teacher training and the enhancement of digital skills.

To do this, the Ministry is investing in two special actions: the Schoollkilt tool and the sharing of good practices through community building that can continually interact with each other on these issues. The Schoollkilt tool are format of training, self-production and circulation of good practices agreed through different focus groups. They embrace several topics ranging from organizing a robotics lesson, such as organizing a digital library, organizing the contents of the lesson, organizing an event, and so on. This solution has several advantages. Firstly, it supports a significant reduction in on-service training costs because training takes place through community-based support to community, in a peer-to-peer relationship that promotes virtuous practices and facilitates transferability from a context to another one.

Secondly, it enhances the resources and the innovative thrust on the territory by reducing the weight of direct management by the center "*because it does not have to be all centralized, not indeed! We must also learn*"(Int. 2). But while considering this one element of value one should not lose sight of the center's responsibility to guide the process "*we can not only delegate training goals*". In other words, guidance, monitoring and follow-up action must be guaranteed. It must be able to provide guidance, support in a logic of improvement, overcoming the most traditional sanctioning perspective that still today is characterized by public administration.

2.2.8. Needs and perspective of improvement

The most urgent need and improvement scenarios can be summarized in at least three issues.

The need for the PA to rethink the accompanying processes is perhaps the most complex challenge to be answered by the Ministry, "*the most sensitive part in which the Public Administration [in its various configurations] should improve*" (Int. 2). And at the same time, the need for schools to take on their space of autonomy to rethink the spaces, the plant and the overall model because the introduction of digital in the classroom is not just a matter of furniture but has a radical impact on 'Social organization and the structure of relationships and communications.

"*There are schools that have re-designed environments in super-innovative mode, schools that represent the peak of innovation*" (Int. 1).

Emerging teaching skills for digital era

Digital culture no longer has its own scope, is not the preserve of experts (certainly not of ICT specialists who do other jobs), but it is now in all things, contaminates everything. Digital culture is not a discipline, it is a new

vision of the world, from work to everyday life, which in school must contaminate all disciplines, with a coherent general framework (toolbox) and all those specific insights Which the various disciplines call back. From social to big data to robotics, from web semantics to security and privacy to abuses that the network unfortunately allows. No discipline is out of this new commitment. The real challenge for each teacher is to understand the general sense of digital innovation and to re-elaborate its own matter by contaminating it, innovating all the insights that will allow a new, modern interpretative key to the contents of the discipline itself. Digital innovation in this sense requires a cultural revolution equal to that produced by writing and printing.

The most important problems detected and possible solutions

As already pointed out, the most important problems are the fragmentation of institutional competences with regard to the issue of digital development. Fragmentation with which the Ministry must compare in every revision and redesign action that wants to affect this dimension. Infrastructure development, for example, is the responsibility of the Ministry of Economic Development; The intervention aimed at calming the markets through "work on canons, digital in the school, fiber distribution to ensure connection to the school is the responsibility of AGICOM [Communications Authority]". On territorial policies, local implementation structures need to be met. Within the same ministry there are departments with different responsibilities that have to talk about similar issues. This is certainly one of the most important issues that can only be solved through the perspective of an integrated policy. When the Ministry sets new goals, it raises the standard, it must also be concerned that all these goals are achieved and to do so can not disregard joint agreements with the other components.

Another problem is determined by the speed of changes introduced by digital technologies. This speed does not fit the times and the logic of the educational system, both for the rapid obsolescence to which the technologies are subjected and to the rigidity of the regulatory system: "*We change our systems in two years because they require a decree of the President of the Republic , It is not a trivial thing* "(Int. 1).

For this reason, it is necessary to strengthen the spaces of local autonomy, ensuring an adequate process of assistance and empowerment from the functional centre to favour a logic of co-responsibility in development processes.

Finally, a critical issue emerges in the management of public communication. Cross-criticism of all public institutions. In the digital era - characterized by an explosion of communications, at all levels and in all forms, and by the withdrawal of community spaces - the PA is experiencing this difficulty in reaching appropriately and timely his potential referents. "*With respect to this theme we have to be better organized, talk about more profitable, more incisive awareness activities in the territories, there is the problem there*" (Int. 4).

SWOT Analysis

In an attempt to summarize the reasoning through the cross-sectional analysis of the evidence collected, it will try to summarize the most important considerations emerged retracing strengths, weaknesses, constraints and opportunities that the Italian education system is to cross in the digital challenge.

Strengths

One of the strengths is the value that local social capital can acquire in certain territories, such as Emilia Romagna, where there is strong participation of social components.

Recognizing the importance of promoting and supporting the formation of active educational communities in the area, the Ministry is also investing in the promotion of local networks through the promotion of calls, such as PONs, involving participation in mixed partnerships composed of "*schools, universities, training bodies, local authorities, local production sectors".* These partnerships tend to "*have a very profound local impact*" that promotes trust relationships in the territory, overlaps the time/constraint of the initial project and helps to create virtuous circles. Among the strengths we can also include the presence of enthusiastic innovators teachers who are capable of designing and experimenting innovative solutions.

Weaknesses

With regard to weaknesses we have to distinguish between external and internal, in the first type we refer to those referring to the context of reference, in the second type we indicate those that more directly characterize the school system.

Exogenous elements

We can consider among exogenous elements cultural, infrastructural and systemic issues, all strictly tied each other, as the following.

First of all, we have to consider the general retard in the spread of **digital identity** in the country. The SPID project is the unique digital identity system, or the "unique pin" through which access to public administration services. This project is in line with the Electronic IDentification Authentication and Signature (eIDAS).

EU Regulation 910/2014 on digital identity, which aims to provide a Community-wide regulatory basis for trustee services and electronic tools of identification for member states. The primary objective of this regulation is to strengthen trust in transactions in EU by providing a common regulatory basis for secure electronic interactions between citizens, businesses and public administrations. The legal and technical framework of the eIDAS Regulation allows you to accurately identify benchmarks to ensure interoperability and to update them flexibly where necessary with the aim of enabling the development of reliable digital trust services and thus promoting trust in electronic transactions, promoting the creation and success of the European single digital market. The choice of adopting a Community regulation to reform trustee services, previously regulated by a directive implemented by each Member State for its own account, now requires urgent action on the rules of the Member States which are incompatible with the new regulation. There are in fact many inconsistent norms and non-homogeneous terminologies in the definitions and implementing rules govern important services such as digital signature and electronic documents. The debate on how to ensure the overall consistency of the previous provisions with the new Regulation has so far slowed down the process of reforming legislation and also caused some controversy. The Italian complexity of the implementation of the new regime also is based on the fact that Italy was the Member State that had made the greatest effort to implement the 1999 Directive with legislation on digital signatures and services such as certified e-mail and digital preservation.

"*Today in Italy people do not subscribe to SPID, except for those who have been obliged (teachers and*

students). We have received it, but there is no interest. The citizen at this moment can not recognize the opportunity"(Int. 4). Moreover, the heated debate on transparency, security and privacy creates some suspicion of the risks associated with misuse of digital for malicious purposes.

Then, we can add the different speed that distinguishes **territorial** development. This factor is closely linked to the specificities of the different regions with respect to the type of intervention implemented by local autonomies and the socio-cultural peculiarities that characterize the territories. These differences are insinuated in the tradition of studies on the process of implementation of school autonomy which have well underlined the weight of the local factor, as well as the following testimony highlights:

" "For twelve years I have been doing this business in two difficult regions, where it is very difficult work because the policy affects a lot about the choices, affects you, and then you have to be a little off, otherwise you can not carry out the projects"" (Int. 4).

As regard to public administration we have to remember two principal kind of problems. The first one is related to the need to institution to intervene with a greater effort to promote territorial development. Goal restricted by the unsuitable of the structure in which "there isn't the sufficient number of persons to realize all the activities" (Int. 4). This problem invest also the Italian Digital Agency (AGIL) to which a great number of activities are assigned without sufficient human and professional resources.

Lastly, but not least, we have to remember the general insufficient in digital skills that distinguish public administration employees, for this reason one of the most important effort, is the training.

Obviously, all this general problem weighs negatively on the possibility to translate into effective innovative practices the investments in digital technologies at school, where there is a lack of wider support for digital innovation.

Among other problems that regard the public administration, as already mentioned, we can remember the inability to think and activate accompanying processes that can lead to transition phases. At the same time, we can recall the difficulty to elaborate training processes and service update able to respond to the real needs of accompaniment of diverse needs faced by teachers, school leaders and the variety of schools in relation to curriculum, level and local development.

Endogenous elements

If we shift our attention to internal problems at school, we can underline different issues. The first one is referred to the absence of a system vision about digital innovation processes at school. In fact, the registry of technologies, managed by the ministry, can not inform us about teaching practices, uses and digital skills of teachers and students.

Secondly, we have to remember the most important feature that distinguish Italian school, also in comparison with other countries, that is the high average age of our teachers. The age range most represented is the one between 51-60 years old. Although, the age can not be considered in absolute terms a constraint it is clear that it is necessary to act with these categories of teachers with innovative training interventions.

Thirdly, as already emerged, we can consider the solitude of innovative and available teachers "around the 15-20% who are hungry for news and are the most lively and passionate part of the school who asks to be heard and accompanied" (Int. 5).

If such and many resources are not harvested and channelled into the waste produced by the sense of abandonment it easily translates into a boomerang effect towards the system and the germs of innovation initiated.

Fourthly, we have to reflect about the question of e-leadership, strictly connected to the theme of school autonomy which, through the tool's of Educational offert plan (POF), school leader have wider micro-policy margins through which to draw the own institution identity. Also in this case, there is a training problem, because very often, for the most varied reason connected to the age, the cultural vision, the education routines, "School leaders cannot understand digital challenges that they consider a too specialistic matter" (Int. 3). The problem is in the necessity to favor a spreader e-leadership, at different level, to nudge digital change in education system. This introduce the follow question, the absence of e-leadership in education system. The e-leader "is that figure who does not have technical skills but the specific and embedded knowledge of the context and the ability vision necessary to contemplate a different idea of education and school" (Int. 5). In this sense, the issue for education policies is "how can we build an educational and teaching e-leadership?" (Int. 1). It is important to work on this topic because, nowadays, school is the place of conservation and not innovation. Innovation cannot come from the faculty college which by its nature is very conservative. This is a question of school policy.

We can see another element of weakness in the aforementioned training problem, because in Italy "we have not a digital training plan for teachers and school leaders". For this reason, also with the first stage of training plan connected with the first edition of the Digital Nationl School Plan, in absence of an accompany system, severals competences are lost (Int. 3).

Finally we have to consider the gender gap that characterizes the Italian educational system. Around 90% of teacher are women which are known to have some difficulty in approaching digital technologies. "This is not a thing to underestimate" (Int. 3). Because it is a theme that requires an intervention system able to rethink and act on the recruitment and diversity management policies.

Threats

An honest reasoning about the prospects of developing digital at school forces us to reflect about some unavoidable threats that influence the matter.

First of all we have to consider the different velocity of innovation and public administration that has precise transposition and intervention rules that do not correspond to the rapidity of changes in technology and the obsolescence of technologies and related skills.

Secondly we have to remember "the complexity and bureaucracy of the Italian system. The contract code has recently been modified and it is particularly difficult to translate into schools. The system spills increasing responsibilities on school executives and administrators of administrative services. On the one hand, it is necessary to follow regulatory rules that are difficult, on the other hand, they are required to deploy in the

purchase of solutions that need a very advanced technological knowledge. We are asking for a tremendous effort to school leaders and schools" (Int. 2), very often, without providing the necessary support.

The risk closely linked to the difficulty of many schools and territories to develop an adequate development plan is dual. On the one and the risk of a top down intervention but "*The equipment can not be monocratic but needs to be tailored to the needs of schools*" (Int. 3). On the second hand "the lack of competence brings with it a misunderstanding, meaning that digital innovation means working on computer science. For this many teachers pull back and say I'm not capable, I can not do this" (Int. 3).

The issue of skills introduces the question of their measurement and evaluation according to certain and internationally recognized standards. In this regard, one cannot ignore the fact that there is a widespread debate in the world about the functionality of these rigid protocols and the risk of debauching the relevance of teachers' learning and core competencies. The risk is that the content conforms to the standards and not vice versa, losing significance to the sense of learning and teaching.

Lastly, there is also a much more general theme linked to the current debate on *privacy* and *security* which relates to the cultural perspective that goes through the information society and sometimes it is instrumentalized for political and economic purposes that have nothing to do with the prospects that digital technologies can reveal to educational systems in terms of quality and equality of opportunities on a global scale.

Opportunities

The opportunities that can be perceived by the Italian experience, on the basis of the collected testimonies, can be summarized as follows.

Above all the presence of lively local drives coming from the territories, the communities and the social world.

Secondly, we can recognize the government's will to dialogue with this myriad of local initiatives to support the formation of local networks.

Finally, we can see an other element of interest in the new tendence to promote integrated policies among different institution and govern level. Goal pursued by intentional protocol aimed to define shared objectives and efforts. Also training interventions for teachers and School Leaders should enhance this logic "so that who attend a training path can return home with real intervention tools" (Int. 3).

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Conclusion

To conclude this brief cross-sectional analysis of deep interviews, one can observe that the most relevant element can be summarized in the paradigm shift that public administration is going from the burocratic to telocratic logic. The first one based on a rigidly traditional vision expressed by sectorial policy. The second one based on a negotiated and integrated vision aimed at bringing actors, interests and competences to converging on complex and common goals.

This passage is accompanied by an ambitious tension between the centralist government push to address and guide the transition and the attempt to exploit territorial resources through reciprocal fertilization systems aimed at enhancing local social capital.

This brief survey highlights that the theme of digital innovation is just the tip of the iceberg of far more complex issues related to the relationship that invests the school-society and socialization model associated with the prevailing culture type and the educational ideal expected.

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Bibliography

Ferrari, A. (2012). *Digital Competence in Practice: An Analysis of Frameworks*. Luxembourg: Publications Office of the European Union.

Prensky, M. (2011). *From Digital Natives to Digital Wisdom*. http://marcprensky.com/writing/Prensky-Intro_to_From_DN_to_DW.pdf

Annex 1 – Best practices in developing the digital skills of teachers

Overview of major success factors and developments in Italy. Include any political endorsements, international rankings, overall impact and evaluation.

Best Practice 1
Title: **Schoolkit**
Objectives:
MIUR in support of the dissemination of the new PNSD (National Digital School Plan) has introduced the concept of Schoolkit or mini-models and models to help executives and teachers design and develop innovative practices in response to the actions contained in the PNSD. The main objectives of this practice are: 1. to accompany schools in the implementation of the National Digital School Plan. 2. to answer a clear question and help solve a problem or develop an innovative practice
Methods (design, participants, materials, procedures)
A Schoolkit is a model of instruction to support leaders, teachers, and the whole school community in developing innovative practices, or in designing and implementing the actions of the National Digital School Plan. Schoolkit wants to be a guide, a flexible tool, an example for schools, whose content is not, of course, prescriptive. The National Digital School Plan is a complex and articulated policy, and although MIUR has launched several accompanying initiatives (including galleries and webinars dedicated to tenders), it can and should enhance the support of the "expanding school community" in its implementation . Peer support and the valorisation of practices, thanks to a common format, is also a central element of the implementation of the National Digital School Plan. New Schoolkits can be proposed by teachers, school staff, public and private institutions and institutions as long as they meet the characteristics defined by MIUR. Schoolkit involve all those who have a shared practice that schools can benefit from, and who intend to put together the shared format. In particular, Schoolkit imagine three types of contributors: 1. MIUR, which is committed to accompanying a simple and consistent instructional model, every call and initiative that will be organized on the Digital School Plan. 2. The school community can submit Schoolkit proposals - using the template on the site - on innovative activities that have successfully developed or solved problems to enhance best practice throughout the school. 3. Institutional and private partners, who have distinguished themselves for their support for the school community, and that MIUR is involved from time to time to help accompany schools (such as AGID,

the Milan Museum of Science, the Digital World Foundation and Explora Center in Rome, for example). Schools and organizations can request the Schoolkit through the website http://schoolkit.istruzione.it/. This platform is to be considered as an always open process for collecting and producing the best practices for innovation in the school. The contents present are the result of the first actions of involvement of the school community and external partners. This strategy will obviously be systematized. MIUR publishes Schoolkit as a result of appropriate assessments of opportunities and accuracy of content. The respective Schoolkit authors remain responsible for current, correct, complete, and quality-of-information profiles. Schoolkits are released under the terms of the CC-BY 3.0 license.
Results
There are some of the Schoolkit already available on the portal: • How to Create a Shared Archive of Didactic Materials– link • How to Design a Creative Atelier – link • How to prepare a class for cooperative learning – link • How to organize an event with businesses: School-Challenge for real – link • How to organize cooperative learning activities: the Jigsaw – link • How to configure a lab – link • How to stimulate manipulation and wit: create wool - link "marbles"– link
Key implications for our research
Schoolkits are a way to showcase practices that have remained in the minds and hands of those who innovate the school every day, or to definitively enhance those who were already gaining a protagonism in the training paths. At the same time, they represent a conscious MIUR strategy to engage the school community and acquire support from outside, involved in the school.
Link http://schoolkit.istruzione.it/

Best Practice 2

Title: **Creative Atelier**

Objectives:

The PNSD expected to 2020 the allocation of 40 million euro under the Structural Funds and about 35 million euro on national resources for the creation of "creative labs and labs for key skills" for schools (D.M. 11/03/2016)

The main objectives of this seventh action of National Digital School Plan are:

1. to provide schools of innovative and modular spaces where to develop a meeting point between craftsmanship, creativity and technology.
2. to make the didactic laboratory an essential meeting point between knowing and knowing what to do between the student and his territory.
3. to rethink the laboratories as places of innovation and creativity, rather than mere technology containers, making those innovative laboratory practices that are still too often relegated to the extracurricular field.
4. to return to school the craftsman charm, the "maker" and the investigator, by developing in students the awareness that objects can design and create.
5. to create labs that allow the production of videos, apps and games, and art

digital music, and acts as an access to the immersive reality where, for example, it can propose a teaching based on storytelling or active teaching methodologies.

Methods (design, participants, materials, procedures)

MIUR makes the funds available for the ateliers to be realized through calls for schools.

The ateliers should be thought of as the environment in which the skills are deployed then the starting point can not simply be the purchase of the equipment. There are no templates or packages to buy packaged by others: the starting point is the unique and original design of every single institute:

1) the idea: this is the first inspiration. Every institute have to think for your own school to an environment in such away as to:

a. can experience your skills;
b. engage the most classes / students;
c. encourages creativity, manual, play, critical media use, and design thinking using technologies as well;
d. become an incubator of ideas where students learn and practice curiosity and fantasy; a meeting point between formal and informal learning, between ancient and avant-garde materials and instruments.

2) the design of the expected skills: inspiration must be realized and calibrated on the needs and conditions

of the individual schools; its use can be integrated into the curriculum both disciplinary and interdisciplinary, aiming at the achievement of competence paths, also providing for new forms of formal evaluation, so that the activities are not derubricated to "extracurricular". For the curriculum hours, the atelier can be designed to achieve competence-based projects; but it can also be a space for the community, with opening to the territory and parents or students of other schools.

It can be used by teachers for training activities; it can be the environment to aggregate vertical groups from childhood to secondary school or even through cooperative and collaborative dynamics, for open or horizontal groups over several classes, with a more methodological approach than technological approach.

3) participatory design: as well as methodologies are the figure of design, so also the ways of its implementation require special attention. It is desirable to have a participatory design work involving, as widely as possible, teachers - and students - with levels of protagonism depending on age - various and specific professionalism (technologists, artisans, architects, etc.).

Results

Examining Committee has evaluated over 3,400 proposals come to the Ministry. The selection process took place completely online and the schools were first accompanied by the process of elaborating their proposals through live streaming sessions of administrative and technical support organized by Miur. Thanks to this funding over one-third of the primary schools will have an innovative lab.
From January 2017, 1873 projects will be funded through the 28 million announced in 2016 to innovate the teaching spaces in the primary school, with a maximum contribution of 15,000 euros per project (e.g. MIUR has funded from the astronomy lab where the same students will be able to create astronomical instruments artisanally, to create narrative forms using digital technologies. From the studios for the study of the human body biomechanics to that on tissue recycling, the recovery of small toys and plastic material for the manufacture of artifacts also through the use of 3D printers.

Key implications for our research

The development of creative ateliers is an example of active participation of schools in reorganizing the environments and didactic methodologies. Teachers and students become so protagonists of their teaching and learning path. Laboratory methods of teaching also facilitate the operation and at the same time dialogue and reflection on what is done. "*The lab, if well organized, is the mode of work that best encourages research and design, involves pupils in thinking, realizing, evaluating shared activities and participating in others, and can be activated both in different spaces and occasions Inside the school is enhancing the territory as a resource for learning*" (from National Indication of the First Cicle of School).

Link
http://www.istruzione.it/scuola_digitale/prog-atelier.shtml

Best Practice 3
Title: **DA – Digital Animator**
Objectives:
With the aim to accompany innovation in the school, the National Digital School Plan (PNSD) provides for the presence of a "digital animator" (DA) in every school. The Digital Animator, together with the headmaster and the administrative director, have a strategic role in spreading innovation at school, starting from the contents of PNSD. DA are formed through a dedicated training on all issues of the PNSD, to support the overall vision (DM 435/15).
Methods (design, participants, materials, procedures)
Each school will be entrusted with a budget of € 1,000 per year, bound to the scope of activities - which will be described below - that the Digital Animator will be in charge of managing. DA will be able to develop planning on three areas: 1. *Internal training:* to act as an incentive to internal formation at school on the themes of the PNSD, by organizing training workshops (but not necessarily being a trainer), and by animating and co-ordinating the participation of the entire school community to other training activities, such as those organized through the training sessions; 2. *Involvement of school community*: encourage participation and stimulate students' protagonism in the organization of workshops and other activities, including structured ones, on the PNSD issues, also opening up the training sessions for families and other actors in the territory, for the realization of a shared digital culture; 3. *Creating innovative solutions*: Identify sustainable methodological and technological solutions to spread within school environments (eg. use of particular teaching tools provided by the school; the practice of a common methodology; information on existing innovations in other schools; a coding lab for all students), consistent with the analysis of the needs of the school itself, even in synergy with other technical support activities figures.
Results
The experience of finding and training digital animator has created a professional community of practices, very active on the virtual square in sharing news, experiences and strategies. About a year after the creation of the Facebook Animators Group, a website was also created. The site aims to help the DAs to pursue their task with success and satisfaction. That's why this site is born, where you will find all the content inside Facebook that would disappear in a few hours between one post and another. In the web site you can access weekly video clips in which to share all the latest news and news for all the Das.

Key implications for our research
The Digital Animator is no longer one of many "instrumental features" that could be named by the Headmaster. But it is a strategic function. This figure with the team for digital innovation, meets the needs of support and coordination that many teachers presents in schools.
Link https://www.facebook.com/animatoridigitali/ http://animatori-digitali.it/

Best Practice 4
Title: **Italian Digital Revolution Association (AIDR)**
Objectives:
The Italian digital economy is already about 2% of GDP, with a net contribution to employment of over three hundred thousand jobs. In the future, it could do even more. It is necessary, though, to begin to face the digital revolution with determination and vision. The challenge of the coming months and years will therefore be to make as a country system a leap of quality and quantity. Italian Digital Revolution is association for social development and support, consisting of lawyers, executives and public officials, university professors, doctors, practitioners, etc., shared by the awareness of the opportunities that digital can open in the daily lives of each of us. The Association was born with the aim to stimulate and circulate the reflections of experts and representatives of different sectors to try to make a portrait of digital Italy: what is there and what it might be.
Methods (design, participants, materials, procedures)
The main activities of the association are: 1. to manage this information, service and aggregation website; 2. to organize events to support Digital and Innovation, that are free for members of AIDR 3. to attend conferences to promote the statutory goals; 4. to spread information to all those who share their goals 5. to launch initiatives that recognize a concrete and tangible effect of digital revolution in redefining people's lives; 6. to create regional groups to carry out activities to promote and develop the activity of the association;
Key implications for our research

The association through its own web platform promotes events and initiatives that have the main theme of digital development, according to a network model. The association intends to answer the following questions: How is Italy facing the digital revolution? What are our strengths and what are our weaknesses? What are the specific potentials that, if developed, could give Italy a vanguard role? What are our digital excluded - as the largest percentage in Europe - and how do we make them in the interest of them, but also of our society and our economy?
Link http://www.aidr.it/pagina0_home-page.html

Annex 2 - Focus group: methodological overview

Introduction to the focus group method

Focus groups are a data collection method. Data is collected through a semi-structured group interview process. Focus groups are moderated by a group leader; are generally used to collect data on a specific topic.

The focus groups will be conducted using the Questioning route method, a method that is often used in academic research. The focus group structuring will be high as the control of the discussion, through a structured path in which the moderator will develop articulated and detailed questions. The type of questions will be divided according to the degree of exploration to be achieved by alternating open questions to which participants respond verbally, using a list of written responses, rating scales.

Characteristics of focus groups

The design of focus group research will vary based on the research question being studied. Some general principles who have to be considered are:

- Standardization of questions. Focus groups can vary in the extent to which they follow a structured protocol or permit discussion to emerge.
- Number of focus groups conducted, or sampling will depend on the 'segmentation' or different stratifications (e.g. age, sex, socioeconomic status, health status) that the researcher identifies as important to the research topic.
- Number of participants per group. The rule of thumb has been 6-10 homogeneous strangers, but there may be reasons to have smaller or larger groups.
- Level of moderator involvement. Can vary from high to low degree of control exercised during focus groups (e.g. extent to which structured questions are asked and group dynamics are actively managed).

Focus groups may be used:

- To explore new research areas
- To explore a topic that is difficult to observe (not easy to gain access)
- To explore a topic that does not lend itself to observational techniques (e.g. attitudes and decision-making)
- To explore sensitive topics
- When you want to collect a concentrated set of observations in a short time span
- To ascertain perspectives and experiences from people on a topic
- In combination with other methods, focus groups might be used to:
    - gather preliminary data
    - aid in the development of surveys and interview guides (for this reason we suggest to organise before focus groups and then interviews)
    - clarify research findings from another method

Timeline

The planning has to start several weeks ahead of the actual session (6-8 weeks). Time is crucial to identify the

participants, develop and test the questions, locate a site, invite and follow up with participants, and gather the materials for the sessions.

Recording focus group data

One of the challenges in recording focus group data is knowing who is speaking at any particular time, since often multiple people speak in overlap.

- Consider audio or video recording focus group sessions (or even both). Video will be helpful for identifying who is speaking. Recordings also provide access to nuances of the discussion and the ability to replay sessions during analysis.
- Have, if possible, 2 researchers (in addition to the moderator) attend the focus group and take notes. The focus of each researcher's note-taking efforts might be different (e.g. nonverbal behaviour, group dynamics, if relevant, emergent themes).

Benefits

- Ability to produce a large amount of data on a topic in a short time
- Access to topics that might be otherwise unobservable
- Can insure that data directly targets researcher's topic
- Provide access to comparisons that focus group participants make between their experiences. This can be very valuable and provide access to consensus/diversity of experiences on a topic

Identify the participants

- Determine how many participants and who they are
- 1 group = 10 participants
- Headmasters, school leaders, management staff and coordinators working on ICT integration
- Develop a list of key attributes to seek in participants based on the purpose of the focus group
- Headmasters, school leaders and staff involved in the integration of ICT in regular teaching activities, with a broad knowledge in the fields of ICT and didactics, proven experience and expertise at high operational level, experience in the development of innovative plans, knowledge in the fields of learning management and classroom activities
- Using the list of attributes, select the participants
- Secure names and contact information, finalize the list, and send invitations

(See Annex 1 - Focus group script)

Annex 3 - In-depth interviews to key actors: methodological overview

Introduction to the semi-structured interview method

Focus identified so far are only exploratory and can be grouped into two types:

- the respondent's opinion (about nature, causes, solutions of the analysed phenomenon);
- respondent's tangible experiences of the phenomenon.

The used tool is the semi-structured Interview.

Purpose of the tool

Generally, purposes are:

- Obtain specific quantitative and qualitative information from selected respondents;
- Obtain general information relevant to specific issues (ie: to probe for what is not known);
- Gain a range of insights on specific issues.

What is the specific purpose of the interviews?

Purpose of this tool is to design a focused interview framework with key actors (policy makers, decision makers from national and local institutions etc.), as indicated in the template for national research.

Interviews aim to understand, analyze and evaluate the following topics:

- national education policies in terms of digital challenges;
- the steps taken by relatively governance integration of ICT in education system and teaching practices;
- managing digital challenges in education system with a special focus on european recommendations related to development of skills in the digital era.

Characteristics of semi-structured interviews are:

- The interviewer and respondents engage in a formal interview.
- The interviewer develops and uses an interview guide: a list of questions and topics that need to be covered during the conversation, usually in a particular order.
- The interviewer follows the guide, but is able to follow topical trajectories in the conversation that may stray from the guide when he or she feels this is appropriate.

Semi-structured interviews are conducted with a fairly open framework which allow for focused, conversational, two-way communication. They can be used both to give and receive information. Unlike the questionnaire framework, where detailed questions are formulating ahead of time, semi-structured interviewing starts with more general questions or topics. Relevant topics are initially identified and the possible relationship between these topics and the issues such as availability, expense, effectiveness become the basis for more specific questions which do not need to be prepared in advance. Not all questions are designed and phrased ahead of time. The majority of questions are created during the interview, allowing both the interviewer and the person being interviewed the flexibility to probe for details or discuss issues. Semi-structured interviewing is guided only in the sense that some form of interview guide, such as a matrix is prepared beforehand, and provides a

framework for the interview.

The script should not be too long: most in-depth interviews ought not to exceed 90 minutes, especially if respondents receive no compensation. Many senior managers will be unable to spend more than half an hour, which means that interviews must be focused and efficient.

Respondents must be prepared for in-depth interviews. Confirm the interview (time and place) in writing, and provide a general outline of the issues to be reviewed in advance.

It is important to also indicate how much time the interview will take.

Conducting the interview

After introductory pleasantries, confirm the main purposes of the research project, the role that the interview plays, the approximate time required to complete the interview.

The respondent must do 90% of the talking. Return to incomplete points. If the respondent does not provide full information the first time a question is posed, return to incomplete points by repeating key questions throughout oblique references.

Questions must follow a general to specific order. It is important to improve neutrality by avoiding agreeing or disagreeing with the respondent, avoiding indicating that a respondent's answer is 'good', 'right', 'interesting', 'wrong' or 'poor'.

Recording semi-structured interviews

Typically, the interviewer has a paper/web-based interview guide that he or she follows. Since semi-structured interviews often contain open-ended questions and discussions may diverge from the interview guide, it is generally best to record interviews and later transcript these tapes for analysis.

Always ask permission to record an interview, and if the interview is taking place in person, have the recorder in plain view. It is also important to have a written releasing.

While it is possible to try to jot notes to capture respondents' answers, it is difficult to focus on conducting an interview and jotting notes. This approach will result in poor notes and also detract for the development of the relationship between interviewer and interviewee. Development of rapport and dialogue is essential in unstructured interviews.

Benefits

Many researchers like to use semi-structured interviews because questions can be prepared ahead of time.

They can provide reliable, comparable qualitative data; they can confirm what is already known but also provide the opportunity for learning. Often the information obtained from semi-structured interviews will provide not just answers, but the reasons for the answers.

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Semi-structured interviews also allow informants the freedom to express their views in their own terms. They are less intrusive to those being interviewed as the semi-structured interview encourages two-way communication. Those being interviewed can ask questions to the interviewer. In this way semi-structured interviews can also function as an extension tool. When individuals are interviewed they may more easily discuss sensitive issues.

(See Annex 2 - In-depth interview script)