Preface

It is almost obvious today to say that digital technologies and the Internet have changed our life, less evident is the path through which this occurred. During last decades (since late ‘70s and early ‘80s), soon after the development of PCs and the birth of distributed computing, computers evolved and became user friendly due to the introduction of special input devices (e.g., mouse and joystick) and graphics user interfaces (GUIs); but it has been the introduction and the spreading of digitization and of the Internet, to produce the most relevant changes in data acquisition and communication. Both the above phenomena forced people to use computers more and more frequently, because most part of the information they sent and received from other people had to be managed by digital equipment (Heffernan, 2011).

The described digital revolution followed another revolution, which occurred in human and social communication for the development of mass media. The phenomena associated with the growth of communication equipment and mass media were essentially analogical, due to the physical phenomena they were based on, and they induced deep changes in mankind. M. McLuhan (1968), for example, stated that media determine the structural features of communication and produce pervasive effects on people imagination, independently from the information contents they transport (by using the words of McLuhan “the medium is the message”).

Recently, while referring to Popper (2002), and especially to the metaphor of the television as a “bad teacher”, G. Sartori has proposed the definition of *Homo videns* (looking people), for his contemporary generation. Sartori (1997) says that children, and more generally people, when looking at the television receive an imprinting, which is the result of an educational action mostly centred on looking and seeing with respect to acting.

Different perspectives have also been adopted in sociology while studying the effects of digitization and of the Internet on mankind. M. McLuhan (1989), before all, said that new media (i.e., digital media) could induce very useful and positive effects on mankind, by increasing the level of democracy all over the world, so that a “global village” could be created.

Psycho-technologists, on another hand, suggested deeper changes on human cognition and intelligence by means of the Internet. P. Levy (1996) suggested the construction of “collective intelligences”, which are the result of high levels of collaboration among people, so that their actions look like the result of a single mind; communities of people connected on the Internet can build group intelligences, these intelligences emerge from the cooperation and competition among the subjects belonging to the community. De Kerckhove (1996), started from Lévy’s ideas and adapted them to the technological environment of computer networks, as a result his attention was centred on the connection of people intelligences for the hitting of a common and unique target, more than on the collaboration among individuals. Digital media and especially the Internet are for De Kerckhove psycho-technologies which modify McLuhan definition of “global village”; he says in fact: “it is no more the village to be global but the people living in it, who have satellite and Internet connections, so that they can reach every place and everyone

at any time". As a result, globalization is not for De Kerckhove a phenomenon pertaining to finance and economy, it is the field of psychology, because it is the expression of mental stages and subjects' perceptions when people are connected on the Net.

Nowadays the different media described above (i.e., analogical and digital media, transmitting and interactive media etc.) are mixing together; as a result the Internet is often and often the vehicle for multimedia messages coming from last generation mobile telephones (i.e., smartphones) and TV broadcasting, while the television uses the Internet to get information and discuss about it.

The effects of the intertwining of the different media described above cannot be considered as the sum of former effects described until now, and evidences for new implications on human mankind have been recently reported by many scientists. P.C. Rivoltella (2006), for example, has proposed the definition of "multi-screen society" for today society, which is highly populated by new technologies, where the spaces of vision are multiplied, and traditional television is accompanied by computer screens, portable consoles (e.g., Nintendo and Mobile PS), public equipments (like those in stations and airports), palmtops, mobile phones, smart-phones etc. Main result of the visual multiplication, depending on the multiple screens is the re-definition of the individuals' seeing, which features are now:

- To be intermittent (it is a mosaic of not contextualized visual stimuli),
- To be mobile (i.e., it no more refers to the time passing for what is seen, but it is connected to the looking time of the people who transfer their look from one screen to another one) and
- To be interactive (what is seen is exactly what people likes to see, because people select it among many different screens).

For Rivoltella the multiplication of human seeing acts on at least the following two human dimensions:

- Knowing, which is no more stored and mono-visual, but is shared and multi-access,
- Living, which is no more situated in a physical space but is social (which means: to be in touch with the others while being connected on the Internet).

The most relevant implications are for mankind focused on the categories of being, which are much more involved in the above changes than the categories of perception: otherwise stated, there is no more contrast between real and virtual experiences (the last ones were always considered imaginary, before the digital revolution), and virtual life is a possible life at all, not less real and concrete than physical life.

Far from any reduction or simplification, the great deal of the hypotheses reported until now on the changes affecting mankind in the evolving world, ask for different questions:

- do different people react the same way to stimuli coming from digital equipment and digital environments?
- do new technologies impact the same on young people and elder people?
- do digital technologies influence the ways people learn and the connections between traditional education and virtual environments?
- do the above considerations apply to single subjects only, or analogous changes can be found in different contexts like communities, organizations and corporate?
- are there instruments and/or processes to be adopted which can help people, communities and organizations to overcome the difficulties they can meet in the knowledge society?

It is very important to remark here that most part of the above questions is not new and some scholars already tried to answer to them, but new and different explanations can be suggested today, and all of them give us different perspectives and frameworks for the description of the world we are immersed in.

M. Prensky (2001) has been one among the visionary interpreters of the new millennium society, because he remarked the difference between young and elder generations, and gave a possible explanation for the second question before it was asked for. He called "digital natives" the people born in a world populated of digital technologies, able in using them since their earliest instant of life, and called on the contrary "digital immigrants" those who had to learn the language and the use of new technologies, had to face the multiplicity of the contexts of interaction with digital equipments but never metabolized them.

Prensky definitions lead to hypothesize a positive answer for the second question, but do not explain the reasons for the differences detected in children and adults behaviours, when they are using new technologies and differently react to them.

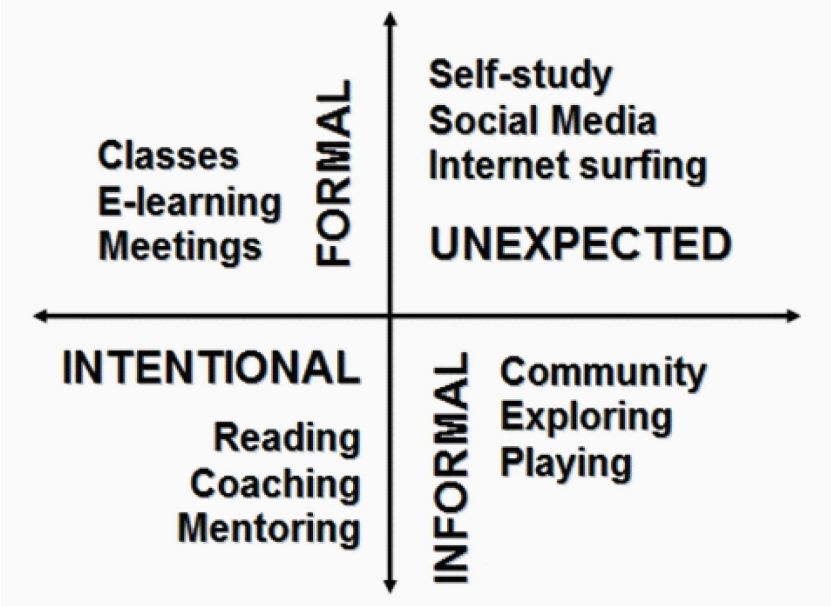
Furthermore, the analysis of learning environments in the changing society, reported by many educators, tell us that formal education still is important for the growth of young generations, but the results from non formal and informal educational experiences, cannot be discarded, and are today much more important than in the past for the cultural growth of young generations.

On this side, a special attention must be given to the scheme reported in figure 1, proposed by M. L. Conner (2004), where possible displacements in the relevance of different learning environments on youth education and more generally people learning is drafted.

Undoubtedly the importance of informal education and unexpected learning has notably grown during last decades for the spreading of digital technologies, and new technologies have also deeply modified the ways of teaching and learning in traditional classes.

One of the consequences of the above issue has been the growing of the relevance that public institutions assigned to digital literacy and the changes in its meaning and definition in the last decades.

Figure 1. Map of different learning environments and learning strategies in today's society



Many conceptual models have been developed to describe the features of new literacy proposals involving IT and ICT and some among the most relevant ones are reported below.

The Committee on Information Technology of the Computer Science and Telecommunications Board on the US National Research Council (1999), published the report "Being fluent with Information Technology"; as a result of this report educational institutions were explicitly invited to propose to the students training activities on the abilities specifically needed for the information society.

The Association of College and Research Libraries (2000) proposed the following definition for information literacy: "the group of skills needed for individual development in modern-day societies" and described the features of these skills.

The UNESCO (2002), on another hand, defined media education as that education allowing people to develop the understanding of the means of communication used in the society they live and setting them along the path for the acquiring of the necessary skills which are needed to use these means in relation to others. UNESCO considers these skills as an essential part of the civic training.

The ETS (2002) by working at the International ICT Literacy Panel developed a framework within which ICT literacy was defined and provided the foundation for the design and conduct of large-scale assessments and diagnostic tests. For ETS the literacy in ICT has the following meaning: "digital technology, communications tools, and/or networks, to access, manage, integrate, evaluate and create information in order to function in a knowledge society".

The basic differences between the above proposals can be grouped in the following two categories (Tornero, 2004):

- Scope: The ACRL proposal refers to information in general, regardless of the means through which it may be accessed; UNESCO refers to the means of communication in a broader sense; ETS confines itself to digital means;
- Framework of applicability: UNESCO makes its proposal within a framework of democratic society, and therefore within a collective context; the ACRL and the ETS make their proposals within the framework of individual competence, which is cognitive and technological.

Furthermore, if a sound digital literacy is important for people living in the knowledge society, much more important is considered today the development of a "digital competence" in those people.

Recently a great attention has been devoted to the impact that new technologies have on mankind, when passing from the discussion on how people use digital resources and processes, to the analysis of what they must know and be able to do with technologies. Otherwise stated, there has been a shift in the focus attention, from a discipline centered paradigm to a human centered paradigm: competences as active involvement of subjects with their representations of reality, their knowledge and skills are considered today much more important than the knowledge of instruments and processes (Le Boterf, 1990).

Notwithstanding the efforts reported above the following issues remain emblematic for the understanding of the contradictions present in our life, and they show how difficult it can be to try answering to the questions asked before:

- The gap existing between "digital natives" and "digital immigrants" (both in learning styles and knowledge development) (Prensky 2001); otherwise stated, young people can use digital equipments to better perform in getting information and communicating with respect to elders, and,

what is more, new generations have different perception of reality and, usually, are more ready to act than to think about phenomena,

- The permanence, or the lowering, of the already low basic skills and competences in reading, writing and computing for students at different school levels (OECD 2009). This result seems to contradict what is reported in the item above, because it is usually recognized that the use of digital equipment implies the development of good information management skills (meta-cognitive skills),
- The basic skills and competences for lifelong learning, which are considered essential to let people be the citizens of the knowledge society. On this regard the Commission of the European Community approved a recommendation for all member countries, reporting the set of these competences. Digital competences, the fourth among them, are considered especially important because of their cross cultural features with respect to language (reading / writing) and calculus competences (Council of European Parliament 2005).

It can be easily deduced from the above issues that today, more than in the past, the acquisition of better knowledge, skills and meta-cognitive features from people, go hand in hand with the analysis of the environment people are immersed in, both on the sociological and technological sides.

Furthermore, when passing to communities and organizations, the role of digital technologies in the development of organizational knowledge and the influence they have on the evolution and transformation of tacit and explicit knowledge in individuals (Nonaka and Takeuchi, 1995), needs explanations and claims for deeper analysis.

New disciplines like Knowledge Management have been developed to let corporate and organizations build their own instruments and strategies for getting, retrieving, maintaining and sharing information and knowledge, and studies have been carried out to analyze the influence of the presence of management information systems (MISs) on communities. In some cases good results have been evidenced and the hope for future developments in the implementation of community practices into MISs has spread out, but no final answer on the instruments and the strategies to be adopted for the generalized use and application of digital equipments in these contexts has been found.

The attempt to answer the above questions and the need to deepen clarify new problems resulted in the writing of this book, and the issues reported until now induced to create five different sections for it.

The first section is devoted to the analysis of the problem of digital divide, and the need of new literacies. The second section discusses the connection between digital literacy and digital competence, and shows how relevant can be complex environments and social networks in education, when centered on the development of digital competences. The third section focuses on the application of the considerations developed before in some experiences of lifelong learning. The fourth section displaces the attention on the organizations and the fifth and last section on the whole society and some cultural aspects depending on IT/ICT.

The first section is made of three chapters. The first chapter, by P. Ferri (Digital and Inter-Generational Divide), discusses the digital and inter-generational divide, reports of the separation between the North and the South of the World and shows how great the problem still is also in the developed countries, especially in the field of education.

The second chapter, by L. Cervi, O. Paredes and J. M. P. Tornero (Current trends of Media Literacy in Europe: an Overview), gives an overview of media literacy in Europe. The authors map current practices in the implementation of media literacy in Europe and recommend measures to increase the level of media literacy.

In the third chapter, M. Fantin (Perspectives on Media Literacy, Digital Literacy and Information Literacy) says that the cultural landscape poses different challenges for teachers. Together with the development of reading and writing skills, it is necessary to emerge in the digital culture and master the different codes of the different languages. As a consequence, media cannot be excluded from literacy programs, it is essential to reflect on the definition of "being literate" today. The meanings of concepts like literacy, media literacy, digital literacy and information literacy need deeper analysis and re-signification.

The second section is made of five chapters. The first chapter, by A. Cartelli, V. Dagiene, and G. Futschek (Bebras Contest and Digital Competence Assessment: Analysis of Frameworks) focuses on the importance of IT/ICT supported informal education environments for students' learning, and especially for students' development of skills and competences. It starts from the description of the international competition "Bebras" and its features, and soon after discusses the structure of a framework for digital competence assessment, so that a double correspondence between them can be hypothesized:

- first, the framework can help the committee of the "Bebras" contest to create questions better facing the problem of assessing digital competences,
- second, the analysis of students' answers can suggest changes and improvements for the framework.

The second chapter, by A. Cartelli, (A Framework for Digital Competence Assessment), better explores the features of the framework reported in second chapter and suggest some improvements for it. While doing this job the following elements emerge:

- the privileged role of digital technologies in today society,
- the possible influence of the hypothesized framework on the people, who can be helped to become better persons and citizens,
- the research for hints, experiments, protocols and curricula, helping teachers in the design of better teaching activities.

The third chapter, by C. Giovannella (Beyond the Media Literacy: Complex Scenarios and New Literacies for the Future Education - The Centrality of Design), states that the advent of new media and web technologies has made "contents" and "containers" more liquid, and deeply reflects on the multi facets concept of literacy. He then proposes an experiential definition of literacy in education. According to such reflection, in the present scenarios, the "Design" becomes central to education, and underlines the need of educational activities which should include among their objectives the dissemination of what can be called "design literacy".

The fourth chapter in the section is by C. Petrucco (Wikipedia as Training Resource for Developing Digital Competences), and it discusses whether Wikipedia can be considered a valid resource for educational institutions like schools and Universities, or not. Undoubtedly, Wikipedia brings with itself the risk of incurring in mistakes, inaccuracies and plagiarism, but it is reliable and can be used in the curriculum as new approach for social and collaborative construction of knowledge. It can fully enter in educational contexts as an opportunity to reflect on the verification of information, on the ethical use of technology and on the role of democratic participation in social networking. Otherwise stated the creation and the maintenance of articles of Wikipedia as classroom activities, gives the opportunity for the activation of higher processes in cognitive development and on-line relationship, allowing the development of essential digital competences for life-long learning.

The fifth and last chapter by A. Pozzali and P. Ferri (The Medial Diet of University Students in Italy: An Exploratory Research), analyzes digital skills and competences of university students in Northern Italy. The starting point of the authors' analysis is the increase in the inter-generational digital divide accounting between "digital natives" and "digital immigrants", they evidence that, even if university students are familiar with digital technologies, the general possession of high level skills in accessing and using the Internet should not be taken for granted.

In the third section the development of digital competences is seen in a perspective of lifelong learning and five chapters discuss the different aspects of the problem.

The first chapter by L. Tateo and P. Adinolfi (Integrating Educational and ICT Innovations: A Case Study of Master Course), the effectiveness of new computer-supported collaborative problem solving educational approach in higher education at a master's course level is discussed. After outlining the technological and pedagogical characteristics of a new digital cooperative environment, as well as the constructivist, learner-centred philosophy of the Daosan Master (Management of Health-care Services) at the University of Salerno, the integration of the educational approach and the technological support is reported and discussed in an exploratory case-study. The authors observe that many post-graduate students are able to participate in a dense collaborative problem solving activity within a relatively short lesson period, working and reflecting on a real problem of healthcare management.

In the second chapter by A. Jimoyiannis and M. Gravani (Digital Literacy in a Lifelong Learning Programme for Adults: Educators' Experiences and Perceptions on Teaching Practices) some aspects of digital literacy in the context of a lifelong learning programme for social cohesion in Greece are analyzed. It especially explores the experiences and perceptions of eight adult ICT educators who used flexible instructional practices and adjusted them to adult learners' needs and interests. Additionally, the chapter reveals the difficulties that adults faced in the course while developing ICT literacy skills.

The third chapter by L. Corazza (Information Communication Technologies for Lifelong Learning: The Multimedia Documentation of Best Practices in Education), shows how self-instruction and lifelong learning are acquiring an increasing role due to Information Communication Technologies. These learning opportunities are connected to the worker ability of learning in autonomy throughout the entire span of life. Documentation of experiences, as a form of communication that allows tacit, unexpressed, informal knowledge, provides evidence that can be widely shared. In the conclusion of the chapter it is shown how audiovisual and multimedia documentation has proved to be a useful and efficient means of recording the experiences to be shared in knowledge management.

In the fourth chapter by F. Lazarinis and D. Kanellopoulos (E-Skills and ICT Certification in Greek Cultural and Travel Agencies: An Exploratory Study) the importance of the ICT skills for the enhancement and development of productivity in everyday work is analyzed. The authors report data on the demand for professionals with ICT skills, and show that it still exceeds the supply, especially in travel industry. Soon after they present the results of the study describing the impact of ICT certification on people working in travel agencies in Greece and consider the relevance and practical value of the e-skills acquired during training from tourist employers. It clearly emerges that the ECDL ICT certification plays a crucial role in cultural and travel agencies as their employees being technologically skilful can offer better services to their customers.

The fifth and last chapter, by E. Klekun (Digital Literacy for Health: The Promise of Health 2.0), outlines and challenges expectations and promises regarding the potential of the Internet and in particular Web 2.0 for empowering patients and citizens. The chapter focuses on the literacies required to make a meaningful (to the individual) use of these technologies for health and health care related purposes,

and briefly discusses how these should be taught. The main conclusion is that digital literacy and health literacy are complex and challenging to many, and that the empowering claims are over-stated. As a result many traditional sources of information and advice will remain essential to maintaining quality of health care without a sound development of better digital competences.

The fourth section is made of three chapters and discusses the role of digital literacy in organizations and corporate. The first chapter is by C. De Pablos Heredero (Framework for the Experiences in Digital Literacy in the Spanish Market). The author starts by considering the information society as the society made by people, where the priority for the society development is the acquisition of knowledge in the digital society. But, being digitally literate means to have the technological capabilities letting persons survive in the information society; for that reason the chapter offers real examples of digital literacy development in a variety of areas of application: education, social inclusion and firms. Three main projects are described to support the contribution of digital literacy to the growth of Spanish people: the Educared, which promotes the spread of the Internet for innovation and pedagogical training amongst teachers, parents and students in primary and secondary schools; the Dana Project, which identifies good practices to reduce the digital gap based on gender; and the Competic, a program offering good practices for the promotion of information and communication technologies in small and medium size firms.

The second chapter is by A. Cartelli (Frameworks for the Benchmarking of Digital and Knowledge Management Best Practice in SME and Organizations), and discusses the effects that IT/ICT have on subjects and organizations. The proposal of frameworks for digital competence assessment and the construction of suitable instruments helping students in the acquisition of this competence are the main reason for the transfer to Small and Medium Enterprises (SME) and organizations of analogous instruments and processes. To hit the target the author compares knowledge phenomena in the subjects, with the strategies of knowledge management in the organizations. Soon after he describes the features of the framework for the benchmarking of best practices in SME and organizations on the basis of the results formerly obtained with virtual campuses. At last the instruments to be adopted for the acquisition of further information from all stakeholders and from the best practices to be shared are analyzed, and possible interventions towards the improvement of digital processes in SME and organizations are discussed.

The third and last chapter is by C. De Pablos Heredero and D. López (Free Software Implementation Experiences for the Promotion of the Liquid Society), and discusses the changes induced by information and communication technologies on citizens inter-operation with Public Administrations. By following the authors' ideas digital literacy is the key for the development of the "Liquid Society" and, public administrations must lead the actions for promoting more efficient, universal and user oriented public services. The migration to open source standards allows public administration offering more democratic and efficient channels for establishing relationships with citizens and the authors support their idea by showing the results of some international experiences which describe the migration of Public Administrations towards open source software, in order to promote digital literacy in the contexts they operate. They also report that the results depend at a great extent on contextual and organizational factors, as for example the need to change, the political support, the existence of available technological resources, the organizational climate, the motivation of the human resources and the kind of leadership for the project or the organizational complexity.

The fifth and last section is made of three chapters and analyzes the relationship between digital technologies and tradition, or more generally culture. The first chapter is by E. Lastrucci and A. Pascale (Cooperative Learning Through Communities of Practice) In this chapter the authors first recall what a community is, a group of individuals building a "community of practice" when a mutual engagement is

established between themselves. Soon after the authors explain that main aim of a community of practice is to find the solution to problems by sharing experiences. As a conclusion they state that communities of practice can be seen as communities of self-managed learning, where professional development is not based on preset training courses, but on the sharing of experiences, on the identification of best practices and on the help that people give each other while facing daily problems. At last the authors remark that until now cooperative learning, which is recognised as one of the best teaching methods and an effective strategy, has been limited to traditional training contexts, but it can also be carried out on teaching work by involving the Web, and especially by using online teaching.

The second chapter is by I. Cantón and C. Morán (Levels of Self-Efficacy among Harassed Teachers). The authors first examine the differences among harassed teachers and unharassed ones, as regards coping strategies, self-efficacy, and locus of control. They conduct a survey over 255 teachers (163 women and 92 men) with a set of three questionnaires: the Mobbing Perceived Questionnaire, a battery of control expectancies, and the Brief COPE to assess, respectively, mobbing perceived at work, self-efficacy, locus of control, and coping strategies. The authors explain that the efforts made by educational organizations for preventing mobbing need to be intensified, and new technologies must play a more relevant role in collecting data, monitoring processes and making available all information on those phenomena.

The third and last chapter is by A. I. T. Kiser, T. Porter, and D. Vequist (Employee Monitoring and Ethics: Can They Co-Exist?). The paper shows that advanced technologies that make possible the monitoring of employees in the workplace have led to controversies on both legal and ethical grounds. Employers can now easily monitor emails, Internet usage and sites visited, and keystrokes, as well as use GPS systems to track employees' movements throughout the day. At one end of the spectrum is the employer who claims that monitoring not only improves productivity but is a legal necessity that assists in keeping the company from becoming legally liable for employees' misuse of technology. Employees, on the other hand, want their privacy protected, and many believe that it is more a matter of them not being trusted. In this chapter, a survey is presented that describes various forms of workplace surveillance and monitoring, viewpoints of both employers and employees, policies that companies have implemented, and the ethical and legal implications of such policies.

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