

coliblite

Coliblite national report - ITALY

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INTRODUCTION

COLIBLITE - COmmunity LIBraries and digital LITeracy skills for MLF (migrant and low-educated families) children, is a KA2 Erasmus+ project (n. 2017-1-NL01-KA201-035271) started in September 2017 and due to finish in August 2020.¹

COLIBLITE's partners are based in Utrecht, London, Bologna, Modena and Bucharest.² In this project they aim to develop horizontal coordinated neighborhood approaches, methodologies and actions involving schools, libraries, youth work organisations, community centers and MLF parents to promote and teach the necessary digital citizenship skills -including basic ICT skills, digital information and critical thinking skills- to MLF children (4–11 years old) and youngsters (12-16 y.o.). COLIBLITE is based on the outcomes of the DGGMLF project (2014-17),³ in which methods were developed to support MLF parents in coaching their children in their online use of the Internet.

During the new 3-year project, COLIBLITE partners will: undertake national research on digital citizenship initiatives (the main content of this report); develop and implement organizational and joint action plans; develop and execute training of educational, librarians and other professionals; develop joint pilot projects and activities with children and youngsters; and upscale the results and methods to other neighbourhoods in the partners' cities and other cities in their countries.

The production of the national reports is an important step of the project, as it contributes to sharing useful information and creating a common understanding among the partners of what is meant in each country by digital citizenship competences and 21st century skills (the focus of COLIBLITE project) and which policies and actions are deployed to develop them among children and young people, especially disadvantaged ones (and the population at large). This step is needed because attention to digital competences, the reference frameworks used to describe them and the measures to develop them are still relatively new and evolving. They partly differ across countries and sectors (e.g. libraries, schools and youth work etc.) and it is therefore important to collect information about these aspects nationally, and then share it among the partners. Besides contributing to develop a common language and understanding of these issues, the effort also helps partners identify opportunities to link COLIBLITE's local actions to existing national and local initiatives in the same field, enhancing the sustainability of the project's results.

The COLIBLITE national report is the first intellectual output of the project and is produced for each partner's country following a common overall structure (adapted to national situations):

1. **definitions and views** of digital citizenship and related competences found in education policies, digital agendas and so on
2. evidence about the **digital experience and competence** of children and young people, incl. disadvantaged ones (if available)
3. **initiatives for digital citizenship** competence development in schools, libraries and other sectors at national, regional and local level
4. **concluding observations**

¹ See <http://www.miramedia.nl/projecten/internationaal--coliblite.htm> and for Italy <http://www.abc-digitale.it/coliblite/> and <https://www.facebook.com/coliblite/>.

² Bibliotheek Utrecht is COLIBLITE's formal project coordinator supported by Mira Media as transnational coordinator. The "leading" national partners are: Mira Media in Utrecht, Migrants Resource Center in London, Fondazione Aldini Valeriani and Open Group in Bologna and Modena, and Active Watch in Bucharest.

³ See <http://www.miramedia.nl/projecten/dggmlf-intercultural-media-literacy.htm>

1 Definitions of digital citizenship + 21st century skills in Italy

In Italy, notions of digital citizenship or that can be related to it, albeit not officially defined and approved, are present in (we use the Italian acronyms of institutions and policy documents):

- the Guidelines (2014) of the National Program for digital culture of the Italian Digital Agenda
- the National Guidelines for the school curriculum (2012) of the Ministry of education, university and research (MIUR)
- the 2015 National Digital School Plan (PNSD) and, specifically, in the Digital Civic Education Curriculum (2018)
- the Manifesto for information literacy (2016) and the proposals put forward by the Italian Libraries Association (AIB), stimulated by the above Digital Agenda and the PNSD

1.1 Digital citizenship in the Italian Digital Agenda

In September 2013, the Italian Digital Agency AGID (Agenzia Italia Digitale), operating under the Prime Minister, launched the **National Program for digital culture, training and competence**, which is one of 6 strategic axes⁴ of the Italian Digital Agenda. A subsequent key document is the **Strategic and Operational Guidelines**⁵ of the National Program, published in May 2014. The Guidelines came after an extensive consultation with representatives and stakeholders from all government levels (from ministries to municipalities) and sectors of Italian society.

These documents frame digital competence into four broad domains:

1. **competences for digital citizenship**
2. transversal digital competences needed by all workers, which can build up to so-called eLeadership
3. the digital competences of all workers in the public administration (a variant of the previous category)
4. the professional competences of ICT workers and specialists (whatever their employment sector)

“Basic digital competence – digital citizenship” is identified as a policy area/priority which should develop the competences that citizens need “in order to access and fully participate, with full digital awareness, to the dynamics of the knowledge society” (Guidelines, p.27). To achieve this, “digital inclusion” actions are also needed to create equal conditions for all citizens to use the Internet and fight the causes of illiteracy and social and cultural discrimination; key among them, the creation of life-long learning opportunities.

The National Program and the related Guidelines do not provide more specific definitions of what those competences are/should be. Reference however is made to the components of the European **Digital Economy and Society Index (DESI)**, which measures the digital skills level of the population, based on the answers that citizens give in the annual survey carried out on these and other topics by national statistics offices, coordinated by Eurostat. The activities whose presence/absence are deemed to signal some degree of basic digital competence mentioned in the Guidelines are: regular Internet use, use of eGovernment services, buying goods and services online, using online banking, uploading on the web one's digital content (posts, photos etc.), joining social networks, following online courses, participating to online polls or voting on social or political issues.

⁴ The six axes of the Italian Digital Agenda are: Infrastructure and safety; eGov/Open Data; eCommerce; digital competence; smart cities/communities; research and innovation.

⁵ See

http://www.agid.gov.it/sites/default/files/documenti_indirizzo/programma_nazionale_cultura_formazione_competenze_digitali_-_linee_guida_indicazioni_strategiche_operative_0.pdf

The full list of activities used to measure citizens' digital competence/skills in DESI comes from the European Digital Competence framework (DigComp). The questions related to it ("have you done ...? yes/no") in the Eurostat survey can be seen in the central column of the table below (numbers refer to the associated DigComp competences).⁶ The right column shows the criteria used to assign the competence value at area level, based on the respondent's answers to the questions.

Table 1 - Indicators and aggregation method used in DESI for digital skills

Area	Indicator	Criteria to assign competence value for the area
Information	Finding information about goods or services 1.1 Obtained information from public authorities websites 1.1 Seeking health-related information 1.1 Copied or moved files or folders 1.3 Saved files on Internet storage space 1.3	None (individuals having done none of the listed items) Basic (only one item) Above basic (at least two items)
Communication	Sending/receiving emails 2.1 Telephoning/video calls over the internet 2.1 Participating in social networks 2.1/2.2 Uploading self-created content to any website to be shared 2.2	None (individuals having done none of the listed items) Basic (only one item) Above basic (at least two items)
Software skills for content manipulation	A – Basic Used word processing software 3.1 Used spreadsheet software 3.1 Used software to edit photos, video or audio files 3.1 B – Above basic Created presentation or document integrating text, pictures, tables or charts 3.1 Used advanced functions of spreadsheet to organise and analyse data (sorting, filtering, using formulas, creating charts) 3.1 Have written a code in a programming language 3.4	None (individuals having done none of the listed items) Basic (if one or more "basic" items but none of the "above basic" items) Above basic (if at least one of the "above basic" items)
Problem solving	A – Problem solving Transferring files between computers or other devices 5.1 Installing software and applications (apps) 5.1 Changing settings of any software, including operational system or security programs 5.1 B – Familiarity with online services Internet banking 5.2 Online purchases (in the last 12m) 5.2 Selling online 5.2 Used online learning resources 5.2	None (individuals having done none of the listed items) Basic (only items from one of the two sub-dimensions) Above basic (at least one item from each sub-dimension)

Source: EC DG CONNECT "Measuring Digital Skills across the EU: EU wide indicators of Digital Competence", May 2014 and http://ec.europa.eu/newsroom/document.cfm?doc_id=44390

⁶ DigComp competences 1.2, 2.4, 2.5, 2.6, 3.3, 5.3, 5.4 are not covered.

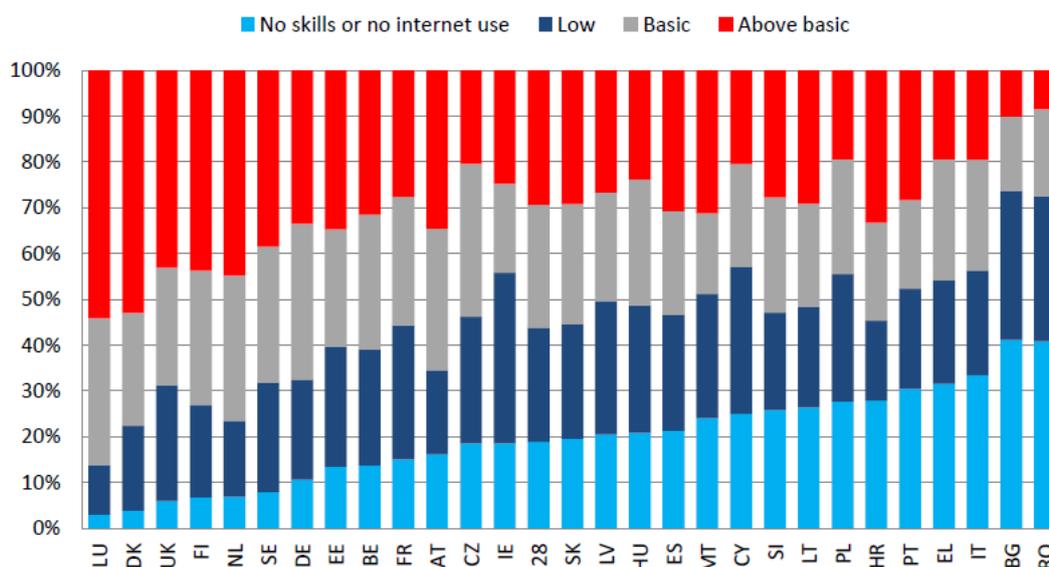
For the **overall aggregation** of the indicator, four categories are defined for an individual's skills, whereby :

DESI 2017 "Human capital" chapter ⁷	
NO	individuals who answered none in all categories, plus those who have not used the internet in the last 12 months or who have never used the internet
LOW	an individual has to have carried out activities from only one of the four dimensions
BASIC	an individual has to have basic in at least one dimension, but no skills in none
ABOVE BASIC	the individual has to score above basic in each of the four dimensions

Progress in digital competence, from the DESI perspective, reflects therefore the number of digital activities performed and the diversity of competence domains (number of areas covered). Only with digital content production (area 3) a distinction is made between simpler (basic) and more complex (above basic) activities.

Based on the DESI composite indicator, the figure below shows that "19% of the EU population had no digital skills in 2016, the main reason being that they did not use the internet or did so only seldom. **44% of the EU population in 2016** can be considered as lacking sufficient digital skills insofar as they had either **low or no digital skills**, which means they did not possess the minimum, basic digital skills to meet current needs".

Digital skills of the EU population, 2016 (% individuals, by level of skills*)



Source: Commission services based on Eurostat data

Interestingly, COLIBLITE partner countries are at the opposite ends of the figure, with the Netherlands and UK having much higher shares of "above basic" population compared to Romania and Italy.

⁷ http://ec.europa.eu/newsroom/document.cfm?doc_id=44390

1.2 Digital competence in the National Guidelines of the Ministry of Education

The Ministry of Education (MIUR) issued in November 2012 the **National Guidelines for the curricula at kindergarten and first school cycle (primary and lower secondary school)**.⁸ This legally binding regulation defined at a general level the new school curricula, in compliance with the competence-based, student-centred strategy for school education launched in 2004.

According to this regulation, at the end of the first school cycle (14 years old) “the student has good digital competence, he/she uses ICT with awareness to search for and analyse data and information, to distinguish valid ones from those that need further investigation, control and validation, and to interact with different people in the world” (p.10). Throughout the document, and across all disciplines,⁹ ICT, new media and digital competence are mentioned as sources of opportunities for students to access knowledge, develop personalised learning paths, communicate and collaborate with others and express themselves creatively.

In particular, the discipline called Technology should “develop in the students a **practice with technology which is ethical and responsible**. ... In the case of ICT, it is necessary that along with the mastery of tools (which is often acquired outside of school), students develop a **critical attitude and greater awareness about: their social and cultural effects, the relational and psychological consequences of different usages, and their implications for health and the environment**. This educational goal should in fact be shared among all disciplines. When possible, students should learn simple and flexible computer programming languages, that can help them enjoy the design and creation of practical projects (interactive web sites, games, and other applications) and understand the link between source code and visible results”. (p.66)

The National Guidelines define as follows the **learning outcomes associated with the use of ICT** (“is able to ...”) in two crucial moments of the first school cycle:

<i>End of primary school (11 years old)</i>	<i>End of lower secondary school (14 years old)</i>
<p><i>To view and observe</i></p> <ul style="list-style-type: none"> – Identify and document the main function of a new digital application – Represent observation data with maps, tables, diagrams, drawings and texts 	<p><i>To view and observe</i></p> <ul style="list-style-type: none"> – Find and explore the functions and potential of new computer applications
<p><i>To envisage and imagine</i></p> <ul style="list-style-type: none"> – Organise a school trip or visit to a museum by using the Internet to find useful news and information 	<p><i>To envisage, imagine and design</i></p> <ul style="list-style-type: none"> – Design a school trip or visit to a museum by using the Internet to find useful news and information
<p><i>To act and transform</i></p> <ul style="list-style-type: none"> – Search for, select, download and install a common computer application 	<p><i>To act, transform and produce</i></p> <ul style="list-style-type: none"> – Dismantle and reassemble simple objects and electronic devices – Detect and draw one's home and other locations, also by using specific software tools – Program computing devices and write simple instructions to control robotic devices

⁸ MIUR (2012) “Indicazioni nazionali per il curricolo della scuola dell’infanzia e del primo ciclo di istruzione”, see http://www.indicazioninazionali.it/documenti/Indicazioni_nazionali/indicazioni_nazionali_infanzienvirna_primo_ciclo.pdf

⁹ The disciplines addressed in the first school cycle are: Italian language, English and a second EU language, history, geography, mathematics, natural sciences, music, art and images, physical education, technology.

1.3 Digital citizenship in the National Digital School Plan (PNSD)

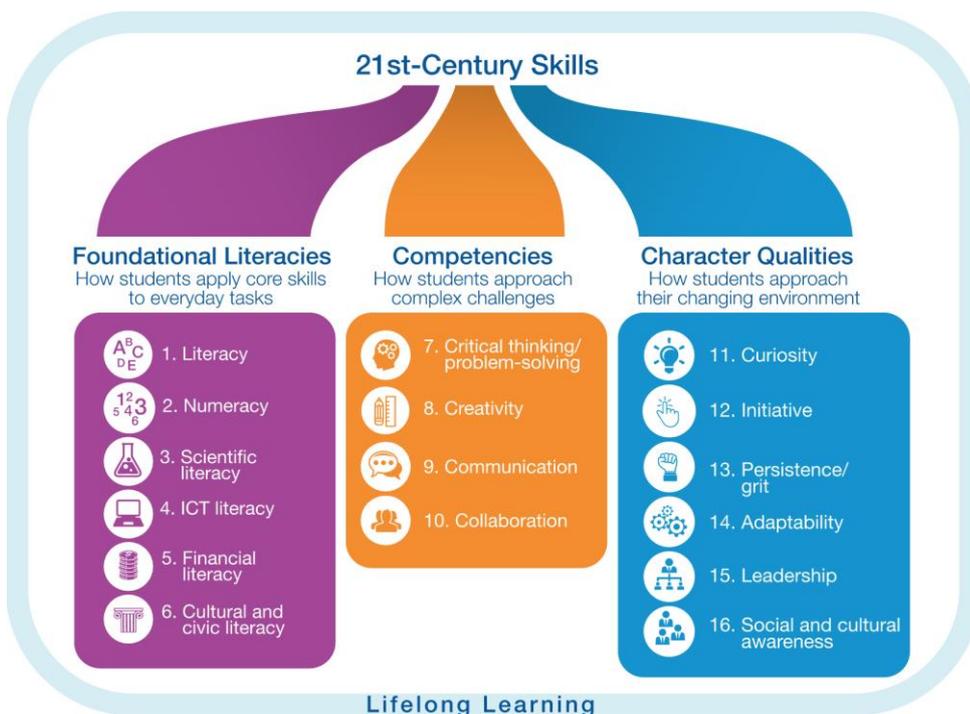
In 2015, MIUR launched the new **Digital School National Plan** (PNSD in Italian),¹⁰ with an overall investment of about 1 billion euros by 2020. The Plan presents a strategy with 35 actions, linking wider use of digital technology to the organisational and pedagogical transformation of school education. Half of the money is to be spent on Internet connectivity, digital equipment and learning environments of the schools and the other half on training and other support measures of teachers, school managers and other staff.

Action 14 of PNSD envisages a technical working group that will define “A common framework for students digital competence and media education”. This action’s success will be measured in terms of: revision of existing national guidelines (see above), adoption of the new guidelines school curricula and teaching offer; competence mapping and certification.

In Action 14, digital competence is described as: 1) a foundational literacy (along with literacy, numeracy etc.); 2) a contributor to transversal competencies and attitudes (cognitive, operational, relational and meta-cognitive) 3) as the basis for a **full, active and informed citizenship** in our society.

To illustrate the role of digital competence as foundational and transversal element of 21st century skills, PNSD presents the image from the WEF 2013 report *New Vision for Education* represented in **Figure 1**.

Figure 1 -21st century skills in the view of the World Economic Forum



Source: World Economic Forum, *New Vision for Education* (2013)

With respect to digital citizenship, PNSD mentions three inspiring documents for the working group (in Annex, we provide a short summary of these frameworks):

- the Media Smarts digital literacy framework for Canadian schools¹¹

¹⁰ Piano nazionale scuola digitale can be found at http://www.istruzione.it/scuola_digitale/index.shtml

¹¹ See <http://mediasmarts.ca/teacher-resources/digital-literacy-framework/mapping-digital-literacy-policy-practice-canadian-education-landscape>

- the Web literacy framework of Mozilla Foundation¹²
- the DigComp framework of the European Commission

The working group envisaged by action 14 has not yet been set up, but the staff in charge of PNSD at MIUR has published in January 2018 the **Digital Civic Education Curriculum**,¹³ which offers a description of the meaning and content of **digital citizenship in the school education perspective**.¹⁴ The Curriculum has been developed within the **Connected Generations - Safer Internet Centre Italia** initiative, coordinated by MIUR in collaboration with several other partners. Over 100 public institutions, national and international universities and third sector organisations and representatives contributed to the design of the Curriculum.

According to the Curriculum, the development of digital citizenship entails the full appropriation of digital media by students (and citizens in general), with a change **from being passive consumers to being critical consumers and responsible producers** of digital content and systems. The two qualifying features of digital citizenship that should enable and support this shift are thus:

- the **critical awareness** that behind technology's vast potential for humanity stand deep social, cultural and ethical implications. Such critical awareness is a necessary condition to "govern" technological change and orient it towards sustainable goals for our society;
- the **responsibility** that digital media require from their users, with respect to the consequences that stem from using them to produce messages and content, besides just for consumption.

The curriculum identifies 5 main themes which contribute to the development of digital citizenship:



In the Curriculum's website, each theme is described in discursive terms, by highlighting relevant content aspects (see next page). Each theme is also linked to related "schoolkits"¹⁵ that a large number of training content providers are making available to teachers and schools, as part of PNSD implementation.

At the moment, the Curriculum does not specify in what school grade/at which age the different content

¹² See <https://learning.mozilla.org/en-US/web-literacy>

¹³ Il Curriculum di educazione civica digitale can be found at <http://www.generazioniconnesse.it/site/it/educazione-civica-digitale/>

¹⁴ Many of the topics in the Curriculum were anticipated in the call for teaching proposals on "digital citizenship and creativity" issued by MIUR on March 3, 2017 (see http://www.istruzione.it/pon/avviso_cittadinanza-creativita.html#sec_mon)

¹⁵ In PNSD, a Schoolkit is a document about a learning activity with information about its title, author, target, aims, detailed steps, input requirements, expected results, evaluation suggestions and links or attachments to useful materials, illustrations and so on.

aspects should be addressed. Most schoolkits, however, do provide information about the school level/s they target.

Table 2 - Themes and content of Digital Civic Education Curriculum in Italy

<p>1. Internet and the current transformation / architecture, rights and ecology</p> <ul style="list-style-type: none"> – Internet history, architecture and key features – Net Neutrality and the challenges of Internet governance – consequences and changes in people's rights on the Internet – implications for organisations and work, for money and markets – how freedom of expression, participation and the functioning of democracy are affected
<p>2. Media education /behaving and moving around effectively in our media society</p> <ul style="list-style-type: none"> – comparative media history, evolution and culture (media as means of communication and cultural artefact); – the individual/personal dimension, at the cross-road between public and private domains (privacy, digital footprints, self-representation through mass media, new media and social media) – the socialization dimension (learning to relate and communicate with others in the digital world, managing diversity online etc.) – media and time management (when and how much to use media, intergenerational aspects at school and in the family)
<p>3. Information education /searching, analysing and using information correctly</p> <ul style="list-style-type: none"> – searching, making sense of, and using information critically and purposely – the capacity to assess sources' origin, quality and credibility, and the quality of the information found (and the role of archives, libraries etc.) – normative aspects related to the production and re-use of information – the evolving ecosystem of info-data production and distribution – public information, open data, open governance, civic hacking etc.
<p>4. Quantification and computing / data and artificial intelligence understanding their role, value, risks and implications</p> <ul style="list-style-type: none"> – data vs. information; – managing data production, classification and processing in appropriate formats – knowing mathematics and statistical notions necessary to extract meaningful information from data – semantic (e.g. meta-data), technical (e.g. interoperability) and social (openness, data safety) data governance issues – making sense of and communicating data (data visualization, data journalism etc.) – big data (what is it, how to deal with it) – problems, algorithms and computation; automation, machine learning and artificial intelligence – online safety (cybersecurity) and trust (blockchain)
<p>5. Digital culture and creativity / being in the Internet is also a cultural act</p> <ul style="list-style-type: none"> – learning about multimedia, interactivity, hypertext and interfaces to express one's creativity – learning digital storytelling and communication (blogs, videomaking etc.) – cognitive ergonomics, usability and information representation – the evolution of reading and writing in digital environments – video-gaming – virtual reality and augmented reality

Source: based on <http://www.generazioniconnesse.it/site/it/educazione-civica-digitale/>

1.4 Libraries, information literacy and digital literacy

The **Italian Libraries Association (AIB)** in Italian) has been much active in recent years in the discussion about information and digital literacy. Stimulated by the launch of the National Program for digital culture, training and competence (see chapter 1.1), AIB set up a national **Study Group on Information Literacy** called GLIT, which operated in 2014-2017 and has been renovated for the 2017-2020 period.¹⁶ In 2016, GLIT produced and discussed widely within the Italian librarians' community a **Manifesto for information literacy**.¹⁷ This document provides an updated view of the topic, in the light of the mass diffusion of digital technologies, the multiplication of information sources, the influence of social networks etc.

The definition of Media and Information Literacy endorsed by the Governing Board of IFLA, at its meeting in Den Haag, The Netherlands, 7 December 2011 is considered still valid:

“Media and Information Literacy consists of the knowledge, the attitudes, and the sum of the skills needed to know when and what information is needed; where and how to obtain that information; how to evaluate it critically and organise it once it is found; and how to use it in an ethical way. The concept extends beyond communication and information technologies to encompass learning, critical thinking, and interpretative skills across and beyond professional and educational boundaries. Media and Information Literacy includes all types of information resources: oral, print, and digital.”

The Manifesto, however, aims at framing this notion into a more operational perspective, by putting forward a large number of themes for potential information literacy actions. These are recommended to be carried out by libraries in collaboration or partnership with a wide range of actors, including at the local level, given the pervasive presence nowadays of digital technologies in all areas of life and related information competence requirements.

Several of these themes can be found in the Information education section (area 3) of the Digital Civic Education Curriculum seen in chapter 1.3. For three topics, AIB developed schoolkits which aim to provide advice and support teachers on how to design classroom activities (individual and group-based):

- to discover the richness of **Italian public information** available in databases, websites and other digital sources (schoolKit "Alla scoperta delle banche dati");
- to **develop a critical mindset** among students towards documents and information, also by learning to use a specific information evaluation grid (schoolkit "Individuare i documenti, valutare le informazioni");
- to learn how to **search, retrieve and assess information from the Internet** (schoolkit "Imparare a documentarsi e orientarsi nella ricerca in Internet").

Three other schoolkits included in the Curriculum area 3 come from the Central Institute for the Unified Catalogue of Italian Libraries and bibliographic information (ICCU¹⁸ in Italian). One addresses the MOVIO multifunctional platform: an easy to use, open source CMS with a collection of tools to create multimedia exhibitions and for digital storytelling (multimedia galleries, slide shows, interactive geographic maps, etc.). A second one is about the national multimedia portal devoted to World War I. The third one is about OPAC SBN the query system of the National Library Service.

As a further reflection about the new potential role of public libraries in developing digital citizenship, one of the members of GLIT, Laura Testoni, wrote a scientific article about the relationship between

¹⁶ The group gathered about 10 librarians from different cities throughout Italy who meet and coordinate their activities mostly at a distance.

¹⁷ <http://www.aib.it/struttura/commissioni-e-gruppi/gruppo-literacy/ilmanifesto/>

¹⁸ ICCU - Istituto Centrale per il Catalogo Unico delle biblioteche italiane e per le informazioni bibliografiche.

information literacy (the traditional domain of intervention of libraries) and digital literacy, which appears as a broader area, ever more important for the use of library services themselves and citizenship in general. Testoni compared 19 competence themes that she extracted from the Association of College and Research Libraries' Framework for Information Literacy for Higher Education 2015¹⁹ with the 21 competences of the DigComp framework, looking for both matching and distinct elements. From this analysis, she identifies a first list of common/shared competences which she qualifies as "indispensable for any training project, basic and essential to direct laboratory activities for any type of library".

They are:

1. the ability to retrieve, organise and manage information
2. the ability to filter and evaluate sources
3. recognising the social, collaborative and interactive nature of the digital infosphere
4. awareness of privacy issues
5. the ability to create as well as use digital content (with the consequent responsibilities)
6. attention to copyright and licenses

Testoni considers these competences the "most effective antidote to fake news and the post-truth era", which she cited in the preface of the article as highly topical issues on the public agenda, on which libraries and schools are called upon to develop an info-educational action.

The Information literacy's exclusive area of expertise includes elements that appear highly specific and advanced, not surprisingly, as they come from a framework for higher education. The specific competences of digital literacy rather concern social aspects (active citizenship, netiquette, etc.), problem solving and technical skills (systems protection, programming, etc.). Testoni wishes that between these two "exclusive" areas, no fences but rather bridges will be erected, harbingers of "fruitful contaminations".

¹⁹ <http://www.ala.org/acrl/standards/ilframework>

2 Children's and teenagers' digital citizenship skills in Italy

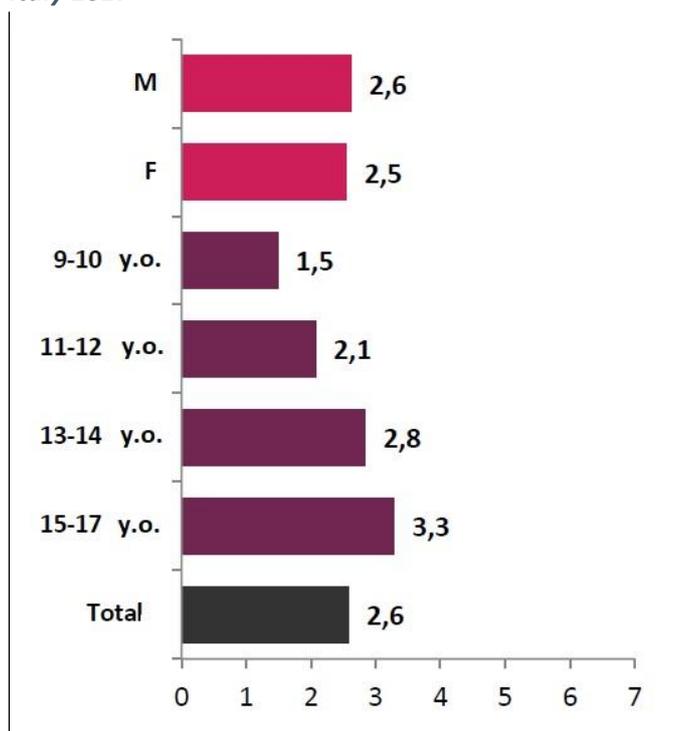
The recent publication (June 2018) of the new EU Kids Online survey on Italy²⁰ provides a wealth of interesting and updated information about the current practices of children and young people with digital technology, specifically with the Internet, and about the opportunities and risks they face when they go online. The survey interviewed directly in 2017 about 1000 kids, 9 to 17 years old, who are a representative sample of the Italian Internet users in that age range.

2.1 Use of the Internet, activities and risks among 9-17 years old kids

Internet access today occurs daily and through the **smartphone** for 84% of users on average (97% for 15-17 y.o. kids, 51% for those 9-10 y.o.). On the other hand, the daily use of PC/Laptop has decreased from 50% on average in 2013 to 42% in 2017. In this regard, the EU Kids Online researchers notice that "...computer-based and mobile-based online experiences are not interchangeable. In particular, research on digital divide in the adult population have highlighted that the online activities that increase the cultural, social and economic capital of individuals are those conducted by computer instead of the smartphone."²¹ (Pearce & Rice, 2013). There is therefore a risk that inequalities in digital literacy will emerge among children who only access the Internet from smartphones and those that have at their disposal multiple devices to go online (even if smartphones remain everyone's favourite choice)".²²

Internet daily access occurs primarily at home: 81% of kids in 2013, 88% in 2017. But it is increasingly **on the move**, up from 30 to 40% of users in 2013 - 2017 (74% among 15-17 y.o. kids) and **at school** (up from 8% to 26%). One can observe, however, considerable differences in age. For children 9-10 y.o. daily Internet use grows mostly at home (+13%) and only 4% access the Internet at school. Among 15-17 y.o. kids, the highest increase is recorded in daily internet use at school (+35%, with 49% of kids doing it) or on the move (+31%).

Figure 2 - Hours of daily Internet use by gender and age, Italy 2017



Fout! Verwijzingsbron niet gevonden. shows how the 9-17 year olds spend on average **2.6 hours a day on the Internet**, without gender differences. On the other hand, there are significant differences in age: children aged 9-10 years use the Internet 1,5 hours per day, whereas 15-17 y.o. adolescents use it more than three hours.

²⁰ Mascheroni, G. e Ólafsson, K. (2018). "Accesso, usi, rischi e opportunità di internet per i ragazzi italiani. I risultati di EU Kids Online 2017". EU Kids Online e OssCom. Available at <http://www.lse.ac.uk/media-and-communications/assets/documents/research/eu-kids-online/reports/EU-Kids-Online-Italy-report-06-2018.pdf>

²¹ Pearce, K. E., & Rice, R. E. (2013). "Digital divides from access to activities: Comparing mobile and personal computer Internet users", *Journal of Communication*, 63(4), 721-744.

²² Mascheroni, G., & Ólafsson, K. (2016). "The mobile Internet: Access, use, opportunities and divides among European children", *New Media & Society*, 18(8), pp. 1657-1679.

Concerning the **activities** supported by daily Internet use, the survey confirms the priority of communication with friends and family (77% of users), followed by entertainment, i.e. video watching and social media (51% of users) and doing homework (37% of users on average, but 50% among 15-17 y.o. kids). The survey confirms also in Italy the loss of interest among kids for Facebook and the increase of instant messaging services (WhatsApp, Instagram).

All measured activities become more common with increasing age. Younger children use the Internet to watch video, listen to music, play games, use social media and do homework. Teenagers, on the other hand, use the Internet in a wider variety of practices, although those activities which are more closely associated with the notion of **digital citizenship** -i.e. information (such as reading news online), creative (creating and sharing music or video) or participatory usages (discussing social and political issues, signing petitions, etc.)- are practiced by a few 13-17 y.o. kids (from 5% to 24% depending on the activity).

Using the Internet may entail having **disturbing experiences** of various kinds, but only 13% of all interviewed kids felt "upset, uncomfortable, or annoyed" by some online experience in the last year. This is about twice the percentage measured in the previous 2013 and 2010 surveys (which was 6%). Negative experiences are more common as kids grow older and use the Internet more widely (no gender differences are noticed). The more intensive use of the Internet among younger children over time is also reflected in this indicator: disturbing online experiences affected 3% of 9-10 y.o. children in 2013 and 13% of them in 2017! For most kids, these are occasional events, for a significant minority however they occur at least once a month.

When asked about specific risks, however, the percentage of kids affected turns out to be much higher. An overview of some of the most important online risks and their impact is provided in **Table 3** (the report deals with several other risks and gives detailed evidence on all of them).

Table 3 - Online risks and share of Italian kids affected (2017)

Type of risk	Kids affected (who have experienced, seen etc.)
Negative user-generated content (messages, posts, photos, video, etc.)	51% among 11-17 y.o. <ul style="list-style-type: none"> – 36% violent images – 33% racism & discrimination – 22% self-injuries – 21% anorexia and bulimia
Hate/offensive speech (new items observed in 2017 survey)	31% among 11-17 y.o.
Pornographic content	31% of all kids (13% for 9-10 y.o. and 51% for 15-17 y.o.)
Cyberbullying	6% of all kids directly affected
Excessive screen time	16% of all kids had disputes on this issue with family/friends at least once a month

Source: Mascheroni, G. e Ólafsson, K. (2018). See footnote 20

The percentage of children directly affected by cyberbullying is relatively small (6%) and constant over time, but the share increases to 10% if on-offline episodes are considered, and in any case it remains the most distressing experience of all. Besides, bullying events are witnessed by three times as many kids (19%) and reactions to them are equally split between 50% who helped the victim and 50% of by-standers.

Exposure to pornographic content has increased significantly, from 12% in 2010, to 23% in 2013 and 31% in 2017. Boys from 11 y.o. and older are those who witnessed the greatest growth in exposure, which remained instead about the same for younger children (9-10 y.o.) and girls.

Facing this evolution, the researchers found that greater and more diverse Internet usage undoubtedly increases exposure to risks, but also kids' resilience. After a disturbing online experience, **reactions** vary:

- 47% of respondents talked about it with friends and parents (38%), whereas only 6% talked to brothers and sisters and 2% to teachers
- 25% did not speak to anyone about the experience
- 35% had a passive reaction, i.e. hoped the problem will go away, shut the webpage or App
- 22% blocked the contact on social media, 10% changed privacy settings, 2% reported to platform managers

2.2 Digital competence

Taking into account changes in both technology and its use by young people, the latest survey has developed new approaches to measure their digital skills and their tangible results in terms of social inclusion. The following five skill areas were considered:

1. operational skills
2. navigation skills and critical assessment of online information
3. social skills, which allow you to master the communication and relations with others on online platforms
4. creative competence, i.e. the ability to create content to be shared online
5. skills for the use of mobile devices such as smartphones and tablets

For each area, two-three self-assessment questions were asked by the survey and an index of responses on a 1-10 (min-max) scale was calculated. The results are illustrated in **Table 4**.

Table 4 - Index of digital competence of Italian kids by skill area (2017)

SKILLS AREAS	Average score
<u>Operational skills</u> (saving downloaded photo, act on privacy settings)	7.6
Navigation and critical assessment of online <u>information</u> (assessing info accuracy, choice of keywords for online searches)	6.4
Social skills for online <u>communication</u> and relations (info to share/or not, removing someone from contacts list)	8.0
Ability to <u>create content</u> from share it online (creating video/music to share, editing/changing existing digital content)	6.5
Skills to use <u>mobile devices</u> such as smartphones and tablets (installing Apps, limiting service costs, purchasing through Apps)	7.0

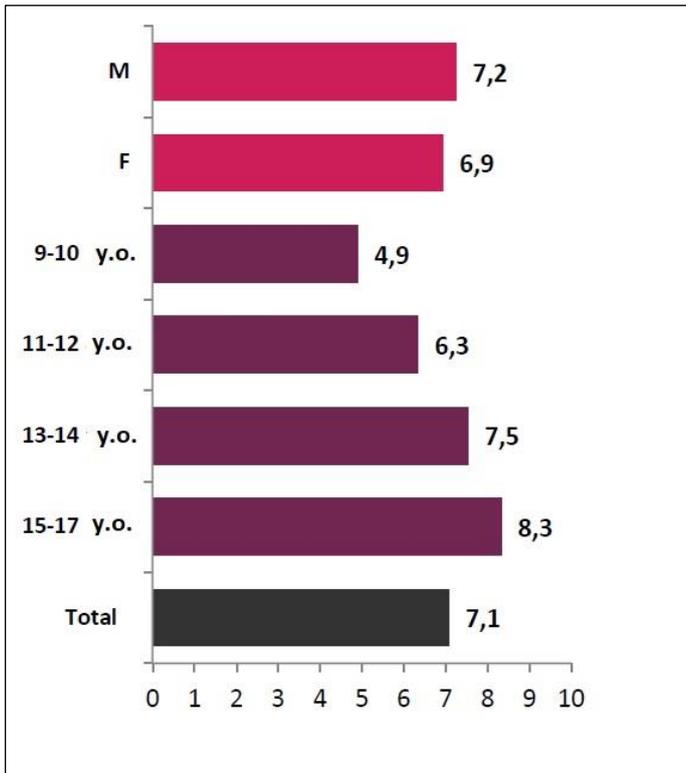
Source: Mascheroni, G. e Ólafsson, K. (2018). See footnote 20

According to the researchers "Data collected in 2017 show the persistence of inequalities in children's e-skills: contrary to the myth of the "digital natives", the kids do not learn automatically and as a natural

process to use new technologies. As a result, too many of them lack crucial competencies such as critical and creative competences". (p.20)

In fact, as **Figure 3** below shows, there are significant age-related differences in the level of competence. Children aged 9-10 and pre-adolescents aged 11-12 are the most likely to register lower average scores for each class of skills analyzed, and overall for the e-skills index.

Figure 3 - Index of digital competences of Italian kids, by age and gender (2017)



3 Initiatives for digital citizenship in education

3.1 Initiatives at national level

As mentioned in chapter 1.3, the Italian Ministry of education (MIUR) launched in 2015 the new **National Digital School Plan** (PNSD in Italian),²³ which includes 35 strategic actions, linking wider use of digital technology to the organisational and pedagogical transformation of school education. The plan's overall investment is about 1 bn€ and along with its wide scope, it is currently driving digital-related change in schools throughout Italy.

Half of the money is being spent on infrastructural and other technological investment:

- broadband Internet connectivity is being set up in principle in all schools at classroom level. Sometimes, as in Emilia Romagna (see later), this is done in collaboration with regional governments
- with the Digital environments action, new digital equipment is made available in labs and for use in any classroom at primary and secondary school level. Innovative learning environments/spaces are also being tested;
- creative ateliers (for first cycle schools) and professional digital labs (for upper secondary schools) are funded to support coding, making and other creative digital activities.

The remaining half of PNSD money is spent on training and other support measures for teachers, school managers and other staff:

- initial and continuous training of teachers on digital-enhanced education are run in the whole country, with specific schools (which have a longer tradition in this area) playing a coordination role at sub-regional level;
- new curricula and teaching practices (for instance, much emphasis is put on project-based learning) are being piloted, with the aim of mainstreaming them as soon as possible;
- all school managers had to nominate at the launch of PNSD one teacher to act as “digital animator”. This should be the reference person for new digital training and teaching initiatives inside the schools and towards parents and other external actors. Given the effort required from the digital animator, MIUR soon accepted that he/she should be helped by an “innovation team”, made up of a few more teachers nominated in the same school;²⁴
- PNSD encourages the opening up of schools and greater external collaboration with local stakeholders (parents, associations, private companies etc.), to make full use of the infrastructural and equipment investment and to guarantee that technical and pedagogical innovation contributes to broader social needs. This drive however often meets with change resistance and all kinds of organizational obstacles which characterize the Italian school setting.

Despite many shortcomings and the uncertainty created by the change of national government in Spring 2018, by this time, thousands of projects addressing the above priorities had been funded and were underway all-around Italy, with Emilia Romagna -as illustrated later- among the most active regions.

Before moving to that, it is important to mention a specific project associated with the PNSD called “**Programma il futuro**” (Code the future).²⁵ This large scale project is run by MIUR (but almost entirely funded by private sources) to test the structural introduction of basic IT concepts and education in schools.

²³ Piano nazionale scuola digitale can be found at http://www.istruzione.it/scuola_digitale/index.shtml

²⁴ As part of the PNSD, digital animators and the innovation teams have been given special training and a small budget to run bottom-up digital projects at school (about 1000€ per year from MIUR).

²⁵ See <https://www.programmailfuturo.it/>

The project is based on the international Code.org initiative and is implemented by CINI (National Inter-University Consortium for Informatics), which also provides scientific advice to it.

A comparison between the first run of Programma il futuro in school year 2014-15 and the latest run in 2017-18 shows the growth and impact of the initiative:

Table 5 - Figures and the Programma il futuro project in Italy

	December 2014	December 2017
Participating		
Schools	1,911	5,909
Teachers	4,417	28,312
Classes	14,948	100,857
Students	290,516	1,853,747
Hours spent on project per student	4.44	11.96

Source: Programma il futuro – Monitoring report 2017-18²⁶

The success of the Italian project is reflected also in the Italian schools' participation to the international "Hour of code" event. In December 2017, Italy was the first nation in the world by number of Hour of code events per million inhabitants and the first nation in the world, apart from the US, by number of events organized (over 30,300).²⁷

Interestingly, following a growing request on this issue from schools, MIUR and CINI recently developed a "digital citizenship" line of activity.²⁸ Lessons with videos and teaching material²⁹ are offered especially to primary, but also lower secondary schools, showing how to move around the Internet consciously and safely. The lessons aim to develop in every child the transversal skills necessary to use digital devices responsibly and effectively.

3.2 Initiatives at regional level - Emilia Romagna

3.2.1 PNSD in Emilia Romagna - Overview

Schools in Emilia Romagna are very much involved in the implementation of the National Digital School Plan (PNSD). This is important for COLIBLITE, because PNSD is giving a big push to the innovation and diffusion of educational technology in schools, but it also started re-training on a large scale teachers on new pedagogical approaches, which is important to make effective use of digital technologies, and is encouraging schools to open up their new facilities to external actors (adult citizens, associations, professionals, small enterprises etc.) and collaborate with them in innovative learning activities.

In Emilia Romagna, an important role in this process is played by MIUR's regional office (*Ufficio scolastico regionale* USR-ER) and in particular its service devoted to ICT called [Servizio Marconi - Tecnologie della Società dell'Informazione](#). Emilia Romagna is the only region with a dedicated service in the USR³⁰ and it contributes significantly to the promotion of PNSD, to the design and support of other innovative initiatives

²⁶ See <https://www.programmailfuturo.it/media/docs/Rapporto-monitoraggio-settembre-2017-gennaio-2018.pdf>

²⁷ See <https://medium.com/@codeorg/the-hour-of-code-around-the-world-2b939e6c9540>

²⁸ See <https://www.programmailfuturo.it/come/cittadinanza-digitale/introduzione>

²⁹ The lessons and the original videos are made by Common Sense Education (US), with whom CINI signed a collaboration agreement for the adaptation in Italian of their educational material.

³⁰ The Servizio Marconi TSI was formally created in 2009, but it started operating de facto in 1991-92. It now has a staff of about 12 people, mostly school teachers detached on a permanent or temporary basis. Servizio Marconi has contributed significantly to the design of the PNSD, with some of its staff involved in writing the national plan.

in schools (e.g. in collaboration with Coop Alleanza 3.0, the largest consumers cooperative in Italy), to the training of teachers on new educational technology and pedagogy opportunities, and in general to promoting information exchange, networking and collaboration among schools in the region.

Table 6 shows the number of projects recently funded under some of PNSD³¹ main actions and currently underway in the schools of Bologna and Modena (whole province and capital cities). In total, there are about 235 PNSD projects worth over 7.5 M€ in Bologna and Modena.

Table 6 – Number of digital projects of the PNSD in Bologna and Modena (March 2018)

	Bologna province	of which Bologna city	Modena province	of which Modena city	Emilia Romagna
Digital environments (PON)	94	36	71	16	431
Creative ateliers (PNSD)	29	11	22	6	120
Innovative libraries (PNSD)	12	7	7	2	71
Territorial labs for employability	1	1	1		4

Source: Ervet elaboration on MIUR's sources

Digital environments are projects to create alternative learning spaces which enable and facilitate innovative teaching approaches, mobile IT laboratories and classrooms "augmented" by technology. They concern all school levels and have an average value of 22,500€. In the two cities, almost all Istituti Comprensivi (first cycle schools) have at least one such project (all 22 in Bologna and 9 out of 10 in Modena). The remaining projects concern 14 out of 20 secondary schools in Bologna and 7 out of 12 secondary schools in Modena.

Creative ateliers are projects to create school labs (open also to external users) for coding, making and other creative digital activities. These projects have a fixed funding of 15,000€ and are only for schools of the first cycle. About half such schools in Bologna and 60% in Modena won creative ateliers projects.

Innovative libraries are projects to make school libraries of both first cycle and upper secondary schools become digital information and documentation centres. The value of the funded projects is not available and in general fewer schools applied to this call. An explanation often mentioned for this, is that school libraries have been much disregarded in recent decades and schools today very often have no staff that can run professionally such an internal service. Needs in this area have been (partly) met by establishing stronger collaborations with local public libraries. It is unclear how the innovative libraries projects will affect this situation.

Territorial labs for employability are projects (750K€ each) run by local networks of secondary and VET schools, enterprises and other actors (e.g. Ervet is involved in one of them) to offer information, hands-on training and making practices to students, teachers, young people not in education, employment or training (NEETs), micro-enterprises and professionals.

3.2.2 PNSD in Emilia Romagna –cooperation between RER and USR ER Servizio Marconi TSI

In Emilia Romagna, the development of digital competence is one of the four axis³² of the Regional digital agenda of the Emilia-Romagna Regional government (RER) known as ADER,³³ which aims to have by 2025

³¹ Projects are funded by national PNSD resources or by the national and European Structural Funds of the National Operational Plan for Schools, PON.

³² The four axis are: Infrastructure, Competence, Communities, Data and services.

³³ Agenda Digitale dell'Emilia Romagna, <http://digitale.regione.emilia-romagna.it/cos-e-agenda-digitale>

STEM Caravan - promoting digital and STEM initiatives for girls

To fight the gender gap in ICT studies and employment, Ervet first launched an information event and campaign for the “Girls in Tech” UN world day in April 2017 and then started organising orientation and training initiatives on digital and STEM education opportunities for girls in lower secondary schools. In October 2017, during the AftER digital festival in Modena, Ervet ran awareness raising technical labs on robotics, 3D modelling, art&technology and coding at the hosting school IC 1. In a peer-to-peer learning perspective, 8 upper secondary school female students who had attended the UniMORE coding Summer camp for girls led 8 groups with a total of 40 lower secondary students, showing them the basics of programming languages for videogames and how to use a 3D printer. Many other IC 1 students visited the lab during the day. In parallel, Modena’s digital animators were briefed by USR-ER staff on digital and STEM educational opportunities.

In November 2017, during the Technical Culture Festival of the Bologna Metropolitan City, Ervet ran 4 labs over two days at the Alto Reno municipal library in Porretta Terme on the Bolognese Apennines and again 4 labs in the Urban Centre (see chapter Neighbourhood Laboratories in Bologna5.1) at the Central library Sala Borsa in Bologna. The labs deal with four different topics: art and technology from the point view of an illustrator (Cinzia Bolognesi) and of an interaction designer (Gianluca Macaluso), basics of 3D modelling (Livio Talozzi) and programming with Scratch (Paolo Martinelli). Each lab lasts 3 hours and was attended by 12-13 girls, for a total of 105 participants from 8 lower secondary schools. In parallel to these labs, again staff from USR-ER met with the digital animators and other teachers of the schools involved, to discuss their experience in the STEM labs for girls promoted in the Summer 2017 by the National Equal Opportunities Department to fight the digital gender gap and to envisage new initiatives to enhance girls’ participation in digital and STEM education, to be developed with future PNSD funding calls.

The above activities are part of a broader ADER-supported initiative called “STEM Caravan”, which plans to carry out about 270 similar laboratories over 2018-19 (15 per year in each of the 9 provinces of Emilia Romagna), especially in the schools of rural and mountainous areas of the region. Some of them will also be located in the 10 new **Open Labs** funded by RER (with ERDF resources) in the provincial capital cities of Emilia Romagna. Open Labs are set up primarily to host and support SMEs and professionals in the cultural and creative industries, makers and other innovative ventures especially with young people. But they are also expected to develop activities in collaboration with schools (the above mentioned Urban Centre is the Open Lab of Bologna) and Ervet will contribute to this aim.

CASP-ER - engaging migrant students in coding and making activities to combat early school leaving

Partly based on the DGGMLF Erasmus+ project run by Ervet in Emilia Romagna, the CASP-ER project³⁸ aims to fight early school leaving by students (many of them with a migration background) attending VET schools in the region,³⁹ by offering them interesting educational experiences focused on digital coding and making, with a specific attention to Italian L2 learning. Information meetings are also held with the students’ parents dealing with safe internet use and the public online services offered by the regional health authority, employment services and the schools attended by their children and by education authorities. For the students, CASP-ER runs a 24-hour laboratory, split over several sessions, in each of nine VET schools, one per province in the region. Students first learn to use the Tinkercad software to create three-dimensional models of objects (covers for smartphones, key rings, rings, badges and others). Throughout

opportunities in this area, illustrating good practices in their exploitation and encouraging the creation of new learning environments at school, in a “design for all” perspective.

³⁸ The project started in September 2017 and will end in December 2018. It falls within the Emilia Romagna Multi-action regional plan – action 1 “Fighting early school leaving”, funded by the EU Asylum, migration and integration fund 2014-2020.

³⁹ COLIBLITE partner Fondazione Aldini Valeriani runs a VET school, but is not involved in CASP-ER.

the activity, they are encouraged to work together, help each other and interact as much as needed with the tutor. They must learn the application settings, commands, procedures etc. but they are also stimulated to be creative and to personalize their work. Then students learn to use Repetier-Host software to create the G-code for the 3D printer. By looking at how the printer works and at the results of different printing attempts, students are helped to understand better the logics and how to improve both the modelling and printing processes.

3.2.3 Pane e Internet collaboration with schools on e-facilitation services

When the *Alternanza scuola-lavoro* (ASL) scheme⁴⁰ became compulsory in 2015 for all secondary school students, the Pel project started offering an “e-facilitation package” to the schools as an ASL activity for the students. The package involves the **training** of students to perform e-facilitation functions,⁴¹ followed by **practical activities** with real beneficiaries (citizens with low digital skills), which can take many shapes: the temporary involvement of the students in Pel e-facilitation services, typically offered in public libraries (as in Modena, see later), experiential laboratories as the “Let me teach you smartphone” sessions (see box), and others.

T’insegno lo Smartphone experiential lab

The “I teach you smartphone” lab is structured into 4 meetings of 3 hours each, during which students facilitate citizens to use the smartphone. The laboratory activity is supervised by a tutor to guarantee an active classroom climate and to support facilitators in micro-working groups. Students work in pairs that support a user, in a room with wi-fi access and computers connected to the Internet to better perform the laboratory activities. Ideally, each pair of students follows a single user for 12 hours of facilitation activity. Citizens are expected to bring their smartphone.

The topics of the 4 meeting are: 1) know your mobile phone; 2) looking for information and APPs; 3) using WhatsApp and Google Map; 4) solving problems with your mobile phone.

The Pel e-facilitation package for students has the following educational goals:

- to present the concept that digital technology use is fundamental today for all citizens and all future workers and to introduce students to the theme of digital inclusion/exclusion;
- to make students aware of their own digital skills and cognitive gaps, through the helping relationship with the other party;
- to highlight opportunities and expand the use of digital skills to new areas (as it is known that young people tend to concentrate on few applications) and also to highlight potential risks and

⁴⁰ *Alternanza scuola-lavoro*, “alternating school and work” in English, was extended to all schools (before it only concerned technical and vocational schools) by the *La buona scuola* national educational reform law of 2015. ASL requires that during the last 3 years of upper secondary all school students perform, depending on the type of school, 200 or 400 hours in total (over the 3 years) of educational activities closely related to the world of work. These activities are unpaid, but schools must provide for insurance coverage. All kinds of activities have been and are being created and offered to schools by a wide range of actors and intermediaries to help them and their students meet this legal mandate. Given the overwhelming presence in the Italian economy of small and micro enterprises (which face many problems to host and manage on a temporary basis any inexperienced staff), the enforcement of this law turned out difficult. About 1,5M students in Italy were affected by this scheme in the 2017-18 school year.

⁴¹ The Pel training course for e-facilitators addresses the following topics: 1) introduction to digital competence and its relevance in current and future employment; 2) what is digital facilitation and digital inclusion, tips on how to teach adults; 3) facilitation techniques and the creation of mini educational resources; 4) organizational and content aspects of e-facilitation services, experiential laboratories etc. The course lasts about 14 hours and is made of: an introductory lesson delivered face-to-face (4 hours); a period of self-study online (6 hours), using the e-learning platform SELF of the Regional Government (<http://www.self-pa.net/>); a summing-up lesson (4 hours) again delivered face-to-face.

develop skills in the safety and problem-solving digital competence areas of the DigComp framework;

- to develop transversal skills or life skills, in preparation for future work activities.

In fact, the Pel experience of involving students in e-facilitation activities shows that they can develop:

Methodological competences

- To be able to adapt their support action to the type of users and the context in which they operate
- To become aware of the organisation of a service to the citizens
- To organize one's tacit knowledge into explicit knowledge that can be transferred to others
- To increase one's awareness of the use of technologies

Relational skills

- To know how to welcome and listen to a user's needs
- To know how to communicate properly, adapting the communication to the other party, also by reflecting on the use of language and the effects of actions and attitudes on the service user's satisfaction

Organisational skills

- To know how to activate and manage an organizational process according to agreed criteria (for example, organize a facilitation session, manage the time available with the user etc.).

3.3 Initiatives in the education sector – Bologna

As we have seen, there are many PNSD digital initiatives underway in Bologna schools at the moment, but not enough information is yet available to provide an overview of their development, results etc. Therefore, here we only briefly illustrate some digital experiences in formal and non-formal education which involve COLIBLITE partners.

Besides the STEM Caravan (female students) and the CASP-ER (migrant students) projects run by Ervet, which we saw before and which mainly take place outside of Bologna city, Ervet is involved in the Territorial labs for employability project called Opus Facere in Bologna. Then, we shall mention partner Open Group's activities of the ABC Digitale project (which concern schools, but also libraries and other domains) and the digital projects of partner school IC 15.

3.3.1 The Territorial Laboratory for Employability at Opificio Golinelli

As already mentioned, PNSD is funding the creation of so-called Territorial laboratories for employability, set up by local networks of secondary and VET schools, enterprises and other actors. 58 such projects were launched nationwide (each worth 750k€): 4 of them are in Emilia Romagna, and one is in Bologna. The project coordinated by Technical Institute Belluzzi-Fioravanti in Bologna is called *OF-Opus facere fare per capire*,⁴² and was rated first among the four winner proposals from Emilia Romagna. It is hosted by Golinelli Foundation⁴³ in its innovative location Opificio Golinelli in Bologna.

As a project partner, Emilia-Romagna Region supported by Ervet promoted in collaboration with Pane e Internet a line of activity called "Making to understand: facilitating digital competence" which runs

⁴² Opus facere in Latin translates into the Italian phrase "fare per capire", which translates into English "making to understand".

⁴³ See <http://www.fondazionegolinelli.it/>

workshops based on the PeI e-facilitation package for students illustrated before in chapter 3.2.3, to develop upper secondary school students' digital competence and fight digital exclusion. In the 2017/18 school year, three upper secondary schools of the *Opus Facere* project network in Bologna were involved in this activity (ITS Mattei in San Lazzaro, Liceo Righi in Bologna e Liceo Salvemini in Casalecchio).

Creating awareness in schools about the existence and current and future importance of big data and open data in society and especially in the work environment, and developing the skills to manage them, are a priority of PNSD, also mentioned in the digital civic education curriculum (areas 3. Information education and 4. Quantification and computing, see chapter 1.3). For these reasons, Ervet organised in early May 2018 at Opificio Golinelli a full-morning workshop for 100 students, again from the above three schools, with eight laboratories on data journalism and fake news, focusing on migrants, urban information related to the participatory processes in Bologna neighbourhoods (see chapter 5.1) and data on the schools themselves (from MIUR's open data repository). As this type of activity is considered valid to fulfil the ASL requirements, Ervet is studying to set up a longer course on open data and big data along similar lines for the next school years.

3.3.2 Open Group' ABC Digitale activities for digital competence

Open Group (OG) is a social cooperative created in 2014 from the merger of three historic cooperatives in Bologna. With about 600 professional employees, it delivers educational, social, media and communication services to a wide range and number of people. About half of OG's staff works in non-formal educational activities requested primarily by schools and municipalities.⁴⁴ In recent years, OG's Education and citizenship business unit has been working with over 26.000 children and young people every year.

In 2015??, OG launched the ABC Digitale project in order to promote digital competence development in various domains and with different target groups. Internally, OG has established the e-Bit team, with representatives of all its business units, to coordinate efforts on the digital upskilling of its own workforce and to exploit synergies in digital-related activities with customers. The latter are often carried out in collaboration with schools, but usually outside of the official curriculum. Other activities are requested by local public administrations and carried out with other social and educational partners. In order to better structure and finalize its digital-related activities, OG has adopted the European Digital Competence framework for all citizens (DigComp).

OG digital-related educational activities in Bologna address the following issues and target groups:

- a) early childhood, i.e. 2-6?? y.o. children and their educators, including parents. The focus is on digital outdoor education and ??? Trenino 3.0 project
- b) teenagers, with the Rock for skills project which focuses on the recognition and development of their soft skills. Altri progetti/attività da menzionare rispetto a scuole elementari, medie e superiori? (This project uses the YouRock European platform as a tool to introduce the topic and develop activities with the young people and their teachers
- c) people (o students?) with disability, with the Enable project which ??? non ne ho idea
- d) young migrants and refugees and the educators and social workers dealing with them. The Erasmus+ ELASTIC project (Exchange and Learning for Adult Socialworkers: Training ICT Competences) aims to identify and develop good practices and new ICT tools to facilitate the work of social workers in this area
- e) libraries and their customers with the Book trailer project which ??? non ne so nulla

⁴⁴ OG's other main activities are: reception services for refugees and asylum seekers; integration projects for vulnerable people in extreme marginality situations (homeless people, drug addicts, Roma and Sinti people); housing and reception services for people with physical or mental disabilities; an FM radio station and communication agency.

Si può dare qualche numero sulle persone coinvolte nei suddetti progetti o anche complessivamente su questa categoria di attività di OG?

Qualunque altra cosa tu ritenga utile aggiungere ...

3.3.3 Istituto Comprensivo 15, Bologna

COLIBLITE partner school IC 15 in Bologna is a good example of first cycle school currently involved in PNSD projects and dealing with the challenge of the digital education transformation.

As any Istituto Comprensivo, IC 15 includes three levels of schools: kindergarten for 3-5 y.o. children (Dozza and Flauto Magico), primary schools for 6-10 y.o. children (Casaralta, Croce Coperta and Dozza) and lower secondary school for 11-13 y.o. children (Zappa), with a total of about 1000 students.⁴⁵

Given MIUR's requests for the implementation of PNSD and the related growing funding opportunities, IC 15 duly nominated the digital animator and innovation team to coordinate the efforts. PNSD/PON projects have been funded to IC 15 for Digital environments in several member schools and for WiFi connectivity (in one of the primary school sites).

In order to better manage these projects, in 2017 the school formalized a digital school plan, whose first goal is to have 60/70% of the primary school classrooms equipped with interactive whiteboard by 2019. The plan also envisages to extend to a larger number of teachers the continuous training activity on digital and pedagogical innovation that was started for the digital animator, the innovation team members and a few other "pioneering" teachers.

In the Casaralta primary school, 6 classes started in 2017-18 working on Scratch⁴⁶ and other learning materials on coding by Code.org. Further activities to develop computational thinking in primary school, focused on teacher training and labs with children on Minecraft, are planned in collaboration with the Navile Neighborhood Council and Microsoft. As part of the school's opening up process, IC 15 also organized info-training for parents (especially with a migration background) on the content and use of the IC 15 website, the school register and other online services.

3.4 Initiatives in the education sector – Modena

In Modena, the Municipality (the Smart City department in collaboration with the Education and Culture department) has been developing two intertwined action lines to support the schools in dealing with the digital education transformation. On the one hand, it has encouraged and supported schools in coordinating their efforts with respect to the implementation of the PNSD. For instance, it has provided technical advice to the schools in the preparation of funding applications on national calls for proposals. It has promoted the creation of a coordination group among the digital animators of the city's schools, in order to better capture their needs, to facilitate the exchange of good practices and so on. It has developed digital training opportunities for teachers, in collaboration with the MEMO Municipal educational services unit and the University of Modena-Reggio Emilia UniMORE. In 2017, these activities were formalized into the **Modena Smart school** network agreement, signed by the Municipality and the 10 Comprehensive Institutes of Modena (1° cycle schools) for activities in the field of Smart City and urban innovation. The first priority was to develop collaboration between the Makeitmodena Digital gym and the schools' creative ateliers funded under PNSD.

⁴⁵ About 40% of the students have a migration background, given the location of the schools in the Bologna Navile neighborhood, which has a high share of foreign population.

⁴⁶ See <https://scratch.mit.edu/>

The second line of action includes a number of activities which involve secondary school students and build upon past experiences which have become part of Modena's Local Digital Agenda 2017-19 - Digital Culture axis.⁴⁷ The Agenda was defined in 2014-15 through a participative process with the citizens and is carried out with the involvement of several local actors, from the University of Modena-Reggio Emilia UniMORE⁴⁸ and local enterprises to a wide range of third sector organizations. The main projects in the Agenda's Digital Culture axis are illustrated below:



Digital girls: a Summer Camp on coding for upper secondary school girls run by UniMORE (run in 2018 for the 5th time)

Modena social city: using social networks for a continuous dialogue between the Municipal government and the citizens

Net Garage: digital literacy and creativity courses in public internet access points

Assisted computing for senior citizens: digital literacy courses for senior citizens (55+ years old)

Code it, make it!: experimental project for the aware, critical and creative use of digital tools across the curriculum in primary and lower secondary schools (more on this later)

Penguin among the desks and Penguin 2.0: recycling hardware and peer learning activities in schools (more on this later)

Makeitmodena – Digital gym - Innovation Lab: a space to experiment with digital tools in making and modern craftsmanship for local firms

Modena Smart Life: annual event devoted to digital culture

Digital cultural for foreigners: the Erasmus+ project Digital Generation Gap in Migrant and Low educated Families (DGGMLF), later followed by COLIBLITE

Safe Internet and Modena Smart Security: a range of actions by the Municipality to promote a safe use of ICT and Internet services. It includes a tertiary education academy on cybersecurity and the

development of digital safety culture in schools.

3.4.1 Intergenerational and peer-to-peer digital learning activities with students

The Municipality has been organizing since school year 2016-17 digital-related activities for upper secondary school students who must perform work-related educational projects, under the "alternanza scuola-lavoro" (ASL scheme, see footnote 40). Industrial institute E. Fermi and lyceum and technical institute F. Corni, both with a strong teaching tradition in ICT disciplines, are the two schools in Modena

⁴⁷ Modena's Local digital agenda -as similar policies which the Regional government promoted in all provincial capital cities of Emilia Romagna- is broadly aligned with the Digital Agenda of Emilia-Romagna Region (ADER) and comprises three main axis: Connectivity and infrastructure; Digital services; Digital Culture. Modena's agenda is described here <https://www.comune.modena.it/comunicazione/infografiche/agenda-digitale-di-modena-2017-2019>. Progress in its implementation can be monitored through the Modena Smart Community web platform <https://www.comune.modena.it/modena-smart-community>.

⁴⁸ In particular, Prof. Colaianni at the Engineering Dept., which can be considered a key partner and consultant of the CO-MO in digital strategy definition and in the implementation of many digital competence projects

which have been most involved in the delivery of digital facilitation services in libraries (illustrated in chapter 4.3.3) and in the other initiatives described below.

Tutoring in digital assistance activities

Besides the digital facilitation activities performed in public libraries, students from the Fermi and Corni schools have been involved in two public internet access points – the Net Garage in Via Viterbo and the Digital Gym MakeitModena in Strada Barchetta- which offer digital courses and customized assistance to senior citizens and in general citizens with low or no digital skills. As part of their school-work projects, after some training on e-facilitation activities, the students were engaged in helping and collaborating with the teachers and senior tutors in the delivery on digital literacy courses and customized digital assistance.

The “Penguin among the desks” projects

The original “Il pinguino tra i banchi” (Penguin among the desks) project ran in 2009-2012. The Municipality started collecting personal computers which were dismissed by local companies and by its own IT Department (as part of equipment renewal processes) and asked IT students from Fermi and Corni to help bringing them to a new life. Student training was provided by UniMORE staff and the personal computers were thus refurbished and installed with Linux software (hence reference to the penguin). They were then installed into primary and lower-secondary schools in Modena. In this first period, about 200 computers were refurbished and given to the schools which needed them. As new demands came up for such support, in 2015 the project started again, with 20 PCs delivered in 2016 and 40 in 2017.

The “Penguin among the desks 2.0” is an evolution of the first project, started in 2017. It involves two lines of activity both in a **peer education** perspective.

In the first line, students from Fermi school have been taught at the Municipality’s Palestra Digitale MakeitModena (Digital Gym MakeitModena) how to check the functionality of second-hand computers (4 provided by the Municipality and 4 by a school), to identify and dismantle their components (RAM, motherboard, HDD etc.), to find/replace any missing/broken piece and prepare a refurbishing plan for them. After this preparation, the computers were brought to the Mattarella lower-secondary school for them to be **reassembled** by the younger students, under the guidance of the Fermi students, with the supervision of their teacher.

In the second line of activity, Fermi students are first trained in their school on the visual programming language **Scratch** and on the **Arduino** microcontroller.⁴⁹ The first time, they were taught by staff from Digital Gym MakeitModena; in the second round, their school teachers took on this function. The students, with the supervision of their teacher, then hold a meeting with the teachers of selected primary schools involved in the Code it make it! project (see below), to define which activities to run in their classes. Eventually, in the 2017-18 school year, 6 peer education meetings, 2-hour each, were held with the primary school students to carry out activities with Scratch (not with Arduino, due to lack of time).

The Help Desk project

This new project launched in 2017/18 involves 30 upper secondary students, all from the same course at Corni technical school. The teachers first explained to the students the aims and organisation of the project. Then, as in the “Penguin among the desks” project, the students were trained at the Digital Gym MakeitModena on hardware refurbishing activities and ended up with 20 renewed PCs. The next step of the project entails different tasks, requested by and/or agreed with the primary and lower secondary

⁴⁹ The Arduino board can be enriched with sensors, lights, buzzers and other devices and to be used in micro-robotics, domotics and other applications. There is a Scratch module for programming Arduino, but other visual programming languages can be used such as ArduBlock and Minibloq.

schools of Modena's 10 Istituti Comprensivi: installing the second-hand and any new equipment bought by the schools, doing maintenance of computer classrooms, repairing and troubleshooting problems with interactive whiteboards and other digital equipment in the school and so on.

Within the Help Desk project, some students have also undertaken the search and analysis of open source and free software for teaching purposes, especially for children in primary school and children with learning disorders (e.g. dislessia). They have then presented these solutions to the teachers in the schools they assist.

3.4.2 Training teachers for digital projects in schools

Since 2011, the Municipality has been offering training opportunities to teachers (usually including laboratory activities also with their students) through its own MeMO Educational Service department. The first courses dealt with safe Internet issues, information search and the assessment of web sources and web search results. Since 2015, MeMO in collaboration with UniMORE also started offering courses on coding and the use of 3D printers. The full list of MeMO courses on transversal/digital competences for teachers in school year 2017-18 was:

- Active learning and digital tools
- Coding school
- Introduction to Making
- Internet search
- School on the cloud: digital resources online
- Internet security lab
- 3D printing and modeling

A particular effort has been put on the experimental Code it Make it! Project, launched as a pilot and entirely funded in 2015/16 by the Municipality. The project involved 13 classes of 4 primary schools in Modena (which became 19 one year later), with an activity over two school years. This entailed the training of teachers and the almost concurrent start of learning activities (using Scratch) with children (120 hours in total over the two school-years).

While the experimental project unfolded, shorter courses on Scratch and Arduino were offered to the primary and lower secondary schools which had received funding from MIUR on Creative atelier projects. The first full course on Scratch for teachers was delivered in 2017/18 and lasted 25 hours (15 class-based and 10 of self-learning), during the first semester (it ended in December 2017).⁵⁰ As a final assignment, teachers had to design a coding project to implement with their students at school in the second semester. About 30 teachers registered to this course and 24 of them finished it. After the course, the teachers who finished it are entitled to 70 hours of expert support at school during project implementation (on average 2-3 hours each). These courses are partly paid with money from the schools and are expected to be replicated again until the end of 2018.

Short courses are also offered to parents who want to become mentors in Coderdojos.

Other specific micro-projects on digital activities have grown out of the above courses and contacts with teachers in schools, and are supported by the Municipality's Digital Gym MakeitModena:

- a) four lower secondary school classes were involved in a gaming design project on road safety education funded by the RER's Safety Office;
- b) a project at lower secondary school Calvino on IOT (Internet-of-Things) created in the 2017/18 school year a meteo station to measure weather conditions. Students at technical institute Fermi will design the web interface to visualize the Calvino station's data on the web;

⁵⁰ The teachers were Maria Donzello an engineer and maker, Alessandro Grandi an engineer and researcher from UniMORE, and Andrea Ligabue an experienced ludologist.

- c) in a project at lower secondary school Cavour in the 2017/18 school year, students from three classes designed and developed their own slot machine using Scratch, as part of a course on gambling and ludopathy;
- d) four runs of experimental mini-robotics activities with students from lower secondary schools, involved in STEM education projects funded by MIUR, took place during the Summer of 2017 and in after school hours in the 2017/18 school year.

In some of the above activities, students from the Help Desk project (see above) were also occasionally involved as assistants to the teachers/ makers/ tutors.

Besides the above activities, the Municipality's Digital Gym MakeitModena is currently working with all 10 Istituti Comprensivi, providing support for the use of the 3D printers, that many schools bought with PNSD funds. In this and the other activities, the Digital Gym relies upon: 2 staff from the Municipality (one full-time, acting as coordinator, and one part-time, a computing engineer expert in cybersecurity, from the Municipality's IT department); 2 operators in charge of opening the Gym, welcoming groups and individual customers, managing the Gym's communication etc.; various external collaborators, engaged on a voluntary or occasionally paid basis, who are university students, makers and other nerds.

4 Initiatives for digital citizenship in libraries

4.1 Initiatives at national level

We already mentioned in chapter 1.4 the discussions and new activities of the Italian Libraries Association (AIB in Italian) on information and digital literacy, including the creation of the national Study Group on Information Literacy called GLIT. In order to better understand the current situation of public libraries with respect to information literacy initiatives, in 2015 GLIT carried out a national questionnaire-based survey on this topic.

Although only a fraction (163) of all 4800 Italian public libraries gave useful answers to the questionnaire, the survey produced an interesting and coherent picture of the digital activities undertaken by those libraries, segmented by broad target group categories (see **Table 7**).

Table 7 - Priority target groups and main focus of information literacy initiatives in public libraries

Priority target groups	Focus of initiatives
Students (esp. secondary schools)	<ul style="list-style-type: none">– source identification (most frequent for all)– info searching and evaluation (lower secondary)– online research and citation methods (upper secondary)
All citizens	<ul style="list-style-type: none">– promotion of e-books and new digital library services (LOL, Libraries On Line platform)
Senior citizens	<ul style="list-style-type: none">– developing basic digital literacy

Source: Sara Chiessi *“Information literacy: formare nuove competenze nelle biblioteche pubbliche”* 2016⁵¹

Schools and their students -especially lower and upper secondary schools- are the primary target of information literacy initiatives run by libraries. Initiatives for students are mostly focused on media and information competence. In lower secondary schools, attention goes to sources identification (this is the most frequent focus of learning activities), information searches and evaluation. Initiatives with upper secondary schools give prominence to online research techniques, citation methods and related issues.

Initiatives addressing all citizens tend to focus on the promotion of e-books and the new digital library services (in particular, those offered by LOL - Libraries On Line, a platform developed in Emilia Romagna, but used throughout Italy).

Initiatives towards senior citizens (the third main target group) focus on developing basic digital literacy.

In general, very few initiatives were found in a digital creation/construction perspective, both with respect to coding-making or multimedia production, but also in matters more closely related to information, such as the active contribution to Wikipedia entries.

⁵¹ Conference paper presented at Convegno Stelline 2016. Bibliotecari al tempo di Google. Profili, competenze, formazione, Milan (Italy), March 17th-18th, 2016. Available at <http://eprints.rclis.org/29128/>.

4.2 Initiatives at regional level - Emilia Romagna

Public libraries in Emilia Romagna operate in a highly decentralized system: except for a few libraries which are part on the national library system (such as Biblioteca Estense in Modena), the vast majority of public libraries are managed and funded by Municipalities.⁵² In order to achieve some economies of scale and to offer a better service to the citizens, in the past (before they were abolished), Provincial governments supported the creation and operation of library “poles” or networks, at provincial (as in Modena) or sub-provincial (as in Bologna) level. The Regional government prompted and coordinated this effort through its IBC Institute (Institute for Artistic, Cultural and Natural Assets).

IBC overviews also the digital initiatives addressing the region’s 430 public libraries. In the context of the regional digital agenda ADER, public libraries (like schools) are gradually being connected to the Lepida ultrabroadband regional network, which allows them to offer also high-quality wifi access to library customers. In collaboration with IBC, the Pane e Internet (PeI) digital literacy and inclusion project trained hundreds of volunteers and library staff to deliver e-facilitation services to citizens with low or no digital skills. Public libraries are the main customer contact point of the PeI Points that the Regional government is setting up throughout Emilia Romagna (there were 13 of them operational in early 2018). PeI Points often use libraries not only for e-facilitation services, but also for training activities (when the logistics is adequate) and to host digital culture events, such as workshops or conferences on digital topics of interest to the citizens. The information society monitoring system of Emilia Romagna run by Ervet showed in Spring 2018 the following situation resulting from the above activities and referred to 432 libraries:

- 65% gave free wifi access to their customers and over 80% had PCs available for Internet navigation
- 77 libraries (18% of the total) offered e-facilitation services (19 in Bologna and 17 in Modena provinces)
- 54% of the libraries used a Facebook page to communicate with their customers

Finally, an important project which started locally (launched by the provincial Modena Library Pole in 2012), and which by February 2018 involved the libraries of most Emilia Romagna provinces is the **EmiLib Media Library OnLine** service. EmiLib is based on the Media Library Online (MLOL) platform⁵³ created years ago by the Bologna-based company Horizons Unlimited srl. MLOL is the first Italian network of public, academic and scholastic libraries for digital lending, with today over 5500 members in 19 Italian regions and 9 foreign countries. The platform offers access to and lending of e-books, online newspapers and magazines, as well as freely accessible open digital resources. EmiLib is the partly customized service offered to all customers (registered citizens) of Emilia Romagna’s public libraries and benefits from the coordination efforts of the participant libraries, especially in collective purchases and subscriptions of publications, but also in library staff and citizens training and in the service promotional activities.

⁵² In total, there are 331 Municipalities in Emilia Romagna.

⁵³ See <https://www.medialibrary.it/home/cover.aspx>

4.3 Initiatives in the public library sector - Bologna and Modena

The information provided in this section is drawn from a survey carried out for the COLIBLITE project, integrated with additional data collection and interviews, especially about the situation in Modena.⁵⁴

4.3.1 Overview of information and digital literacy initiatives by libraries in Bologna and Modena
For the production of this report and the preparation of the project's local action plans, the COLIBLITE Italian partners carried out a questionnaire-based survey of the information and digital literacy initiatives run by libraries in Bologna and Modena. In agreement with AIB's GLIT (see chapter 4.1), a slightly modified version of the questionnaire of the 2015 national survey was created for this purpose. The questionnaire was published online in early April 2018, about 200 library managers and senior staff were contacted by e-mail⁵⁵ and asked to provide answers by the end of April. The results are summarized in **Table 8** below.

Table 8 - Respondents to COLIBLITE survey of digital initiatives in libraries in Bologna and Modena (April 2018)

	BOLOGNA			MODENA		
	Tot	City	Province	Tot	City	Province
Municipalities	55	1	54	47	1	46
Libraries	97	18	79	65	4	61
Survey respondents	29	13	16	29	4	25
with digital activities	12	7	5	16	4	12
activities with schools	6	3	3	7	4	3

Source: COLIBLITE project

Overall, the response rate to the questionnaire has been lower than expected (given the survey promotion effort, see footnote 55) and it was lower in Bologna (30%) and higher in Modena (44%). Especially in Bologna, many important libraries did not answer both in the city (including those of the Navile neighbourhood) and the province. In Bologna, only 1 out of 19 libraries known to be running Pane e Internet (PeI) e-facilitation service answered, compared to 10 out of 13 in Modena.

Among the responding libraries, 40-50% on average run some digital activity with their customers; the share is higher for libraries in the capital cities than in smaller towns and villages. 40-50% of the libraries involve schools in such activities; 100% in the case of Modena city.

Answers given about the content and targets of digital activities are similar to those of the national survey (see **Table 7**), with some regional specificities:

⁵⁴ The Municipality of Modena, and in particular its central public library Delfini (along with the Smart City department), is associate partner of the COLIBLITE project, which made it possible to gather additional information and a deeper view of the situation in libraries compared to Bologna.

⁵⁵ The e-mailing and recalling processes for the survey were done in collaboration with Monica Ferrarini (IBC officer in charge of digital initiatives) and Adriano Bertolini (municipal officer in charge of neighbourhood libraries) for Bologna city and province, and with Debora Dameri (head of Delfini Library and of the Modena provincial library pole) and her staff for Modena city and province.

- both in Bologna and Modena (especially in the provincial libraries) one notices the presence and impact of Pane e Internet activities, with the delivery of e-facilitation services and digital literacy courses for seniors/citizens and the organisation of digital culture events (a new activity that Pel started in 2017)
- collaboration with schools often concerns ASL schemes, whereby students are engaged in intergenerational learning activities of the Pel project or similar initiatives (as in Modena city)
- the presentation and promotion of the EmiLib service towards adult citizens and students has become an important activity in recent years.

Answers to the survey question about external partnerships in digital activities also reflect some local specificities.

In Modena, the strength and tradition of collaboration among libraries through the "provincial library pole/network" shows up also with respect to digital initiatives. Libraries mainly collaborate with other libraries of the provincial pole in this as in other domains. The result, also due to the transversal action of the Pel project, is a relatively more homogeneous picture.

In Bologna, as illustrated below, more fragmented and heterogenous dynamics are observed, perhaps reflecting a stronger relationship of libraries with other local actors, such as schools and associations (these links are strong in Modena only in the city). Pel is also important in Bologna city and province, but as mentioned only a few libraries involved have responded to the questionnaire.

No particularly innovative initiatives have emerged from the survey in the area of information literacy or in other areas of digital competence (e.g. digital content creation, making etc). A few such examples are known to exist, but they can be currently considered as exceptions.

4.3.2 Digital initiatives in public libraries in Bologna city

Only a few of the public libraries in Bologna city answered to the COLIBLITE survey and we provide therefore qualitative results only about them.

For Biblioteca Salaborsa & Kids section (Bologna's central library), the following initiatives were mentioned:

- ASL projects with secondary school students engaged in e-facilitation services and short digital literacy courses (in collaboration with Pel project)
- digital literacy courses for adult migrants
- EmiLib promotion especially in upper secondary schools and training of citizens

The 4 out of 11 neighborhood libraries which answered to the questionnaire mentioned:

- The delivery of Pel e-facilitation services and short courses
- EmiLib promotion

Three thematic libraries mentioned:

- training early-childhood (0-6 y.o.) educators on the best use of Centro Riesco's digital resources for intercultural education
- digital literacy courses for refugees and the curation of online resources for language learning and on extra-EU issues (Centro Amilcar Cabral)
- info-training for mental disability associations on digital resources offered by Bologna library system (Minguzzi Gentili)

In terms of partnerships and collaborations for these digital initiatives, besides the Regional government for the Pel project, answers mentioned Bibliobologna Association (volunteers working in neighborhood

libraries), schools including the adult education school CPIA (which mostly caters for migrant students) and various “thematic” associations.

4.3.3 Digital initiatives in public libraries in Modena

As already mentioned, the *Polo bibliotecario modenese* (Modena library pole/network) plays an important role, as it includes all Modena city libraries (4 general and 3 thematic ones, as well as 5 secondary school libraries) and all libraries in the province. Members of the pole traditionally shared a number of services and related budget, including in particular ICT services. In the past, there was a provincial technical support centre for libraries called CEDOC, which provided network connectivity, managed common e-library services (catalogue, inter-library exchange etc.) and trained library staff on their use. Thanks to CEDOC, public libraries were among the early ICT users in the province of Modena and, not surprisingly, it was the Modena library pole which launched EmiLib a few years ago. As part of the institutional reform which abolished provincial administrations in Italy, CEDOC was closed in 2014, and some of its functions have been taken over by Delfini Library of the Modena Municipality, which coordinates the network. For instance, the continuous training of librarians formerly done by CEDOC is now managed by Delfini Library in collaboration with the University of Modena and Reggio Emilia (UniMORE).

In Modena, there are tight library-school links as showed by:

- the location of 4 out of the 7 reading points in peripheral neighborhoods inside first cycle schools
- the offer within MeMO’s “School-City Itineraries” of a standard activity designed by Delfini Library to bring all students from lower secondary schools to visit libraries, register to become customers, and learn about their services
- Delfini Library’s systematic collaboration with the adult education school CPIA Modena 1 (mostly catering for adult migrants) to promote its library services, foreign books and magazine collections
- the large-scale effort undertaken in recent years by Delfini Library in training teachers to use the EmiLib service and in supporting the schools who won the PNSD Innovative libraries projects to become member of the service, including by sharing with them simplified software and training school librarians.

Another important school-library collaboration on digital matters in Modena concerns the ASL projects which are part of the “Informatics for All” municipal initiative. Secondary school students mostly from Lyceum F. Corni have been involved in:

- the delivery of e-facilitation services in all four neighborhood libraries: 2 hours x 15 weeks, student pairs (27 students total in 2017/18)
- tutoring in the “Introduction to digital literacy” courses at Delfini Library : 2 hours x 4 lessons, 3-4 students as tutors -> 2018/19 in all libraries + how to use the smartphone
- the presentation of the EmiLib service to citizens in public libraries during the All Digital Week 2018

Digital facilitation services in neighborhood libraries

This activity was first experimented in the school year 2016/17. Students take the PeI training course for e-facilitators (see footnote 41) and then, by acting in pairs, deliver 30 hours of e-facilitation service to citizens who request it. All Modena’s four neighborhood libraries host this service. The first time, service delivery was designed to take place intensively, with several 2-3-hour sessions every day, so as to complete the 30 hours within 2 weeks. However, it turned out that spreading the word about this new service in the local libraries took some time and many citizens showed up asking for help when the service was already closing up. Therefore, in 2017/18 the arrangement was different. 27 students (12 pairs and a group of three) were

involved. Each pair of students chose one local library where to work and was engaged for 2 hours once a week for 15 weeks, i.e. covering about 4 months. Since the neighborhood libraries are four, the 12 pairs of students guarantee the service for three afternoons per week in each library. With this arrangement, the service is available for a much longer period and can be taken up by the citizens more regularly.

Tutoring in introductory digital literacy courses

Since November 2017, Delfini Library has been running for free, introductory digital literacy courses for citizens who want to learn how to use a computer and navigate the Internet. These courses are made of 2-hour lessons held twice a week for 2 weeks, hence they last 8 hours in total. Given citizens' demand, they have been held about once a month. Courses have about 8 participants each and are run in a room equipped for the event with laptops provided by the Municipality, next to Delfini Library's main conference hall. Courses are run by senior volunteer-teachers, helped by 3-4 students acting as tutors (occasionally, very capable students end up operating as teachers). With this arrangement, learners receive almost a 1-to-1 training assistance. From the 2018-19 school year, the initiative will include also training on the use of smartphones and tablets, it will involve more students and will be extended to Modena's four neighborhood libraries.

5 Participative urban innovation and the digital agenda in Bologna

The activities of the COLIBLITE project in Bologna take place in a context which is witnessing two important change processes at institutional, organizational and policy level, started a few years ago and now in full deployment. We present these developments in the report, as they may create interesting opportunities especially for the project's future sustainability.

One process is the establishment of the **Bologna Metropolitan City**, which has replaced the previous provincial administration giving a key role to the Bologna Municipality and its mayor over the same geographic area.⁵⁶ Many policies, including on digital infrastructures, services and other matters, and in the educational domain, must now take this wider perspective, as Bologna Metropolitan City now includes 55 Municipalities with a total of 1M inhabitants.



The other change is the **reform of Bologna neighbourhoods**, as lower-level city administrations. They have been cut from 9 to 6 and at the same time have been assigned new functions, crucial among them, a strong community-building remit through civic participation processes. As part of this, a **participatory budget** has been established as a component of the annual municipal budget.⁵⁷ Also, a **neighbourhood team** has been established in each district, made of a multidisciplinary staff coordinated operationally by the district director. The Team is the local reference point for any project development and plays an interface role between all the parties involved

in the different technical and political levels within and outside the administration. At city level, the **Office of Civic Imagination** was created with the task of supporting districts in their management of participation processes, called laboratories, by providing dedicated expertise when needed.

Building on these broad changes, the Bologna Urban Center Committee -a sort of strategic think tank established about 15 years ago by the Municipality and Bologna University- produced in 2016 the **Plan for the Urban innovation** of Bologna, with the aim of linking the choices and projects of the Metropolitan Administration (and significant funding coming from the National Operational Programme 2014-2020 for the newly created Metropolitan cities in Italy) with the potentialities and networks that arise bottom-up from the direct commitment of citizens. The plan includes several actions to be accomplished by 2021, with a total budgeted investment (by early 2018) of over 77M€ from various funding sources, including European structural funds.

In March 2018, the Urban Center was transformed into the **Urban Innovation Foundation** established again by the Municipality and the University of Bologna as founders and by other members.⁵⁸ The Foundation

⁵⁶ There are 14 such cities, established by a 2014 law, which replaced with them the existing provinces: Roma, Torino, Milano, Venezia, Genova, Bologna, Firenze, Bari, Napoli and Reggio Calabria.

⁵⁷ The participatory budget is defined by a dedicated regulation approved by the Bologna City Council in April 2016. It states that the destination of a share of the Municipal annual budget must be decided through a participatory process with the citizens, to be completed within 6 months every year. Besides all citizens entitled to vote, others who can participate in the Bologna participatory budget: are (a) citizens residing in the municipality, who are 16-17 years old; (b) non-resident citizens who carry out their prevalent work or study activity in the Bologna; (c) foreigners and stateless persons residing in Bologna or who carry out there their main work or study activity.

⁵⁸ Other members of the Foundation are the public housing (ACER) and the public transport (TPER) companies, the Bologna International exhibition company and the Agro-Food Center, the Bologna Metropolitan City and the Engineers Association of Bologna.

should carry out public interest activities in various urban development and regeneration domains, including the promotion of technological innovation, by guaranteeing a wide participation of citizens and the University students. The Office of Civic Imagination is now part of the Foundation.

The Foundation will overview and develop activities along the following five main lines, which are framed within the **Plan for the Urban innovation** of Bologna:

1. **URBAN CENTER:** Information on and promotion of urban areas and culture, by organising exhibitions, workshops etc. to involve the various stakeholders interested in the material and immaterial transformation of the city
2. **CIVIC IMAGINATION**, i.e. listening, collaboration and participation of the citizens in relation to projects and policies of the city and its neighbourhoods, as well as the care and regeneration of urban common goods
3. **ACTION-RESEARCH** in relation to the continuous transformation of the city, with specific attention to the use of digital tools and data and their visualisation
4. **EDUCATION AND TRAINING**, in particular for the development of new skills and the promotion of care and regeneration of urban common goods.
5. **RELATIONS AND NETWORKS**, through the participation in national and international networks

We briefly present below three interconnected projects/action lines which are most relevant for the COLIBLITE perspective:

- **Neighbourhood Laboratories**, which are the new participatory process to define priorities and actions in Bologna's neighbourhoods, including for young people and on digital matters
- the **Digital Agenda**, which includes actions for digital competence development and inclusion stemming from the Neighbourhood Laboratories and others
- **Open Lab for Imagination**, the project on digital culture and activities that involves the Bologna Central public library Salaborsa.

5.1 Neighbourhood Laboratories in Bologna

Neighbourhood Labs are coordinated and supported by the Office of Civic Imagination and monitored by the Sociology Dept of the University.⁵⁹ As established in the Municipal participation budget regulation, the main objective of these Labs is to "engage communities, associations, businesses and citizens in collaboration and proximity processes in a stable way, year by year and neighbourhood by neighbourhood, through specific routes that include mapping activities, reporting, listening, consultation, participation, co-design and territorial animation, with respect to specific neighbourhood locations and objectives defined each time". Labs eventually jointly identify initiatives that can be supported by the Bologna administration.

The three objectives set for the first round of Labs which took place in 2017 were:

- a. To define the priorities for the use of the 1 M€ made available by the Bologna Participatory budget for the renewal and reuse of specific sites (usually public property, parks etc.), equally divided among the six neighbourhoods;
- b) To identify the specific destination for 11 new buildings that the Bologna administration made available to create collaborative and community spaces (with funding from National Operational Programme Metropolitan Cities 2014-2020);

⁵⁹ Information about this experience is drawn mostly from the research report ""Una ricerca lunga un anno. Partecipazione e immaginazione nell'esperienza dei Laboratori di Quartiere del Comune di Bologna. Sintesi dei dati di un anno di lavoro dei Laboratori di Quartiere e riflessioni sulla partecipazione a Bologna, 22 Febbraio 2018, a cura di Centro Studi Avanzati su Consumi e Comunicazione, Dip. Sociologia e Diritto dell'Economia, Università di Bologna [http://www.urbancenterbologna.it/images/Laboratori di Quartiere/Report-LabQuartiere-2017.pdf](http://www.urbancenterbologna.it/images/Laboratori%20di%20Quartiere/Report-LabQuartiere-2017.pdf)

c) To co-design project development lines on education, social inclusion and digital initiatives.

Between April and September 2017 over 90 information events and working meetings were held across the city, that involved almost 2000 citizens (about 1400 formally registered to the Labs activities). The labs identified 12 priority needs, with three of them (highlighted) particularly relevant for COLIBLITE:

1. Inclusion of young people, training and education
2. Employment and enterprise development
3. Digital, new knowledge and skills
4. Memory, sense of belonging and participated story
5. Intergenerational exchange
6. Animation and social aggregation
7. Right to space, beauty and play
8. Soft mobility, increased safety and accessibility
9. Open and collaborative spaces
10. Multiculturality
11. Parenting support
12. Support for marginal and at risk people

Under priority 1, we can mention the request of two types of actions for **young people**: a) actions to address early school leaving, which is envisaged through the involvement of young people in **extracurricular laboratory activities**, and by reinforcing support for children who cannot afford to pay for private lessons, with the cooperation of the social actors of the neighbourhoods, teachers and parents; b) actions to strengthen the **function of public libraries**, as open spaces of culture, knowledge and a source of education...School-work alternation is also mentioned as a potentially useful mechanism for young people's engagement.

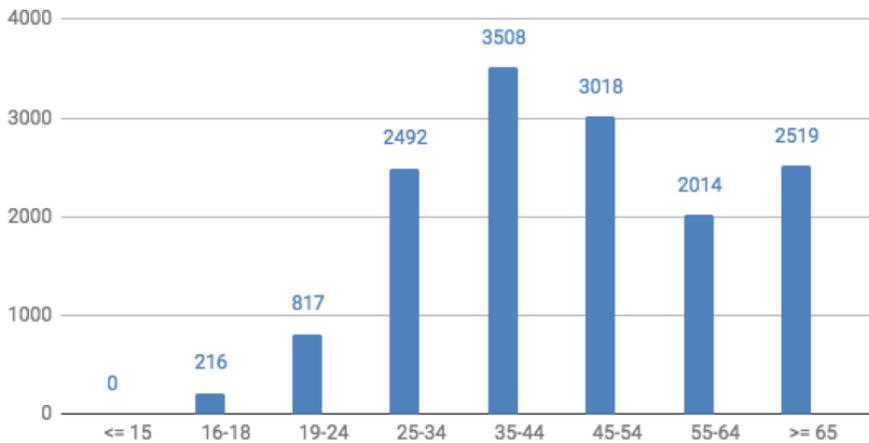
Concerning priority 3, all the workshops in the neighbourhood raised the "**digital**" topic from different angles. First, there is a clear demand to disseminate **digital literacy** to all actors and age groups in society. New technologies and digital competence are seen as important for telling stories, valuing their historical memory and giving visibility to neighbourhoods, and for the employability of young people. Many suggestions thus concerned training activities, e.g. **multimedia workshops** that can also become an opportunity for involvement and aggregation and stimulate teamwork. Specific training proposals were also made related to particular contexts and uses. Overall, citizens expressed the need to develop digital activities and spaces for two reference groups: **those who risk being excluded** and need training to prevent that (older and marginal people, migrants and others) and the **younger generation** who need to be made aware of the potential, and risks of digital technology.

Concerning priority 10, the idea behind **multiculturality** is to overcome ethnic, gender and religious stereotypes, creating above all opportunities for meeting and "**doing together**". Many workshops were therefore proposed, especially for theatre acting, but also for cooking, creative tailoring, language learning, literacy, digital literacy, and school support for children; and the introduction to sport and practice of sports for both men and women.

The results of the priority identification process have been used to design six calls for proposals on educational projects to develop new skills and competences among teenagers and young people (including digital ones), to be carried out in each of Bologna's six neighbourhoods (each call has a budget of 60-80,000€ from the Italian NOP Education), plus a city-wide call to develop three "new competences labs". The calls will be issued by the Summer 2018.

Besides identifying the priorities, citizens were called to signal and propose ideas for the use of the participatory budget for renewal and citizen-oriented projects in specific areas within the six neighbourhoods. Initially, 47 ideas came out of meetings and 37 additional ones were submitted online.

Figure 5 - Voters by age group in the 2017 Participatory budget process in Bologna



Eventually, 27 of them passed through the co-design and technical analysis phases leading to the 27 projects⁶⁰ which were submitted to the **first direct online voting** of the history of Bologna. Between November 7-27, 2017, 14.580 people voted these projects and 6 were eventually selected. Their completion is due by mid-2019.

Young people's participation to the proposals identification and voting processes turned out low. On the other hand, senior people who in Italy often do not use the Internet were not discouraged much by the online vote, also thanks to the availability of assisted voting posts in the neighbourhoods. Navile witnessed the lowest number of voters.

Besides the voting step, it should be noted that overall some sections of the population, in particular youth and migrants and more generally "unorganised" subjects, were less involved in these public participation initiatives. The prevalent use of institutional communication channels in the initial stages of the process probably contributed to this. Later on (possibly too late), a more attentive communication approach was adopted to promote the vote opportunity. An outreach strategy was set up, by engaging as "community reporters" young and very young people from different cultures of origin through the dedicated Under Laboratory project ("under" refers to "under 25 years old").⁶¹

In 2017, the **Under Laboratory** involved 9 young people 18-25 y.o. in a 20-day training&practice experience, during which they were taught and asked to document and communicate with using the new media the Neighbourhood Laboratories experience. Given the positive results of this first experiment, the Under Laboratory is being replicated and extended in 2018. It now involves about 20 young people, who will be engaged over a period of 6 months, with 1 day per week training and mentoring sessions on new media, open data, digital manufacturing and the critical use of digital media and, in parallel, will be asked again to accompany, document and communicate about the new participation process in the neighbourhoods from May to October 2018. This project is run by the Civic Imagination Office of the Foundation for Urban Innovation and takes place in Salaborsa and in the locations of the Neighbourhood Laboratories.⁶²

⁶⁰ The list of projects is available at <http://www.urbancenterbologna.it/bologna/rss/urbanistica/urbanistica-menu-per-rss/urbanistica-laboratori-di-quartiere/42-urbancenter/1627-progetti>

⁶¹ See <http://www.comune.bologna.it/pianoinnovazioneurbana/laboratoriounder/progetto/>

⁶² Among the partners and mentors who will contribute with lessons, labs and other activities to this project are: Matteo Bellini, Digital&Social Media Leader at IKEA Italia; Annalisa Zannoni, Women's Digital Brand Manager at NIKE; Paolo Tacconi, digital media expert and trainer at Fintech; Oriana Persico and Salvatore Iaconesi, HER – Human Ecosystems Relazioni; the Culture Dept. Of Bologna Municipality; the Bologna Museums Institution; Golinelli Foundation (see chapter 3.3.1), Archilabò; Kilowatt; Action Aid; Fab Lab Bologna.

5.2 Digital Agenda Bologna 2016-2020

The Digital Agenda aims to define an operational roadmap to put into practice the new model of urban innovation based on digital transformation as a driver of social change and public innovation. Digital Agenda Bologna 2016-20 aims to provide over time in every district of Bologna, the infrastructure and resources necessary so that every community and every citizen, regardless of age and conditions, has access to technology as a tool to ensure better public services and sustainable economic and social growth.

Three of the Agenda's 6 main axis are relevant in the COLIBLITE perspective:

3. **The Digital Neighbourhood House** aims to develop digital participation tools for the Neighbourhood Laboratories and related processes and to enable citizens to use them. The online voting system is one of such tools and others are designed to support online collaboration and run online petitions. Another action concerns the transformation of the Iperbole digital civic network⁶³ to better support the new participation processes at neighbourhood level.

4. **Data for citizens and decisions** is the main open data project of the Municipality. Bologna has been investing a lot in the "smart city" and related "big data" perspective and produces and publishes with open standards large amounts of data from all kind of sources. This axis includes running of "citizens data labs", where citizens should become active producers and users of data, to support their engagement in civic participation and decision-making processes.

5. The **Inclusion and new competencies** axis targets two groups: people at risk of digital and social exclusion and the younger people who are fully immersed in the use of digital technologies, but very often lack the awareness and competences to minimize the risks and maximise the benefits with this condition. The Agenda envisages the collaboration with MIUR on the PNSD for schools and with RER on the Pane e Internet project for digital inclusion measures. A network of "collaboration spaces", coordinated by the Open Lab for Imagination (see below) will be set up throughout the city, with the specific remit to create opportunities for people and communities at risk of exclusion and facilitate their access to new technologies and related cultural and communication initiatives. Citizens data labs (see above) will likely be held in these collaboration spaces.

5.3 The Open Lab for Imagination

The Bologna **Open Lab for Imagination** is one the projects funded by Regione Emilia Romagna (along with 9 similar Open Lab projects in the other provincial capital cities of Emilia Romagna), run by the former Urban Center. This project will refurbish, connect and open up to the public (by the end of 2018) new spaces in the Central public library Salaborsa and surrounding buildings. These spaces will provide easily accessible information resources and collaborative work tables and tools for presenting information, experimenting with technologies and software. They will be equipped with ultra-broadband connectivity and free and open wi-fi access points and all the audio-video equipment for amplifying and streaming meetings and videoconferences. Both the infrastructure features and future Open Lab activities have been and are being defined through participation and co-design processes with students and citizens. The figure below summarizes the discussion held with about 250 participants during the international conference "An open laboratory for imagination in Piazza Maggiore", held in the Salaborsa Auditorium, January 26, 2017

⁶³ Iperbole was one of the first such initiatives set up worldwide in the 1990s, along with the Amsterdam civic network.

6 Conclusions

Based on the findings illustrated in this report, we can draw a few conclusions about the context and the opportunities faced by the COLIBLITE project.

The promotion of digital citizenship and the development of related digital and transversal competences among children and young people are moving up in the education and other policy agendas in Italy. From the definitions found in policy documents, especially from the Ministry of education, digital competence is seen to mean the full and active participation of each individual in the digital society, which entails:

- the critical awareness of ongoing deep transformations in society and their implications
- an ethical and responsible use of ICT, digital content and systems, in terms of
 - **critical** and **safe** consumption (ability to retrieve, filter and evaluate sources, information and news and to navigate safely on the internet)
 - **responsible** and **creative** production (ability to create, integrate and re-elaborate digital content and tools, paying due attention to copyright and licenses)
 - **respectful** communication (recognizing the social, collaborative and interactive nature of the digital infosphere and paying attention to privacy issues)

In order to achieve these goals, the Italian new Digital civic education curriculum calls for embedding and blending digital competence into social and civic competences.

Initiatives moving in this direction on a large scale started a few years ago and are still much at an initial stage. The National Digital School Plan (PNSD) launched in 2015 is undoubtedly giving a big push towards digital citizenship education in the formal education sector. It is doing this by providing a strategic orientation (coherent with international frameworks on transversal and digital competences) to the efforts of all stakeholders involved and by funding with a significant investment of about 1 bn€ a wide range of actions addressing all the important dimensions of the digital education transformation. PNSD is creating many opportunities for teachers and students to develop digital citizenship and to innovate education with the help of digital technologies.

The library sector is not directly witnessing a similar concerted effort, but librarians are paying increasing attention to the need to deeply transform their function in the digital world and contribute in particular to enhance the citizens' capacity as critical and safe digital information and content consumers, and producers. PNSD has in fact created practical opportunities also to strengthen library-school collaboration in this area: by involving the library world in the design of information literacy education initiatives (through the production of so-called "schoolkits") and by funding the Innovative school libraries projects. This action line of PNSD is still new but given the lack of experienced staff in schools to run digital information and library services, it stimulates schools to collaborate with more experienced public libraries which may help them develop such capacity.

Besides these opportunities that come from the implementation of the national PNSD at the local level, in Emilia Romagna, especially in Modena, but also in Bologna, we found many experiences involving children and young people which are conducive to digital citizenship. The Regional Government's digital literacy and inclusion project Pane e Internet -which mainly targets seniors and adults in general with no or low digital skills- has taken advantage of the new school-work alternation (ASL) scheme that concerns all upper secondary school students, to engage them in intergenerational (teenagers -> adults/seniors) digital learning and personalised assistance activities (so-called "e-facilitation" services). Young people develop a critical awareness of their own and other people's use of digital devices and services and engage in active

citizenship by helping others learn how to use these devices and services. These activities are usually carried out in public libraries of the Pane e Internet network.

In Modena, the ASL scheme has been used also to consolidate some already existing projects (which involved secondary school students in refurbishing IT equipment and supporting its installation and use in primary schools) and to develop new peer-to-peer learning activities (upper secondary -> lower secondary / primary school students), focused on coding and making. The Urban Innovation Plan and related Digital Agenda actions are creating favourable conditions to replicate similar experiences also in Bologna.

The Italian COLIBLITE project partners have been looking closely at these initiatives in order to understand how to link the project's activities to these processes and enhance their impact and future sustainability. COLIBLITE will train teachers, educators and librarians to engage them in hands-on digital labs aiming at developing their own digital citizenship competence and that of children and young people, especially disadvantaged ones with a migration background. The possibility to bring these activities into ASL schemes involving also public libraries and to establish continuous collaborations between primary and secondary schools at neighbourhood and city level would increase their impact and their future sustainability beyond the project duration.

ANNEXES – Digital literacy and citizenship frameworks

The Media Smarts digital literacy framework

The Canadian government has identified seven key aspects of digital literacy (see **Table 9**) and promotes related competencies and learning opportunities (based on school grades) according to three main principles: use, understand and create.

Table 9 - Seven key aspects of the Media Smarts digital literacy framework for Canadian schools

	<p>Ethics and Empathy This category addresses students’ social-emotional skills and empathy towards others as well as their ability to make ethical decisions in digital environments when dealing with issues such as cyberbullying, sharing other people’s content and accessing music and video</p>
	<p>Privacy and Security This includes essential skills for managing students’ privacy, reputation and security online such as making good decisions about sharing their own content, understanding data collection techniques, protecting themselves from malware and other software threats, and being aware of their digital footprint.</p>
	<p>Community Engagement Resources in this category teach students about their rights as citizens and consumers and empower them to influence positive social norms in online spaces and to speak out as active, engaged citizens.</p>
	<p>Digital Health Digital health skills include managing screen time and balancing students’ online and offline lives; managing online identity issues; dealing with issues relating to digital media, body image and sexuality; and understanding the differences between healthy and unhealthy online relationships.</p>
	<p>Consumer Awareness These skills allow students to navigate highly commercialized online environments. They include recognizing and interpreting advertising, branding and consumerism; reading and understanding the implications of website Terms of Service and privacy policies; and being savvy consumers online.</p>
	<p>Finding and Verifying Students need the skills to effectively search the Internet for information they need for personal and school purposes, and then evaluate and authenticate the sources and information they find.</p>
	<p>Making and Remixing Making and Remixing skills enable students to create digital content and use existing content for their own purposes in ways that respect legal and ethical considerations and to use digital platforms to collaborate with others.</p>

Source: <http://mediasmarts.ca/sites/mediasmarts/files/pdfs/digital-literacy-framework.pdf>

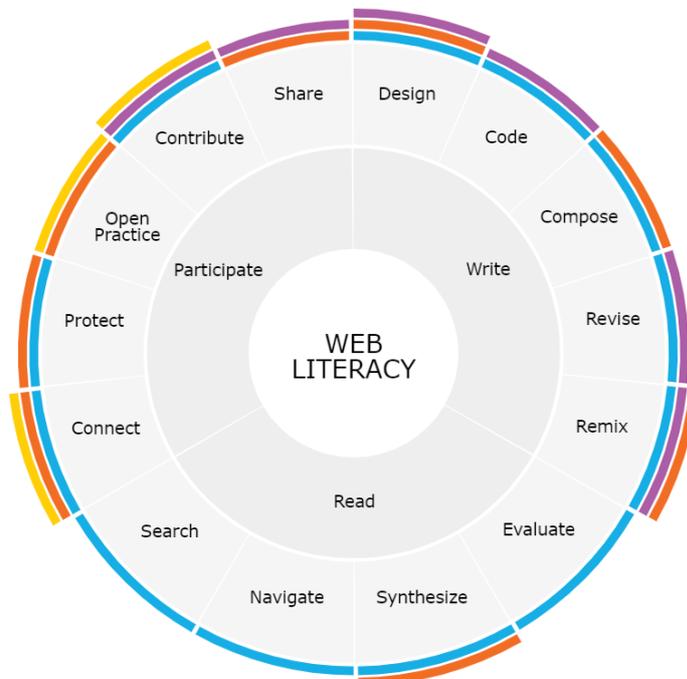
Web literacy & 21st Century skills framework of Mozilla Foundation⁶⁴

Mozilla Foundation's framework for entry-level web literacy & 21st Century skills is also structured along three main activities: write, read and participate. Each of them is enabled/supported by the web literacy skills as illustrated in **Figure 6** below.

Figure 6- Web literacy framework by Mozilla Foundation

21st Century Skills

- Problem-Solving
- Communication
- Creativity
- Collaboration



Writing on the web enables one to build and create content to make meaning. New genres that blend texts and tools have emerged on the open web and are often referred to as making. Learning through making involves constructing new content.

Reading on the web is a critical skill for engaging content online. They can be viewed as “exploring,” or “navigating the web.” Just as traditional reading requires knowledge of the text and concepts of print, reading online requires a basic understanding of web mechanics.

Participating on the open web includes connecting with the communities that share, build, and sustain meaningful content online. A healthy online community requires knowledge of how to create, publish and link content, and an understanding of security in order to keep content, identity, and systems safe.

⁶⁴ See <https://learning.mozilla.org/en-US/web-literacy>

The European Digital Competence framework for all citizens (DigComp)⁶⁵



DigComp identifies five competence areas which concern all citizens including children and young people, but were not specifically envisaged for this segment of the population.

The five areas are:

1. Information and data literacy
2. Communication and collaboration
3. Digital content creation
4. Safety
5. Problem solving

Areas 1, 2 and 3 deal with competencies that can be re-traced in terms of specific activities and uses, whereas areas 4 and 5 are “transversal”, as they apply to any type of activity carried out through digital means. Problem solving elements, in particular, are present in all competence areas, but a specific area was defined to highlight the importance of this aspect for the appropriation of technology and digital practices. Each area includes a number of specific competences for a total of 21. The full DigComp reference conceptual model can be seen in **Table 10** in the next two pages.

⁶⁵ See <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>

Table 10 - The DigComp reference conceptual model⁶⁶

Competence areas (Dimension 1)	
Competences (Dimension 2)	
1. Information and data literacy	
1.1 Browsing, searching and filtering data, information and digital content	To articulate information needs, to search for data, information and content in digital environments, to access them and to navigate between them. To create and update personal search strategies.
1.2 Evaluating data, information and digital content	To analyse, compare and critically evaluate the credibility and reliability of sources of data, information and digital content. To analyse, interpret and critically evaluate the data, information and digital content.
1.3 Managing data, information and digital content	To organise, store and retrieve data, information and content in digital environments. To organise and process them in a structured environment.
2. Communication and collaboration	
2.1 Interacting through digital technologies	To interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.
2.2 Sharing information and content through digital technologies	To share data, information and digital content with others through appropriate digital technologies. To act as an intermediary, to know about referencing and attribution practices.
2.3 Engaging in citizenship through digital technologies	To participate in society through the use of public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.
2.4 Collaborating through digital technologies	To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of resources and knowledge.
2.5 Netiquette	To be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.
2.6 Managing digital identity	To create and manage one or multiple digital identities, to be able to protect one's reputation, to deal with the data that one produces through several digital tools, environments and services.
Continues ...	

⁶⁶ See “DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: the Conceptual Reference Model”. Available at <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-20-digital-competence-framework-citizens-update-phase-1-conceptual-reference-model>

3. Digital content creation

3.1 Developing digital content

To create content in different formats (e.g. data, text, multimedia), to edit and improve existing content, to express oneself through digital means.

3.2 Integrating and re-elaborating digital content

To modify, refine and integrate new information and content into an existing body of knowledge and resources to create new, original and relevant content and knowledge.

3.3 Copyright and licences

To understand how copyright and licences apply to digital information and content.

3.4 Programming

To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or to perform a specific task.

4. Safety

4.1 Protecting devices

To protect devices and data, to understand risks and threats in digital environments, to know about safety and security measures and to have due regard to reliability and privacy.

4.2 Protecting personal data and privacy

To protect personal data and privacy in digital environments. To understand how to share personally identifiable information while protecting self and others from dangers (e.g. fraud). To understand that digital services use a “Privacy policy” to declare how personal data is used.

4.3 Protecting health and well-being

To avoid health-risks related with the use of digital technologies in terms of threats to physical and psychological well-being. To be able to protect self and others from possible dangers in digital environments (e.g. cyber bullying). To be aware of digital technologies for social well-being and inclusion.

4.4 Protecting the environment

To be aware of the environmental impact of digital technologies and their use.

5. Problem solving

5.1 Solving technical problems

To identify technical problems when operating devices and using digital environments, and to solve them (from troubleshooting to solving more complex problems).

5.2 Identifying needs and technological responses

To assess needs and to identify, evaluate, select and use digital tools and possible technological responses to solve them. To adjust and customise digital environments to personal needs (e.g. accessibility).

5.3 Creatively using digital technologies

To use digital tools and technologies to create knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.

5.4 Identifying digital competence gaps

To understand where one’s own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.