

DECODE



IO4 - Practices, training and skills needs of digital teachers

Comparative trends report

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COMPARATIVE REPORT “PRACTICES, TRAINING AND SKILLS NEEDS OF DIGITAL TEACHERS

Executive summary

Key Characteristics of the Survey

The rapid evolution and digitalisation of society means that schools are having to adjust the ways in which they communicate with students. Teaching methods and practices are having to adapt to these changes and must take into account how important technology is for younger generations. These ‘digital natives’ require technology to be part of their learning process, and this means that there is an obvious need for teachers to increase their digital awareness. In the past, Information and Communication Technology (ICT) education and training facilities and teaching staff have typically had “technology” and “incorporating” approaches, with the result that teachers appreciate and use technology, but rarely bring it into class. In recent years, there has been a growth towards a more intrusive breakdown of traditional teaching schemes, in particular with small scale interventions. To this extent, it is important to review pedagogical-methodological approaches.

The comparative survey aims to detect experiences, skills and training needs of teachers involved with the aim of detecting strengths, areas for improvement and development prospects, encouraged by the changes observed in the new educational paradigm, through a multi-dimensional and multi-perspective approach. The comparative survey aims to reconstruct the digital innovation trend in educational agencies (meso level), supporting the accompanying demands of educational agencies.

Survey questions arise around four main issues:

- ☐ What is the daily practice of teaching in relation to the technological equipment provided by the school?
- ☐ How does the use of technologies and personal resources in daily professional practice and teaching work?
- ☐ What is the state of the experience and skills most widely used today among our teachers?
- ☐ What are the most relevant experiments carried out?

For this purpose, a structured questionnaire was designed which represents a so-called standard detection technique among the most prevalent in social research. This involved a long procedure of processing the applications to guarantee simplicity, adequacy, clarity, uniqueness, etc.



The questionnaire is organized around five thematic macro-sections with questions aimed at taking a socio-demographic profile, practices, attitudes and beliefs of teachers involved (in the Appendix): a) school data; b) teachers profile; c) teachers practice in ICT with a specific focus on use of digital tools and technologies in teaching and learning process; d) training needs of teachers, with a specific section dedicated to the self-assessment of the teacher's digital skills according to the DigCompEdu Framework; e) personal opinion of teacher in relation to the use of ICT in teaching and professional practices.

The sections "School data and teacher profile" contain personal data and a series of information on the context in which each teacher performs his/her activities: distribution of respondents by school type, teacher age range, gender, teaching area covered over the last three years, type of contract in the school, teaching role covered over the last three years, role as digital coordinator in the school.

The section "Teaching practice in ICT" section investigates the use of digital tools during the teaching-learning process. This section is intended to help us to understand the frequency which digital technologies are used in the classroom.

The section "Training needs of teachers" investigates achieved training and perceived training needs and accompaniment of teachers in relation to the use digital technologies in professional practice. Within this section, there is the sub area of investigation "Digital Competence of Educators (DigCompEdu)". This section aims to evaluate the digital skills level of teachers, through a self-assessment of the digital skills according to the DigCompEdu framework, issued by the EU in 2018.

Finally, the section "Personal opinion" investigates the widespread opinions among teachers in relation to the use of ICT to recognise basic assumptions and values that guide their educational use of digital technologies.

Methodological approach

In the first phase, Link Campus University proposed a Codebook for national quantitative research for elaboration and sharing same indicators research aimed at identifying experience, skills and training needs of teachers, in all countries involved. During the Action Learning Set in Romania in February 2018, the proposal for a template for processing data and for drafting national reports were shared and co-evaluated by all partners. The template aimed:

- To be a reference for all national teams;
- To give a common grid to analyze the collected data;
- To present general guidelines to write and to present the national reports;
- To offer a proposal for the national research index.

Each country conducted national research through the online survey platform to allow the comparison of national trends. The field research involved partner countries from March 2018 to May 2018. The analysis of data concerned complete cases only, i.e. consider only questionnaires totally filled in. This has to be done in order to make all responses comparable across questionnaires.



The survey involved school teachers of all levels. It is likely that those who participated in the survey are self-selected towards a positive propensity to use the technologies because the contact was done via telematic means (social networks, institutional mailing lists and public contacts available on the network) and participation was done through surveys online. It is also necessary to read the data considering the specificities of each partner and the consequent possibility of reaching and involving a specific target of teachers.

In particular, we highlight the case of Omnia, the Joint Authority of Education in Espoo Region, a multi-sector education provider that offers upper secondary vocational education and training as well as apprenticeship training for young people and adults, general upper secondary education, youth workshop training as well as non-formal education courses, and the specific case of Aspire-igen, the UK partner and Euroguidance's British representative. In both cases, it is evident a large participation of VET teachers (37%), which must be duly considered in reading the data. We also remember that teachers of the early childhood level are over-represented in Finland (33%).

Even in the case of Spain, the teachers reached by the survey all reside in the Catalonia region.

Furthermore, in some cases, some response options vary from country to country, always taking into account the cultural background of reference.

The analysis, therefore, carried out can be considered a quantitative exploratory analysis. Therefore, it has no claim of statistical representativeness. Moreover, these values should be interpreted with care since they are influenced by countries' specific contexts and trade-offs. In education, there is often no simple most-or least-efficient model. For instance, the share of private expenditure in education must be read against other measures designed to mitigate inequities, such as loans and grants.

However, even if the analysis cannot be generalized, due to the fact that in these countries there is no system-wide data able to explain if, and how, digital technologies are incorporated into teaching; this can be considered a very useful contribution to be read in terms of trends and possibilities.

Introduction

The development of the Internet and its widespread penetration has profoundly changed every dimension of our public and private life, from work (Accornero, 1997; Coccozza, 2014; De Masi, 2017), to affective relationships (Sennet, 2001); from communication (Boccia Artieri, 2012; 2013; Morcellini, 2013), to our perception of time and space, to the way we innovate and produce knowledge (Foray, 2006).

The sharing and communication systems made possible and disseminated by the network are presented as high-socio-relational technologies that redefine the space-time dimension and set the stage for new opportunities for progress.



The European Commission ([European Commission, 2013](#)) calls educational agencies to a great challenge: developing appropriate digital skills in the subjects through lifelong learning policies, aimed at recovering the digital gap in comparison with the international players that hold the leadership in this sector.

With the reviewed European framework [Key competences for lifelong learning](#), the European institutions underline the need to develop the attitude and skills throughout life so that citizens can have personal development and active participation in society, but above all to face demands of an ever-changing world of work. In particular, the concept is reiterated that new skills are needed to cope with a new digital world; it is necessary to acquire new digital skills and above all to fully understand both the opportunities and the challenges related to new technologies and the digital revolution that is affecting the whole world. The lines of intervention of the European institutions, defined within the European framework of basic digital skills, are also integrated with the provisions of pillar 6 of the Digital Agenda for Europe (DAE) - "[Enhancing digital literacy, skill and inclusion](#)", In two primary objectives:

1. to achieve digital citizenship, for access and participation in the knowledge society with full digital awareness;
2. to achieve digital inclusion, with the equality of opportunities in the use of the network and for the development of a culture of innovation and creativity.

Furthermore, [the European Digital Agenda](#) is the first of the seven pilot initiatives of the Europe 2020 Strategy and aims to help European citizens and businesses get the most out of digital technologies to foster innovation, economic growth and progress. With the aim of strengthening its commitment to support the need for digital skills in Europe, on 1 December 2016, the European Commission launched [the Digital Skill and Jobs Coalition](#). The coalition for digital skills and occupations is one of the ten key initiatives included by the European Commission in the New Skill Agenda for Europe.

[The Second Skills Summit on Skills for a Digital World](#), which was jointly organized by OECD and the government of Portugal in June 2018, focused on the use of technology as a way to improve and expand the scope of education across a lifespan. The challenges and potential of digitalisation requires a radical rethinking, both of the skill sets that learners receive across their lifetime and how they receive them.

Governments need to understand that the nature of these changes and skills systems need to be redesigned, so that they equip people with the mix of skills they need throughout their lives, as digitalisation transforms the way people work, communicate, and interact with each other and changes the nature of economies. European institutions will be able to implement the right policies to ensure that digitalisation promotes sustainable and inclusive growth, and empowers people with the capacity to prosper in a rapidly evolving environment.

In a changing world, workers at all education levels needs to develop the ability and desire to keep learning – to continuously upskill and re-skill - with technological innovations. Governments must therefore foster a culture of lifelong learning that extends from basic skills in formal education to social and emotional skills in VET and higher education and continuous training throughout working life. Digital technologies could be a key resource for those working in the field of education: in the context of formal education, ICT can be used



through new pedagogical methods to teach intangible skills such as problem solving and empathic thinking (OECD, 2018).

This research stems from the basic conviction that only starting from an awareness of the real state of the art of digital practice at school is it possible to act in a perspective of improvement and accompaniment of teaching professionalism in its relationship with digital use in daily educational practices. The aim is to understand if, and in what way, digital innovation is integrated in teaching practices that participate in the construction of that "organizational texture" (Cooper, Fox, 1990, Gherardi, 2006), identifiable with the whole of people, practices, objects, technologies, emotions, rituals, through which the actors create, unveil and share knowledge every day.

The concept of texture expresses the complexity that characterizes every organization and refers to the more fluid and immaterial aspects that constitute the social reality of the organization made up of values, multiplicity of objectives and belonging, within which the actors share objects, values, visions, practices and emotions (Gherardi, Strati, 1997). Here then, the basic assumptions that are the background to work are the concepts of practice, artefacts, beliefs and emotions.

Social changes and digital skills are not limited to technical aspects but extended to cultural ones, so it is essential to create the awareness necessary to face the changes generated by digital technologies. This principle also applies in the educational field.

For this purpose, the [DigCompEdu framework](#) has been developed in addition to the [The Digital Competence Framework for Citizens 2.1](#), providing a general model to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts. With a view to foster and promote change, the DigCompEdu has been adopted in this research to promote the 'digital' self-awareness in the teachers who participated in the survey.

This is subdivided around some conceptual issues that are fundamental to interpret complex context of the school in relation to emerging digital technologies. Following the methodological guidelines for analysing data, the following IO4 Final Report is articulated in five sections:

The third chapter describes the participants involved in the survey and their distribution by age, gender, order? of school, teaching matter and institutional role, highlighting aspects of career and career profiles.

The fourth chapter is devoted to the presentation of research results through the reconstruction of the practices that have been identified.

The fifth chapter focuses on updating teachers and their training needs. We therefore focus on 1) the updated experiences of teachers; 2) the self-assessment of digital skills according to DigCompEdu Framework 2018



and 3) the representation of the "digital teacher" in the national context as it emerges from the portrait depicted in relation to the needs expressed in digital technologies in professional and didactic practice.

Finally, the last chapter highlights country by country strengths, weaknesses, risks and opportunities, extracted from the analysis of survey data and presents a summary SWOT analysis on the whole sample..

1. Identikit of the "digital teacher". Personal aspects and career profiles

1.1 The profile of the survey participants

The online survey involved a total of **2652 teachers from all** levels and kinds of school, so distributed: 366 FIN, 693 ES, 937 IT, 255 UK and 401 RO. Out of these number, the following completed the entire questionnaire:

1. Spain/Catalonia: 425
2. Italy: 776
3. Romania: 291
4. UK : 255
5. FI: 291¹

The groups of teachers belong to four school types: Secondary school, VET, Primary and Early Years. The majority of teachers who participated in the survey belong to VET (61%) and Secondary (37%).

The characteristics of participants are as follows: female teachers are more represented, and have an age comprised between two ranges: 41-50 and 51-60; except for British respondents who are represented by a higher percentage of male teachers (59%). 58% aged between 31-40 years and 19% 41-15 years.

The age of the participants confirms what emerged by Eurydice research on the statistical sample studied.

The data is congruent with the profiles of teachers emerging from the results of TALIS research (2013): most of the teachers are women, and their age is included in the range observed by this survey for all the nationalities involved. The highest percentages of female respondents are Romanian teachers (female: 90.7%, male 9.3%).

The most represented teaching areas are Literacy, Numeracy and Science. The British teachers teach a wide variety of disciplines, from core subjects through to PE and PSHE. 17% teach Literacy and 16% focus on Numeracy-related teaching. 12% of respondents facilitate PSHE delivery, 12% work in Special Education and a further 12% specialise in Learning Approaches. The Romanian teachers respondents are represented by the following disciplines: Science 35%, Social Science 21,3%, Numeracy 17,2% and Literacy with 16.2%. The

¹ Finland: It should be noted that for Finnish teachers respondents a total of 396 answers were received. Of these, 105 have been eliminated because they were incomplete. All interpretations made refer to the sample of 291 complete answers.



Catalan teachers who participated in the survey are represented by these disciplines: Literacy 34,4%, Science 33,4% and Numeracy 27,1%. Finnish teachers work in these disciplines: Arts 37,05%, Science 35,84%, Physical Education 34,04%. Italian teachers are represented by the following disciplines: Literacy 30,7%, Science 29,6%, Numeracy 29,1% and History 24,9%.

Employment contracts are mainly permanent (about 90%) except for Catalanian teachers who have a lower percentage (63.8%). The data confirms the findings in the previous research TALIS research for Italians (81,5%), Finnish (82%, TALIS 76.9%), British teachers (93%-93,6% TALIS) but not for Catalans (63,8% TALIS 81,7%) and Romanians (92.8% TALIS 69,5%).

In all surveys, the teacher's role is represented by high percentages around 95%, while Finnish respondents are represented by 75%. The role of the Digital Coordinator is generally poorly represented, especially for British respondents who are represented by 3%, while Italian teachers are represented by 29.8%, Romanian by 20.3%; Finnish by 13% and Catalan by 11.8%.

2. Teaching practice in ICT

2.1 The professional habitus between technological tools and uses

In investigating the use of technologies in teaching, the first interesting question is obviously the type of applications most frequently used by teachers. In all partner countries, the frequency of beliefs and digital teaching presents these characteristics:

- ▮ Use of Office and similar package for text, numeracy, presentations etc.: they use these tools always or often
- ▮ Use of software for downloading audio/video files: the majority of teachers say they use it rarely or not at all
- ▮ Use of search tools: the majority of respondents declare to use search tools often or always
- ▮ Use of resources for creating/editing audio, video and graphics content: the majority of respondents confirm that they only sometimes use these resources
- ▮ Digital environments for learning, sharing, communication and collaborating: the majority of respondents confirm that they use these resources often or sometimes
- ▮ Digital Educational Content and OER (Open Educational Resources): the majority of teachers interviewed declare to sometimes use it
- ▮ Multimedia programs relevant for your discipline: the majority of teachers interviewed declare to use it sometimes (the majority of British teachers declare that they never use it)
- ▮ Coding - Computational thinking: the majority of teachers say they use it sometimes or never



About the use of technology for teaching, we have to underline some differences between the teachers of countries engaged in the research project.

The Romanian and Italian teachers are distinguished by a high percentage of use of search tools (respectively 56.7% and 53.8%) while British teachers use them often (34%) and sometimes (41%); Catalan teachers instead have stated to use search tools always (44%) and often (39.1%).

Common points shared by all respondents is that the 'Resources for creating / editing audio' is a tool used sometimes or never. The relevant data about the variable 'Resources for creating blogs, sites, hypertexts' indicates Finnish teachers as the participants who doesn't use it at all (56, 86%).

'Digital environments for learning, sharing, communication and collaborating online' are used often or sometimes by most of the respondents: this is an important point to underline because it enables us to understand how teachers are able to use collaboration and e-learning tools with students.

The variable 'Educational multimedia programs for disciplines' presents high percentages of non-use among British teachers (53% never). On the contrary, 40.3% of Italian teachers declare to use it often.

The more complex tools like 'Coding - computational thinking' or 'resources for creating blogs or websites' are not very popular among teachers, probably because they are not prepared for using these kinds of tools. In fact, more than 50% of all respondents say they never use Coding (UK: 79% - Italy: 46.8%). In conclusion, regarding the frequency of the use of digital technologies as part of teaching, the main gaps in terms of skills and knowledge of the tools, refers to 'Resources for creating blogs or websites' and Coding which is not used or is not known as a digital tool, by the majority of teachers who have participated in the survey.

The collected data on 'Active Methodologies' variables are interesting. A high percentage of Italian teachers state that they are "aware of" (57% and 37% use it) active methodologies, 52.55% of Finnish teachers are "not aware of" of them, while 42.6% of Romanian and 29% of British participants felt the same.. The use of these methodologies is represented by the highest percentage of 37% by Italian teachers, while the other respondents are represented by less than 18%.

Italian teachers' data reveals a high percentage of 'Collaborative learning' (77%) followed by Finnish (60%), Catalan (58.8%) Romanian (46.7%) and British (44%)). This data confirms the TALIS results (2013) which underline the importance of collaborative activities for teachers in order to increase collaboration and sharing teaching practices.

Percentages of 'Project based learning' is over 50% with an interesting 98% among British teachers, 68.5% among Romanian, 60.5% among Catalan, 58.66% for Finnish and 51,9% for Italian teachers. 66.3% of Romanian teachers use technology for 'Problem based learning', 59% of Italian respondents use it, and 52.17% Finnish teachers use it while British and Catalan teachers use it in 30% of cases.



To conclude, more than half of all respondents declare to be aware of the use of 'Active methodologies'. In terms of 'Collaborative learning', more than half of the total respondents declare to use it, especially the Italian teachers. The use of 'Project Based Learning' is common for all countries (more than 50%), the special case from British teachers represented by 98% who are aware and use it, while referring to the use of 'Problem based learning' and 'Project based learning' Romanian teachers represent 68% and 66,3%. Romanian respondents (58,8%) also present a high percentage in the use of 'Case based learning', compared to other countries (Finnish presents lowest at 4,3%).

There remains a mainly pragmatic use that direct the use of digital technologies in an instrumental and practical way compared to the object of knowledge. If we reflect on the type of relationship that the sample of intercepted teachers interwoven with digital technologies seems to be oriented primarily towards the object of the activity, in this case access to information, to knowledge determined by the use / transmission of contents conveyed via the network; while there seems to be no attention to the dimension of the interaction that allows one to open up to others, and the dimension towards oneself, offered by the reflective mediation through which to build one's own self-image.

Survey results show that teachers communicate with their students via email forums and blogs in order to extend their learning outside the classroom most, often and sometimes but a significant percentage state that they never contact students this way. Students are sometimes asked to document online what they have learnt, but a high percentage show that they are never asked by teachers (highest: Italy 49%). The teachers only sometimes and never (highest: Italy 43,2%) involve students in collaborative online work.

High percentages of respondents confirm that they never complete online student assessment. The majority of teachers sometimes only use online applications for creative work. Romanian (50,5%) and Finnish (9,41%) teachers surveyed never use online technologies for the purpose of interdisciplinary projects. The Italian teachers (39%), British (39%) and Catalan teachers (38,6%) instead promote such projects sometimes.

The aspects where digital technologies seem to be more useful are:

- ☐ the improvement of teacher CDP,
- ☐ the empowering of students in their own education,
- ☐ the integration of formal, non-formal and informal learning.

Lower percentages in comparison with the above items consider the digital tools to be "useful" for increasing the efficiency of learning and for linking of school activities with practical activities in enterprises.

Digital tools are perceived to be also useful for a more meaningful learning process, improved communication and collaboration between colleagues, students and institutions: digital tools and technologies seem to be considered more involved in the meaningfulness of the learning process and the empowerment of students, rather than in the achievement of learning goals with less effort or lower costs and with higher results.

- ▮ Concept maps are used most by Italian teachers (41%) and only 4% by British teachers.



- ▮ Self-peer assessment is mostly used by the Romanian participants (63.9%) and by Catalans (62.8%) but the percentages for the other countries are still high (around 40% -50%)
- ▮ The non-use of any technology is more represented, in confirmation of the above data, by the British respondents (36%), Finnish (33.3%) and only 4.5% by Romanians.

The item 'Other' presents very low percentages in all countries.

Romanian teachers represent the highest percentage of use of the 'technologies for assessment'. On the contrary, British teachers declare very low percentages of use of digital technologies for the same purpose.

Among the uses and reasons: the “digital teacher profile”

In all partner countries, the beliefs on the uses and benefit of digital teaching, presents these characteristics:

- ▮ The majority of respondents agree or strongly agree on the usefulness of digital technologies on designing and organizing educational materials.
- ▮ The majority of respondents agree or strongly agree with the usefulness of digital technologies in the promotion of basic skills (reading, writing, comprehension).
- ▮ The majority of respondents agree or strongly agree with the usefulness of digital technologies in the promotion of the development and responsible media and digital skills.
- ▮ The majority of respondents agree or strongly agree with the usefulness of digital technologies in creating positive learning outcomes by influencing how learners behave.

There is a common opinion held among most of the respondents that digital technologies should not replace traditional methods. Over half of the respondents use digital technologies for self and peer assessment. Some of the respondents use it for portfolios, for nothing or for conceptual maps. A minority use digital technology for other assessment purposes and rubrics.

Higher percentages of respondents “disagree” and “strongly disagree” that the use of knowledge and learning management technologies would favour cyberbullying, would represent a distraction for pupils and would not contribute to improving educational processes and learning outcomes. Higher percentages of respondents “disagree” (Finnish respondents: 43.39%, British 75%, Romanian 45.4%, Catalan 43.4%, Italian 53%) and “agree” (Finnish respondents: 43.39%, British 22%, Romanian 35.1%, Catalan 35.5%, Italian 40.8%) that the use of digital technologies would favour cyberbullying, would represent a distraction for students (highest percentage is represented by Italian teachers with 77% and British teachers with 74%) and would improve educational processes and learning outcomes. Their moderate evaluation of risks that ICT tools can present, like cyberbullying and distraction for pupils, is also a sign of teachers' digital awareness.

It is a shared opinion amongst teachers that it is necessary to integrate and complement traditional teaching in the classroom with learning paths that provide activities and learning. Only a very low percentage disagrees



with this. . The respondents confirm that daily use of technology in the classroom is not enough; students also need to learn how to use books.

A focus of the research has been to understand how often digital technologies are used in some different scenarios: social networking, professional networking, personal and professional growth, leisure (culture, hobbies, entertainment, travel, etc.). The majority of the respondents declare that they “always” or “often” use such digital tools as they contribute to strengthening and expanding their professional network and they help their personal and professional development. Contrastingly, professional networking is far less popular with British survey respondents (and therefore, digital technologies are only occasionally used for personal and professional growth: the most frequent response is ‘sometimes’ and ‘often’. But more respondents always use digital technologies for personal reasons (social networking and leisure) than for professional reasons (growth and networking) and more respondents responded that they never use digital technologies for professional reasons than for personal reasons.)

With regard to the perception of the utility of digital tool and technologies for different purposes, the perception of most of respondents at the survey is that digital tools and technologies usefully support the majority of the dimensions taken into account.

Specifically, the majority of teachers consider that the utility of digital tools and technologies are useful in the following contexts:

- ▮ Making students more autonomous and empowering students in their own education (both most perceived utilities of digital technology use are directly related to making learning more active, capacitating students and make them more autonomous).
- ▮ The integration of formal, non-formal and informal learning.
- ▮ The improvement of teacher CDP
- ▮ Make the learning process more efficient

Digital tools are perceived to be useful also for a more meaningful learning process and improved communication and collaboration between colleagues, students and institutions.

Their view supports the integration of e-learning into teaching activities, developing responsible media and digital skills, influencing how learners behave, developing basic skills and encouraging self-assessment among students. Teachers also believe that using such technologies does not replace traditional didactics and that daily use of technology in the classroom is not enough.

In other words, digital tools and technologies seems to be considered more involved in the meaningfulness of the learning process and the empowerment of students, rather than in the achievement of learning goals with less effort or lower costs and with higher results.

Their view supports the integration of e-learning into teaching activities, alongside traditional classroom-based teaching methods.



On the contrary, digital tools and technologies are perceived slightly less useful in linking school activities with work experience and in the efficacy and effectiveness of the learning process. In fact, a high percentage consider digital tools to be “useful” or “very useful” for increasing the efficiency of learning and for linking of school activities with practical activities in enterprises.

It seems that teachers are more suspicious and sceptical of the benefits of digital technologies in terms of effectiveness, efficiency, and connecting education with the labour market.

3. Training needs of teachers

3.1 Training needs and career development of teachers: state of the art and future developments

The teachers involved rarely attended training courses on new technologies exclusively in an online form. Only Italian and Catalan teachers have a trend reversal with more than 50% of teachers involved in totally online training experiences. In all partner countries, the frequency of training courses on ICT is blended and face-to-face modes prevail.

Formal, informal and non-formal education in ICT prevails among Finnish and British teachers. In Romania, Italy and Catalan, teachers declare a prevalence of formal – certified and non-formal learning. This figure could be interpreted in a general way on the basis of the consolidation of the process of non-formal and informal learning validation that characterizes Finland and the UK.

As pointed out in Eurydice/Finland (section 8.5), for example, validation of non-formal and informal learning has relatively long and established roots in Finland and the legislation and policies are well developed and detailed. The core message of Finnish legislation is that validation of non-formal and informal learning is a subjective right of the individual and the competences of an individual should be validated regardless of when and where they have been acquired. According to the “2016 update to the European inventory on validation of non-formal and informal learning: Country report Finland”, there is also the collaboration of the stakeholders in the validation process. Social partners, including employers, are strongly involved in all aspects from designing the content of the qualification requirements to individual validation procedures; i.e. employers see qualifications gained through validation as equally valuable or trustworthy as the qualifications gained through school-based learning. (Karttunen 2016).

The UK adopts a global approach to validation: the process is designed to be self-governing and not to impose an overly rigid model on those who deliver qualifications.

The majority of teachers declare they have basic ICT skills. A low percentage say that they need basic training on it. The data is in agreement with what emerges in the TALIS 2013 regarding Spain, Finland and



Romania where the need to develop digital skills in teaching does not exceed 20%. The widespread basic competence in the use of ICT is presumably linked to initial bias due to the fact that the teachers participate freely in the online survey, introducing, presumably, an element of distortion that can be explained by a positive propensity to use digital in the educational field.

The involved teachers declare that **they need specific training on ICT for professional development** and for the use of **new technologies as communication and collaboration tools**. The figure confirms what emerges from the TALIS survey 2013 in which the highest proportions of teachers report a high need for professional development are developing information and communications technology (ICT) skills for teaching and strategies for using new technologies in the workplace. In particular, TALIS teachers state that the use of ICT in teaching can be encouraged, particularly by participation in **professional development activities** (such as those that involve individual or collaborative research, or networks of teachers) and a positive classroom climate.

Only among the British **teachers the development of skills in Digital Ethics** emerge as a formative priority, followed by the need to train on ICT for collaboration and communication. Among others teachers involved, the need for digital ethics training still remains marginal.

The Catalan teachers involved believe that they mostly need training on design planning and classroom delivery, Communication and collaboration, Professional development, Organisation and Management of educational spaces and resources.

The vast majority of survey respondents have no official qualifications relating to digital skills. This is true across almost all of the British and Finnish teachers and for about 70% of Catalan teachers. Italian and Romanian teachers are those who declare a higher percentage of the presence of ICT certifications; the most widespread certification is the ECDL (IT: 35,1% and RO:27,8%). As regards the data relating to Romania, compared to IO2 interviews, we can point out that the training provided through national programmes was done in waves and that some teachers were overlooked because there were no training programmes at some points in time. Also, many training courses were offered 10-15 years ago, with few opportunities for teachers to update their skills more recently. Even in the case of involved Italian teachers, this finding opens the way for a reflection on the need to move from a basic level of training (equal for all) to an advanced level (only accessible to teachers really motivated), which therefore must be carefully selected .

The training must no longer be seen only as an activity required to be carried out as a purely passive task, but it must be a formation that face the lever on the base motivations of teachers and on the desire to grow aimed to acquire new skills that in practice and efficient manner in their paths of teaching and professional growth. Without prejudice to the need to guarantee to all teachers a compulsory and standard basic training, it is necessary to think about later courses and levels of training in which to push on the spring of healthy competition among the participants (Giuseppe Lanese, AICA National Counsellor, 2017)



3.2 A look at skills based on DigCompEdu

DigCompEdu is the European Framework of Digital Skills of Educators, developed by the Joint Research Center (JRC), the scientific and in-depth service of the European Commission. A first draft was issued in March 2017 and in the following month of May, one was launched during an online consultation after which the document has been completed and is currently available at the link in the footnote.²

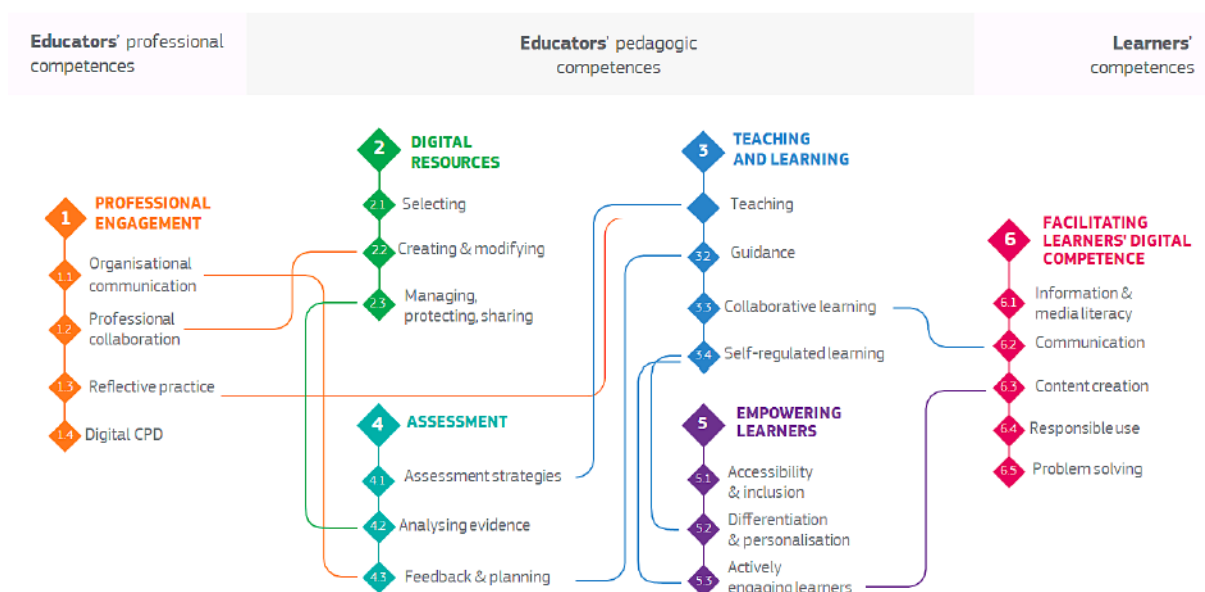


Fig. 1 - DigCompEDU Competences and their connections

DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts. The main objective of the DigCompEdu Framework is to reflect on the existing tools for the digital competence of educators and synthesize them in a coherent model that allows educators of all levels of education to fully evaluate and develop their digital pedagogical competence.

The DigCompEdu Framework intends to stimulate a productive and continuous debate among EU Member States, providing a common ground for this debate, with a common language and logic as a starting point to develop, compare and discuss different tools for the development of the digital competence of educators, at a national, regional or local level.

² <https://ec.europa.eu/jrc/en/digcompedu>



This is the logic with which the DECODE project intended to apply the DigCompEDU: to identify the main areas of development of digital skills in teaching and professional practice among teachers in partner countries in order to build a coherent online training program with the needs expressed by the teachers (IO5).

The main trends that emerged with regard to the six sections of the DigCompEDU (Fig. 1) are described below and underline the need to intervene mainly in the following areas of competence:

1. Professional Engagement:

- a. Digital Continuous Professional Development (CDP);
- b. Reflective practices

2. Digital Resources

- a. Creating & Modifying (*to edit, create and organize digital resources*)

3. Teaching and Learning

- a. Self-regulated learning (*to allow students to plan, monitor and reflect on their own learning*)

4. Digital Assessment

- a. Assessment strategies
- b. Analysing evidence
- c. Feedback and Planning

5. Empowering learners

- a. Differentiation and personalization of learning

6. Facilitating learners' digital competence

- a. Content creation
- b. Problem solving

3.2.1 Professional Engagement

In Finland, there are very high levels of competence (level C1-C2) regarding the use of ICT in reflective practices followed by the organizational communication. **The minimum level of competence** (level A1-A2) instead is more frequent in relation **to the use of ICT for continuous professional development (CDP)**. The figure is confirmed by what emerges from the survey of training needs, where more than 60% of the teachers involved declare they need training on the use of ICT for their professional development; a need that is probably linked to the high percentage of VET teachers who are participating in the survey. Continuous Professional Development is a core issue of VET, but probably ICT is still not widely used in this area.

Italian, Catalan and Romanian teachers perceive themselves **more competent in the use of ICT in CDP rather than in reflective practices**. Even if it emerges from the demand for training needs, there is still a strong need to increase their skills in the use of ICT for professional development, for 60% of Romanian teachers, 51,2% of Italian teachers, and 43% of Catalan teachers involved.



There is a general tendency of British teachers involved to perceive their level of competence on all the proposed indicators from functional (B1) to good (B2). No respondents rate themselves as an excellent knowledge in this area of expertise.

3.2.2 Digital Resources

Teachers from all partner countries perceive themselves as being more competent (level C1 and C2) in **identifying, evaluating and selecting digital resources** for teaching and learning.

While still significant is the percentage of those who claim to have limited knowledge and low use (level A1 and A2) with respect to **edit, create and organize digital resources**.

The self-assessment of skills related to the use of digital resources confirms the data emerging from the question on the frequency of use of digital resources in teaching practice. The teachers involved in all the partner countries have declared to use more frequently (always) search tools, Office and similar packages and quite frequently (often), software to download audio and video. The more complex tools like 'coding - computational thinking' or 'resources for creating blogs or websites' are not very popular among teachers, probably because they are still poorly trained in using such tools.

In a digital environment, the user can enjoy a digital object, but can also modify it, reuse it or produce new digital objects by assembling the existing ones. In other words, it is not just a consumer but also a producer, who makes her/his creations available to others – it is a prosumer. It should be noted that productions can also be collaborative and many tools, such as wikis, support the cooperative creation of digital artefacts.

From the findings of our exploratory survey, **there is still a functional approach to digital resources by teachers who are consumers rather than producers or prosumers**.

3.2.3 Teaching and Learning

In all partner countries, for the area of competence related to the use of digital technologies to support self-managed learning processes (to allow students to plan, monitor and reflect on their own learning), there is a higher percentage of those who claim to be at a level A1 and A2. There is a general tendency of Catalan and British teachers involved to perceive their level of competence on all the proposed indicators from functional (B1) to good (B2). The percentage of those who self-evaluate at the C1 or C2 level for all indicators remains very low.

The data is confirmed by what is expressed by the teachers involved regarding the knowledge and use of teaching methods. The percentage of teachers who say they are not aware of active methodologies (e.g. . Flipped classroom) is high, regardless of the country they reside in. The active methodologies, in fact, engage students in the learning process through activities and/or debates in the classroom, and emphasize higher-order thinking and reflective practices.



An expert use of ICT in meta reflexive? and orientation practices remains marginal. Teachers involved still seem to struggle to approach the path of knowledge as a path of subjective reflection that orients towards their inner self, does not focus on the thing but on how; enhances the reflective, indirect, dialogical dimension.

This approach requires the development of a framework of competences very different from the past that requires the subjects who work in the spaces of education a range of professional, communicative and emotional skills that up until fifteen years ago were unimaginable. Teacher 3.0 is asked to exercise, before their computer skills, a strong competence in socio-relational and emotional levels and adequate awareness of the degree of influence that these dimensions have on the classroom climate, on the students' commitment, on their approach to study, on the use of digital tools in learning, on their scholastic performance, on the containment of discomfort factors and on abandonment outcomes.

The idea that the change of the educational paradigm and of the processes of socialization and construction of the knowledge in which we are immersed should lead us to reflect on the need and usefulness of new, diversified, professional skills and competences, more in line with the challenges posed by the digital society. Among the skills necessary for individuals, the ability to search, collect and process information and use it in a critical and systematic way is necessary, ascertaining its relevance and distinguishing the real from the virtual while recognizing the correlations.

People should also be able to use tools to produce, present and understand complex information and be able to access, research and use Internet-based services.. In terms of attitude, the use of ICT involves a critical and reflective attitude towards the available information and a responsible use of the interactive means of communication. Also, there is a growing interest in engaging in communities and networks.

3.2.4 Digital Assessment

In all partner countries, there is a general tendency of teachers involved to perceive their level of competence on all the proposed indicators from limited (A2) to good knowledge (B2). The percentage of those who self-evaluate at the C1 or C2 level for all indicators remains very low.

Only in Finland, respondents evaluated mostly have very limited knowledge in all the digital assessment strategies. The trend was downward towards expert knowledge level and only very few respondents answered they have achieved it. The data must always be read, however, remembering the profile of Finnish teachers involved in the survey. Almost 37% teach in the field of vocational training and 33% in the early childhood level. Methods of child assessment can be informal (conducting natural observations, collecting data and children's work for portfolios, using educator and teacher ratings) and formal (using assessment tools such as questionnaires and standardized testing).

Probably, responding Finnish teachers are inclined to use informal methods formulated on a holistic level, not describing the desired performance gained by students through the use of digital tools. Furthermore, assessment of VET in Finland is *"formative, development-orientated and criteria-based. There are no national tests and information from vocational skills demonstrations is used instead. Assessment targets are individual*



and communal learning **focusing on processes instead of reports**. Interactive, multifaceted assessments and qualitative methods promote learning and are based on trust – not control” (Räisänen & Rökköläinen 2014). This trend does not reveal the need of use of digital resources for evaluation.

3.2.5 Empowering Learners

In all partner countries, there is a general tendency of teachers involved to perceive their level of competence on all the proposed indicators from limited (A2) to good knowledge (B2).

In Italy and the UK, the area of competence in which there is the highest percentage of teachers who declare having poor or basic skills is “Differentiation and personalization of learning”.

In Finland, Romania and Catalan , the area of competence in which there is the highest percentage of teachers who declare having limited knowledge (level A1) is “Accessibility and Inclusion”, followed by the area of “Differentiation and personalization”.

In the UK, the area of expertise in which the highest percentage of teachers declaring a good level is that of **Accessibility and inclusion (B2)**. No one feels they are working at expert level in the field of “empowering learners”.

3.2.6 Facilitating learners’ digital competence

In all partner countries, the teachers involved rate their knowledge level as limited in the area of digital content creation and in the resolution of technical problems or the creative application of technological solutions in new situations.

There are few teachers involved who say they are very experienced in empowering learners to manage risks and to use digital technologies safely and responsibly. It seems that the teachers are not yet aware of the importance of developing skills on the responsible use of digital technologies and on the ethical implications that this entails. This is an element that emerges from the lack of interest shown by the teachers involved for specific training on digital ethics.



4. Main trends and SWOT analysis

Before sharing a SWOT analysis based on the evidence of the total number of teachers involved in the survey, we believe it is useful to describe the trends emerging with regard to the teachers of each partner country. Below we list the summary data relating to the data collected in each country. Given the exploratory nature of the survey, the trends described do not have statistical significance, but only a descriptive intent.

4.1 Romania

The distribution of the Romanian respondents is similar with the distribution of the entire population in Romania, as Bucharest has the largest number of inhabitants in Romania, but Iasi? is over-represented.

In relation to the age of the respondents, nearly half of them (45%) are in the age group of 41 to 50 years, 26.5% are part of the 31-40 age group, and 23% are aged 51-60 years, while teachers up to 25 and teachers over 60 participated in lower percentages to our survey (0,7% and 1,7% respectively).

The participants were 90,7% female and 9,3% male. This reflects the gender distribution within the pre-university education system, with a higher number of female teachers than male in Romania.

The reconstruction of the teaching practice in ICT reveals teachers' inclination **to use more facile? tools**. The most common digital resources used in the classroom for teaching activities are **tools for text editing, spreadsheets, presentations, audio/video downloading software**, resources for creating/editing audio or video content and search tools. The more complex tools like 'coding - computational thinking' or 'resources for creating blogs or websites' are not very popular among teachers, probably because they do not prepare teachers for using such tools. Regarding digital teaching methodologies, teachers are more familiar with project-based learning, problem-based learning and case-based learning than active methodologies.

In terms of evaluation practices, there are very few teachers who answered that they do not integrate digital tools in any of the assessment methods, the most used method being the portfolio.

Regular use of digital tools as part of the teaching activities is not very common, although some practices – like online documentation on certain topics, collaborative work online, creative activities using online applications – are more frequent than others. Online student assessment and interdisciplinary projects through the use of online technologies being the most rarely used. Very few teachers have formal certification, with the most common types of certification being ECDL, Intel-teach and Profesorul creator de soft.

The identified needs for further training in order to be able to use digital technologies effectively in the classroom indicate that over 50% of teachers feel they need more training in how to use ICT and digital technologies for their own teaching development, for organizing and managing educational spaces and resources and for communicating, collaborating, creating, sharing content and building knowledge in the classroom. Training in how to use ICT and digital technologies to aid with lesson planning and preparation and even training for basic uses of ICT are also highly needed.



The main motivations for teachers to use digital instruments in their didactic and professional practice are for helping their personal and professional development and for professional networking. Their perception of the utility of digital tools and technologies is highly connected to the integration of formal learning with non-formal and informal learning, to improving teachers' CDP as well as to communication, collaboration and coordination between relevant teachers, students and organizations.

The framework of teachers' personal views regarding using digital technologies shows a critical understanding and appreciation of using ICT tools in the process of training, teaching and learning. Although the overwhelming majority of teachers acknowledge the importance and benefits of the use of ICT in teaching and professional practices, especially when designing and organising educational materials and for its positive outcomes in developing responsible media and digital skills, influencing how learners behave, developing basic skills and encouraging self-assessment among students, teachers also believe that using such technologies should not replace traditional didactics and that daily use of technology in the classroom is not enough. Their view supports the integration of e-learning into teaching activities, alongside traditional classroom-based teaching methods. Their moderate evaluation of risks that ICT tools can present, like cyberbullying and distraction for pupils, is also a sign of teachers' digital awareness.

Strengths

- ▮ ICT is seen as having a positive contribution to the design of educational activities by almost all teachers
- ▮ The use of ICT is pervasive and expanding
- ▮ Respondents have significant awareness towards the risks encompassed by the use of ICT in educational settings
- ▮ Most teachers have had training experience on the use of ICT, which represents a basis for future experiences

Weaknesses

- ▮ Regular use of digital tools as part of the teaching activities is not very common
- ▮ Confidence among female users is lower than in their male counterparts
- ▮ Teachers on temporary contracts evaluate their skills as being lower
- ▮ Many teachers limit their use of ICT to information retrieval and dissemination
- ▮ Large numbers of teachers indicate the need for basic ICT skills
- ▮ Lower skills seem to be associated with lower opinion of the usefulness of ICT, which can lead to the creation of a vicious circle



Opportunities

- ▮ Teachers are aware of the gaps in the development of their skills and are seeking training, as evidenced by the high rate of formal certification
- ▮ Large scale initiatives aiming at bridging the knowledge gap created by the new primary and secondary school curriculum are underway
- ▮ Open educational resources and other such initiatives can incentivise innovation

Threats

- ▮ Informal acquisition of skills comes with associated risks
- ▮ Accessing to up to date devices is unequal across the country
- ▮ Continuous professional development is not available to all teachers on a regular basis
- ▮ Changing legislation (e.g. copyright laws) can limit access to resources which were previously used for educational purposes

4.2 United Kingdom

Among British teachers involved in the survey, men are overrepresented (67%), VET and secondary are overrepresented and primary and early years are underrepresented. The greater presence of men is due to the greater participation of VET teachers. This data must always be taken into account in the analysis of the sample reached.

In defining teaching practice in ICT, the majority of teachers surveyed declare to use most often Microsoft Office or similar packages in the classroom. Other frequently used digital resources include software for downloading audio and visual files. Almost no teachers use coding in classroom activities. Similarly, educational multimedia programs for discipline are rarely used.

Regarding digital teaching methodologies, respondents are most aware of the various digital teaching methods referred to in the survey (case based learning, problem based learning, project based learning, collaborative learning and active methodologies). However, smaller numbers actually employ such techniques into their teaching on a regular basis. The most familiar methodologies remain project-based learning (use: 80%), problem-based learning (use: 60%) and collaborative learning (use: 80%).



In terms of evaluation practices, 48% of the teachers involved use self and peer assessment, 38% use portfolios and 36% don't use any of these methods. Only 4% use conceptual maps and 3% use Rubrics and other digital assessment methods.

Survey results show that teachers often, communicate with their students via email, forums and blogs as a tool to extend their learning outside the classroom. Students are sometimes asked to document online what they have learnt, take part in collaborative work online and complete assessments and creative work using digital technologies. The majority of teachers surveyed never employ online technologies for the purpose of interdisciplinary projects.

Only 4% of respondents have received digital skills qualifications. Many of those who have qualifications hold more than one qualification. Of the qualifications held, 29% are ECDL and 24% are CISCO. No one holds a Microsoft MOUS qualification. The identified needs for further training in order to be able to use digital technologies effectively in the classroom indicate that the biggest need requirements are in Digital Ethics (62%), Communication and Collaboration (54%) and Professional Development (43%). The area where people least need additional training is in basic uses of ICT (7%)..

Digital tools are most often rated as average in helping the learning process (around 40%). Digital technologies are most often seen as useful in making students more autonomous (54%) and empowering students in their own education (46%) – this shows that even if digital technologies actually are deemed average, students still feel they are useful.

Regarding the motivation to use digital tools in teaching and professional practices in all cases, the most frequent response is 'sometimes' and 'often'. But more respondents always use digital technologies for personal reasons (social networking and leisure) than for professional reasons (growth and networking) and more respondents responded that they never use digital technologies for professional reasons than for personal reasons.

If we focus the analysis on VET teachers, which represent 37% of the sample achieved, it emerges that the use of technology in the classroom is more than those in other school types. Moreover, those who work in vocational training receive better training on the use of digital technologies, perhaps also because the nature of subjects requires it more. The research also shows that those in the VET sector think that digital technologies are useful whereas secondary school respondents rate them as average.

In relation to what emerged from the qualitative survey conducted previously (IO2), it is possible to underline some elements which are summarized in list items:

1. In the UK, some schools appoint a digital leader – an exception, not the rule – and tends to be non-digital specialist staff so the range of activities are limited.
2. Digital training is embedded into general staff development, so teachers generally have functional digital knowledge.



3. Most schools have an online platform – so it is embedded into teaching to an extent so confidence in certain areas is high – communication and work submission.
4. Many students are encouraged to keep e-portfolios and digital learning materials and staff are encouraged to produce supplementary online learning materials.
5. Aware they can't keep up with digital advancements so the most cutting edge use of ICT is used by students.
6. Challenge for staff to critically assess tools to use. Staff attitudes instead of age/gender were the main reason for uptake of digital skills
7. Many teachers possess skills more advanced than they realise.
8. Truly impactful teaching requires a balance between the old and the new.



Strengths

- ▮ There are not many digital leaders so this project is needed
- ▮ Most teachers use digital tools often or sometimes – so they are integrated into schools to an extent
- ▮ Basic uses of ICT is the least needed area for training so teachers do feel confident in their basic abilities
- ▮ Teachers are confident in using digital technologies in their personal life so they do have the skills required, but just don't know how to apply them
- ▮ Respondents think that overall, digital technologies are helpful in improving the learning process

Weaknesses

- ▮ The respondents are not representative of the whole population of teachers in regards to gender and school type
- ▮ Most teachers say they have functional knowledge in their digital skills – this could be them being modest, but could be that they need some fundamental training
- ▮ 96% of respondents have no official digital qualifications
- ▮ Teachers don't use digital technologies for professional networking
- ▮ Facilitating learner's digital competence is the area where competence levels are lower

Opportunities

- ▮ The report has identified a gap in training as most training is informal, so there could be room for new types of formal training
- ▮ The report has identified the most needed training requirements - Digital ethics, communication and collaboration and professional development
- ▮ Many teachers possess skills more advanced than they realise.

Threats

- ▮ Threat to traditional teaching methods
- ▮ 15-20% of respondents have limited knowledge in empowering learnings and facilitating learners digital competences
- ▮ Digital technologies are used less professionally than personally – there may be a reason for this.



4.3 Italy

Teachers participating in the survey are concentrated in the secondary school degree of first (27,7%) and second level (37.5%). There is also good participation in the online survey of primary school teachers (28.0%), confirming the existing openness in the experimentation of innovative teaching solutions. Less participation can be observed among the teachers of the Early Years (5.9%), which tend to prefer activities such as symbolic play, manipulation of materials, psychomotor and creative activities.

Geographical participation appears not so equally distributed: with 54,5% teachers in the Centre; 20,7% in Northern Italy and 24,7% in the South and Isles. The analysis of distribution by age groups confirms that Italian teaching staff are one of the oldest in Europe: among respondents, the age group ranging from 41 to 50 years (38.0%) and from 51 to 60 years (33.1%) are the most represented, age groups that research labelled as *digital immigrants* (Prensky, 2001). The gender distribution confirms scientific literature, showing a significant majority of women (80.7%), compared to men (19.3%) who have participated in the online research.

In defining teaching practice in ICT, the respondents' statements show that they are well acquainted with the now widespread applications of office automation. More than 80% of the total of 776 validly completed questionnaires, report a use of always or often. Others frequently used digital resources include software for downloading audio and visual files. There is clear evidence of the lack of use of tools for creating multimedia resources, as well as the lack of familiarity with coding declared by teachers (out of 776 respondents, almost 80% say they use it rarely or not at all).

Regarding digital teaching methodologies, 77% of respondents declared to use collaborative methods, followed by problem based learning (59%). Just over half use project-based teaching, the other methods are used by lower percentages of teachers. This gap must be filled with specific training intervention to develop the methodological skills of the teachers.

In terms of evaluation practices, 40% of teachers declare to use concept maps and self-evaluation and peer evaluation methods. Approximately 25% use rubrics and slightly less than 21% use portfolios. A rather high percentage of cases (22.3%) correspond to the non-use of any digital technology for evaluation. The use of ICT in the evaluation process still seems to be not completely widespread. A confirmation of what has been said above, the online assessment of students is the practice indicated as never used by the highest number of respondents (almost 74% of respondents said to use them only sporadically or not at all, with a high percentage of 53.1% who do not use it).

A considerable share (37%) of teachers keep in touch with the students through online communication tools, a percentage that rises to almost 64% if we also take into account those who do it in a discontinuous way. The percentages of those who stimulate the creative work of students through online applications are very interesting: about 30% of the teachers involved say they often promote creative work and interdisciplinary projects in the classroom through the use of digital technologies.



50% of teachers declare to have some certification of digital skills. Of the qualifications held, 35,1% are ECDL and 17,1% are EIPASS. Cisco and Microsoft Mous are far from widespread (less than 2%), probably because there are more specific certifications, often spread among VET teachers who we know are underrepresented in our sample. The identified needs for further training in order to be able to use digital technologies effectively in the classroom indicate that the biggest needs requirements are to improve professional development, to communicate and to collaborate, to create content and build knowledge in the classroom and to facilitate and improve working environments.

Regarding the motivation to use digital tools in teaching and professional practices, the aspects where digital technologies seem to be more useful are: the improvement of teacher CDP, the empowering of students in their own education, the integration of formal, non-formal and informal learning. On the contrary, digital tools and technologies are perceived slightly less useful in linking school activities with work experience and in the efficacy and effectiveness of the learning process. Digital tools and technologies seem to be considered more involved in the meaningfulness of the learning process and the empowerment of students, rather than in the achievement of learning goals with less effort or lower costs and with higher results.

To conclude, teachers agree about benefits in using technologies in order to: design and organize educational materials, promote development of responsible media and digital skills and improve education process and learning but just a low percentage of teachers orchestrate in a flexible way their own skills to manage ICT and develop new formats and pedagogical methods or to enable learners media and digital skills.



Strength

- ▮ ICT is seen as having a positive contribution to the design of educational activities by almost all teachers.
- ▮ Basic digital skills are widespread throughout the sample
- ▮ Formal certification of digital skills is widespread (around 50% of the sample)
- ▮ An increasing number of teachers often promote creative work and interdisciplinary projects in the classroom through the use of digital technologies.

Weaknesses

- ▮ Digital tools and technologies seem to not yet be properly taken into account in the achievement of learning goals.
- ▮ A low percentage of teachers orchestrate in a flexible way their own skills to manage ICT and to develop new formats and pedagogical methods or to enable learners' media and digital skills
- ▮ The use of ICT in the evaluation process still seems to not be completely widespread.
- ▮ An expert use of ICT in meta reflexive and orientation practices remains marginal

Opportunities

- ▮ The survey brings out the following areas of development and training: Professional development (CPD), ICT for communication and collaboration, ICT for creation of contents and building knowledge in the classroom, improving of working environments.
- ▮ The widespread dissemination of basic ICT skills leaves room for the possibility of developing higher skills in the field of teaching methodologies and ICT for assessment.

Threats

- ▮ The opening towards new teaching methods still concerns a minority of teachers, with no impact on the entire education system.
- ▮ There is still a functional approach to digital resources by teachers who are consumers rather than producers or prosumers.
- ▮ The difficulty in transferring the use of digital technologies from personal to professional spheres still emerges.
- ▮ Digital technologies are perceived slightly less useful in linking school activities with work experience and in the efficacy and effectiveness of the learning process.



4.4 Spain - Catalonia

Over half of respondents work in schools where Secondary Education levels are taught (53%), little less than half (40%) in Primary Education schools, about one third (31%) in Early Years education and about one quarter (26%) in VET schools.

The survey has not been extended to the whole national territory but only to the region of Catalonia. This was because the main contacts of the Spanish partner (UOC) are Catalan schools. In addition, the policies in ICT differ a little from the Spanish ones. Most of the participating teachers are from the Barcelona province: almost two thirds (65%) of respondents selected this region. Tarragona is the second province in terms of proportion of respondents (22%), gathering slightly over one fifth of the sample. In third place comes Girona, with 10%, and in fourth place Leida, with 3%.

The analysis of distribution by age groups outline a senior teaching staff: The most frequent age range is 41 to 50 years old (38%), followed by 51 to 60 years old (33%), 31 to 40 years old (18%), over 60 years old (7%), and finally 25 to 30 years old (4%). Thus, the vast majority of teachers (71%) are between 41 and 60 years old.

In defining teaching practice in ICT, the main function of digital technologies is related to information gathering and the preparation of documents: search tools and Office and similar packages, activities which underpin much of today's professional practices in different activity sectors. The following most frequently used digital resource is "Digital environments for learning, sharing, communication and collaboration". Those resources are increasingly integrated as parallel spaces in teaching and learning activities.

Over 50% of teachers state they either never use, or only use sometimes all the resources related to digital multimedia objects and other educational content that support teaching activities as learning materials: multimedia programs, software for downloading audio/video files and Digital Educational Content and OER. The use of resources for creating multimedia, audio-visual, and web-based digital objects is considerably less frequent and integrated than the previous one. Finally, in the last position in terms of usage frequency is "Coding - Computational thinking". Nearly 70% of teachers state they never use those resources.

Regarding digital teaching methodologies, the teaching practices most familiar to Catalan teachers are "Project based learning" (only 2% are not aware of it and 61% make use of it) and "Collaborative Learning" (5% are not aware of it and 58% make use of it). The fact that the majority of teachers make use of these teaching practices indicates that these are well established practices in the Catalan educational system. The remaining practices, however, are not used by more than one third of teachers.

In terms of digitally based assessment methods, the majority of teachers use Rubrics (71%) and self- and peer-assessment (63%). Conceptual maps and Portfolios are used by little more than one in four teachers, putting them in a significant but secondary position.



The most frequent online activity is regular contact with students through online communication. It is the only activity that is never enacted by less than 25% of teachers – expectable since digital technologies provide a communication channel that can be used for student monitoring and support, which are frequent activities of daily teaching practices. Less widespread is the use of ICT to “Ask students to document online what they have learnt” (13% always do it, 25% do it often) and to “Involve students in collaborative online work” (10% always do it, 25% do it often). The less frequent activities are “Online student assessment”, “Creative work using online applications” and “Encourage interdisciplinary projects through the use of online technologies”. About one third (33%) of teachers never engage in the latter two online activities, whereas this percentage is over 40% in the former activity.

75% of teachers declare to have no certification of digital skills. Of the qualifications held, 13,4% are ACTIC³ and 10,1% are Others. Higher percentages of teachers have Online, Non-formal training in using digital technology in education and the identified needs for further training in order to be able to use digital technologies effectively in the classroom indicate that the biggest need requirements are in descending order: design planning and classroom delivery, communication and collaboration, professional development, organisation and Management of educational spaces and resources.

Regarding the motivation to use digital tools in teaching and professional practices, the aspects where digital technologies seem to be more useful are: to “Empower students in their own education” (83% state they are useful or very useful) and to “Make students more autonomous” (80% state they are useful or very useful). Both most perceived utilities of digital technology are directly related to making learning more active, capacitating students and make them more autonomous. Thus, teachers are more suspicious and skeptical of the benefits of digital technologies in terms of **effectiveness, efficiency, and connecting education with the labour market**. Nevertheless, all the elements of this last group are still considered as useful outcomes of digital technology by more than half the teachers.

³ ACTIC: Acreditación de competencias en tecnologías de la información y la comunicación: <https://actic.gencat.cat/ca/inici/>



Strengths

- ▮ ICT is seen as having a positive contribution to the design of educational activities by the almost all teachers.
- ▮ Basic digital skills are widespread throughout the sample
- ▮ Digital Technologies are used regularly for communicating with students
- ▮ Teachers tend to use active digital assessment methods

Weaknesses

- ▮ There is still some difficulty in seeing the benefits in terms of effectiveness, efficiency, and connecting education with the labour market
- ▮ The use of ICT in the evaluation process still seems to not be completely widespread.
- ▮ Use of ICT is more for leisure than for Professional Networking and development
- ▮ Lower levels of competence in the areas of Empowering Learners, facilitating learners Digital Competence and assessment.

Opportunities

- ▮ Needs of training mostly related to design planning and classroom delivery, communication and collaboration (need of more integration in their daily activities) and professional development
- ▮ Less use of active methodologies (but increasing awareness)
- ▮ Most teachers believe in the benefits of digital tools for learning

Threats

- ▮ There is still a functional approach to digital resources by teachers who are consumers rather than producers or prosumers.
- ▮ The difficulty in transferring the use of digital technologies from personal to professional sphere still emerges.
- ▮ Digital technologies are perceived slightly less useful in linking school activities with work experience and in the efficacy and effectiveness of the learning process.



4.5 Finland

The questionnaire was sent to 474 organizations and over three months 366 answers were collected. The response percentage was around 5% if it's assumed that every organization employs 15 teachers. Comparing with the number of educational organizations⁴, the achieved results are only for guidance.

Teachers participating in the survey are concentrated in VET (37%) and early childhood levels (33%). VET teachers were more active as they are the main partner target group.

Geographical participation appears not so equally distributed: Lapland Province was very well represented compared to its number of inhabitants. Among respondents, the age group ranging from 41 to 50 years (32.0%) and from 51 to 60 years (34%) are the most represented; least represented were age ranges over 60 years and under 25 years. The gender distribution shows the significant majority of women (80%), compared to men (20%) who have participated in the online research.

In defining teaching practice in ICT, the majority of teachers surveyed declare to use most Office or similar packages (always: 31,7%) and search tools (always: 25,8%). Other frequently used digital resources include software for downloading audio and visual files. A very low percentage use coding during the classroom activities. Similarly, "resources for creating/editing audio/video content and graphics" and "resources for creating blogs, websites etc." are rarely used (Never 43.5% and 56.8% respectively).

Regarding digital teaching methodologies, over half of respondents answered that they use collaborative learning, project based learning and problem based learning in their teaching practices. Little less than half of the respondents were aware of case based learning and only a minority of them use it for teaching. Over a half of the respondents informed they are not even aware of active methodologies (such as flipped classroom).

In terms of digitally based assessment practices, over half of the respondents use digital technology for self and peer assessment. Some of the respondents used it for portfolios, or for conceptual maps. A minority use digital technology for other assessment purposes and rubrics. 32% of respondents said they do not use them at all.

Respondents described other assessment purposes they use include the assessment of skills demonstrations, exams, essays and reports, tests and spot checks with Google forms and Abitti platforms, all assessment work during and after a course, documenting assessment, evaluating and observing children learning, Bee-bot and Scratch Jr for programming assessment and early childhood education plan.

A considerable share of teachers keep in touch often (21,5%) or always (27%) with their students through online communication tools, a percentage that rises to almost 69% if we also take into account those who do it in a discontinuous way. On the other hand, the percentage of those who use digital technologies to involve

⁴ https://www.stat.fi/til/kjarj/2016/kjarj_2016_2017-02-14_tie_001_fi.html),



students in collaborative work or in creative work is very low: only the 20% of teachers stimulate frequently the creative and the collaborative work of students through online applications.

Almost all the respondents reported they don't have any kind of official certifications for digital skills qualifications. Very few of the respondents informed us that they have ECDL, CISCO, MICROSOFT MOUS, EIPASS and/or IC3 Global standard qualifications. Well over half and most of respondents experienced they need further **training for professional development**. Almost half of the respondents felt they need **digital training for communication and collaboration**. Over a fifth of the respondents need training for organization and management of educational spaces and resources for design, planning and classroom delivery. Less than a fifth informed us that they need training for digital ethics, basic uses of ICT and other purposes.

Regarding the motivation to use digital tools in teaching and professional practices, the aspects where digital technologies seems to be more useful are: the improvement of teacher CDP, the development of a more meaningful learning process for the student, the empowerment of communication, collaboration and coordination between colleagues, students and institutions.

On the contrary, digital tools and technologies are perceived slightly less useful in linking school activities with work experience (not at all: 27,4% comes mostly from VET and elementary school; partially: 27,4% comes mostly from VET). Moreover, digital tools and technologies seems to be considered more involved in the meaningfulness of the learning process, rather than in the achievement of learning goals more effective and efficient. About 40% of teachers believe that the ICT does not improve or only partially improves the efficiency and effectiveness of the learning process. 90% of teachers believe that the use of new technologies should not replace traditional teaching.

The common tendency is therefore that of the integration of the different teaching methods and tools. Finnish teachers agree (63,49 %) in fact that the use of digital technologies helps in designing and organizing educational material and it is necessary nowadays to integrate e-learning into teaching activities, alongside traditional classroom-based teaching.



Strengths

- ▮ Teachers from all the education levels
- ▮ Teachers represented all the regions
- ▮ Other previously reported surveys in Finland support and at a same time bring credibility for these national surveys results about teachers' attitudes, knowledge and use of digital resources
- ▮ Self and peer assessment with digital technologies was popular among teachers.

Weaknesses

- ▮ Resources for creating/editing audio/video content and graphics, Resources for creating blogs, websites etc, Coding - Computational thinking were in use very rarely
- ▮ Teachers knowledge was mostly limited what comes to digital skills in DigCompEdu
- ▮ Teachers had very limited amount of official digital skills qualifications
- ▮ Majority of teachers are not aware of active methodologies such as flipped classroom and how to benefit from it by using digital technologies in teaching

Opportunities

- ▮ Teachers had positive attitudes towards digitalization in education
- ▮ Teachers' training needs for digital skills were obvious
- ▮ Most of the methodologies teachers were at least aware of even they don't use them.
- ▮ Survey results helps Finnish DECODE partners understand current situation of Finnish teachers' digital skills and education needs
- ▮ Survey results guides DECODE partners while planning a continuing education for teachers in all education levels

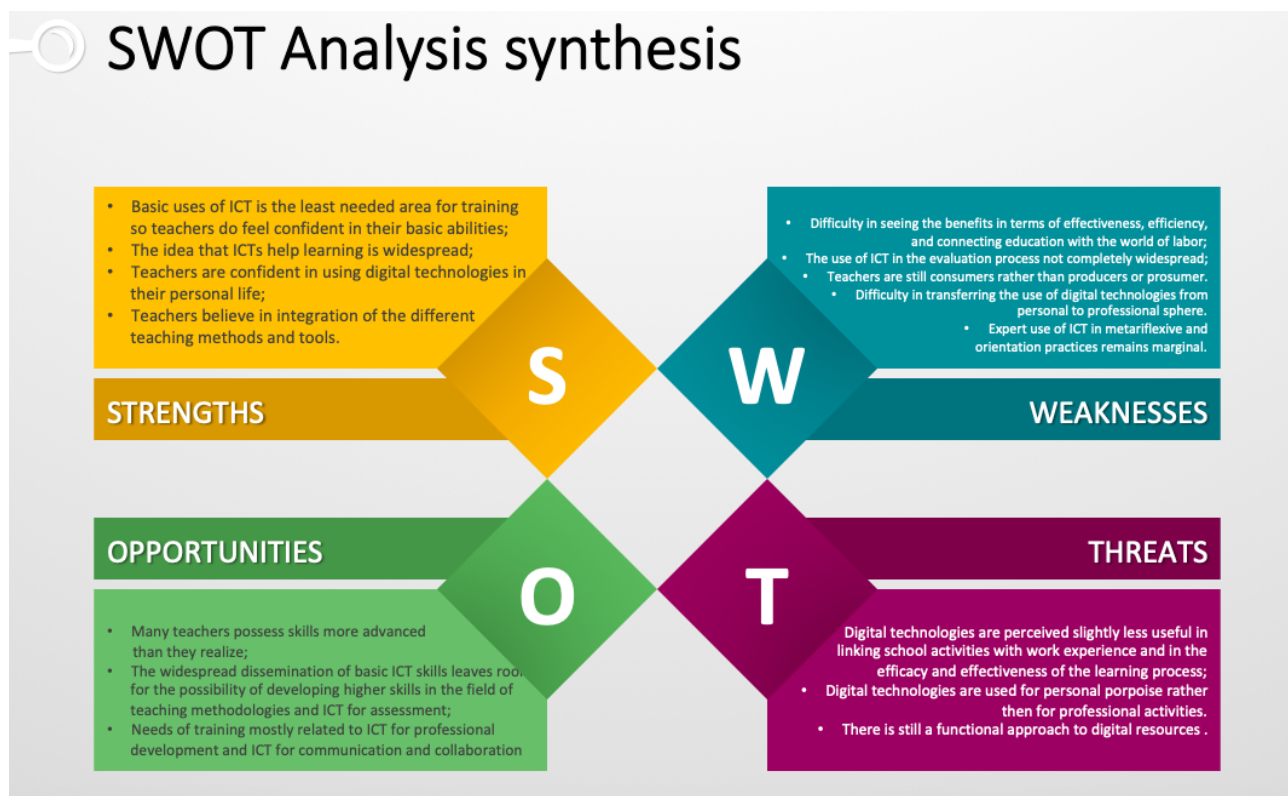
Threats

- ▮ There is still a functional approach to digital resources by teachers who are consumers rather than producers or prosumers.
- ▮ Digital technologies are perceived slightly less useful in linking school activities with work experience and in the efficacy and effectiveness of the learning process.
- ▮ Early childhood education, VET represented more than other disciplines
- ▮ Lapland was represented more than other provinces.



5. A transnational SWOT analysis

Starting from the national SWOT analysis, a transnational one is proposed. It considers all common emerging elements and interesting issues from the data analysis, which can have relevance at a national level for all the countries involved.





Conclusion

To make conclusions of this work, it is most useful to relate the findings to the core questions that have directed the research project in an attempt to offer the reader a vision of more significant, emerging elements.

In fact, although without any claim of representativeness and at risk of generalization, this project offers important and interesting ideas, also taking into account the initial bias due to the fact that the teachers participated freely in the online survey, introducing, presumably, an element of distortion that can be explained by a positive propensity to use digital tools in the educational field. The first thing to note is that, absolutely transverse to the different national contexts, despite cultural differences, regulations and the differences which distinguish the educational systems of the partner countries, are observed dynamics, trends and critically applicants, as already revealed in the phase of qualitative research. The quantitative survey of which it gives account in the present report confirms that experimentation and virtuous experiences and innovation are distributed to leopard spot in different territories, and collide, in general, with common problems and widespread issues that transcend national borders.

Specifically, regarding the initial questions, we can observe, in the first place, the way in which the daily didactic practice relates to the technological equipment available in the school. In this regard, for each country and the related cross-examination of the evidence that has emerged, the difficulty for the teaching body to interpret and integrate the opportunities offered has been revealed.

With respect to the use of digital technologies in the educational context, we observe the permanence of a predominantly transmissive teaching orientation that direct/guide the use of digital technologies in an instrumental and practical way-

Regarding the first point (the daily practice of teaching in relation to the technological equipment provided by the school), the data showing a sort of polarization of the practices among those who, faced with a certain degree of awareness and competence, have been able to stimulate the creative work of students through online applications, and those who, showing lesser mastery of use, let an approach still emerge broadly transmissive: an approach in which digital tools tend to be used more to replicate a traditional teaching model than to promote student-centred learning logic. It should also be said that, in general, the participants in this survey show a largely positive view of the contribution that digital technologies can give to teaching in enhancing students' basic skills; in fostering in them the development of a responsible approach, but also in activating virtuous learning processes and self-evaluation processes. However, there are those who highlight the risks associated with the improper use of these tools; risks associated with cyberbullying, distraction, etc.

With respect to the second point (How does the use of technologies and personal resources in daily professional practice and teaching work) aimed at investigating the way in which professional approach and daily teaching takes place, the personal approach to digital technologies, although there is a certain openness of mind, confirmed by a system of basic assumptions and an overall emotional sphere quite positive towards



the usefulness of digital technologies in teaching, there is no automatic transfer of the practical knowledge acquired in the extracurricular experience.

Also, in this case, the phenomenon appears to be distributed fairly evenly without letting any particular differences emerge between the partner countries. On the other hand, the relevance of the professional community in guiding and supporting tertiary socialization paths can be glimpsed within which to develop new perspectives for action and new areas of expertise. This aspect will be further investigated through the analysis of the clusters that will be implemented in the IO6.

The prevalence of individual experience through which the professional practice is represented and the paths of development of digital competence show the strength and persistence of a social / community based on the analogue dimension where digital represents an alternative that, although valid under many aspects, exhausts to be incorporated into the relationship and construction processes of a renewed professionalism. In this path, absolutely non-linear, we perceive lost subjectivity when it seems to lack a professional community with which to share the weight of choices and strategies located in the context of belonging, as neither the disciplinary nor departmental dimensions seem able to support the change in act.

In relation to the third point (about the most widespread experiences and skills among teachers), the tension that exists between exploitation and exploration emerges (Holland 1975 ; Cyert, March, 1963; March 1991). On the one hand, there is a tendency to adapt the strategies and established practices (exploitation) on the part of the professional body, while on the other, there is an attempt to experiment with innovative solutions and develop new skills (exploration). These are two tensions that coexist, leaving pockets of more or less diffused resistance emerging that is based on a certain difficulty in interpreting and adapting the change that has taken place. Also, in this case, the absence of an accompanying system that is able to provide new explanatory keys to the teaching professionalism seems to emerge in a transversal manner.

The teacher who is confronted with the potential offered by the network is asked more and more to abandon the role of speaker for that of tutor, mentor, coach; a role that requires new and more complex skills of a design, managerial, evaluative, communicative, relational and empathic nature, as well as the self-evaluation system used as reference highlights. But the analysis of the learning pathways training online clearly shows that in all countries this is a terrain where the teacher is alone and forms self-socialization paths played mostly outside formalized contexts and paths. The nature of what should be assumed by a teaching agency that must be confronted with increasingly "net centric" socialization and educational paths, both ambiguous and uncertain both in the development prospects and in the self-realization outcomes is a topic that seems completely open in all countries surveyed.

Finally, regarding the last point (What are the most relevant experiments carried out?)

With respect to teaching innovation [1] spaces, it is confirmed that, while appreciating and using technology, many teachers are struggling to bring it into the classroom (OECD, 2013 / a: 2013 / b). This means that in spite of the easy access and use to various types of digital equipment, which are represented according to the



category of the French sociologist Bourdieu the objectified capital available, these resources are not automatically translated into cultural capital for educational use, therefore incapable to bring real added value to educational practice.

In conclusion, it seems possible to summarize the outcomes of the survey in some transversal priority elements:

- ▮ the absence of a digital policy at national level that can direct educational institutions towards a new model of education/teaching ;
- ▮ the persistence of episodic and localized approaches that are struggling to be valued in a systemic logic;
- ▮ the difficulty in addressing the issue of digital introduction in teaching in terms of planning and organization;
- ▮ the difficulty in intercepting and enhancing that nucleus of innovative teachers capable of doing research and experimentation, critically questioning the use of technologies for educational purposes and experimentation, critically questioning the uses of technologies for educational purposes.

[1] CERl defines educational innovation as an "alternative dynamic change" to the value of the educational processes and results in measurable outcomes, be that in terms of stakeholders 'satisfaction or educational performance' OECD (2010: 14

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