

## **TEACHER TRAINING BETWEEN DIGITAL AND SOFT SKILLS**

### **LA FORMAZIONE DEGLI INSEGNANTI TRA COMPETENZE DIGITALI E SOFT SKILLS**

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#### **Abstract**

The emergency situation due to Covid 2019 and the related restrictions have led to a rethinking of educational processes. To focus these changes we must carefully consider the learning and continuing education of teachers. To cope with the new frontiers of the educational poverty (Report Save the Children, 2021), the schools must rethink DDA, DDI and life skills. In a changing society, it is always necessary to renovate practices and knowledges, especially in the educational field. In this perspective an interesting challenge is to reshape the framework in which the basic competences, but above all transversal and digital skills and global education are developed. Starting from teacher training between digital and soft skills, we also need to reflect how didactics can be reshaped, with the aim of making students active protagonists of their learning and life process. A contribution to this is also given by the update of the Dig-Comp 2.2 framework which provides schools with operational indications for developing digital skills and above all digital citizenship.

La situazione di emergenza dovuta al Covid 2019 e le relative restrizioni, hanno portato a un ripensamento dei processi educativi. Per focalizzare questi cambiamenti dobbiamo considerare attentamente l'apprendimento e la formazione continua degli insegnanti.

Per far fronte alle nuove frontiere della povertà educativa (Report Save the Children, 2021), le scuole devono ripensare DDA, DDI e life skills. In una società in rapido cambiamento, è sempre necessario rinnovare pratiche e conoscenze, soprattutto in campo educativo. In questa prospettiva una sfida interessante è quella di rimodellare il quadro in cui si sviluppano le competenze di base, ma soprattutto le competenze trasversali e digitali e l'educazione globale. Partendo dalla formazione degli insegnanti tra digital e soft skills, occorre riflettere anche su come si possa rimodellare la didattica, con l'obiettivo di rendere gli studenti protagonisti attivi del proprio processo di apprendimento e di vita. Un contributo in tal senso è dato anche dall'aggiornamento del framework Dig-Comp 2.2 che fornisce alle scuole indicazioni operative per lo sviluppo delle competenze digitali e, soprattutto, della cittadinanza digitale.

#### **Keywords**

Training, soft skills, digital citizenship

Formazione, competenze trasversali, cittadinanza digitale

## Introduction

The emergency situation due to Covid 2019 and the related restrictions have led to a rethinking of educational processes. To focus this change we must carefully consider the education of the teachers. To cope with the new frontiers of educational poverty (*Report Save the Children, 2021*), schools must rethink DDA, DDI and life skills and in general a new educational paradigm, also in an inclusive perspective, which permits to analyze new opportunities and to face up to new emergencies.

In a rapidly changing society, it is always necessary to renew competences and practices, especially in the educational field (Baldacci, 2019). In this perspective, an interesting challenge is to reshape the framework in which basic skills are developed, but above all transversal and digital skills and global education can be defined. Starting from teacher training between digital and soft skills, it is necessary to reflect how teaching can be reshaped, with the aim to make students active protagonists of their own learning process in order to build their own life project. If this was already evident before the Pandemic, it is now an undeniable fact. Educational Institutions, schools must construct the new paradigm of digitalization to face the “new normality” designed by Covid-19.

The economic investments of the schools have considered the tools equipment to allow the teachers to develop their work remotely. Considering the changes determined by Digital Transformation, it is important that people constantly develop new digital skills, to guarantee continuous personal and professional growth. But what are digital skills? And what is meant by digital transversal competences?

### 1. Digital skills and digital transversal skills: a reference framework.

Digital soft skills are transversal skills (*All-digital, 2022*) that allow to move effectively in an increasingly digitalized and constantly changing society. The Pandemic has shown how much interpersonal skills such as adaptability, cooperation, self-awareness, communication skills and empathy, supported by technology, have been fundamental in the great transformations of our global society.

Examples of digital behavioural skills are:

- Digital Mind-set: openness to changes
- Digital privacy: having confidence with data and its protection
- Knowledge Networking: ability to share information within virtual communities
- Virtual communication: have confidence in the management of forms of communication and online relationships
- Digital Team Working: ability to collaborate and collaborate with one's colleagues even remotely
- Digital Problem Solving: consists of the ability to find solutions to problems using digital tools
- Digital identity: awareness of one's online presence and the ability to manage it better. It's about knowing how to manage your reputation and your online presence.
- Digital use: the ability to use different devices and systems.
- Digital security: the ability to recognize and avoid the risks associated with the use of digital, or to know how to recognize the risks of cyberbullying, radicalization, violence, obscenity.
- Digital security: the ability to recognize the dangers of hacking, scams or malware and understand what practices are needed to protect your data and devices.

- Digital empathy or digital emotional intelligence: emotional intelligence that allows you to approach others with awareness even behind a screen.
- Digital literacy: the ability to find information online, evaluate its credibility, create your own content and share it in the best possible way.
- Digital rights: awareness of the right to freedom of speech and thought, but also of the right to privacy, intellectual property and the still discussed right to be forgotten.

The world is changing rapidly and there are no sectors that today do not require the development of new technological skills.

In this perspective educational institutions are investing economically to improve the digital skills of their teachers and students, developing projects that help them to acquire new skills, essential to face up to the new digital age.

The application of digital skills at school can not remain within a specific disciplinary area, but must become an increasingly widespread competence capable of involving all human activities, especially educational powers.

Children and adolescents should have the opportunity to develop an approach to digital technologies in all school disciplines to develop their digital skills more and more.

Therefore, schools must help to govern the complexity of change, rather than minimize some aspects of it as a mere risk.

The school can help students and their parents, to construct positive strategies to cope with the unforeseen events of experience.

## **2. A new educational paradigm**

The digitization and robotization of the educational processes determined by the Pandemic has developed an urgency for the acquisition of useful skills to better organize the technological tools (ManpowerGroup Skills Revolution Reboot, 2021). Digital teaching represents an universe of technological skills - defined as digital hard skills and digital soft skills – which develops from the ability to use a computer, to the project of software for artificial intelligence.

In this perspective the relational skills allow people to use effectively the new digital tools from the protection of one's data to “netiquette” in the use of social media; from searching for information online to creating digital content.

They are not a closed box, but they constantly change with the evolution of technologies and will also change with the passage of time, because what is now considered "digital literacy", is fundamental for the education (OECD Skills Outlook, 202)

The role of the school will be increasingly crucial in promoting the development of skills for digital citizenship in a globalized, liquid and uncertain society. Starting from teacher training, the school will have the task of knowing how to build a new training paradigm. Dig-Comp is the European framework for digital skills, which represents a single and well-defined reference frame for the digital skills needed by any individual, to interact, learn and work with the environment.

The European Commission has adopted this model, built by the Joint Research Centre (JRC), and has expanded its scope with different forms (for the citizen, for educators, for organizations, for consumers). Version 2.2 has recently come out, an interesting update especially for the school, which in our country, for years, has been wandering in search of a curriculum to realize a digital competence, in respect of which we have a significant gap compared to the rest of European countries.

In fact if you check the results of the recent DESI 2021 Report, the *Index of the Digital Economy and Society* that involves the countries of the European Union, and thanks to which the

European Commission monitors the digital progress of the member states, Italy ranks 20th among the 27 states. There are still a limited number of schools that have produced and used a curriculum for the development of digital competence. It is therefore worthwhile to analyze the state of this general problem of Italian school.

The digital skills in our school system are currently found in the final competence profile of the National Indications (MIUR, 2012) for the first cycle of education: "The student has good digital skills, uses communication technologies with awareness to research and analyze data and information, to distinguish reliable information from that which requires in-depth analysis, control and verification and to interact with different issues around the world".

An orientation very centred on the issue of awareness, also confirmed for the end of the compulsory education (16 years) which sets as the objective in the certification model "an adequate use of information and communication technologies".

Finally, it is reported that digital competence "enriches the possibility of accessing knowledge, allows the creation of individual learning paths, interactive communication and personal creative expression".

In 2015, the National Digital School Plan (PNSD), a planning document that will give a significant boost to the innovation of the national school in the following years, demonstrates the need for a reference framework for digital skills, to integrate the study paths already regulated through the National Indications and the Guidelines (which in any case only touch the digital area, having all been released between 2010 and 2012).

In Action # 14 - A common framework for digital skills and media education for students, the PNSD declares an intent that will never be realized. In 2013 the European Commission had already published the first version of the DigComp reference framework (digital skills of the citizen), updated in 2016 with version 2.0 and in 2017 with version 2.1, thus solving the "problem" of providing schools just to orient the educational paths of young people and adults. Until 2018 there will not be an Italian translation of AGID (Agency for Digital Italy).

In the meantime, in 2016 the MIUR promoted the Digital Curricula call, in order to finance networks of schools that were supposed to design specific courses on digital skills. After the translation of Dig-Comp 2.1, in different contexts (school networks, INDIRE, university research ...) training and experimentation activities in the field were promoted to "translate" the framework into a transversal curriculum.

There are still few schools that can boast the implementation of a clear path on the development of digital competence, in analogy to what happens for disciplinary areas, but also for transversal paths such as civic education (which is, let's remember, mandatory).

In all schools, from 2020, there is a curriculum for Civic Education, but not a curriculum for achieving digital skills. (Only art.5 of Law 92/2019)

### **3. The new DigComp 2.2 - What are the real changes for the school?**

On March 22, 2022, DigComp 2.2, the European framework for citizens' digital skills, was published: what has changed? Probably it is not a change, but an enrichment.

In fact version 2.2 introduces examples of knowledge, skills and attitudes for each of the 21 competences identified by the model (Figure 1) So we come to the latest update "DigComp 2.2. The Digital Competence Framework for Citizens. With new examples of knowledge, skills and attitudes" (2022), an update that is exclusively dedicated to Dimension 4 (examples of knowledge, skills and attitudes applicable to each competence). For the other dimensions, what is indicated in DigComp 2.0 and 2.1 is valid.

In DigComp 2.2, more than 250 new examples support citizens to use digital technologies with confidence, in a critical and secure way, considering these in relation to the development of Artificial Intelligence (AI).

To verify this situation are fully involved experts and stakeholders, interactive workshops with international actors (such as ILO, UNESCO, UNICEF and the World Bank) and the establishment of a Community of Practice, whose educational process is documented in the publication.

For each of the 21 skills, there are about 10-15 examples that constitute a useful reference in the field of education and training. In fact, they can provide useful input for updating the resources and paths to improve the digital skills.

An aid to consultation is provided by the use of graphic symbols to gather the examples of knowledge, skills and attitudes, by the colors that link the areas of competence in specific skills related to them and with shades (more or less intense) that facilitate the appreciation of the different levels of mastery.



Figure 1 (DigComp 2.2)

The issues and technologies in this update are, in particular, new and emerging ones:

- misinformation and disinformation in social media and news sites (fact-checking of information and its sources, fake news, deep fakes),
- information and media literacy,
- data connected to internet services and apps (for example focus on how personal data is used),
- interaction with Artificial Intelligence systems (including data skills, data protection and privacy, but also ethical considerations),
- Internet of Things (IoT),
- environmental sustainability (for example the resources consumed by Information and Communication Technologies),
- new forms of work (remote and hybrid),
- virtual and augmented reality,
- robotics.

Examples related to Artificial Intelligence, remote work and digital accessibility are highlighted with the abbreviations AI (Artificial intelligence), RW (Remote Working), DA (Digital Accessibility).

In general, the new examples are not developed on levels of competence, they are not even an exhaustive list of what competence itself entails and should not be taken as a set of learning outcomes that are expected of all citizens (Xhaët&Derchi, 2019)

However, explicit descriptions of learning objectives, contents, learning experiences and their assessment can be developed as a basis to improve education.

Digital competence is now a basic competence

"Digital competence presupposes an interest in digital technologies and their use with familiarity and a critical and responsible spirit to learn, work and participate in society. It includes computer and digital literacy, communication and collaboration, media literacy, digital content creation (including programming), security (including being comfortable in the digital world and possessing cybersecurity skills), intellectual property issues, problem solving and critical thinking." (Garapon&Lassègue, 2021)

This is the excellent description that the European Commission makes of it in the Council Recommendation of 22 May 2018 on Key Competences for lifelong learning.

There are no doubts: digital competence is essential, in the span of life, in the same way as linguistic, scientific, civic and other skills that we can identify in the infographic in figure 2. All interact in order to form a competent and responsible citizen.



Figure 2 (Key competences)

We find in the introduction to the latest version of Dig-Comp: "Digital competence is part of the framework of key competences for lifelong learning and is interconnected with other competences. The recommendation on key competences for lifelong learning identifies the essential skills for citizens for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion.

All key competences are complementary and interconnected with each other. In other words, essential skills for one domain will support skills development in another. This also applies to digital competence and other key competences." (DigComp 2.2, 2022)

Can the school disregard the responsibility of accompanying all students in the acquisition of these skills? Obviously a clear framework is needed.

Are digital citizenship and digital skills the same?

In some institutions, the declination of digital citizenship competences within civic education is considered to be exhaustive.

It is necessary to clarify that the application of art. 5 of the Law of 20 August 2019, n. 92, which defines the scope of "Education for digital citizenship", fulfils the entire context of digital skills. This is a mistake, since in 2020 there is the obligation of a transversal curriculum of civic education in every school, to calculate 33 hours per year per class, in order to relate the exercise of active citizenship with the use of digital competences.

We also find within Dig-Comp version 2.2: "On the other hand, the Dig-Comp competence defines the commitment to citizenship through digital technologies (Dig-Comp 2.3 competence). The same competence of Citizenship is defined in the Key Competences as "the ability to act as responsible citizens and to participate fully in civil and social life". The new examples attempt to illustrate this relation by highlighting complementary knowledge, skills and attitudes for both themes.

The Citizenship competence is also linked to media literacy by outlining "the ability to access, have a critical understanding and interact with traditional and new forms of media and understand the role and functions of the media in democratic societies".

It can therefore be said that media literacy, which is a new issue added to the definition of digital competence in 2018, is placed at the connection between Citizenship and Digital Skills.

Summarizing in an extreme way (figure 3), it can be said that Digital Citizenship is a subset within the broader and more complete framework of Digital Skills which, therefore, needs a curriculum organization in school courses. We can't wait any longer.

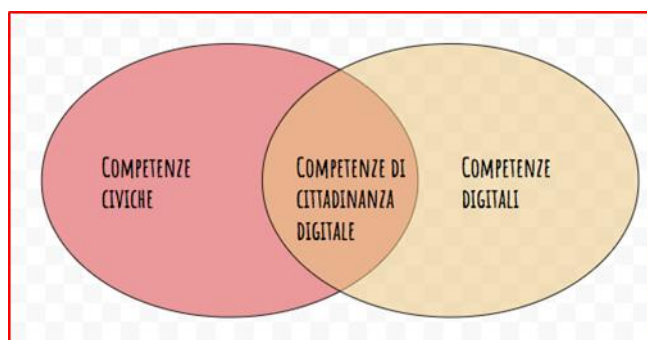


Figure 3 (Citizenship and Digital Skills)

At Dig-Comp, five areas of expertise outline what digital competence entails. They are the followings:

- 1 - Information and data literacy;
- 2 - Communication and collaboration;
- 3 - Creation of digital content;
- 4 - Security;
- 5 - Troubleshooting.

The first three areas concern skills dedicated to specific activities and uses.

Areas 4 and 5 (Safety and Problem solving) are instead "transversal" as they apply to any type of activity carried out through digital means. Problem solving elements, in particular, are present in all skills, but a specific area has been defined to highlight the importance of this aspect for the appropriation of technology and digital practices.

In the DigComp 2.2 update, there are two important innovations, which could finally give a boost to the introduction of this model in the curriculum:

1 - the “Examples” dimension, already present in the previous version, is expanded and better defined, distinguishing for each example knowledge, skills and attitudes.

These are 250 concrete examples, divided between the various skills, which help to gradually pursue a complete and updated digital competence.

Some are as follows:

- disinformation and disinformation on social media and news sites
- the trend in data processing of internet services and apps (e.g. how personal data are used)
- Artificial Intelligence systems (including skills related to data, protection and privacy, but also ethical considerations)
- emerging technologies such as the Internet of Things (IoT)
- environmental sustainability issues (e.g. resources consumed by ICT)

These new examples are not a complete list of what competence itself entails. The new DigComp examples of knowledge, skills and attitudes should not be taken as a set of learning outcomes, but as a starting point for developing explicit descriptions of learning objectives, contents, learning experiences and their assessment. This undoubtedly requires planning at the school level, as happens for other didactic projects.

The introduction of a new "dimension" compared to those already present (area of competence, descriptor of competence, level, examples): the "Study cases", which better specify and integrate the "Examples". (In this context we see for the first time a clear reference to school courses, which are supported in the application of the model with precise references to teaching.)

We know that DigComp, as a model for the development of citizens' skills, in previous versions offered generic and non “scholastic” examples, which had to be adapted in some way to educational paths.

Now the Study cases are instead divided into:

Employment scenario: job search process (therefore use cases adaptable to the world of work).

Learning scenario: preparing group work with my classmates (use cases referable to the school).

The dimensions in the new DigComp (Figure 4 and 5) are as follows:

Dimension 1 • area of competence

Dimension 2 • competence (descriptor)

Dimension 3 • level of competence

Dimension 4 • examples of knowledge, skills and attitudes

Dimension 5 • use cases

19		DIMENSION 3 • PROFICIENCY LEVEL	
 <p><b>DIMENSION 1 • COMPETENCE AREA</b>  <b>2. COMMUNICATION AND COLLABORATION</b></p>	<p><b>FOUNDATION</b></p>	<p>1 At basic level and with guidance, I can:</p> <ul style="list-style-type: none"> <li>• identify simple digital services in order to participate in society</li> <li>• recognise simple appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>	<ul style="list-style-type: none"> <li>• identify simple digital services in order to participate in society</li> <li>• recognise simple appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>
	<p>2 At basic level and with autonomy and appropriate guidance where needed, I can:</p>	<ul style="list-style-type: none"> <li>• identify simple digital services in order to participate in society</li> <li>• recognise simple appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>	
<p><b>DIMENSION 2 • COMPETENCE</b>  <b>2.3 ENGAGING CITIZENSHIP THROUGH DIGITAL TECHNOLOGIES</b></p> <p>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.</p>	<p><b>INTERMEDIATE</b></p>	<p>3 On my own and solving straightforward problems, I can:</p>	<ul style="list-style-type: none"> <li>• select well-defined and routine digital services in order to participate in society</li> <li>• indicate well-defined and routine appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>
	<p>4 Independently, according to my own needs, and solving well-defined and non-routine problems, I can:</p>	<ul style="list-style-type: none"> <li>• select digital services in order to participate in society.</li> <li>• discuss appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>	
<p><b>ADVANCED</b></p>	<p>5 As well as guiding others, I can:</p>	<ul style="list-style-type: none"> <li>• propose different digital services to participate in society.</li> <li>• use appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>	<ul style="list-style-type: none"> <li>• vary the use of the most appropriate digital services in order to participate in society</li> <li>• vary the use of the most appropriate digital technologies to empower myself and to participate in society as a citizen.</li> </ul>
	<p>6 At advanced level, according to my own needs and those of others, and in complex contexts, I can:</p>	<ul style="list-style-type: none"> <li>• create solutions to complex problems with limited definition that are related to engaging in citizenship through digital technologies.</li> <li>• integrate my knowledge to contribute to professional practices and knowledge and guide others in engaging in citizenship through digital technologies.</li> </ul>	
<p><b>HIGHER SPECIALISED</b></p>	<p>7 At highly specialised level, I can:</p>	<ul style="list-style-type: none"> <li>• create solutions to solve complex problems with many interacting factors that are related to engaging in citizenship through digital technologies.</li> <li>• propose new ideas and processes to the field.</li> </ul>	
<p>8 At the most advanced and specialised level, I can:</p>			



Figure 4 (Dimension 3)

DIMENSION 4 - EXAMPLES OF KNOWLEDGE, SKILLS AND ATTITUDES		NEW W 3.2
KNOWLEDGE	67. Knows about different types of digital services on the internet: public ones (e.g. services to consult tax information or make an appointment in the health care centre), community-based services (e.g. knowledge repositories such as Wikipedia), map services such as Open Street Map, environmental monitoring services such as Sensor Community) and private services (e.g. e-commerce, online banking).	→
	68. Knows that a secure electronic identification, (e.g. identity cards which contain digital certificates), enables citizens to increase safety when using online services provided by the government or by the private sector.	
	69. Knows that all EU citizens have the right to not be subject to fully automated decision-making (e.g. if an automatic system refuses a credit application, the customer has the right to ask for the decision to be reviewed by a person). (AI)	
	70. Recognises that while the application of AI systems in many domains is usually uncontroversial (e.g. AI that helps avert climate change), AI that directly interacts with humans and takes decisions about their life can often be controversial (e.g. CV-sorting software for recruitment procedures, scoring of exams that may determine access to education). (AI)	
	71. Knows that AI per se is neither good nor bad. What determines whether the outcomes of an AI system are positive or negative for society are how the AI system is designed and used, by whom and for what purposes. (AI)	
	72. Aware of civil society platforms on the internet that offer opportunities for citizens to participate in actions targeting global developments to reach sustainability goals on local, regional, national, European and international level.	
	73. Aware of the role of traditional (e.g. newspapers, television) and new forms of media (e.g. social media, the internet) in democratic societies.	
SKILLS	74. Knows how to acquire certificates from a certification authority (CA) for the purpose of a secure electronic identification.	→
	75. Knows how to monitor public spending of local and national government (e.g. through open data on the government's website and open data portals).	
	76. Knows how to identify areas where AI can bring benefits to various aspects of everyday life. For example, in healthcare, AI might contribute to early diagnosis, while in agriculture, it might be used to detect pest infestations. (AI)	
	77. Knows how to engage with others through digital technologies for the sustainable development of society (e.g. create opportunities for joint action across communities, sectors and regions with different interests in sustainability challenges) with an awareness of technology's potential for both inclusion/participation and exclusion.	
ATTITUDES	78. Open to change one's own administrative routines and adopt digital procedures when dealing with government and public services.	→
	79. Readiness to contemplate ethical questions related to AI systems (e.g. in which contexts, such as sentencing criminals, should AI recommendations not be used without human intervention)? (AI)	
	80. Considers responsible and constructive attitudes on the internet as they are the foundation for human rights, together with values such as respect for human dignity, freedom, democracy and equality.	
	81. Proactive about using the internet and digital technologies to seek opportunities for constructive participation in democratic decision-making and civic activities (e.g. by participating in consultations organised by municipality, policy-makers, NGOs; signing a petition using a digital platform).	

DIMENSION 5 - USE CASES	
ADVANCED	
EMPLOYMENT SCENARIO: organise an event	
<ul style="list-style-type: none"> <li>I can propose and use different media strategies (e.g. Survey on Facebook, Hashtags on Instagram and Twitter) to empower the citizens of my city to participate in defining the main topics of an event on the use of sugar in food production.</li> <li>I can inform my colleagues about these strategies and show them how to use a particular one to empower citizens to participate.</li> </ul>	
LEARNING SCENARIO: prepare group work with my classmates	
<ul style="list-style-type: none"> <li>I can propose and use different micro-blogs (e.g. Twitter), blogs and wikis, for a public consultation regarding social inclusion of migrants in my neighbourhood to collect proposals on the topic of the group work.</li> <li>I can inform my classmates about these digital platforms and guide them on how to use a particular one to empower citizenship participation in their neighbourhood.</li> </ul>	

Figure 5 (Dimension 5)

## Conclusions

In this perspective, the digital skills are a focal meaning of educational contemporary research. The world is changing quickly and there are no sectors that today do not require the development of new technological skills (Cappuccio, 2019).

Developing them therefore becomes an important chance to educate the individual for the contemporary world. Due to this educational institutions are investing economically to improve the digital skills of their teachers and students, developing projects that help them to acquire new skills, which are essential to face up to the new digital age.

The application of digital skills at school are not limited to a specific disciplinary area, but must become an increasingly widespread practice capable of involving all activities, and the educational powers of every individual (Garapon, 2021).

Children, teens and pupils should have the opportunity to develop an approach to digital technologies in all school disciplines to increasingly acquire their digital competence (Rivoltella, 2021). Therefore, schools need to analyze the complexity of changes, rather than minimize some aspects of it as a mere risk.

Our global world is changing after the terrible crisis of Pandemic and of Russia-Ukraine war. We don't know about the consequences of our future. Only one consideration is very clear.

Education can save the world and education without digital competences is not more possible. In this perspective the teachers' training must be based on a digital wisdom, on the responsible use of digital technology to organize better the curriculum just to construct a school as a new laboratory of democracy.

Only a teacher with a basic competence, in which there is connection between digital skills and soft skills, can promote a new educational paradigm for a new school and a possible inclusive society.

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