

## **Participatory culture and Open Educational Resources**

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*Abstract:* The article examines the new competencies - required and embedded - in the new youth participatory culture. It introduces the OER - Open Educational Resources - as both an opportunity and a challenge to educational institutions that respond to the youth culture based on openness, on social connections, and on networking. In particular, OER will be individuated as a practice that responds to the “participatory culture” incorporating it. Open Access represents the core of the youth culture that is building up around and through the new forms of circulation of information and knowledge. Open Access approach in the educational system represents an education policy that embeds the dynamics of the new youth participatory culture.

*Keywords:* Participatory culture, Youth, New technologies, Open Access.

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## Introduction

The aim of this study is to investigate recent developments in the media education environment, drawing from a number of innovative researches<sup>2</sup> and with a focus on some key issues in the international debate:

- the contribution of digital technology in terms of the cognitive impact of new media in knowledge and learning processes (de Kerckhove, 1997; Levy, 1996; Carr, 2010; Rheingold, 2012);

- the pervasive role that new electronic devices play in young people's lives and how this contrasts with everyday school life (Lenhardt and Madden, 2005, Wiley and Hilton, 2009, Avvisati *et al.*, 2013);

- the development of Open Educational Resources (OER)<sup>3</sup>, their importance in terms of media education and the need for educational policies and for the right conditions to create a public network.

More specifically, the aim of this article is to show how the complex relationship among technology-school-society highlights a plurality of actors - educational and non educational, human and non human - that are all parts of the discourses, processes and policies of the daily practices of schooling. Particularly, OER will be individuated as a practice that responds to the "participatory culture", incorporating it. Open Access represents the core of the youth culture that is building up around and through the new forms of circulation of information and knowledge.

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<sup>2</sup> See the research carried out by Sonia Livingstone for the project UK Children Go Online (2005) and EU Kids On line (with Leslie Haddon, 2006-2009), as presented in Livingstone (2010), which was commissioned by the European Commission as part of the Safer Internet Plus programme. See also the work by Henry Jenkins as part of the New Media Literacies Project at the University of Southern California, illustrated in the *White Paper on Media Education* (2006) produced by the author for the MacArthur Foundation.

<sup>3</sup> Open Educational Resources are freely accessible and openly licensed digital resources for educators, students and self-learners to use and reuse for teaching, learning and research. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. In the definition of William and Flora Hewlett Foundation, OER are: teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. In the wake of Massachusetts Institute of Technology OpenCourseWare Initiative, many universities have been joining the OER movement by offering. A recent and relevant development is represented by the Massive Open Online Courses (MOOCs), online course aimed at large-scale interactive participation (Bady, 2013).

Starting by this point, this study focuses on the so-called *competencies of digital citizenship* as outlined in the 2006 *European recommendations* and in the 2006 white paper *Confronting the Challenges of Participatory Culture: Media Education for the 21<sup>st</sup> Century*, edited by Henry Jenkins for the MacArthur Foundation. Debate on digital competencies, which are defined as prerequisites for 21<sup>st</sup> century citizens, makes it obvious that we need new teaching models and teaching-learning methodologies for the changing context.

Our information regarding the main strategies for education and training, including OER approach, is based on some official documents. Particularly, the European Commission's work on the Digital Agenda offers more recent data on the way children and adolescents use new media. The complex relationship between young people, new technologies and educational institutions in the current socio-cultural context is analysed in greater depth using data from the European Commission and its *Strategy for a Better Internet for children* (2012), and referring to results of a 2013 OECD - Organization for Economic Co-Operation and Development - report on the Italian Digital School Plan, edited by Francesco Avvisati and builds on research from the CERI Innovation Strategy for Education and Training.

The article sections are structured as follows. First, this paper presents the studies and researches in the emerging media culture, adopting the framework of social skills and cultural competencies. Second, it discusses about the new emerging socio-cognitive skills and about the new competencies - required and embedded - in the new participatory culture. Finally, the article introduces the OER as both an opportunity and a challenge to educational institutions that responds to the youth culture based on the openness, on the social connection, on the networking.

### **Digital technology and digital skills**

New technologies are an integral part of the lives of the so-called “digital natives”, giving rise to what many authors have termed “emerging socio-cognitive skills”. New media literacy constitutes the “core digital competencies and social skills necessary for digital citizenship”(Jenkins, 2006b, pp. 27-29). Many studies explore how digital natives differ from other generations with regards to their social value, their lifestyles, their

preferred digital technologies and social media habits<sup>4</sup>. The Pew Research Center report (2010, pp. 13-14) describes the Millennial Generation (18-29) as “confident, connected, and open to change”. Most “millennials” (61% in the survey), say their generation has a unique and distinctive identity. That, however, doesn’t make them unusual. Roughly two-thirds of Silents (65+), nearly six-in-ten Boomers (46-64) and about half of Generation X (30-45) feel the same way about their generation. But Millennials have a distinctive reason for feeling different. 24% say it’s because of their use of technology. Gen Xers also cite technology as their generation’s biggest source of distinctiveness, but far fewer (about 12%) claim this. Boomers’ feelings of distinctiveness coalesce mainly around work ethic, which 17% cite as their most prominent identity badge. For Silents, it is the shared experience of the Depression and World War II, which 14% cite as the biggest reason their generation stands apart. Millennials’ technological exceptionalism is chronicled throughout the survey. “It’s not just their gadgets - it’s the way they’ve fused their social lives into them” (Pew Research Center Report, 2010, p. 13).

In the words of Lev Manovich (2010, p. 11) “*software* has replaced a diverse array of physical, mechanical, and electronic technologies used before 21<sup>st</sup> century to create, store, distribute and interact with cultural artifacts. It has become our interface to the world, to others, to our memory and our imagination, a universal language through which the world speaks, and a universal engine on which the world runs”. Ardizzone and Rivoltella (2008, p. 55) highlight in the Italian context Media and ICT that represent *the culture* in which young people live today, building and sharing meaning. According to Benadusi, Valentini and Viterriti (2008, pp. 52-53): “researches and studies on open and collaborative practices show how Internet represents a new knowledge environment including new forms of participation, sociality, creativity”. Others suggest that a new concept of knowledge is required evolving from passive “knowledge” to active “knowing”, defined as cognition in progress (Gherardi, 2008, p. 32). In 2001 Manuel Castells, in his work on network societies, already pointed out that hypertext is both a feature and a product of our minds. For Castells, the innovation of hypertext – one of the most significant for people who were part of the transition from old to new media – is not that it is a sophisticated technological product. The real innovation lies in the capacity

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<sup>4</sup> See also Colombo, F. (2012).

of our minds to associate and recombine past and present experiences. It is becoming more and more obvious that hypertextuality is a feature of our minds because “whenever we think we make connections between various events, experiences and knowledge” (Buffardi and de Kerckhove, 2011, p. 30).

Over the last twenty years or so, technology has become “transparent and invisible” (McLuhan, 1964; Norman, 2004) as far as young people are concerned, and computer applications are as much a part of their daily routine as switching on a light. In this sense, “e-learning is dead” (Dal Fiore and Martinotti, 2006), because young people no longer find knowledge on the web but are involved in networked learning experiences on the web. However, as many authors have highlighted, school in the 21st century seems to present a *daily divide* (Wiley and Hilton, 2009; Avvisati *et al.*, 2013) as far as young people’s online experience is concerned. This implies a need to define and implement educational policy in line with the current social and cultural context. Open Access, and more specifically Open Educational Resources would seem to provide a response. The widespread availability of quality online learning content enables us to focus attention on the digital content which seems key to education given the importance of new technology to the life and study patterns of young people today.

Certain universities have created repositories of open scientific resources but Italy is lagging behind where schools are concerned. The 2013 OECD report “*Review Italian Strategy for Digital School*” confirms this, stating that schools and teachers need to be encouraged to produce digital content and lessons and to share resources through open platforms. Currently, the integration of new technologies requires careful reflection on the role of the public sector in producing content, and this applies to digital media in general. The relationship between young people and the Internet is coloured by high expectations and deep seated fears. The promises of plurality and democracy that accompany Internet growth will never be fulfilled without adequate education policy to support it. This makes the selection of learning content – open or protected, public or commercial – of paramount importance in setting up a public web that can be usefully integrated into everyday school life. As underlined in the EU, *European Union Agenda for the Rights of the Child* (European Commission, 2011), the long-term effects

of not investing enough in policies affecting children may have a profound impact on our societies.

According to Kozma (2008, pp. 1084-1085), “without a strategic rationale to guide the nation’s use of technology in education, ICT policy is merely operational. Policy becomes techno-centric, promoting the purchase of equipment or the training of teachers without providing a strong educational purpose or goal for the use of technology”. As Mellini (2009, pp. 127-129) observes, *digital collaboration* was introduced in the 6th Framework Programme for research, but “in the first phase it was promoted exclusively to upgrade infrastructure and innovative technologies. It is only starting from the seventh Research Framework Programme (2007-2013), that *e-collaboration* began to represent a methodology and a precondition to the research in the field of new technologies”.

Ingrosso and Spaggiari (2008, p. 78) show that it is necessary to adopt a vision based on understanding and studying together. E-learning, though not only, demonstrates “specific applications and uses which imply a focus on personalisation and contextualisation of the learner pathways, and also offers significant opportunities for group learning (...) within the logic of participatory learning systems, including sharing, discussing and negotiating” (Ingrosso and Spaggiari, 2008, p. 10) inspired by a spirit of peer collaboration and collective construction of knowledge, which young people are already very familiar with.

This leads us to focus our attention on the *hacker ethic*, which Manuel Castells and Pekka Himanen (2002, p. 114), define as a tendency towards knowledge sharing, participation, exchange and the co-construction of knowledge. As the authors state: “given their passionate approach to learning, computer hackers pose problems and questions (...) building and experimenting (...) using and critically evaluating diverse sources of information (...) and share their learning processes”. These principles, thanks to the development of the internet, social networks and online sharing tools, are no longer the domain of hackers but are common to the online communities that attract young and very young people.

To understand the true potential of this information revolution in education, we need to look beyond the framework of information. For at the base of this information revolution are new ways of relating to one another, new forms of discourse, new ways of interacting, new kinds of groups, and new ways of sharing, trading, and collaborating. Wikis, blogs, tagging, social

networking, and so on, are especially promising in this regard because they are inspired by a spirit of interactivity, participation and collaboration. It is this spirit which is important to education. The technology is secondary. “This is a social revolution, not a technological one, and its most revolutionary aspect may be the ways in which it empowers us to rethink education and the teacher-student relationship in an almost limitless variety of ways” (Wesch, 2009, p. 4).

Henry Jenkins (2006a) speaks about *convergence culture* to describe a process at the same time social, cultural and technological based on the new modality and facilities in the circulation of the digital content. We live in a “participatory culture”, says the author (Jenkins, 2006b, p.8) that emphasises the cultural components of sharing and exchange. In the above mentioned white paper he observes that participatory cultures are based on *new creative forms* (such as digital sampling, skinning and modding, fan videomaking, fan fiction writing, zines, mash-ups); *affiliations* and *membership*, formal and informal, in online communities centered around various forms of media (Friendster, Facebook, message boards, metagaming, game clans, MySpace); *collaborative problem-solving* and *circulations*. Many young people are already part of this process, working together in teams, formal and informal, to complete tasks and develop new knowledge (Wikipedia, spoiling) and shaping the flow of media (podcasting, blogging). One of the key elements in this participatory culture is the growth of social networks which, within a few years, have become the major tool for interaction and communication, from the launch of Wikipedia in 2001, Flickr in 2004, YouTube in 2005, to the first tweet and Facebook going public the following year. The new skills that are required in a participatory culture are in the areas of the four Cs that Jenkins identifies: Create, Circulate, Connect, Collaborate, “new skills for a digital media curriculum that incorporates new literacies for this digital age” (Cupaiolo, 2012).

According to Jenkins (2006b, p. XI), many young people are actively involved in what is defined as “participatory culture”, through blogs, social networks and wikis. A participatory culture is a culture in which members believe their contributions matter, and feel some degree of social connection with one another.

It is a common idea amongst academics today that activities like these develop the kind of skills that will be useful in the workplace and will

enable people to become fully-fledged members of society. Jenkins, as well as many others, believes that educational and political policy has to change to enable young people to learn the cultural competencies and social skills they will need to face the challenges of the XXI century. New participatory norms demand a new approach to digital citizenship and an ethical education society-wide (Rutledge, 2010).

### **The pervasive role of new electronic devices**

Technological innovation demands substantial changes to the learning process both in terms of the tools/methods and the structuring of the content. Although these changes are internal to the teaching process. They strike at the heart of social bonds and involve the complex relationship between education and society (Colombo, 2008, p.19). These changes involve “a multidimensional vision of ‘learning environment’, including technological, logistic and social components” (Pandolfini, 2010, p. 11).

What is fundamental is the ability to incorporate digital tools as part of daily teaching and learning processes. And this puts teachers firmly at the heart of innovation in schools. Although investment in the technology is important, it is now clear that this alone will not guarantee development in teaching practice. “It is a common mistake to hope that ICT, on its own, will change learning and teaching processes. It is the same kind of deterministic attitude which makes parents judge their children’s future school on the number of computers available rather than by talking to the teachers who work there. (...) Public opinion regarding technology in schools often focuses on the actual hardware rather than on experimentation and new teaching methodologies which would enable students to make effective use of the technology” (Livingstone, 2010, p. 88).

However, the success of school and education policy depends on the latter, as do National and European guidelines. The 2006 *European Parliament and European Council recommendations* focused on investment in key transversal competencies and already in 2000, on the occasion of the extraordinary European summit in Lisbon, the European response to globalisation put “people as the most important resource in Europe” and defined the skills and competencies necessary for the development of a

competitive and dynamic European knowledge economy. As a result of these recommendations, the 2007 *New National Education Guidelines* highlight the importance of improving people's access to basic knowledge which is made possible and facilitated by positive attitudes towards learning.

Key competencies have been identified for the education of self-fulfilled individuals and European citizens. These include collaborative skills, like working well in groups and showing respect for other people, and, at the same time, the ability to act independently and responsibly, to plan ahead, and to be able to find solutions to complex issues and, in more general terms, being able to learn how to learn. In today's knowledge society it is also important to be able to acquire knowledge from various sources and media and to be able to assess this knowledge critically. Another important skill is being able to identify links and relationships between phenomena, events and concepts. Key competencies are fundamental to preparing people for future life and work. New technologies provide the framework and contemporary society's knowledge flow fits within it. Educational institutions should grasp this opportunity, making full use of its potential while being aware of its limitations and critical issues.

As Jenkins highlights in the white paper it's not that it isn't important that students have computers in their classrooms. Frequently, computers are used as an appendage to a physical library or as a word processing tool. These are good uses for computers, but they don't really teach students about the participatory culture that exists online: the participatory culture that they will be expected to take part in as adults. Networking and collaboration develop social skills that are vital to the new literacies. Although new, these skills are built on traditional literacy, research skills, technical and critical analysis skills. Moreover, these New Media Literacies can be learned without computers in the classroom (Jenkins, 2006b, p. 29). Participatory culture is emerging as the culture that absorbs and responds to the explosion of new media technologies. It highlights the cultural component embedded in the new technologies practices. In fact, focusing on participatory cultures does not mean to attribute a utopian participatory sense to the contemporary media (Boccia Artieri, 2012).

It should also be considered that, in actual fact, many students are already engaging with participatory culture, and they're bored by uses of computers that don't incorporate it (Boccia Artieri, 2012). For many young people,

experience in their real life consists of access to many networked and online resources. Often, they meet restrictions on online access to their institutional courses. But, generally they are able to find human and non human resources on social networks, and by following connected links they can find updated content relevant to their courses and studies.

Wiley and Hilton (2009) refer to the disconnection between young people's lived experience in the real world and the artificial environment inside the classroom as the "daily divide". Unlike the digital divide, the daily divide also discriminates against people of higher socioeconomic status. Individuals with abundant access to information and communication technologies who have habits of effective use of these technologies in information-seeking and problem-solving activities are unable to make effective use of these technologies in traditional higher education settings.

As it has often been pointed out in studies of the media, different forms of technology allow for the acquisition of different types of skills and call on different cognitive abilities. New generations born and brought up over the last 15 years are used to different models of socialising and knowledge gathering. "Digital natives show abilities and competencies in their everyday lives which were unthinkable 20 years ago. These competencies go largely unrecognised by traditional, institutionalised models of teaching yet they are completely consistent with, if not essential to, the development of the skills necessary to work in a knowledge society" (Bagnara and Mesenzani, 2011, p. 111).

A readiness to deal with the unexpected (which is evident in young people's use of videogames) and an ability to multitask (which is seen in the way they use different communication devices at the same time, successfully combining study and leisure) are two skills which have emerged with digital technology and which help people deal with the complexities of today's world (Jenkins, 2006b; Gui and Argentin, 2009; Livingstone, 2010; Ferri, 2011). In particular, for example, videogames based on strategy and the construction of possible worlds, like the Sims or Sim-City imply a constant "selective attention", continuous problem-solving activity and experimenting with different roles within the game (Ferri, 2011, p. 3). Bagnara and Mesenzani (2011, pp. 110-113) describe the so-called emerging socio-cognitive skills that result from wider use of technology in young people's everyday lives as follows: *better eye-motor coordination*, with more precise manipulation skills using all the fingers

including the thumb (formerly used only as a rest and now, with touch systems, is indispensable for sending messages or playing games). This new dexterity is a highly-developed motor skill that underlies interaction with most devices for communication, research and expression. *Visual thoughts* are prevalent, and go hand in hand with the ability to work with images in our heads using diagrams, graphics and pictures, to simulate experiments or to generate scenes in our heads. We already mentioned the ability to deal with the unexpected as often happens in videogames and to respond appropriately and within a reasonable timeframe. Better and more *attentive control of space and peripheral concentration* which also apply to videogames, enable us to predict the unexpected, find solutions and to cope with more than one pathway or parallel cognitive tasks when checking information; there is also a *new sociability* which requires new cognitive, emotional and cultural skills which are also relevant to the kind of horizontal, peer-to-peer, cooperative learning that is growing in popularity especially amongst young people.

By focusing on what are often referred to as the new socio-cognitive skills, we can see some of the related effects of technological development and analyse their advantages and disadvantages. Development of visual thought, for example, and the ability to elaborate ideas through images and graphics is, according to Jenkins (2006b), one of the ways in which the human mind reacts to information overload, allowing it to deal with information more quickly and easily. Nonetheless, it goes hand in hand with a reduction in linguistic ability and verbal thought, making it necessary to balance the two types of cognitive ability. It is necessary to hone and educate the visual skill but we also need to improve our language skills at the same time. Similarly, our improved ability to multitask is counterbalanced, according to many experts, by an inability to concentrate for very long or learn anything in any depth. "It is important to find a balance between these two cognitive abilities, between parallelism and concentration, between action plucked from a familiar repertoire and an innovative response. It is not easy to reach this kind of equilibrium. We need to learn how. (...) We need to cultivate these new cognitive skills, the nuts and bolts of a knowledge society and make sure that our other skills, like our reflective and linguistic ability, are not lost in the process as these are equally important for us as members of society and the workplace" (Bagnara and Mesenzani, 2011, pp. 110-114).

The pervasiveness of our media landscape is constantly changing and requires a rethink of traditional categories and devices to most educational experience.

We are moving from a culture that was dominated by writing on paper and by print to one that is being dominated more and more by electricity. A situation of rapid change.

“It is no exaggeration to say that smart phones mark a new era of control over our everyday lives in the relationship between body and language. In this digital era, electricity is becoming information and cognitive content” (Buffardi and de Kerckhove, 2011, p. 37). It is an era marked by an “always on” philosophy, which started at the beginning of the century, and involves various generations, both immigrants and digital natives, and spurious as well as pure natives (Ferri, 2011). Each generation treats the same technology differently. These days, all of us has a variety of video, audio and 3D codes available and we all contribute in the construction of a world which is based on the sharing and exchange of knowledge and information. But while “social networks, messaging software or blogs are simply tools for many Gutenberg’s children, for digital natives they are an integral part of their self-image and their social relationships” (Ferri, 2011, p. 25). Young people use digital technology to construct their social and learning experiences and the technology represents an important component of the experience.

We are moving towards new literacies. In the words of Eric McLuhan (2009, p. 34) “each new medium is a new culture and each demands a new spin on identity. The shift in our world view from individual to network brings with it a radical reconfiguration in culture”.

Literacy is an important key word. Talking about mass media, in 1964, Marshall McLuhan recognized the important role of literacy to shape not only production and marketing procedures, but all other areas of life, from education to city planning.

Nowadays, many authors speak about media literacy and information literacy as a form of knowledge-ability. The report on Google Generation by the Cyber research team at University College of London (2008) claims that, although young people demonstrate easy familiarity with computers, they rely on the most basic search tools and do not possess the critical and analytical skills to assess the information that they find on the web. So, information literacy needs to be inculcated at an early age or coping

strategies (e.g. over-reliance on Google) become deeply ingrained. According to the Report, this is a big public policy issue.

At the same time, just as reading and writing require a set of complex skills that go well beyond the simple ABC, the skills we need to cope in the new environment – technological, cultural and social – and to be successful participants in it, have to be learned and refined (Ming, 2007, p. XIII). In order to learn, people need analytical and critical skills to understand and use different expressive codes, and creative solutions and original strategies to deal with innovation. It may seem easy to access knowledge these days; all you need is an internet connection but what you know is less important than knowing how to use what you know (Wagner, 2013).

*Table 1 - Young people cultural competencies and social skills in the new media landscape*

PLAY	the capacity to experiment with one's surroundings as a form of <u>problem-solving</u> .
PERFORMANCE	the ability to adopt alternative identities for the purpose of <u>improvisation and discovery</u> .
SIMULATION	the ability to interpret and construct dynamic models of real-world processes.
APPROPRIATION	the ability to meaningfully sample and remix media content.
MULTITASKING	the ability to scan one's environment and shift focus as needed to salient details.
DISTRIBUTED COGNITION	the ability to interact meaningfully with tools that expand mental capacities.
COLLECTIVE INTELLIGENCE	the ability to pool knowledge and compare notes with others toward a common goal.
JUDGMENT	the ability to evaluate the reliability and credibility of different information sources.
TRANSMEDIA NAVIGATION	the ability to follow the flow of stories and information across multiple media.
NETWORKING	the ability to search for, synthesize, and disseminate information.
NEGOTIATION	the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.
VISUALIZATION	the ability to translate information into visual models and understand the information visual models are communicating.

As the already-quoted MacArthur Foundation white paper points out, we need to change focus and concentrate on the social and cultural skills that

would enable people, for example, to make effective use of classroom computers, with the aim of promoting a real participatory culture. Instead of asking: “do kids have computers in their classroom?” we should ask: “do kids have the basic social skills and cultural competencies so that when they do get computers in their classroom, they can participate fully?” (Jenkins, 2006b).

The white paper identifies the New Media Literacies as “the core cultural competencies and social skills that young people need in our new media landscape” (Jenkins, 2006b, pp. 22-55) (tab. 1).

### **OER and educational policy**

The opportunities that digital technology offers education can be better understood by looking at what normal usage of these devices involves: new ways of relating to other people and interacting with them, new languages of expression, new types of groups and new forms of collaboration, sharing and exchange.

The advent of Internet meant that schools lost their traditional monopoly on teaching (Wiley and Hilton, 2008, p. 5). Contemporary society is presently facing a situation of “education overload”, in which the information environment outside of schools is far richer than that inside of schools, in which virtual environments offer a multifaceted and complex dimension for learning practices, in which people suffer the limits, and enjoy the benefits of this “total surround” of information and knowledge” (Buffardi and de Kerckhove, 2013).

“Students in today’s classrooms are not the same as those the education system was designed for”: Prenski’s observation (2001, p. 1), which refers to an American educational context of about ten years ago, is still relevant to Italy today. Maybe we adults, so-called digital immigrants, can still ask ourselves whether current developments in technology are a good thing or not. But for young people, born into this world, the new technology is a natural part of the social environment (Ferri, 2011, pp. 24-25). Evidence of the daily divide is pretty widely recognised, as can be seen in the 2013 OECD report for Italy: “Today’s youth lives in a connected world surrounded by digital technologies. Many Italian observers predict a growing distance between school lives and out-of-school experiences of

children, unless schools update their instructional tools and methods. Teachers, parents and politicians also emphasised that pupils are digital natives for whom ICT constitutes a natural way of socialising and interacting. They stressed the need to align schools with changes in society". OECD's report also highlights that "for example, in 2011, only 30% of Italian students in 8th grade used ICT as a regular instruction tool in science classes, compared to 48% on average in an OECD country" (Avvisati *et al.*, 2013, p. 24).

For many academics, the teaching of digital skills in a context of openness and participation is the only way to bridge the gap between educational institutions and the everyday lives of young people. According to Wiley and Hilton (2009), openness is a fundamental value underlying significant changes in society and is a prerequisite to changes that institutions of education need to make in order to remain relevant to the society in which they exist.

There are a number of ways institutions can be more open, including programs of open sharing of educational materials. As Deimann and Friesen (2013, p. 112) explain, "a remarkable movement has begun to influence education at various levels. Its goal is to remove barriers and to enable more people to access high-quality materials than ever before. This is the Open Educational Resources (OER) movement, with OER defined as the technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes". OER also are defined as learning and teaching materials that teachers (and others) can freely use and reuse, generally without charge, and which have limited or unrestricted licensing rights (generally Creative Commons or GNU licenses). A significant source of savings from digital technologies precisely lies in the access that they provide to a wealth of readily available OER (OECD, 2007).

According to Deimann and Friesen (2013, pp. 112-113), the advent of digital technologies is clearly contributing to the realisation of long-held aspirations to open education up to the widest possible public. In fact, it seems as if OER can realise promises that were formulated over 30 years ago – long before the invention of the Web (...). However, as OER programmes and initiatives are gaining momentum, a debate on the core issue of the educational potentials and affordances they make possible is only just beginning. (...) As Iiyoshi and Kumar (2008, p. 429) explain:

“one of open education’s most critical questions – how can open educational tools, resources, and knowledge demonstrably improve educational quality? – is rarely mentioned or explored”.

Furthermore, “in higher education, most universities have their repository of open educational resources, but they rarely include material that can be used as teaching and learning resources in school” (Avvisati *et al.*, 2013, p. 34). In Italy the Web learning portal Federica (<http://www.federica.unina.it/>), that offers free courses and contents for high education, through its *Mini guides* also helps students who are orienting in the choice of the degree course. But generally - despite projects like the European-wide Learning Resource Exchange, (<http://lreforschools.eun.org>) that federates repositories of open educational resources - the development of quality digital content and OER is a core issue for schools in the third millennium. As the 2013 OECD pointed out when discussing National Plan for Digital Schools: “supporting the production of digital resources is thus an absolute necessity for the success of the plan. Developing quickly enough digital pedagogic content and tools, meeting a variety of needs, requires the mobilisation of the for-profit and non-profit private sectors, but also the contribution of teachers. An important step would be to encourage Italian teachers and institutions to develop and share OER themselves” (Avvisati *et al.*, 2013, pp. 32-34).

In the Communication titled *European Strategy for a Better Internet for Children*, the European Commission (2012, pp. 8-9) shows that there is a serious digital skills deficit amongst Europe's children, despite the popular view that they are “digital natives”. Children need to develop their critical thinking - and digital and media literacy skills - to be able to actively contribute in a participatory society. Digital and media literacy skills are crucial to children's use of the internet. New and higher quality content and services, dedicated to children, have to be developed. The Strategy supports two strands of action: *stimulating the production of high-quality on line content for children* and *promoting positive online experiences for young children*. For example, teenagers could benefit from creative and educational games to stimulate their imagination and support their positive use of the internet. At the same time, technology will be used more and more in classrooms for all age groups. Interactive learning through technology can stimulate creativity and critical thinking. The aim is to encourage creativity and positive use of the internet that will not only help

them develop their digital skills but will also empower them to grow and shape their world in a safe, creative way, to build communities, and to be active in a participatory society.

It could also give birth to technological innovation and start-ups that contribute to the digital single market. On line and mobile apps and games provide unprecedented opportunities for business development. Nowadays, 75% of 6 to 17 year-olds in Europe are users of the Internet. 15 and 16 year-olds report that they first went online when they were 11. By comparison, 9 and 10 year-olds report that, on average, they began to use it when they were 7. 33% of 9 to 16 year-olds who go online say they do so using a mobile phone or other handheld device (Livingstone *et al.*, 2011). 38 % of 9-12 year-olds in Europe who use the Internet report that they have a personal profile on a social networking site (Livingstone *et al.*, 2011). Paying attention to the demands of children opens up a wide range of business opportunities.

The European Commission (2012) highlight that the global digital content market was over 110 billion Euros in 2012. The market worth of mobile apps was 5 billion euros, and is expected to grow up to 27 billion euros by 2015, mainly driven by games and with more than 5 billion mobile subscriptions worldwide. The global video game market is predicted to reach sales of over 62 billion euros. “With the wide proliferation of tablets, smart phones and laptops that children use heavily the potential market for interactive creative and educational online content for both young children and teenagers is substantial” (European Commission, 2012, p. 4).

As highlighted in the Communication, a combination of policies is required to deliver a *Better Internet for Children*. “While the Internet, the devices used to access it and the services available today were not created specifically for use by children, research shows that they are increasingly prominent users. Children therefore form a specific group requiring attention: the way children behave today online will help define tomorrow’s digital world” (European Commission, 2012, p. 15).

According to Palfrey and Gasser (2008, pp. 6-7) the repercussions of these changes, in the decades to come, will be profound for all of us. But those who are growing up as “digital natives” are on track to pay the highest price. Digital natives have every chance of propelling society further forward in myriad ways -if we let them. But we are at a crossroads. There are two possible paths before us. One in which we destroy what is great

about the Internet and about how young people use it. One in which we make smart choices and head toward a bright future in a digital age. The stakes of our actions today are very high. On one of these paths, we seek to constrain their creativity, self-expression, and innovation in public and private spheres; on the other, we embrace these things while minimizing the dangers that come with the new era. “Fear is the single biggest obstacle to getting started on that second path, the one where we realize the potential of digital technology and the way that Digital Natives are using it. The choices that we are making now will govern how our children and grandchildren live their lives in many important ways: how they shape their identities, protect their privacy, and keep themselves safe; how they create, understand, and shape the information that underlies the decision-making of their generation; and how they learn, innovate, and take responsibility as citizens” (Palfrey and Gasser, 2008, pp. 6-7). In the words of Neelie Kroes (2013), Vice president of the European Commission responsible for the Digital Agenda: the internet is the home to so much innovation. The platform for so many democratic voices. The new frontier of freedom: we must cherish and protect it.

Institutions responsible for education and training find themselves at the centre of a major transformation which is pushing for the adoption of new teaching and organisational models, new competencies and new objectives: “There seems to be little doubt that contemporary society is changing as a result of economic, political, technological and social transformations which leads us to question the role that education systems are called on to play both now and in the short-term future” (Landri, 2010, p. 39). Little more than a century ago we were setting up factory schools for the industrial society (Wagner, 2013). Schools for the 21<sup>st</sup> century need to be our priority now. The ability to find innovative solutions, a creative approach to problem solving, critical thinking, communication and collaboration skills are becoming more and more important in the development of an education system that bridges the gap between the world of school and that of business, between the people who teach our children and those who will employ them (Wagner, 2013, p. 45).

In Italy, the government’s Digital Schools plan, which was launched in 2007, is based on the principle of integrating technology within a new kind of teaching process. The aim is to move outside the traditional confines of classroom and subject areas, “to fundamentally change the way schools

work and how we perceive school time”. With the Digital Schools plan, there is no longer “a class in the lab, but a lab in the classroom”<sup>5</sup>: an expression which usefully describes the importance of encouraging more constant and varied use of technology as part of normal school activity, “the same technologies that students use for their personal and social relations”. The section outlining the rationale behind the plan states that: the process of improvement that the project aims to promote covers both organisational and didactic aspects of the teaching and learning process. The section begins with an appraisal of school needs, and discusses how technology should be integrated into classroom practice, referring to methodology as well as the actual tools. “The focus is not on the technology as such, but on the innovative dynamics it can result in”<sup>6</sup>.

The Plan has encouraged investments of private firms in the development of pedagogical digital content. “As a result, a larger fraction of publishers’ resources are expected to flow into the development of quality contents to support teaching and learning (and a small share in their sales department)” (Avvisati *et al.*, 2013, p. 32). But OECD recommends that “while continuing to incentivise publishers to develop digital resources, Italy should take steps to develop quickly a national bank of digital pedagogic resources - through an adaptation of a selected number of high quality open educational resources available in other languages, or/and through a central repository for Italian OER - supporting the development of a virtual exchange platform where teachers can post their own open educational resources, as well as share their experience about using specific digital devices and resources for teaching and learning” (Avvisati *et al.*, 2013, p. 9).

### Conclusions. Towards the virtual classroom

The network environments that are affecting most forms of social relationships and knowledge-sharing, are powerful architectures for user participation, posing new challenges to education systems. Nowadays, we live in an interconnected digital ecosystem and youth participation in this networked world suggests new ways of thinking about the role of education.

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<sup>5</sup> [http://hubmiur.pubblica.istruzione.it/web/istruzione/piano\\_scuola\\_digitale](http://hubmiur.pubblica.istruzione.it/web/istruzione/piano_scuola_digitale)

<sup>6</sup> <http://www.scuola-digitale.it/classi-2-0/il-progetto/introduzione-2/#sthash.6ROcLcxr.dpuf>

As in the questions of Mizuko Ito, what would it mean to really exploit the potential of the learning opportunities available through online resources and networks? Rather than assuming that education is primarily about preparing for job and careers, what would it mean to think of it as a process guiding youth participation in public life generally? Finally, what would it mean to enlist help in this endeavor from engaged and diverse publics that are broader than what we traditionally think of as educational and civic institutions? (Ito *et al.*, 2010).

Nowadays, the need to integrate digital technologies into teaching and learning processes is dictated by our recognition of the potential usefulness of these new tools, as well as by our awareness that technology plays a central role in young people's lives, in the way they socialise and interact as well as learn. Technology is becoming a synonym of today's youth, to the point that we refer to them as a digital native generation.

There has been heated debate about the theory of technology and teaching for decades now, with a more recent focus on how to integrate new technology into the school curriculum and classroom practice. The recent increase in the availability of top quality OER is contributing to a more synergic relationship. The centrality of digital content once again emphasises the importance of integrating methods and tools that form part of young people's everyday lives into the school curriculum and normal classroom practice.

We are aware that it is teaching content and methodology, rather than technology, which is going to help educational institutions respond to the challenges of the 21<sup>st</sup> century and determine how they answer to the needs of the digital natives generation. To meet this challenge, public institutions need to come up with the right educational policies and then ensure the proper conditions for their implementation, getting out of the old loophole between, on one hand "the rather chaotic development of educational technology and, on the other hand, industry's need to find new markets" (Maragliano, 1974, p. 19).

"Between our great hopes of social progress at one end of the scale, and the bathos of e-mail, videogames and surfing the net at the other, there are two half-way stages. The first is online resources - i.e. contents and services which genuinely offer new opportunities - and the other is the desire and motivation on the part of our young people to get to grips with these resources and the critical skills they use to interpret them" (Livingstone,

2010, p. 84). The dynamics of the way young people learn, communicate, participate and socialise on the web constitute the array of possible ways the subject can interact with the Internet as object. It is also important, therefore, to look at the “actual attitudes of the institutions like schools, the family, the market and the State, looking at the influence these Internet activities have and how they are used in everyday life. This is, in effect, what encourages a teacher to use computer and audiovisual technology instead of books, why governments encourage people to have an Internet connection at home, why universities develop a decentralised network and why families encourage their children to use it.” (Livingstone, 2010, p. 37). The 2003 Unesco report stated clearly that social inclusion depends on higher levels of education. “As societies become more complex, more sophisticated skills are required for social integration and economic participation. It is imperative that all young people, in or out of school have access to technological tools and knowledge-sharing networks” (Guttman, 2003, p. 17).

This is a complex scenario and one in which digital technology and the Internet play a crucial role, especially in terms of the potential they offer and the cultural framework that defines their use. Key factors are: working in groups, peer to peer culture, sharing and collaboration, connective thought and intelligence, new learning processes, as well as the new forms of socialisation and interaction which have arisen as a result of the Internet. It is not only classroom practice that is changing, but a series of complex elements involving diverse players and sectors, including big business, political decision-makers, teachers, parents and the technology itself, as well as the relationships between them all. As is always the case, innovation crashes headlong into the comfortable, established routine, attracts investment and raises some tricky political and legislative questions. “Hopes that the Internet would lead to new, more open, informal, horizontal, dialogue-based, cooperative forms of learning (see also: Stead, *et al.*, 2006) look set to be dashed for the moment because of heavy conservative tendencies governing curriculum design and development, teacher training, assessment procedures, employer expectations and the availability of funding” (Livingstone, 2010, p. 114).

The question of digital content gives rise to some interesting reflections on the relationship between the web and educational institutions. One of these is the question of net neutrality, which is generally taken to mean what Tim

Wu (2003, p. 142) defined as a “design principle” aimed at “guaranteeing a neutral public web”. Another, but related issue, is the conflict between the free file sharing and the free market, with the Open Access, and especially the OER movement on one side, and, on the other, private companies that produce and sell digital content. The issue of quality control is also important, especially, though not only, where educational and teaching content are concerned. The digital question thus involves those institutions traditionally associated with credentialing, and along with them, their teachers, whose role in the new digital schools is key if they are to bridge that “daily divide” and introduce technological methodology as well as apparatus into their classrooms and translate theoretical guidelines into daily teaching practice. A new system of knowledge construction is dawning; one which will change our whole relationship with knowledge and education, as well as the way we learn. As always, Education policy – and the way it is implemented – will be a key factor in determining the curricula and methodology that schools adopt. Exploration of the digital space is only just beginning, in schools and elsewhere, although progress over the first ten years has been extremely fast.

This promising relationship is only at the beginning and it is obvious that adequate education policies and suitable conditions for implementing them are necessary. When talking about the development of digital content at the University level, Borgman in 2006 highlighted the need for partnerships between publishing companies, libraries, universities and schools. If educational institutions want to make the most of the opportunities that digital technology offers, then cooperation and collaboration are essential. Educational institutions are central to these collaborative networks and they need to be actively involved in the construction of a public web at the level of policy and implementation, as well as design and running. This web will host open and quality digital content which is freely available to its users; students, young people, teachers and ordinary citizens, who will use the web more and more often to find the information they need.

In the year 2013, with the Internet at a suitable stage of development to enable us to forget the excesses of enthusiasm as well as of terror that accompanied our acceptance of bytes into our lives, it is obvious that we need to set down adequate policies regarding internet use and development that will support teachers, students and ordinary citizens in their relationship with the new technology. As Reinghold (2013, p. 5) wrote in

his recent “Why the Internet makes us intelligent” response to Nicholas Carr’s famous “Google is making us stupid?”: “the way emerging media are used in these early years and the new language register could influence the way they are used and abused in the years to come”. Whether the Internet makes us more stupid or more intelligent will depend on the choices we make and the policies we adopt over the next few years.

As we discussed in the article, these policies are – and must be – the result of the intersection between the plurality of actors involved in the school-technology-society relationship. Just as it is not enough simply to introduce new technological artefacts in the classroom, just as it is not sufficient to introduce policies that are not part of the process of the intersection and of the “arrangements between the actors, artefacts, technologies, discourses and practices of education policy” (Serpieri and Grimaldi, *forthcoming*).

Open Access approach in the educational system represents an education policy that embeds the dynamics of the new youth participatory culture.

For those who have been closely monitoring the long and winding road of e-learning into the youth participatory culture, it comes then as no surprise the rapid and impetuous development of Massive Open Online Courses. MOOCs owe their extraordinary success to their capacity of blending two key factors: the experience accumulated, over the past ten years, in the production of high quality OER courseware and the participatory and interactive dynamics of the web 2.0 environment. On strictly technical grounds, the main innovation of MOOCs has consisted in passing by the one-step, one-time download of the whole course to the offering of courses according to a weekly schedule. With the paradox that, by bringing back the clock to the traditional calendar, access to the OER material have been transformed, thanks to web 2.0 networking, by a solitary experience into a communitarian mass phenomenon. At last, we can say that the virtual classroom has been born again, and this time ... for real. For the past, the idea of the virtual classroom mainly reproduced the conventional small group of learners, just as in the century-old educational setting, with two main variants. In the so-called distant education, learners could be in a distant place from their teacher, all together or dispersed across a city, or a nation. But they remained a small group, and their relationships among them and the teacher followed the usual patterns of limited interaction. The same was true in the other variant, when in a regular bricks and mortar classroom OER materials would be introduced through the web, thus

giving life to a parallel «virtual classroom», one that would be, however, quite confined in space.

With Moods, we enter - through a traditional pathway - a brand new scenario. The number of participants to a course is unlimited, scoring, in some cases, over one hundred thousand. Yet, learners are bound together by the same schedule across the world, for accessing lessons, downloading materials and delivering required tests or papers. And they interact with each other to exchange information, solve problems, answer to questionnaires, advice on proper sources to be consulted. Thus giving birth to a virtual classroom with an extraordinary knowledge potential.

It is way too early to evaluate results and future perspectives for the MOOCs revolution. The fact that the main MOOC aggregator, Coursera, has enrolled, in less than two years, more than twenty millions students to courses by the most prestigious US universities has launched MOOCs center stage in the international educational debate. While being aware that quantity is not necessarily a synonym for quality, it is by now clear that we are now dealing with a new frontier. It may take some time for MOOCs to find the proper blending with the overall educational system, moving out of the academic walls into various grades of education. But, as we have been learning so many times with the internet speed of change, we should all try and do our best not to be caught unprepared.

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