The background of the entire page is a photograph of several young students in a classroom. They are seated at desks, each with a laptop open in front of them. Most of the students are wearing large, over-ear headphones, suggesting they are practicing listening or speaking exercises. The students are focused on their work, with some looking at their laptops and others looking slightly away. The lighting is warm, and the overall color palette is dominated by reds and oranges, which is also reflected in the text boxes and the bottom section of the page.

Digital Education Plan of Catalonia

A plan to learn
in a digital world

2020 | 2023



Generalitat de Catalunya
Departament d'Educació

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Prologue

We live immersed in a complex and changing world, in which technology is increasingly present in our lives: we communicate, inform, play, and work with technology. Yet, how do we learn? The digital competence understood as a 21st century competence becomes a key factor for citizenship, which, in turn, must be critical and responsible for the use of technology.

The guidelines of organisms such as UNESCO, the OECD and the European Commission demonstrate the need to promote digital competence from and through the education system. According to the European Union, 9 out of every 10 jobs in the future will require digital competence. With regard to citizenship, 44% of European citizens lack basic digital skills, while digital well-being will increasingly be threatened by misinformation, cyberbullying, and lack of data privacy.

Prologue

Schools must be permeable to social changes and should also respond to the challenges posed by learning in the digital age. The digital transformation of the education system is key to the progress and advancement of countries and their citizens. In order to provide a response from schools to these major challenges and to ensure equality and the quality of the system, the Department for Education of the Government of Catalonia presents its Digital Education Plan 2020-2023. The plan's main objective is placing Catalonia as a pioneering country in the educational use of technology and accelerating the digital transformation of schools in Catalonia, digitally educating students and teachers within the framework of the great social and technological changes that we are living through.

Digital culture in the Catalan education system

The introduction of ICT in the Catalan educational field has its origins in the mid-1980s, with the creation of the Educational Informatics Programme (PIE). Later, in 1995, there was a significant evolution with the integration of the Telematic Network of Education of Catalonia (XTEC) in the RedIRIS university network and the Catalan Scientific Ring. The Catalan educational system was one of the first in Europe to connect all its educational centres to the internet and to offer email addresses and spaces for the publication of digital resources to all its teachers.

Later on, the creation of the Commission for Information Society of the Government of Catalonia (1988) and the implementation of the Catalonia Network Strategic Plan was a major impulse for the implementation and adaptation of CVs to the needs of the information society, with the deployment of equipment and communication systems (Argo project) and with important structural and organizational changes in the education centres.

The digital services integrated into the XTEC progressively expanded with the creation of edu365.cat portals-digital educational resources for students and Families (2001)-, clic.xtec.cat-interactive activities created by professors (2003)-, www.edu3.cat- library of audio and video resources, in collaboration with the Catalan Corporation of Audiovisual Media (2007)-, merli.xtec.cat- directory of educational resources (2009)-, blocs.xtec.cat- blogs of educational subjects created by professors and students (2007)-, linkat.xtec.cat- educational distribution completely based on free software (2008)-, agora.xtec.cat- virtual learning environments Moodle and Nodes web platforms (2008)-among others.

From 2008 to 2011, the EDUCAT1X1 Project was an important investment in the renewal of the ICT equipment of secondary ed-

ucation centres that took part both in terms of communication and classroom equipment, Wi-Fi network, digital devices available to students and teachers, and the promotion of the publishing sector in the creation of new digital learning materials. The training of teachers expanded and diversified into new modalities: telematic courses, training programs, massive courses (MOOC), workshops, monographic sessions (robotics, safe internet, digital inclusion, TACart, mobile in the classroom...), working groups, and seminars.

The incorporation of the competences of the digital sphere in the Decree 119/2015, of 23 of June, Ordering of the teachings of primary education, and in the Decree 187/2015, of 25 of August, Ordering of the teachings of compulsory secondary education, marks a breaking point in the consideration of the digital field as a transversal element in the global training of the children and young adults. The use of digital technologies went from being considered a complementary resource to forming part of the basic competences that all students should achieve upon completion of compulsory education levels.

It is in this context, and in order to tackle the challenges of the 21st century and achieve the digital transformation of education and society in general, that the Department for Education presents the Digital Education Plan of Catalonia 2020-23.

Frameworks of Reference

The Digital Education Plan of Catalonia 2020-2023 promoted by the Department for Education of the Government of Catalonia follows the recommendations of UNESCO, the OECD and other organisations with educational competencies, as well as the policies of the European Union, in the classification of digital competence as one of the key competences of citizenship in today's society.

Taking into account that the fundamental objective of educational systems is school success and integration of students in 21st century society as rightful citizens, the achievement of digital competence is one of the basic pillars that should allow for a critical and secure use of digital technologies. Students' need to achieve digital competence is a shared objective for all educational organizations around the world. However, these organisations also emphasize two fundamental conditions that must be taken into account to ensure their success: teacher training and, therefore, their digital competence, and the availability of technological resources used in an innovative and efficient way within the framework of an educational project. Therefore, we need a framework based on three axes that have to be the basis of the digital strategy of an educational system: the digital competence of students, the digital competence of teachers, and the digital competence of schools.

Below are the definitions of these three axes, their importance and their interaction as they have been analysed by the fundamental educational organizations in which the Digital Education Plan of Catalonia 2020-2023 is based.

UNESCO is one of the institutions that has demonstrated the need to achieve digital competence as a key competence for the full de-

velopment of citizenship in today's society (UNESCO, 2017a), paying special attention to girls and women to achieve effective equality in internet access and professions in the digital field (UNESCO, 2017b). This has also been a topic for expert reports convened by UNESCO. Ensuring that all students have opportunities to achieve digital competence necessarily implies that teachers achieve a digital level that is sufficiently high. With the aim of establishing common definitions in reference to teachers' digital competence, UNESCO published the [Framework for Competences for teachers in ICT](#) (2018) to favour its integration in educational centres.

On the other hand, within the fundamental framework of the sustainable development goals of the [Incheon Declaration](#), the UN proposes, in its fourth objective, "to guarantee an inclusive and equal quality education and to promote lifelong learning opportunities for all" (UNESCO, 2016; Education 2030). In the fulfilment of this objective, digital competence is referred to as one of the quality indicators of education, and it is regarded as necessary to achieve equal opportunities and equity.

The need to assure digital competence in a world transformed by technology has also been compiled by the OECD in the [Learning framework of 2030](#) (2018), related, at the same time, to sustainable development goals.

Following the same line as UNESCO, the OECD highlights, in its report [Innovating Education and Education for Innovation. The Power of Digital Technologies and Skills](#) (2016), that the achievement of digital competence for students must be based on rigorous teacher training from both a technical and a methodological point of view. This report shows how innovation in educational systems, understood as the adoption of new services, technologies and competences in educational organizations, can help improve learning outcomes, reinforce equality, and increase efficiency. This innovation is more effective and sustainable when well-trained teachers implement it, and when it is framed in clear educational objectives.

Reinforcing the idea of the need for teaching training, the OECD [Thriving in a Digital World](#) (2019) report shows that, although governments in different countries have dedicated many efforts to endow educational centres with technological facilities, it is necessary to accompany these financial resources with digital competence training aimed at teachers in order to achieve educational success. In other words, providing access to digital technology or using it in the classroom does not guarantee the improvement of academic results. This is because the effect of technology on student outcomes depends on how it is integrated in the classroom and how it is used to support teaching and learning processes.

The need to train teachers is evidenced in the data collected in the OECD TALIS (Teaching and Learning International Survey) Report (2018), based on the responses of lecturers gathered in the year 2018, where a comparison is made with the responses collected in the year 2013. Most countries show an increase in the participation of teachers in the professional development of ICT skills.

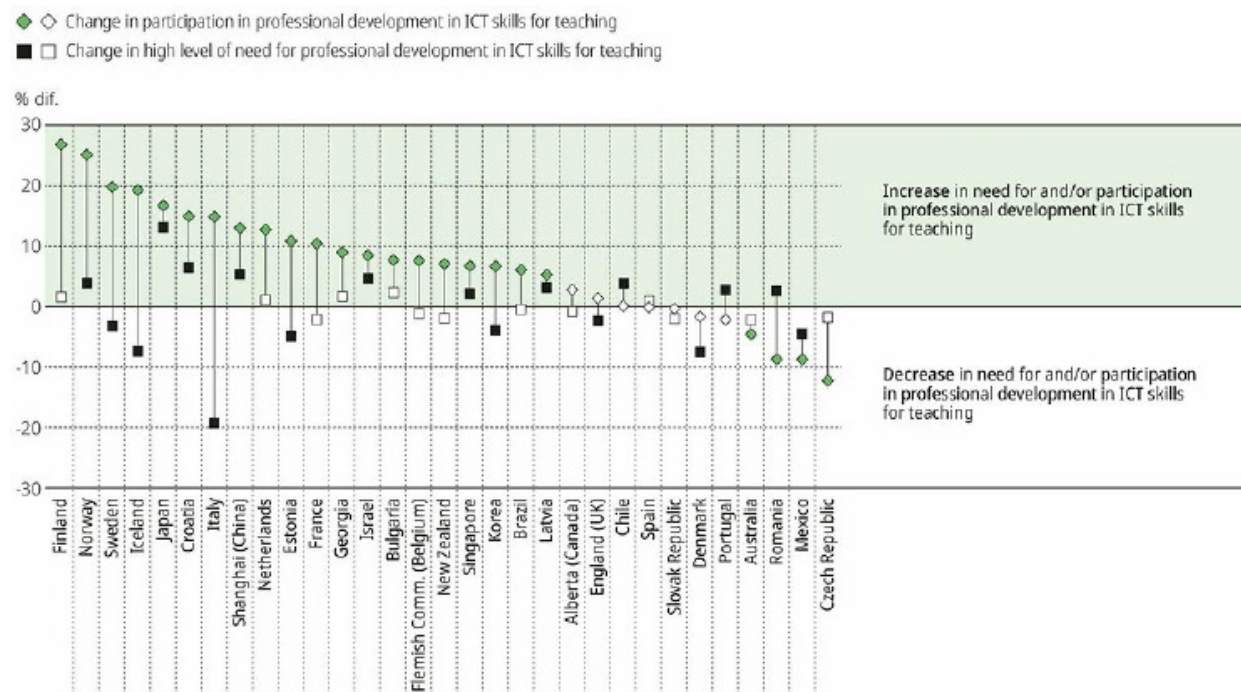


Image 1. Change in participation and need for professional development in ICT skills for teaching 2013 to 2018. Differences in percentage points between 2018 and 2013 in the proportion of teachers who have participated in and with a high level of professional development in ICT skills for teaching.

Source: OECD, TALIS 2018 Database, Tables I.5.27 and I.5.28. <http://dx.doi.org/10.1787/888933932969>

In the framework of the European Union, the [key competences for lifelong learning](#), one of which is digital competence, were defined in the year 2006. It is at this point that the educational systems of all EU Member States adopt these competences as the fundamental focus of learning.

The bases for incorporating key competencies to educational systems are sourced from various documents. At the end of 2016, the European Commission published [Communication on improving and modernising education](#), highlighting the need to take advantage the opportunities of digital technologies and introduce methodologies that favour knowledge. Subsequently, after the 2017 summit in Gothenburg, the European Commission published [Communication on Strengthening European identity through education and cul-](#)

[ture](#), in which, for the first time, the training in digital skills of European citizenship is considered a priority. One of the documents deriving from this is the [Digital Education Action Plan \(2018\)](#), which studies the inclusion of training in digital skills in all areas of education. This Digital Education Action Plan of the European Commission is divided in three basic priorities: to make good use of digital technology in teaching and learning, to develop the basic competencies and skills for digital transformation, and to improve educational systems from data analysis. Each of the priorities named includes a series of actions and measures to be applied in European schools.

In order to define what is meant by digital competence, in 2013 the EU published the framework of digital competence called [DigComp](#), which was revised in 2016. This framework

has served as a common reference for all Member States. From the DigComp framework, members are able to extrapolate definitions of digital competence applied to specific professional fields, in the sense that they have to include the characteristic traits necessary to carry out a concrete work task. With respect to education, the framework names the [DigCompEdu](#), which is the framework that refers to digital teaching competence.

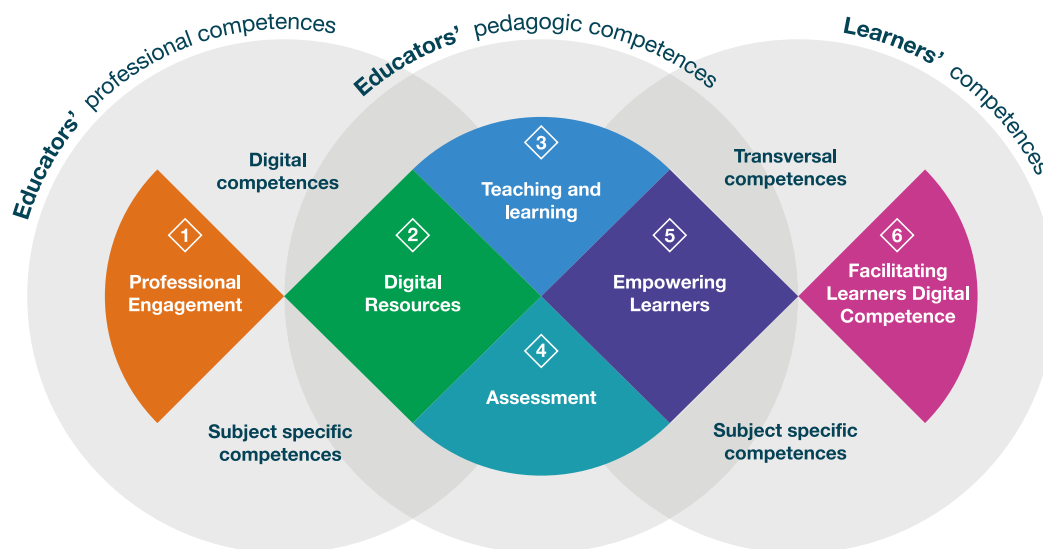


Image 2.
DigCompEdu

Hence, [DigCompOrg](#) is the first European reference framework designed to improve the digital competence of educational institutions. Its purpose is to guide educational organizations in switching to digitalization in a systematic and strategic way, and, for the first time, it refers to digitally competent institutions.

With respect to the implementation of digital competence in schools, the European Commission published, in 2019, the report [Digital Education at School in Europe](#), which analyses the treatment of digital competence of students in the resumes of Member States, the digital competence of its teachers, how it is evaluated, and how and when it is reached; educational policies in reference to achieving the digital competence of students, and the support received by educational centres in reference to infrastructures, methodological and organisational strategies, digital resources and contents, and specialist teaching staff.

When considering the digital competence of students, it is important to note that one of the conclusions of this report is that almost no member state has generated guidance or guides aimed at teachers to help them in evaluating this competence. The report recommends establishing guidelines for the different educational levels to accomplish, in a transversal way, the skills and contents that are necessary to assist in the achievement of digital competence.

Specifically in Catalonia, in the preamble of the [Law of Education of Catalonia](#) (LEC), the need to adapt education to the demands of a society in constant change in all areas is explicitly explained and made possible with objectives of equality and excellence in education. At the same time, it describes the need to promote systematic and structured pedagogical innovation, the recognition of good educational practices with the encouragement and support

of educational leadership, teacher training, digital infrastructures in educational centres, and the establishment of pedagogical reference centres.

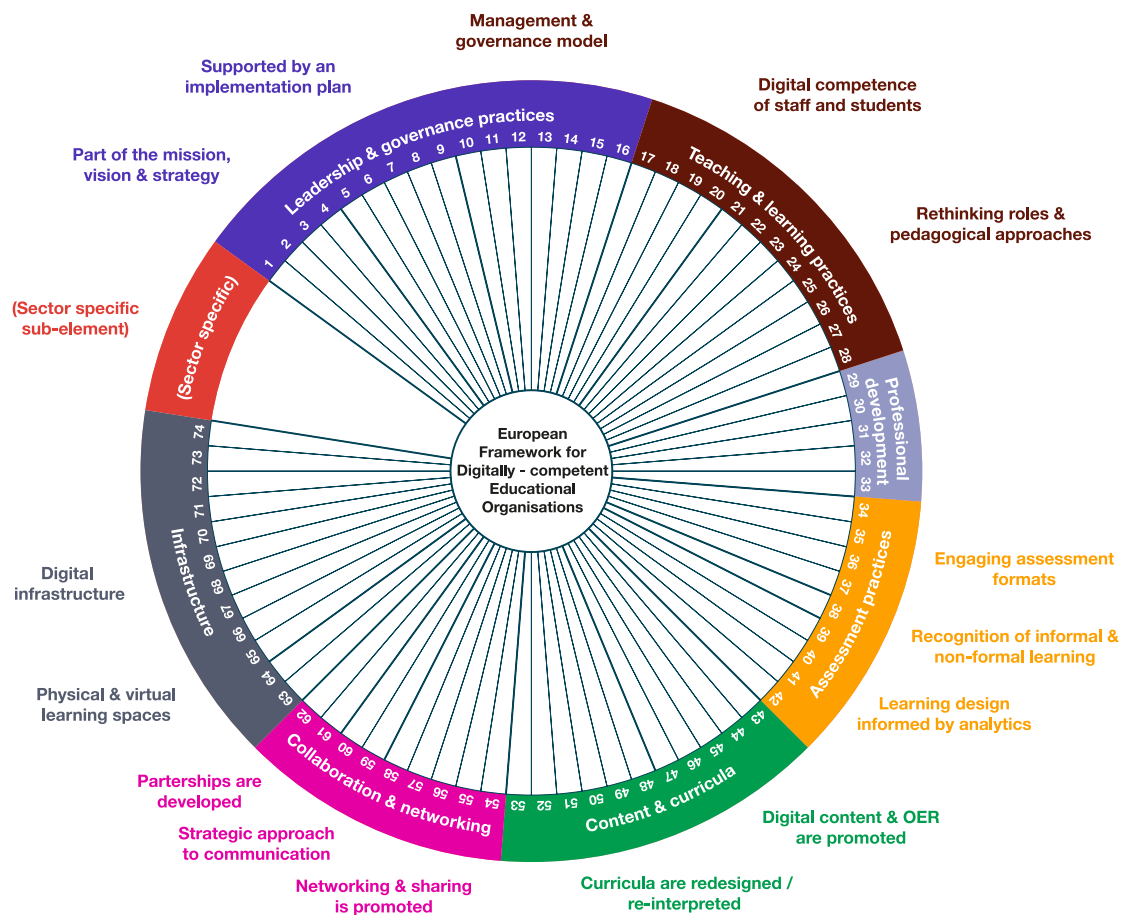
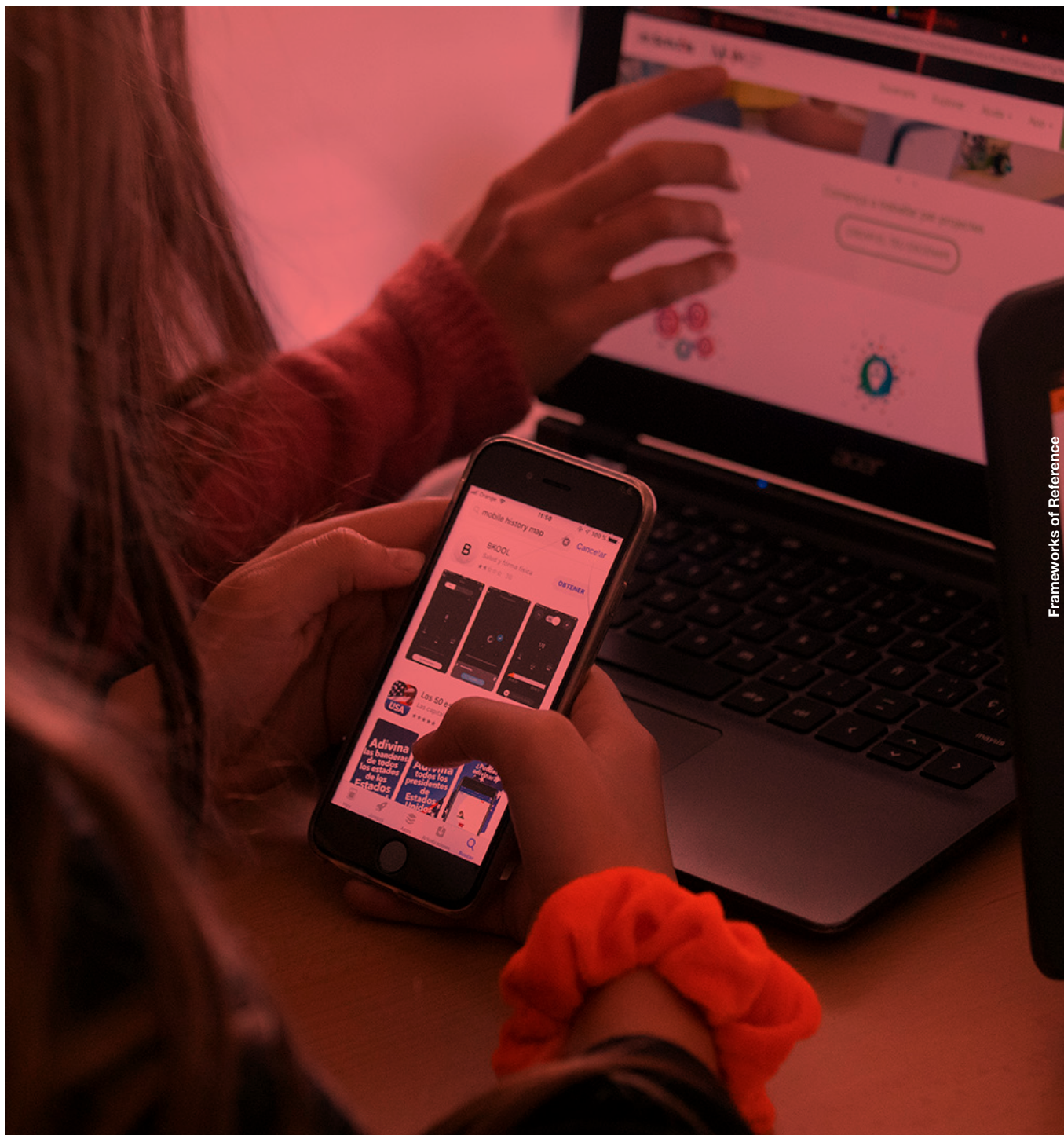


Image 3.
DigCompOrg

Within the specific principles that, according to the LEC, ought to govern the Catalan educational system, the competence for the autonomous and creative use of digital systems is highlighted. With regard to digital and telematic services that the Department for Education must make available to educational centres in order to improve the development of educational activities, Article 89 of the LEC includes educational applications, quality educational content, personal learning dossier services and an individual personal academic record, as well as other applications and digital services aimed at promoting the excellence of learning and facilitating the functioning of the centres. The article also states that the personal learning dossier should gather digital documents and objects from the intellectual production of students during the learning process, using evidence for evaluation, in digital format. Finally, Article 87 of the LEC highlights the need of ensuring that constructive educational projects allow for the integration of digital technologies.

In reference to curricular deployment, the [Decree 119/2015](#), of 23 June, Ordering of the teachings of primary education, and the [Decree 187/2015](#), of 25 of August, Ordering of the teachings of compulsory secondary education, include the digital competence as a basic competence. This competence refers to the creative, critical and safe use of digital technologies to achieve the objectives related with learning, access to work, leisure, inclusion and participation in society.

Likewise, in 2016 the [Framework for Teaching Digital Competence](#) was published as a result of the work of the interdepartmental group created in 2014 and formed by the Department for Education, the Department for Enterprise and Employment, the Department for Economy and Knowledge, and representatives of all Catalan universities. Teaching digital competence refers to didactic and methodological skills combined with the instrumental use of the technologies, implemented to ensure the educational success of all students.



Digital Education Plan of Catalonia

2020|2023

Digital Education Plan of Catalonia 2020-2023

The Digital Education Plan of Catalonia 2020-2023 (PEDC) presented by the Department for Education in the framework of the XII legislature aims to contribute to the development of digital skills that citizens need to live and work in a society immersed in constant transformations and changes.

The aim of this Plan is to place Catalonia as a pioneering country in the educational use of technology for educational and social success, whilst also aiming to improve the digital competence of students, lecturers and schools in the context of the system's educational transformation.

The objectives of the Digital Education Plan of Catalonia are:

To ensure that students in Catalonia are digitally competent upon completion of compulsory education.

To gradually increase the number of teachers that acquire digital teaching competence as a key competence of the 21st century.

To build a country network with digitally competent educational centres to facilitate learning within the framework of educational transformation.

A competent and committed teacher body, all the educational community, the municipalities of the territory, the associative and business fabric, the universities, and all those agents that bring value in the digital transformation process of society, will help in the deployment of the Plan.



The Action Plan is aimed at:

100.000 teachers

800.000 students

3.000 schools

and its strategic framework
is divided into

13 objectives

25 lines of
action

58 actions

The first strategic action which refers to digitally competent students, establishes the methodological guidelines that allow the achievement of the digital competence in students throughout the educational stages, as well as the guidelines and instruments of evaluation and creation of digital content. Students will be empowered so that they can manage their learning, self-regulate it, and be increasingly autonomous and critical in terms of the use of digital technologies.

The second action, centred on digitally competent teachers, refers to the achievement of the digital competence in teaching of both active teachers and future teaching staff still in initial training. To achieve this, it is necessary to define the processes for detecting the formative needs of active teachers, the development of a training plan for teachers and the certification process for the teaching digital competence, as well as the establishment of coordination strategies with universities to ensure the achievement of the teaching staff in training. This action also establishes mechanisms to create a network of teachers who share classroom experiences.

The action that refers to digitally competent educational centres provides a vision that stems from leadership and governance of the educational centre as the engine for updating the education system, and addresses the profound transformations that range from organising and rethinking organizational models such as the design and implementation of the Digital Strategy, which will articulate this process. In this organisational framework, the Digital Strategy Committee and the Digital Coordinator are fundamental pieces to achieve a shared educational line throughout the cloister. The advice of the centres is key for the educational transformation. To this end, the digital planning structure is redefined through the Digital Culture Territorial Network (XTCD).

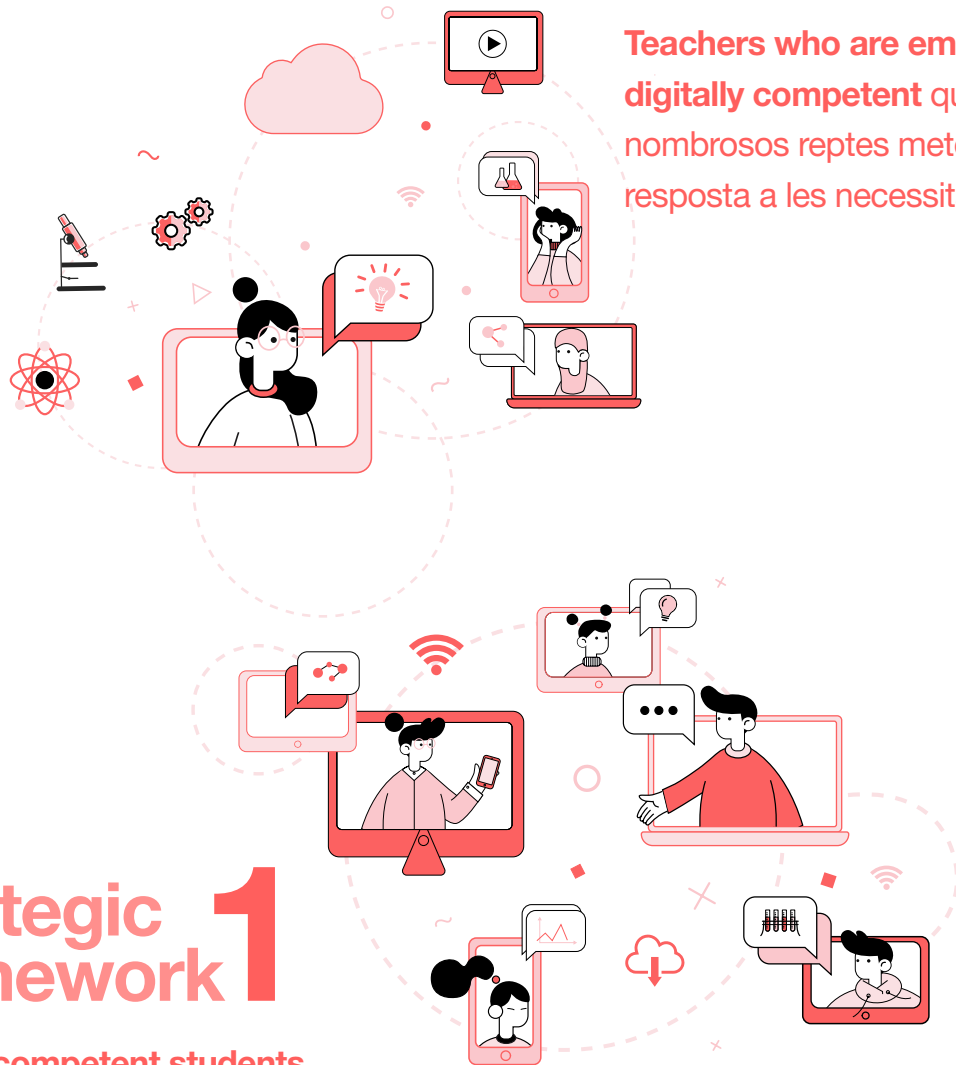
The connection with the families and their empowerment is also essential in this action, as is the connection with all those agents that are part of the associative and business fabric, locally or elsewhere, and the ecosystem of innovation.

Finally, the Digital Education Plan of Catalonia 2020-2023 refers to the infrastructures necessary for the implementation of the Plan, such as the equipment and services that will allow students, teachers and schools to correctly develop teaching and learning activities. Connectivity, equipment, student and teacher portfolios, centre portals, virtual learning environments, and the integration of information systems are part of this action, along with security and data protection measures, and the communication with families. This is a firm step towards achieving the real digital transformation of all educational centres in the country.



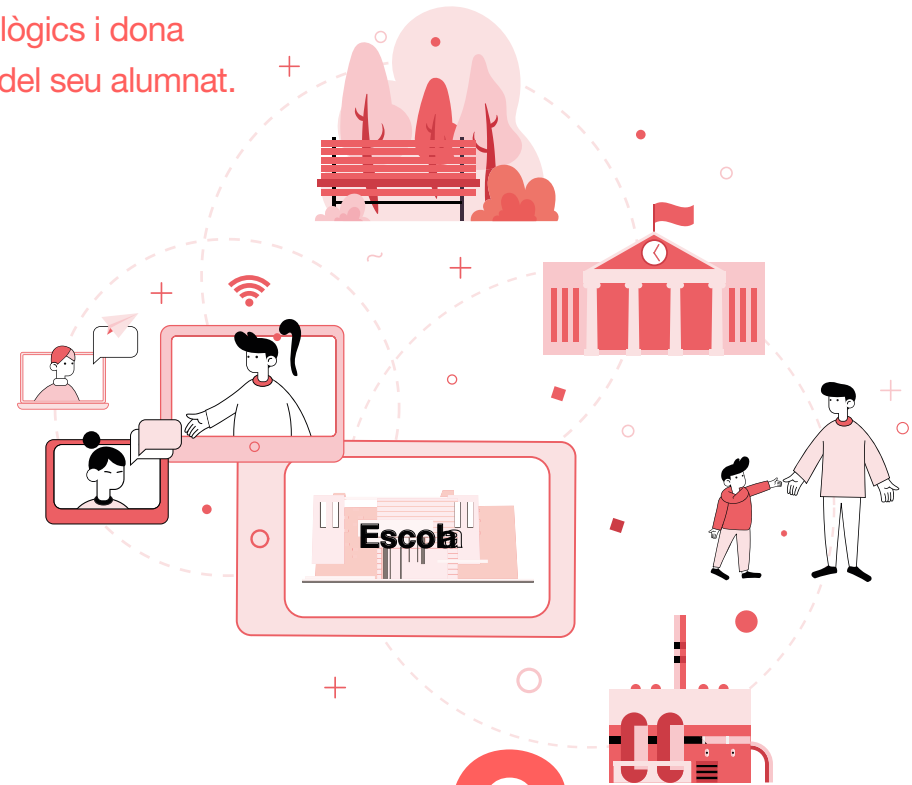
Strategic framework 2

Teachers who are empowered and digitally competent que fa front a nombrosos reptes metodològics i dona resposta a les necessitats del seu alumnat.



Strategic framework 1

Digitally competent students that are protagonists of their own learning to achieve educational success



Strategic framework 3

Educational centres in transformation that respond to the challenges of digital and educational transformation from its leadership and in connection with the environment

Strategic framework 1

Digitally competent students

Digitally competent students that are protagonists of their own learning to achieve educational success

Digitally competent students that are protagonists of their own learning to achieve educational success.



Less than 20%

of ICT professionals are women

The growing presence of digital technologies in daily life is changing the way people communicate, access, share and create content; in other words, the way they exercise their digital citizenship. We need competences which enable us to select, understand and verify the information provided by digital media; to adapt to a growing number of digital instruments and platforms, protect privacy and data and share as well as create our own digital content.

In order to make the most of the opportunities that digital technologies provide it is necessary to develop the required competences to use them properly. Thus, we must ensure that everyone achieves digital abilities, so that they can fully participate in the 21st century society.

In this vein, it is important to reduce the gender differences in terms of scientific and technical vocations, which is specially noticeable in the digital sphere. For example, in Catalonia there's a lack of women in tech companies, with only 8% in technical and specialised positions (Catalonia Technological Centre - CTecno, 2019). This means a significant lose of talent in this sector. Cross-integration of digital technologies in class and from the very early stages of education should be key to increase the pupils' confidence in their own abilities.

Schools should promote the developing of skills so that students become not only critical and responsible users but also content generators, making them protagonists of their own learning process. Seemingly, we have to bear in mind the key role of students in transferring digital knowledge to the rest of the society, since they are usually the digital tutors of their families.

In order to optimise the use and developing of digital technologies, they must be integrates in all the curricular areas and in all levels of educations, ensuring the inclusion of all students, as established in the educational attention decree within the

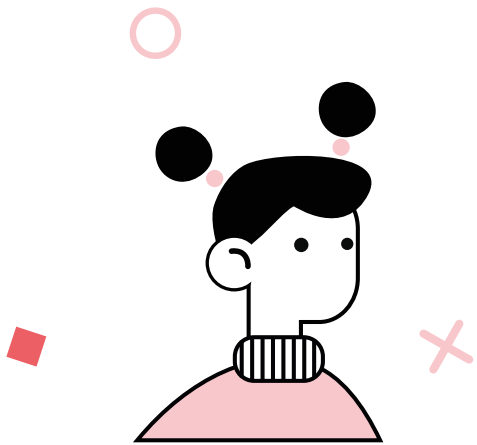
Strategic framework 1

inclusive educative system framework. The digital skills are established in each educative stage's curriculum as a cross-field competence which, besides having an instrumental nature, must contribute to the global improvement of all learning processes and help using digital technologies safely, as well as the defining the digital identity of the students.

A key part of the evaluation process will be creating an individual professional dossier of each student, according to article 89 o LEC, which should ensure a formative evaluation of the digital competences and of other learning processes related to digital production, so that the pupil's evolution could be assessed accordingly.

The benefits of digital technologies in the students' learning process are not a direct consequence of its inclusion in schools. Such potential contribution is only possible by adopting the transformative nature of digital technologies in the educative methodology. Understanding digital technology as an instrument to be used in learning is a revolutionary element which lead to personalised, active and self-regulated learning processes driven by motivation and based on experience. This is only possible when students themselves are in control of technology, following the teachers' guidance, and involved, either individually or in a team, in open tasks and activities which challenge their personal learning process.

Strategic framework 1



The digital content and resources used must be in accordance with the digital strategy defined by schools and must be integrated in the class' program. Otherwise, they could become isolated actions which won't help the pupils' learning process but only follow a method. Thus, it is necessary to establish learning sequences where the use of digital instruments and the integration of digital content lead to achieving the educative goals. This is way Catalonia's Digital Education Plan 2020-2023 not only provides examples of digital content and inclusive teaching-learning practises, but also guidelines and advices for teachers to create their own, in accordance with their students' needs and requirements.

Finally, the actions proposed in this action of the Catalonia's Digital Education Plan are aimed at promoting educative innovation as a body of actions to improve the learning process as well as the teachers' task, as specified in Catalonia's Pedagogic Innovation Framework published by the Department for Education. In this vein, in order to ensure that these examples of digital content and learning sequences actually lead to innovation, schools will collaborate with research

centres and tech-companies which could provide valuable feedback both in assessing the evaluation process and suggest new learning formats and digital instruments to be acquired. This collaboration is in accordance to the article 89 of the LEC, which establishes that Catalonia's Department for Education must put high quality digital resources at the schools' disposal.

Objectives and actions

The goal of Catalonia's Digital Education Plan in order to contribute to the students' achievement of digital competences, according to the identified necessities are the following:

Specific objective 1.

Provide methodologic and evaluation advice so that the achievement of digital competences could be assessed throughout the different levels of education.

Specific objective 2.

Provide methodology and systems of evaluation to support the achievement of digital competences in different learning environments.

Strategic framework 1

Key strategies

1.1. Establish an illustrative scale in relation to the achievement of digital competences in each level of education.

1.2. Establir orientacions per la creació d'instruments d'avaluació de l'assoliment de la competència digital per a cada nivell de totes les etapes educatives.

Actions

1.1.1. Publish the guidance of the digital content to be reviewed in the pertinent areas and corresponding to each level of education.

1.1.2. Publish methodological guidance which could assist the acquirement of digital competence from the different areas.

1.2.1. Publish specific guidelines to transversally assess the acquirement of the digital competence corresponding to each educative stage.

Key strategies

2.1. Establish guidance to introduce educative technology to support the different learning styles.

2.2. Ensure the achievement of digital competences amongst vulnerable people and guarantee digital equity.

Actions

2.1.1. Promote the use of educative technology as part of the universal teaching material.

2.2.1. Design specific actions aimed at the vulnerable students in order to ensure digital equity.

Objectives and actions

Specific objective 3.

Design tools to assess the achievement of digital competences.

Key strategies

3.1. Develop a follow-up system of the basic competences' achievement.

3.2. Provide evaluation tools to do an appropriate follow-up of the digital competences.

Actions

3.1.1. Developing the students' personal learning profile in a digital support which could allow the collection of data and help the teachers to make the appropriate decisions in relation to the achievement of digital competences.

3.2.1. Design the tools and its lines of implementation to accomplish the students' follow-up.

3.2.2. Design the tools to evaluate the achievement of digital competences in the different stages of the education system, as well as its lines of implementation.

Objectiu específic 4.

Promote the creation of digital content, making sure it is competency-based, inclusive and cross-wise, and its inclusion to the teaching programs and agendas.

Key strategies

4.1. Set illustrative tools to create digital content, making sure it is competency-based, inclusive and cross-wise.

4.2. Include the digital content in the learning units according to the curriculum's directives.

Actions

4.1.1. Writing guidelines to create inclusive, cross-curricular and competence-based digital content.

4.1.2. Creating examples and samples of digital content.

4.1.3. Planning and developing tools which assist in the creation of inclusive, cross-curricular and competence-based digital content.

4.1.4. Collaborating with learning technology companies and scientific or social organisations to develop teaching resources.

4.2.1. Writing guidelines to include digital contents in the teaching programs, according to the curriculum's directives.

4.2.2. Creating examples of learning units which include digital content according to the curriculum's directives.

Strategic framework 1

Objectives and actions

Specific objective 5.

Put a virtual environment at the teachers' disposal and make sure it allows to create and share digital content and teaching and learning techniques.

Key strategies

5.1. Put a virtual environment at the teachers' disposal and make sure it allows to create and share digital content and teaching and learning techniques.

5.2. Plan collaborative strategies to create teaching-learning practises.

5.3. Give visibility to the database created by the educative community and promote its use.

Actions

5.1.1. Select environments for the creation of digital content.

5.1.2. Compilation of examples and models of inclusive, cross-curricular and competence-based digital content.

5.1.3. Compilation of examples and models of learning units which include coherent and curriculum-based digital resources.

5.1.4. Creating the environment to host, show and share the productions carried out by the schools and the teaching community and examples of its implementation in the classroom.

5.2.1. Organising collaborative actions for the teaching community in order to share experiences and elaborate new teaching-learning practises.

5.2.2. Planning strategies in order to share the experiences amongst the teachers.

5.3.1. Defining the strategy to give visibility to the database created and revitalise its use.

Strategic framework 1

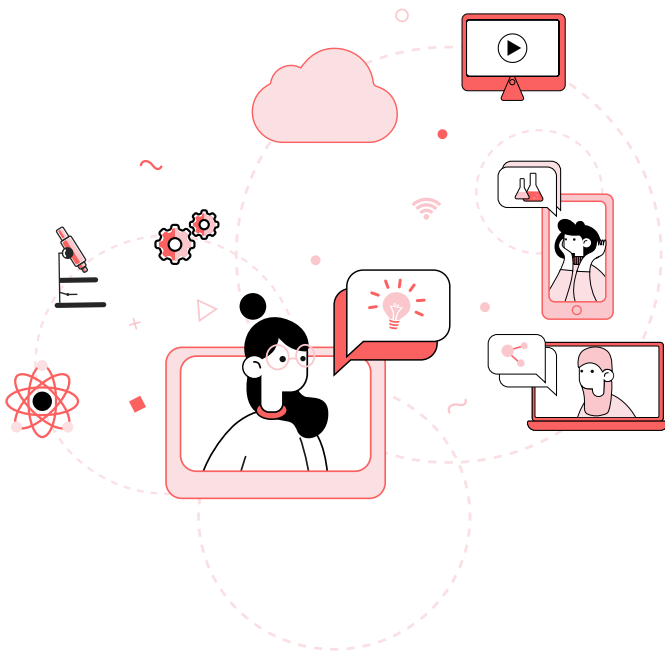
Strategic framework **2**

Digitally competent teachers

Teachers who are empowered and digitally competent to face numerous methodologic challenges and respond to their pupils' needs

Strategic framework 2

Teachers who are empowered and digitally competent to face numerous methodologic challenges and respond to their pupils' need



The teachers' competence is a key factor to achieve a high-quality education. Regarding the digital competences specifically and in accordance with the proposals suggested by the working group of the Interdepartmental Project of Digital Competences for Teaching (PICDD), the Department for Education has published the '[Digital Competences for Teachers in Catalonia](#)'. The document displays the instrumental and methodologic components and summarises the recommendation of the EC's DigCompEdu. Thus, it is the framework which defines and identifies the digital competences required for non-university teachers in Catalonia. It also enables teachers to acquire and prove these competences. The document is included in the resolution ENS/1356/2016, May 23rd.

In the document, the Digital Competence for Teaching (CDD) is defined as the teachers' ability to transfer all their knowledge, strategies and attitudes in relation to learning technology into real situations of the teaching praxis, in order to i) assist in the students' learning process and its achievement of digital competences ii) try to improve and renew the learning process according to the challenges of the digital era and iii) contribute to their own professional developing in accordance with the social and technological changes that take place both in the society and in the schools as well. Likewise, the Digital Competence for Teaching not only refers to the methodologic skills but also to the competence in ICT in relation to the instrumental use of technologies.

On a daily basis, the teacher will develop his digital competences in a comprehensive manner, simultaneously performing the 5 dimensions which shape them: design, teaching planning and implementation, organising educative areas and resources: communication and collaborating: digital ethics and professional developing.

In order to respond to these necessities, which determine the teacher's professional activity and ensure the student's edu-

cative success, the Department for Education takes a step forward with these actions, so that both current and future teachers acquire digital competences.

The actions in this point include continuous training for teachers and the coordination with universities in order to set a system of certifications for new staff. Likewise, it established mechanisms to prove and assess the achievement of these competences so that it becomes an access requirement for new professionals.

Finally, this point aims to facilitate the creation of teaching networks which allow sharing experiences in which the use of digital technology is integrated within the classroom. These networks include a database to share digital content, teaching-learning activities and learning units, including its implementation guidelines.

Objectives and actions

These are Catalonia's Digital Education Plan objectives to ensure teachers achieve the necessary digital competences:

Specific objective 1.

Defining in-service teacher's training targeting achievement of educators digital competence.

Key strategies

1.1. Identify the teachers' training needs and set training itineraries to ensure the achievement of digital competences.

1.2. Promote the teachers and the schools' networking in order to share through real examples their experiences on implementing the teachers' training.

1.3. Ensure the presence of digital technologies in all trainings.

Actions

1.1.1. Defining the strategic model of the individual training.

1.1.2. Defining and creating new teaching models which promote a personalised training according to the individuals' needs.

1.1.3. Creating training itineraries based on the teacher's level of accomplishment of the digital competences.

1.1.4. Defining the certification system linked to the training itineraries.

1.1.5. Produce a tool to identify the individual training needs for the teacher to achieve the digital competence.

1.2.1. Creating virtual spaces to share the activities carried out by the teachers throughout their continuous training.

1.3.1. Coordination with all units responsible of training to ensure the presence of digital technologies in all the formative actions.

1.3.2. Considering the leadership in the digital transformation of the schools when training of future directors.

Strategic framework 2

Objectives and actions

Specific objective 2.

Design the mechanisms to assess the digital teaching competence for working teachers.

Key strategies

2.1. Designing the mechanisms to certify and acknowledge the digital teaching competence for active teachers.

2.2. Designing the evaluation process to certify the digital teaching competence for active teachers.

Actions

2.1.1. Put at the teachers' disposal a professional portfolio which facilitates their access to learning resources, continuous training activities, lesson planning and other educative proposals.

2.2.1. Planning the evaluation process.

2.2.2. Executing the evaluation process to certify the digital teaching competences for active teachers.

Specific objective 3.

Establish a coordination framework with universities in order to ensure the accomplishment of digital competences in the initial teachers' training.

Key strategies

3.1. Creation of a working group formed by members of the Department for Education, the secretary office of Universities and Research and the Catalan universities.

3.2. Establish the tracking mechanisms to ensure the achievement of digital competences in the initial teachers' training.

Actions

3.1.1. Creation of a working group to work crosswise and together with the universities.

3.1.2. Analyse and compare the situation of the high school degrees with that of the universities' degrees regarding the accomplishment of the digital competences.

3.1.3. Suggest specific actions to adjust the high school degrees to ensure the accomplishment of the teachers' digital competence in universities.

3.2.1. Assessing the adjustments made in relation with the mechanisms to certificate the teachers' competences.

3.2.2. Assessing the adjustments made in relation to the tracking actions for new teachers carried out by the educative inspection.

3.2.3. Assessing the adjustments made in relation to the results of the procedures to incorporate new teachers.

Objectives and actions

Specific objective 4.

Ensure the level of competence necessary to teach in the proceedings to incorporate new teachers.

Key strategies

4.1. Defining the system to certify the accomplishment of digital competences' in the public examination processes to access teaching.

4.2. Defining the system to certify the level of digital teaching competences when entering the teachers' classified jobs.

Strategic framework 2

Actions

4.1.1. Designing the mechanism to assess the digital teaching competence common in all the public examination processes to become a teacher.

4.1.2. Including the evaluation of the digital competence in the public examination processes to become a teacher, as well as in the evaluation of the probationary training year of the public servants.

4.2.1. Designing the mechanism to assess the common digital teaching competence required to access the teachers' classified jobs.

4.2.2. Include the certification of digital teaching competence when entering the teachers' classified jobs.

Specific objective 5.

Promote the creation of digital content making sure it is competence-based, inclusive and crosswise.

Key strategies

5.1. Design training and counselling actions for teachers in relation to the creation of digital content.

Actions

5.1.1. Include the creation of digital content in the lesson planning.

5.1.2. Advising in the creation of digital content based on the education centre.

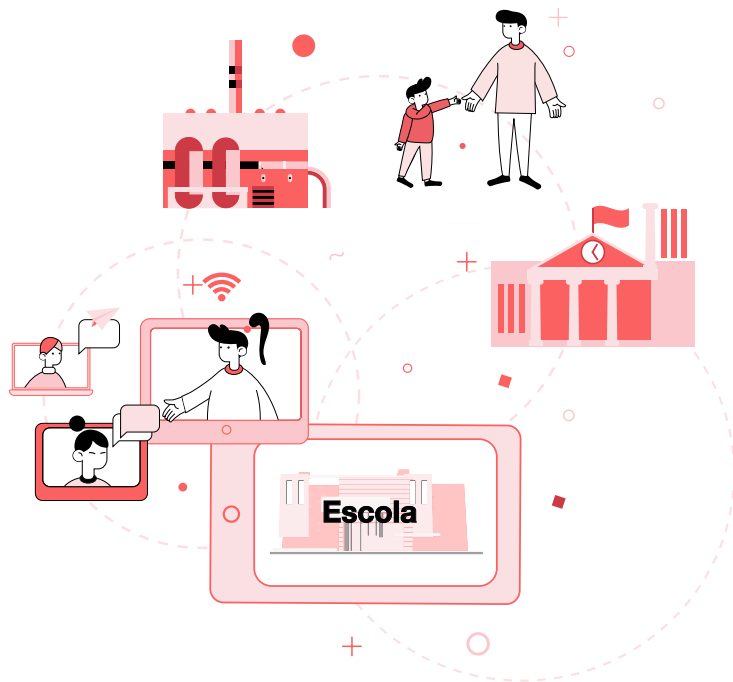
Strategic framework **3**

Digitally competent centres

Educational centres in transformation that respond to the challenges of digital and educational transformation from its leadership and in connection with the environment

Strategic framework 3

Educational centres in transformation that respond to the challenges of digital and educational transformation from its leadership and in connection with the environment.



Leadership and governance are two key elements to generally achieve educational change.

The management team, as the executive body, is in charge of determining the governance of educational centres, as established in the [Self-governance of the educational centres decree](#). This body must transform and develop the digital competence in a coordinated and harmonious way, as well as systematise the principles of the Digital Education Plan of Catalonia 2020-2023 within the different documents for the management of the centre. This results in long-term documents (the Centre's Educational Project (PEC), the Rules for the Organisation and Operation/Functioning of the Centre (NOFC), the Management Project), mid-term (the digital strategy of the centre) and short-term (the Annual General Programme (PGA), the annual report, the budget). Specifically, the centre's digital strategy needs to be a tool to formalise the technology's governance within the framework of the centre's self-governance and the PEC. It also needs to facilitate planning in the organisational, pedagogical and technological areas. The process of preparation of the Digital Strategy of the Centre (EDC) will influence the organisation's way of being and doing in their process of digital transformation.

With regard to leadership, article 142 of the LEC outlines the role of the director of the centre, framed within a pedagogical leadership. One of the main objectives of the education system is promoting the distribution of leadership among the management teams, with the aim to create a system of shared responsibilities and participation in collective decision making among all members of the community. In other words, the necessary conditions need to be found and an organisational structure designed in order to facilitate the connections between the governance structures and the different working teams. In addition, the centres also need to create a networking system among the different educational actors that promotes a collaborative environment where teachers can participate and decide on the centre's digital transformation. This way of doing ensures the achievement of the institutional plans with regards to

the systematisation of the Digital Education Plan of Catalonia.

Following the objectives and the practises outlined in this course of action, a proposal of a centre with a learning community for the digital transformation would be to create and establish a Digital Strategy Committee of the centre. Such committee would consist of a promoting team working to develop the digital strategy of the centre in accordance with the Digital Education Plan of Catalonia 2020-2023.

The structure of the committee has to be heterogeneous, that is to say, it has to be formed by professionals from the executive team as well as teachers from different teams and/or departments. This group has to work in a systematised way to facilitate the management of improvement or innovation processes, linked to the concept of change in the digitalisation field of the centre.

This line of action that aims to create digitally competent centres, provides the procedures, tools and guidance with regard to leadership and governance, for reflection on the centre's digital needs. These will be framed within their own PEC and will lead to drawing up the Digital Strategy of the Centre. While this document will be written by the Digital Strategy Committee, it has to be shared among all the educational community. Moreover, it is also necessary to establish assessment and review methods to be able to evaluate it.

However, the centre will not be alone in this process, since both counselling and the network of teachers are key for the common achievement of continuous improvement and digital transformation through pedagogy in all centres.

Creating learning collaborative environments among various educational actors, favours participation and decision making, which in its turn benefits continuous improvement. In this context, counselling is organised in the form of a common training model framework, that is shared among all actors involved. On the basis of the needs identified, counselling contributes to the

Strategic framework 3

improvement of the teachers' and the centre's digital competency. By extension, it also improves the student's competencies and their academic success.

The digital advice of the centre involves several territorial partners which, together, form the Digital Culture Territorial Network (XTCD). The teams of the Digital Strategy of the Territorial Services, managed by the coordinator of the Digital Strategy of the regions, look out for the implementation of the Digital Education Plan of Catalonia 2020-2023 on their geographic area and manage the training, equipment and activity strategies. A network of digital advisors with proximity to the centres is established for this purpose. These will maintain direct contact with the educational centres and respond to their needs. Lastly, the Digital Coordinators of each centre will also be part of the Digital Culture Territorial Network to the extent that they will participate in collaborative and dissemination sessions with other coordinators of centres of geographical proximity organised by the digital advisors in each area.

This counselling structure must ensure that the centres receive appropriate support and look out for the development and application of their Digital Strategy in accordance with their PEC and their identified needs.

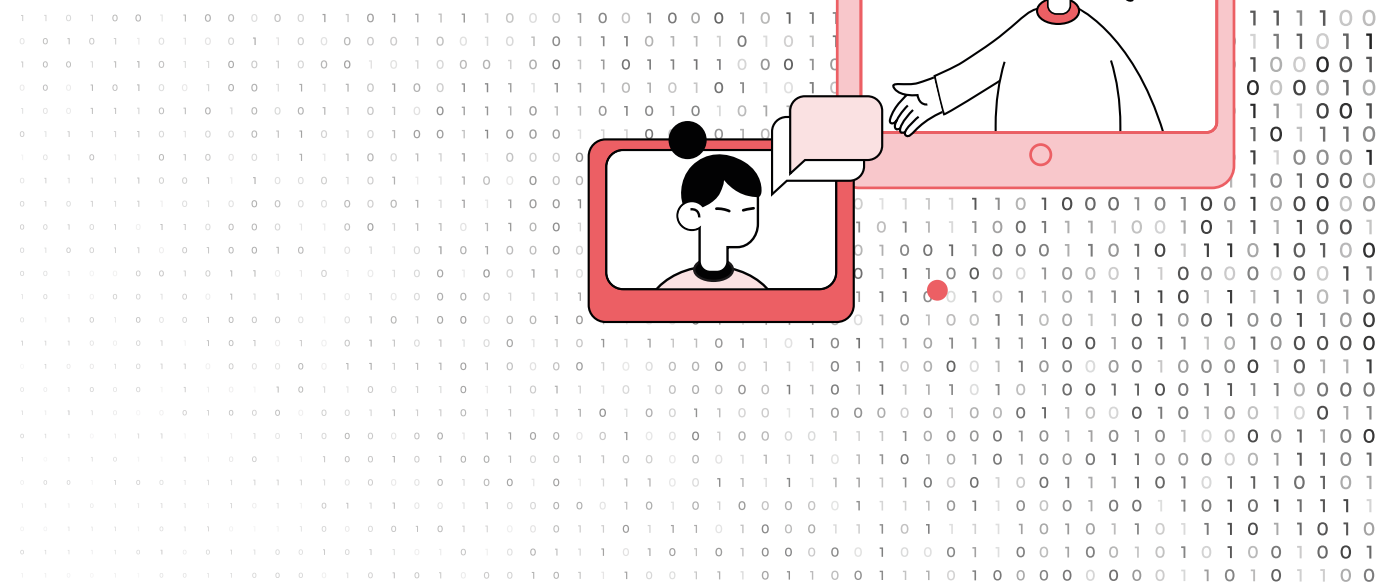
Furthermore, in coordination with the competent authorities in cybersecurity and data protection, the Department for Education has to offer guidance and patterns to the educational institutions with regard to the usage of telematic services. One of the objectives of the educational centres is to be able to offer specific protection strategies and establish good cybersecurity practices. The Department for Education is providing the educational centres and teachers with resources and strategies for data protection and network security.

The Catalan Authority for Data Protection (APDCAT) published the manual [Guidance for data protection in educational centres](#),

in order to bring the fundamentals of European regulation closer to schools, and provide guidance and strategies for its application.

The Cybersecurity Agency of Catalonia also supplies school material and guidance regarding network safety to use in the classrooms or with the families through their initiative [Safe Internet](#).

With regard to the usage of digital content from the educational centres, it is necessary to safeguard the respect for intellectual property, establishing review mechanisms and advice to ensure the compliance with [relevant legislation](#).



Objectives and actions

The specific objectives with regard to guidance on the digital leadership and governance of the educational centres are the following:

Specific objective 1.

To share the Digital Strategy of the Centre with the school staff, the students and the rest of the education community.

Key strategies

1.1 Defining the Digital Strategy of the Centre, ensuring the participation of the staff, the students and the education community.

Actions

1.1.1. Plan of the indicative model to define the digital strategy of the centre.

1.1.2. Creation of strategies that promote the involvement of the staff, the students, and the rest of the education community in the preparation of the EDC, while ensuring data security.

1.1.3. Composition and publication of the EDC in the PEC, by the Digital Strategy Commission.

1.1.4. Establishment of updating and transferring systems for the school's digital strategy.

1.1.5. Establishment of the appropriate mechanisms and indicator system, needed for the evaluation of the digital competency of the centre and the decision making with regards to the EDC.

1.1.6. Compliance with the security and data privacy criteria in the Information Service and in the Telematic Services of the Department for Education.

Strategic framework 3

Objectives and actions

Specific objective 2.

Updating the model of territorial reference to be able to give advice and improve the level of digital competency in educational centres.

Specific objective 3.

To forge an innovation eco-system that allows to connect the educational centres and the education community with the opportunities and needs of the social and business fabric in their more immediate context.

Strategic framework 3

Key strategies

2.1. Arranging a team of professionals who can develop the duties of a guide in digital culture in the different geographic areas.

2.2. Defining the coordination model among the different digital actors.

Actions

2.1.1. Establishment of the duties of the Team for Digital Strategy of the Territorial Services.

2.1.2. Establishment of the duties of the Digital Strategy of the Territorial Service's coordinator.

2.1.3. Establishment of the duties of the Digital counsellors of the Education Services.

2.2.1. Definition of the system of relations among the Subdirectorate for Research and Digital Culture, the coordinators of the Digital Strategy of the regions, the digital counsellors of the Education Services and the digital coordinators of the educational centres.

2.2.2. Elaboration of documentation and resources to ensure an efficient coordination.

Key strategies

3.1 Create alliances with territorial agents in order to drive the achievement of the plan and its connection with its surroundings and its innovation eco-system.

Actions

3.1.1. Activation of working groups and meeting points opened to experts and citizens' participation.

3.1.2. Definition of collaboration agreements for the improvement of the centre's digital competency.

3.1.3. Accompany the students' families from the different administrations, entities and companies to facilitate their adjustment to the information society, resolve the deficits and take advantage of the opportunities.

3.1.4. Produce innovative proposals that help connect educational centres with the different agents involved in the territorial innovation eco-system: the business and associative fabric, and the local sphere.

Infrastructure

The centre's digital transformation is a global and systemic process, in which technology and methodology benefit from each other. This transformation process implies the involvement of both the directorate / executive team and the teachers in the analysis of the centre's needs. The changes must take place with accordance to the centre's digital strategy, which has to favour the use of technology in the most suitable conditions by organising spaces, resources and groups accordingly.

The centre's digital strategy has to ensure that the teams, the connectivity, the programme, the virtual environment and the rest of elements involved in the centre's infrastructure are aligned and adapted to the identified needs and the PEC. On another hand, the Department for Education, as established in article 89 of the LEC, has to make access to a set of digital and telematic services available to all educational centres. These services will aim to improve education's development, ensuring equity and inclusivity among all students.

The Department for Education promotes the usage of free software or open source resources. Linkat is one of the actions from the Department for Education for the promotion of free software. Among other advantages, Linkat expands digital literacy while respecting the law, promoting the principles of collaborative work – necessary for the knowledge society to move forward along the path of equal opportunity -, and freedom of choice in the market.

It is also important to remember that, in addition to the equipment's provisions for students, teachers and schools, there is also the possibility to access technology spaces open to all citizens. These also provide specific educational projects and collaborations with educational centres. In this sense, FabLabs stand out. These digital fabrication centres for citizens, which operate under the authority of

local governments and other public and private organisations, can be found distributed within the territory.

This section outlines the infrastructures, equipment and telematic services that the Department for Education has to provide for students, teachers and schools, according to article 89 of the LEC, as well as the need to integrate the Department for Education's information systems to the telematic services of the centre. Likewise, the section also defines the necessary actions to develop for the optimal implementation of the Digital Education Plan of Catalonia 2020-2023 and for their maintenance and the maintenance of the infrastructures and equipment provided to the centres. It also comprises the technical strategies and the necessary guidance that ensure digital safety, personal data protection, and compliance with intellectual property laws. Lastly, the mechanisms for the centre's digital communication with the families and others through the web portal of the centre and mentoring communication tools are also specified.

Digital transformation goes beyond what is physical and tangible. These infrastructures should allow us to move forward towards a fairer and more equitable society. Point 4 of the sustainable development objectives states: "to ensure an inclusive, equitable and quality education, and to promote learning opportunities at any point in life for everyone". To address this point, digitalisation and its ethical use allow for data processing for decision-making in order to prevent any student from falling behind and to make of the Catalan education system, a reference system. A system where pedagogical tradition at the service of advanced innovation overcomes new challenges and guarantees academic success and social cohesion for everyone.

There are 3 phases anticipated for the digital transformation of the infrastructures of the Digital Education Plan of Catalonia 2020-2023:

Phases	Definition	Challenge	Objectives
Phase 0 / emergency	Virtual learning environment	Achieving that all centres have a virtual learning environment (EVA)	
Phase 1 2020-2021	Equipment deployment	Digital divide	Specific objective 1
Phase 2 2021-2022	Student's digital identifier and Suite for education	Collaborative and integrated work among the services of the centres	Specific objective 2 i 3
Phase 3 2022-2023	Advanced innovation	Traceability and AI at the service of educational success	Specific objective 4

Objectives and actions

The general objectives of the Digital Education Plan of Catalonia with regard to Infrastructure and cybersecurity are the following:

Specific Objective 1.

To ensure that all students, teachers and schools have the necessary digital infrastructures and equipment to guarantee the appropriate development of learning-teaching activities.

Key strategies	Actions
1.1. To ensure optimal connectivity conditions in all centre's working spaces.	1.1.1. High-speed Internet connection and optimal bandwidth which ensure the proper development of the learning and teaching activities.
1.2. To transform the equipment's digital model to be able to guarantee teaching practices through technology.	1.2.1. Supply the necessary equipment to students, teachers and centres to achieve everyone's digital competency and protect equity.
1.3. Facilitate the management of digital devices in the centres.	1.3.1. Implementation of virtual consoles in each centre, to ease the software's management, control and maintenance, as well as the set-up of the student's digital devices.

Objectives and actions

Specific objective 2.

To provide the educational centre with the necessary telematic services and integrate them with the Information System of the Department for Education.

Línies d'acció

2.1. To integrate the multiple information systems of the Department for Education with the ones from the educational centre.

2.2. To make cloud services for working available for both teachers and students.

2.3. To reinforce and improve the services for a virtual learning environment.

2.4 To develop the actions for the assessment of the digital competency.

Actuacions

2.1.1. Implantation of an integrated information system that makes the management of digital identities, academic data, mentoring programmes, communication with families and the management of quality programmes, simpler, more efficient and safer.

2.2.1. Creation and maintenance of user's email accounts linked to the cloud services for working.

2.2.2. Establishment and maintenance of an office suite that allows for collaborative work.

2.2.3. Integration of the user's accounts with both the information system of the Department for Education and centre's telematic services.

2.3.1. Linkage of the virtual learning environment Àgora-Moodle with the integrated academic information system.

2.3.2. Linkage of the Àgora-Moodle platform with repositories of open educational resources, digital textbooks, collaborative spaces and other services.

2.4.1. Design and development of a digital personal learning portfolio that allows the collection of data and learning evidences during the years of compulsory education. This will be linked to the information system of the Department for Education and with the rest of virtual learning platforms.

2.4.2. Design and implementation of a monitoring system to track the achievement of the digital competency by both the students and the teachers.

Objectives and actions

Specific objective 3.

To improve the centre's web portal and promote communication channels with families.

Key strategies

3.1. Augmenting and strengthening the use of the centre's web portal as a resource for information and communication, as well as for the participation of the whole educational community in the centre's life.

3.2. Setting up effective communication channels family - school.

Actions

3.1.1. Development of the centre's web portal service Agora - Nodes with new functions and a repository of images and videos with access restricted to families.

3.2.1. Design of a mobile application to facilitate communication with families and to coordinate the educational activity.

Specific objective 4.

To initiate advanced innovation projects from the monitoring of data, in order to ensure everyone's educational success and to improve the education system.

Key strategies

3.1. Taking advantage of massive data processing to improve the education system at different levels.

Actions

3.1.1. Design of the advanced innovation strategies needed to ensure equity in the system and the improvement of teaching practise; teaching-learning activities and leadership in educational centres, to favour educational success.

Milestones

	Milestones of the Digital Education Plan of Catalonia 2020-2023	2020-2021	2021-2022	2022-2023
M1	Publication of methodological, evaluation and digital content guidelines to work on from each field, and in a transversal way for each level of all educational stages, with inclusive and equitable criteria.	■	Revision	Revision
M2	Design and implementation of monitoring mechanisms and instruments for evaluating the digital competence of students.		■	
M3	Creation of digital content (guidelines and criteria, models, and resources) and creation of guidelines for incorporation into the teaching programmes.	■	Update	Update
M4	Creation of spaces for the co-creation of digital contents.	■		
M5	Training, dinamisation, and networking of teachers and centres for the collective creation of high-quality digital content.		■	■
M6	Creation of training itineraries for training and accreditation of the digital competence of teachers in 3 levels: basic, medium, and advanced, as well as the design of a self-diagnosis tool.	■		
M7	Teacher training in digital competence.	■	■	■
M8	Concretion and consensus of the competence criteria for teaching and management training, from the field of digital competence.	■	Update	Update
M9	Beginning of the process for the design and implementation of the teacher portfolios.		■	
M10	Planning of the process of recognition of digital competence for teachers.		■	
M11	Launching of the evaluation process for recognising the digital competence for teachers.			■
M12	To agree on the mechanism for the accreditation of digital competence in the initial and ongoing training of teaching staff.	■		
M13	Establishment of the calendar for the entry into force of merit and/or requirement of the digital competence for teachers in the access competitive governmental examinations in the different areas of work in the educational system.	■		
M14	Establishment of the digital strategy as a framework of reference for the digital culture of educational centres and the improvement of the digital competence of students, teachers and educational centres.	■		
M15	Redefinition of functions and implementation of the new territorial digital consulting structure.		■	
M16	Creation of alliances with territorial actors to promote the achievement of the Digital Education Plan of Catalonia and its connection with the environment and the ecosystem of innovation.	■	■	■

Desired results

A system that does not leave any student behind

Students that are prepared to become critical citizens when consuming and creating digital content, and which have the ability to learn in a digital world and are able to be part of the working world, since they have the transversal digital competence necessary to respond to the challenges of living and living in the 21st century.

Teachers' professional development

Teachers capable of conducting their jobs with digital tools and that make it possible for students to learn digital skills. All teachers must have the basic competences and a high percentage must be placed at a medium level of digital competence, as well as all the advisors, trainers and territorial references that work digitally within the framework of the Digital Education Plan of Catalonia.

A qualified public education system in line with innovation and economic growth in Catalonia

All education centres should be equipped with devices and connectivity to provide an education based on digital competence, with teachers working online with other centres to improve teaching-learning practices, and where students connect with society, and the needs and the opportunities of the territory.

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Credits

URL: <http://ensenyament.gencat.cat>



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Col·lectiu CTecno

Traducció: Delegació de Govern de la Generalitat al Regne Unit i Irlanda

2020 | 2023