HYBRID SCHOOL

How to drive the digital transformation of schools

MIQUEL ÀNGEL PRATS
ELENA SINTES

FUNDACIÓ BOFILL

EQUITAT DIGITAL

Hybrid school

How to drive the digital transformation of schools

Miquel Àngel Prats and Elena Sintes

Hybrid school

How to drive the digital transformation of schools

Miquel Àngel Prats and Elena Sintes

FUNDACIÓ BOFILL

EQUITAT DIGITAL

Miquel Àngel Prats. PhD in Pedagogy, he is a Tenured Lecturer of Educational Technology at the Blanquerna School of Psychology, Education and Sports Sciences (Ramon Llull University) and leading researcher of the eduTIC line of research in the consolidated research group on pedagogy, society and innovation with the support of ICT (PSITIC). In 2020, he was awarded the 30th Joan Profitós Pedagogical Essay Award for the essay *10 lliçons per a un ús ètic, saludable i responsable de les tecnologies digitals* [Ten Lessons for Ethical, Healthy and Responsible Use of Digital Technologies].

Elena Sintes. PhD in Sociology and Degree in Economics and Business Sciences from the University of Barcelona. She is Project Manager at the Fundació Bofill.

Girona, 34
08010 Barcelona
fbofill@fbofill.cat
http://www.fundaciobofill.cat

Second edition: March 2023

Authors: Miquel Àngel Prats and Elena Sintes
Translator: textosBCN

Project Manager: Elena Sintes
Publishing Technical Coordinator: Anna Sadurní

Edited by: Bonalletra Alcompas
Cover's design: Sonia Fernández
Cover's photograph: Uncle Jun
Design and layout: Mercè Montané
ISBN: 978-84-126532-2-9
DL: B 10273-2021

Impressió: Martín Arts Gràfiques

Summary

1 A hybrid learning model aimed at ensuring equity and improving learning outcomes

Schools need to integrate and effectively use digital technologies (DT) to fulfil their core mission: to educate students to live, participate and thrive in a complex and interconnected world facing rapid technological, cultural, economic, informational and demographic change (DigCompOrg[1] and the Digital Education Action Plan 2021-2027).[2] **Educational digitalisation is now seen as a crucial step towards achieving quality and inclusive education:**

- Digital literacy and competence should be part of any citizen's **core set of basic competencies** to be able to develop as a person, **to actively participate in society and to exercise their fundamental rights**.
- Moreover, DT hold enormous potential to **improve the quality of educational practice**, since their use facilitates more personalised, flexible and student-centred learning in all educational stages and phases.

Although governments and educational institutions have long been aware of the importance of moving forward in the digital transformation of education, the outbreak of COVID-19 proved that many education systems were not equipped for ICT-supported home-based learning,[3] with deficiencies that have exacerbated educational inequalities.

1. See https://ec.europa.eu/jrc/en/digcomporg/framework
2. See https://intef.es/Noticias/digital-education-action-plan-2021-2027/
3. See https://globaleducationcoalition.unesco.org/

The crisis meant that governments had to take swift action to reduce digital divides, using resources to address the lack of connectivity and devices, and expediting their digitalisation plans. In the case of Spain, the Ministry of Economic Affairs and Digital Transformation launched the National Plan for Digital Skills.[4] The Plan seeks to ensure the training and digital inclusion of workers and citizens as a whole, in order to boost the creation of quality jobs, reduce unemployment, increase productivity and contribute to closing gender, social and territorial gaps. It should be borne in mind that the National Plan for Digital Skills is included in the Digital Agenda 2026[5] and is also part of Spain's Recovery, Transformation and Resilience Plan.[6]

Investment in infrastructures, devices and connectivity as well as **training programmes in digital skills** are essential to lay the foundations for educational digitalisation. **But in order to make a significant leap in the consolidation, scope and, above all, equity and quality of educational transformation** (Riera, 2018), a **decisive and sustained investment** in effective and innovative DT **designs and implementation processes** in schools **is also necessary**, as has been done in the most advanced countries in our midst.[7]

One of these more advanced digitalisation designs with better educational outcomes is the hybrid learning model, which offers the opportunity to incorporate DT with the aim of **achieving a more flexible, personalised, inclusive and learner-centred educational model**. With hybridisation, technology is used as an educational tool that, in turn, changes the way we teach and learn (Bettinger *et al*., 2022).

4. See https://portal.mineco.gob.es/es-es/digitalizacionIA/Paginas/plan-nacional-competencias-digitales.aspx
5. See https://portal.mineco.gob.es/es-es/ministerio/estrategias/Paginas/00_Espana_Digital.aspx
6. See https://planderecuperacion.gob.es/
7. See https://obrimeducacio.cat/blog/Pol%C3%ADtiques-educaci%C3%B3-online-Catalunya

Hybrid learning combines in-person teaching (in which teacher and students physically share the same space) and individual or group work sessions in virtual environments. Just as in-person activities usually take place in school settings, virtual activities can take place both inside and outside the school (at home or in technologically equipped spaces). As will be seen throughout the document, **the versatility of this model allows the learning process to be adapted to the specific characteristics of each age, educational stage or individual student's circumstances, combining the best of in-person learning (group cohesion, collaboration and participation) and virtuality and asynchrony (reflective learning, directed learning and student autonomy).**

The other major potential of this model is that it goes beyond the physical and time limitations of the school, increasing the flexibility of the education space and time. It diversifies the possibilities for activities, communication among students, and between students and teachers, as well as for following up on and supporting students' work. This is a key factor in advancing towards **greater equity in access to digital learning**, as **virtual activity does not necessarily have to take place at home, but can be carried out in prepared spaces in schools or in other community facilities or spaces, equipped to support and assist the digital work and learning of all students, thus reducing the digital divide**.

Objective of the document

This document sets out the need to drive the digital transformation of education systems with a view to **developing the digital literacy and competence of all students and moving towards a more flexible, personalised and student-centred model of education.**

To this end, we propose a process of digital transformation of the overall education system for the next ten years through the development of a hybrid learning model aimed at ensuring equity and

improving learning outcomes. The aim is to ensure that within this timeframe the overall education system makes a significant leap forward in the digitalisation of education, at least in the compulsory stages, as a crucial component of quality and inclusive education in the 21st century.

With this purpose in mind, the document sets out **objectives, criteria, guidelines and key actions to implement a hybrid learning model in primary and secondary education in both public policies and schools**. The proposal therefore presents:

- The definition of a strategic **public policy** framework (Gisbert and Prats, 2018), objectives and actions to move towards equitable and quality educational digitalisation.
- Tools and resources for the development of hybrid models and for the educational digitalisation of **schools**.
- Measures for supporting and advising **teachers**.
- Measures for personalising **students'** education (promotion of autonomy, socialisation and individual care).
- Support and guidance measures for **families**.

Key elements of the proposal

This document sets out a hybrid learning model that, without ignoring the current risks and limitations of digital technologies, develops processes of change in the education sector aimed at advancing towards a digital world, especially through optimising the possibilities offered by technology to move towards inclusive and high-quality educational transformation.

Designed to respect the pace of the different agents involved, **the proposal is based on two fundamental ideas**:

- Firstly, that educational transformation processes bear a stronger relation to **supporting** and bringing out people's talent and the possibility of networking between them than to the mere acquisition and use of technological devices.
- Secondly, that the digitalisation of education is more a **process of adaptive change management than technical change management**, i.e. greater emphasis must be placed on the criteria of when, how and why we use DT than on the knowledge and instrumental use of actual DT.

The model proposed **requires action in eight major strategic lines of action with an impact both on public policies and schools**. The introduction of this hybrid learning model involves:

a) **Improving educational quality and transformation**.
b) **Guaranteeing equity and digital inclusion**.

The domains related to **improving educational quality and transformation** include:

1. Schools and teaching teams working towards hybrid school

The digital transformation of schools and the use of hybrid learning models are not limited to the simple introduction of DT in educational activities, but entail pedagogical, technological and organisational changes. To properly guide their transformation, schools need to **define their own strategy as well as a roadmap for the organisation's digitalisation**.

The design of the digital transformation strategy and the organisation of the hybrid model call for:

- **Schools to evaluate their digital maturity, i.e. the level of digital competence as an organisation, to identify their baseline situation and to define the way forward.** This should be a joint task

between the school's management and its Digital Strategy Committee, which should be supported by digital reference points in Educational Resource Centres and digital advisors in Territorial Services included in the Digital Education Plan.[8] The evaluation may be based on the model proposed by Edutech Cluster. This process calls for the following requirements to be met:

- **The corresponding education authority must step up support for schools through local digital advisors** (digital reference points in Educational Resource Centres and digital advisors in Territorial Services), who must provide regular and consistent support to the school in the development of their digital strategy.
- **Schools should strengthen the role of their Digital Strategy Committee**, which should take on greater responsibilities in the design of the school's pedagogy in coordination with their management and the education authority's digital advisors and supporting teachers, students and families.

Hybrid school requires a **high level of coordination and communication between the teaching staff and students and families**. Education's design, planning and organisation based on in-person synchronous learning must change substantially when virtuality and asynchrony are introduced. In these models, **environments and tools for coordination, organisation and promotion** of activities that allow **collaboration and communication between the teaching team and students and families** are essential.

8. See https://educacio.gencat.cat/ca/departament/publicacions/colleccions/pla-educacio-digital/

This calls for the following requirements to be met:

- **Schools must have a virtual learning environment or learning platform (VLE-LMS) as a tool for the coordination, organisation and communication of the activity.**

  - For the teaching team, it is a management and teamworking tool (organisation of the teaching activity, assignments, groups, coordination, etc.). It also facilitates the documentation of teaching experiences, exchanges and reflection on teaching practice, which are essential in a learning process such as digital and hybrid school.
  - For families and students, it is a space that offers information and communication with the school.

2. Designing authentic learning experiences

Hybrid education should not replicate the "transmissive" model or reproduce in-person practices in the virtual environment, but should be conducive to learning using **active methodologies** that prioritise the student's practical experience. To this end, **activities should be designed using an experiential approach**, offering students **meaningful** learning and encouraging their **autonomy**. Interaction must be promoted, combining direct relations between students and teachers with multimedia support materials, and with carefully designed assignments and projects for students to carry out on their own.

This calls for the following requirements to be met:

- **Teachers must be trained and advised by the corresponding education authorities so that they can design hybrid learning activities, projects and experiences** that promote competence-based learning and student autonomy.

- **The government can facilitate this by developing guidelines and teaching proposals for the design, creation, implementation and evaluation of digital activities.**
- With these guidelines, **each school can decide which activities are best suited to its characteristics and priorities**. Activities should be designed with UDL (Universal Design for Learning)[9] inclusion criteria, so that they can be undertaken by any student, in line with the Inclusive School Decree.[10] We recommend reading CAST (Center for Applied Special Technology)[11] frameworks, as well as the documentation that each education authority makes available to the education community.

3. Personalising virtual learning environments

Hybrid activity requires virtual learning environments (VLE) that allow both in-person and virtual educational activities to be alternated and combined. These environments act as an educational platform in which teachers incorporate the educational and evaluation resources and activities proposed by the students. **In a hybrid model, these environments should allow, in addition to individual work, collaboration and synchronous and asynchronous communication between all members of the school community: teaching staff, students and families.**

Having a virtual learning environment is important, but is not enough: for it to work properly, everyone needs **to be familiar with and competent in VLEs, and to share criteria for their use**.

9. For further information, see https://xtec.gencat.cat/ca/curriculum/diversitat-i-inclusio/projectes-educatius-inclusius/disseny-universal-per-a-laprenentatge/ and http://www.educadua.es/doc/dua/dua_pautas_intro_cv.pdf

10. For further information, see https://portaldogc.gencat.cat/utilsEADOP/PDF/7477/1639866.pdf

11. For further information, see https://www.cast.org/

This calls for the following requirements to be met:

- **The corresponding educational authorities must facilitate the provision of virtual learning environments in all schools, allowing synchronous (e.g. videoconferencing) and asynchronous learning methods.**
- They should also provide **training for the entire educational community** (teachers, students and families) in the use of the platform, with online training and other information materials, which can be made available to families through the schools concerned.

4. Diversified assessment and continous feedback

In hybrid models, **formative, continuous and competency-based** assessment models should be developed, integrating assessment as part of the learning process rather than its purpose. **Continuous feedback** is essential to ensure the learning process, as well as the **diversification of monitoring tools** (self-assessment and peer-assessment grids, portfolios, learning portfolios, etc.), which make assessment easier and more fluid in models that combine in-person and virtual learning.

Moving towards this change in assessment calls for the following requirements to be met:

- **The corresponding education authorities should promote formative and continuous assessment models, including assessment mechanisms in hybrid environments.** Tools must be defined that allow teachers to assess and provide continuous feedback on the learning process, both in the classroom and online. To this end, **diversifying tools and activities is also important**, so that assessment is based on a more varied combination of information on the learning process (in the classroom and online).

- **Territorial Services and Educational Resource Centres should have agents and/or mentors to provide psycho-pedagogical support to teachers** in the schools that require it to assist and advise on hybrid teaching-learning processes. Different figures depending on their experience, but with the purpose of supporting and mentoring teachers.

The domains related to **guaranteeing digital equity and inclusion** include:

5. Constant monitoring, communication and tutoring

The execution of constant monitoring, support and tutoring is crucial for ensuring adequate educational progress, the connection with students and personalised student care, especially in educational models that incorporate online activities. To ensure this **constant connection between teachers, students and their families**, **tutoring and guidance** needs to be **strengthened in schools by increasing the number of tutors. Guaranteeing that all students have constant monitoring and assistance, both face-to-face and online, is essential**.

This calls for the following requirements to be met:

- **The corresponding education authorities must increase the number of teachers-tutors in schools** to ensure one tutor for every 12-14 students in primary and secondary schools to provide more intensive and personalised support for students and their families, both face-to-face and online.
- **It must also promote a permanent training programme to train teachers in tutoring and guidance**. Training should include the development of tutoring and guidance in hybrid models. The figure of the tutor-mentor, who guides and supports students and their families in academic, emotional and social aspects, among others, should be developed.

- **The school must ensure constant follow-up and assistance for all students** and their families, with the support of the Diversity Advisory Committee to identify students with special educational needs (SEN).

6. Digital wellness, safety and autonomy

The use of virtual environments and digital tools calls for personal and constant support for students so that they can explore every e-learning opportunity and also protect them from the risks associated with the use of technologies, promoting wellness, safety and autonomy in the use of digital technologies.

In any model of educational digitalisation, **spaces and mentors must be created to support and raise awareness among students, as well as educators and families**.

Promoting quality use of digital technology calls for the following requirements to be met:

- **Educational Resource Centres must have a digital mentor figure (different to the role of the psycho-pedagogical mentor) to regularly and continuously support schools, teachers, students and families.** This can be a new figure or a task for the digital mentors included in the Digital Education Plan.
- **Mentors should generate spaces for training and communication with the different groups in the school** (tutorials and meetings for reflection-practice, guidance materials, etc.), on different aspects of digital wellness, safety and autonomy (healthy habits, relationship with devices and digital diet, digital detox, responsible use, cyberbullying, consumption of appropriate content, social networks, critical sense and truthfulness, etc.).
- **Schools should create an ideology and regulations for the use of technologies at the establishment, shared with students and**

families (what tools will be used, when and how, rules and guidelines for use). The ideology, included in the school's Digital Culture Document, is disseminated in communications with students and families (meetings, newsletters, etc.).

7. Training, support and capacity development for teachers, students, families and the community

Digital competence is a cornerstone for the digital transformation of schools. The instrumental use of digital technologies and their methodological application in the classroom must become a fundamental part of teachers' professional development and the acquisition of Digital Competence for Teachers. With the new Digital Competence Framework for Educators (DigCompEdu),[12] the scope of work has been expanded and updated for several reasons: firstly, the framework has been aligned with regional, national and European proposals on digital competence, with the aim of incorporating the knowledge and experience acquired and facilitating convergence in the creation of a European Education Area by 2025;[13] and, secondly, to especially emphasise that DT are now indispensable in the working, social, economic, sporting, artistic, cultural, scientific and academic fields. In short, DT have become, as mentioned previously, part of our lives and are changing them.

In this regard, teachers should be **trained, equipped and supported so that they can incorporate digital technologies into their day-to-day educational practices, focusing on training programmes in methodological designs** (not so much on the use of technology as on learning to teach differently using technology) and **for schools** (specific training for all teachers at a school or at a given stage of education at the establishment), especially in resources and strategies for hybrid learning.

12. For further information, see https://joint-research-centre.ec.europa.eu/digcompedu_en
13. For further information, see https://education.ec.europa.eu/about-eea/the-eea-explained

To achieve this, in addition to incorporating Digital Competence for Teachers in initial and continuing professional development, different training strategies need to be developed throughout the academic year that are tailored to the training needs and digital strategy of each school.

Hence:

- The education authority, through Educational Resource Centres and Territorial Services and in coordination with the school's Digital Strategy Committee, has to **identify teachers' training needs in Digital Competence for Teachers and the needs for the development of the school's digital strategy and plan for training over the course of the academic year**. This training must be accredited as teaching merits.

The main objective is to train **students in digital skills and competence**, as one of the key competencies for lifelong learning.

- **Schools must identify students' training needs**, based on the competences and levels of the European Digital Competence Framework for Citizens (DigComp 2.2)[14] and **prioritise training for students with greater difficulties** in using DT or from more vulnerable backgrounds.

Reducing the digital divide calls for the inclusion of digital training for **families and community agents** with whom they network, so that they can provide appropriate pedagogical and technological support for students and can actively participate in hybrid learning dynamics.

- **The education authority, through the territorial services and Educational Resource Centres, should generate training plans**

14. For further information, see https://publications.jrc.ec.europa.eu/repository/handle/JRC128415 and https://somos-digital.org/digcomp/

for families and community agents, which may include information resources, conferences and workshops and training in digital competence.

8. Guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff

Having the right infrastructure, guaranteeing technological equipment, connectivity and resources and materials to be able to undertake educational tasks is fundamental in any digital model, both within and outside schools. In hybrid models, **students must also be guaranteed the appropriate equipment and spaces to undertake non-classroom work, whether at home, at school or in nearby facilities**.

The availability of these elements is fundamental but not sufficient, as **students, families and teaching staff must be supported and provided with technical and pedagogical assistance services to ensure their proper use**. Many students still do not have the necessary support from their families or other adults to be able to carry out school tasks or use technological devices appropriately. **In a hybrid model, this support must be guaranteed so that they can continue their educational work, even virtually.**

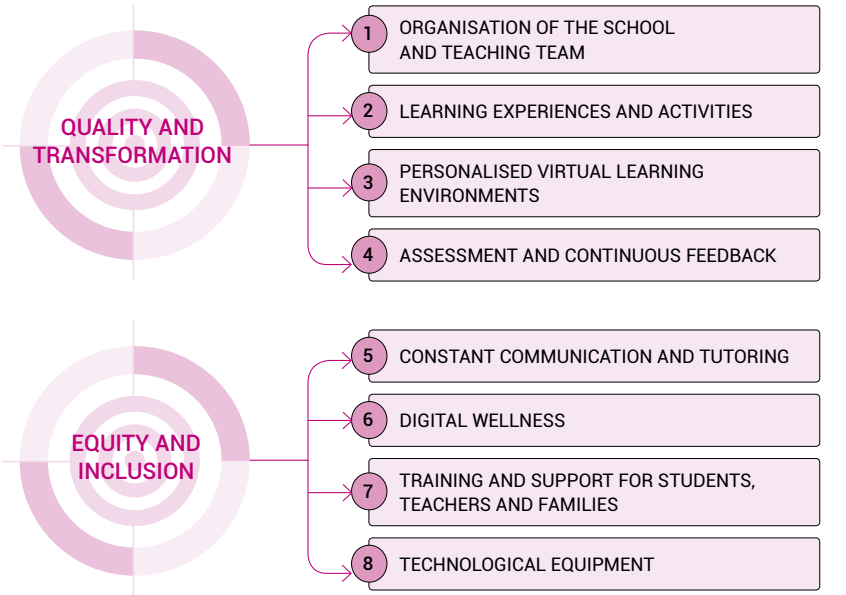
This calls for the following requirements to be met:

- **The corresponding education authority must provide a loan service of up-to-date computer devices for students and teachers**, to be used within and outside the schools.
- **The corresponding education authority and local councils should provide spaces in schools and surrounding facilities** (libraries, civic centres, community spaces, etc.) **with connectivity, technological devices and technical support staff** available to students who may need them.

- **The corresponding education authority, together with the community network of bodies, organisations and town councils and education universities and educational technology research groups, promotes physical spaces**[15] (knowledge centres or citizen laboratories for social and digital innovation) that allow for creation and experimentation with the use of technology-based teaching material.

FIGURE 1

Strategic objectives for a hybrid learning approach



Source: authors' creation.

As mentioned above, the development of a hybrid learning model based on these eight main strategic lines of action should facilitate **the achievement of the proposal's two fundamental objectives**:

15. See https://www.citilab.eu/

- **Quality and educational transformation**. Educational digitalisation extends beyond access to technological devices and connectivity, and requires **integrating and supporting pedagogical, technological and organisational changes in schools**, in order to achieve improved learning.
- **Equity and inclusion**. Educational digitalisation must not only avoid excluding anyone, but also prioritise precisely those groups at greatest risk of digital isolation. Focusing on equity and inclusion means **establishing resources and implementing specific measures for students and families in vulnerable situations and also for schools with greater social complexity or that need more support to make progress in digitalisation**.

Agenda of priority measures to be implemented by the education authorities and schools

Based on these eight main strategic lines of action, **the document presents a wide range of measures to be developed by the authorities and schools**, among which **it is essential that the education authorities and schools, in particular, take responsibility for ensuring the following measures**:

Measures that fall under the remit and responsibility of the education authority:

1 Provide basic and essential services to work on a hybrid model both within and outside schools

- Guarantee **infrastructure, connectivity and devices** (well configured and up to date) for teachers and students in local schools and facilities to avoid inequalities in access to these resources. Priority should be given to provision in the most vulnerable areas.

  - **Set up a loan facility of up-to-date computer devices for students and teachers.**
  - **In conjunction with local councils, set up spaces in local schools and facilities** (libraries, civic centres, community spaces, etc.) **with connectivity, technological devices and technical support staff** available to students who may need them.

- Guarantee all schools a **virtual learning environment** that facilitates collaboration, communication and synchronous and asynchronous monitoring between all members of the school community (teachers, students and families).

2 Guarantee the training of teachers, families and the local community in different areas

- Develop training in initial and continuing **Digital Competence for Teachers**, and support the centres through Educational Resource Centres and Territorial Services in the development of digital competence in schools.

  - **Identify teacher training needs** in Digital Competence for Teachers (Instrumental and Methodological) and at the school in order to plan training from the outset and throughout the academic year.
  - **Draw up training plans adapted to each context and type of school**, in accordance with their digital strategy and the objectives of their Digital Culture Document.
  - **Plan different training strategies in schools aimed at the acquisition of Digital Competence for Teachers**, especially in hybrid learning resources and strategies.
  - **Include digital technologies as basic and core content in initial teacher training programmes and as a key component of teachers' professional development** through agreements between the government, faculties of education and university educational research institutes.

- Promote **initial and continuing professional development in tutoring** (face-to-face and online) and **guidance** for all teachers in the system.
- **Develop training plans** for families and the local community in accordance with the specific needs of each area.

3 Provide support for schools (digital, emotional and psycho-pedagogical wellbeing)

- **Create mentors and spaces for digital and socio-emotional support** in Educational Resource Centres that **regularly and continuously support schools, teachers, students and families**.
- Provide **mentors to deliver psycho-pedagogical support to teachers** through Educational Resource Centres and Territorial Services to assist and advise on hybrid teaching-learning processes.
- **Promote spaces for educational experimentation (laboratories) with digital technologies** and the generation of networks of educators eager to share good educational experiences and practices.

4 Move towards digital transformation and support centres for educational digitalisation.

- Foster **the design of hybrid learning experiences and activities**, developing practical guidelines and teaching recommendations that help teachers to devise, create, implement and evaluate digital activities or tasks that foster competence-based learning. Activities should be inclusive, based on UDL (Universal Design for Learning) principles.
- Promote **formative and continuous assessment models including assessment mechanisms in hybrid environments** (grids, learning portfolios, guidelines, etc.) as an integral part of the assessment system, taking precedence over final assessment models.
- Ensure **constant face-to-face and online monitoring, support and tutoring** for students, especially those most in need, by increasing

the number of teachers-tutors in schools to ensure one tutor for every 12-14 students in primary and secondary schools.

- **Document what the school has learned in terms of good practices with a view to promoting conferences and meetings**, while identifying teachers interested in using digital technologies.

Measures that fall under the remit and responsibility of schools:

5 Ensure constant monitoring, support and assistance for students

- **Strengthen the school's tutoring and guidance** and **the identification of students with SEN**, in order to guarantee constant monitoring and assistance for all students.
- **Ensure processes with a higher degree of on-going support and communication for students and their families**, facilitating their personal, academic, social and professional guidance (life plan), providing spaces and/or means (synchronous and asynchronous) to guarantee this on-going communication.

6 Ensure coordination and communication between the various teaching teams

- Create **virtual spaces and use apps that facilitate communication, coordination, the exchange of experiences and reflection** on teaching practice in the school's hybrid environment.
- **Document**, collect and promote good practices in the school itself.

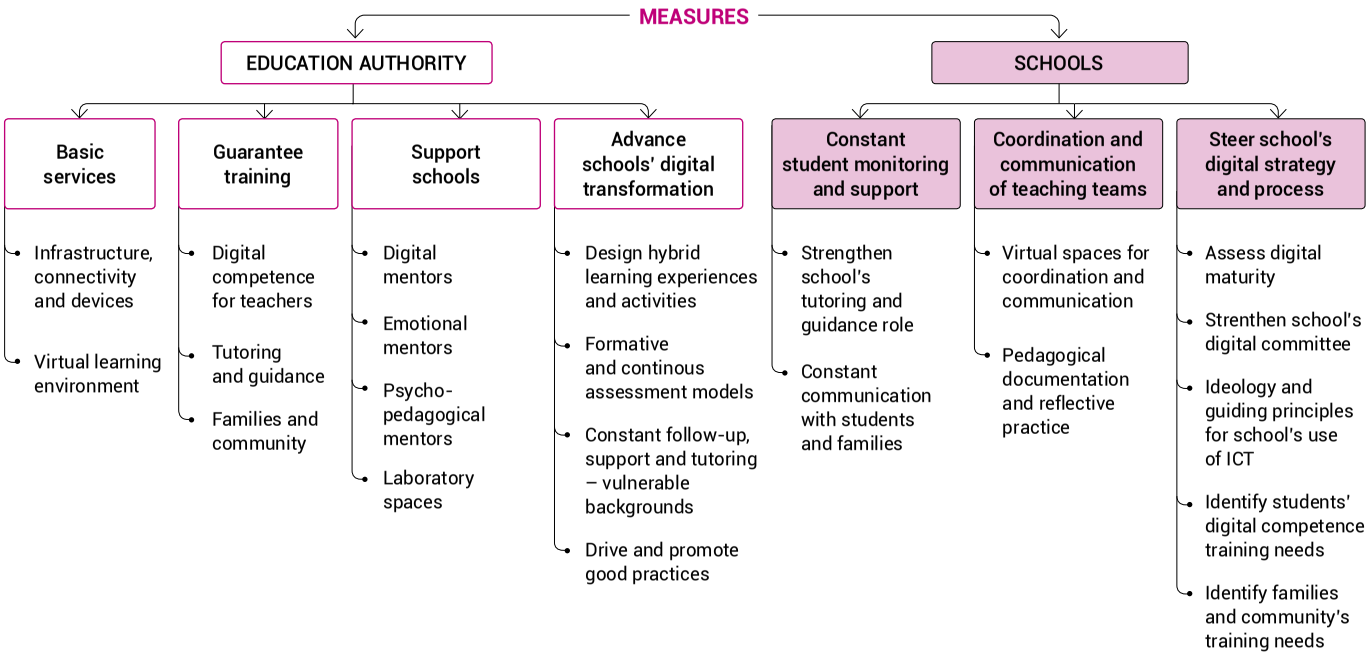
7 Steer the school's digital strategy and process for educational transformation

- **Assess the school's digital maturity and develop a transformation strategy and roadmap** for the organisation in a hybrid school model.

- **Strengthen the school's Digital Strategy Committee**, which is to take on a greater role in the pedagogical design of its activities and given the implementation of digital competence in the primary and secondary curriculum decisions.
- **Ensure an ideology and guiding principles that govern the school's use of ICT**, with the actions to be determined regarding the school's position on digital technologies (statement of principles or its outlook and what has been agreed by the management team and teachers on these digital and technological matters).
- **Identify students' digital competence training needs** and prioritise digital training for those students who, due to personal or environmental circumstances, have greater difficulties using them.
- **Identify training needs** among families and the local community according to the specific needs of each area.

FIGURE 2

Visual map of the agenda of priority measurres



Source: authors' creation.

2 Educational digitalisation and transformation

According to Iñiquez de Onzoño (2019), information and communication technologies (ICT), in parallel with developments in cognitive psychology and educational sciences, are bringing about a major paradigm shift in education, both in terms of the learning process and the mission of educators. Education has traditionally been about transferring knowledge, preparing students for a job and for their place in society. However, the future of education is increasingly seen as an opportunity to develop and strengthen our individual qualities. This is where the real change lies.

In the future, thanks to technology, education will not only be about acquiring the knowledge needed to do this or that job, but will also allow us to help develop students' personalities, focusing particularly on their strengths, adapting the amount of study time to their needs and abilities, measuring the results of the learning process and determining which teaching methods can best facilitate personal and professional development.

This is where technology can contribute to the humanisation of the learning process. Sometimes we think of technology as an obstacle to proximity and sociability. Let us call to mind the paradox that technology can make us feel very close to those who are very far away and, at the same time, very far from those who are very close.[16] However, the combination

16. See https://www.ara.cat/societat/Noves-formes-densenyar-aprendre_0_1267673267.html

of technology and teaching can help to strongly humanise the learning process. As well as adapting to students' circumstances, it can strengthen the relationship between students and teachers. It also facilitates teaching, for example, in measuring academic performance, conveying basic information or answering frequently asked questions. Technology thus allows educators to focus on more value-added activities.

But what evidence do we have of its real impact on education? What should the goals be to use it efficiently so that we can begin to talk about educational transformation?

What is known about the effectiveness of digital technologies in education?

As mentioned above, the rapid development of digital technologies and their growing integration into everyday life is changing the way we live, interact, work and learn. The widespread use of digital technologies has reached every social sphere and institution, and has also been gradually introduced in schools. Computers, mobile devices, robotics, virtual reality, augmented reality and educational apps, among others, are progressively becoming a part of education and learning processes, albeit at a slower pace than in other areas, and showing significant differences in the objectives and forms of integration in classrooms, as well as in the outcomes.

Educational digitalisation is the introduction of digital technologies, tools and applications in the processes of educational management, relations and communication with the education community and the improvement of teaching and learning processes. Several countries have initiated a process, at varying speeds and with varying outcomes, to transform their education systems, making increasingly more intensive use of digital technologies in learning processes, as well as in their educational management processes and communication with families.

This process is based on the evidence that, if properly planned, **the introduction of digital technologies can be a powerful tool for improving education, as well as for enhancing students' motivation, involvement and interest**. According to Usart (2020), several studies show that:

- The use of digital technologies in educational practice bears a positive impact on student **outcomes** at all educational stages.
- Digital education also facilitates the acquisition of key 21st-century skills and **competencies** such as collaboration, communication, autonomy and cognitive skills development (World Economic Forum, 2015).
- It contributes to improving students' positive **attitudes** towards subjects such as mathematics and science, both at primary and secondary level.

For its part, the latest edition of the PISA survey measures **digital literacy** (OECD, 2016) as the ability to "evaluate information from several sources, assessing the credibility and utility of what is written using self-established criteria as well as the ability to solve tasks that require the reader to locate information, related to an unfamiliar context, in the presence of ambiguity and without explicit directions". In other words, digital literacy can be seen as the ability to read and navigate autonomously digital content.

Some evidence shows a positive correlation between 15-year-olds' performance in digital literacy and their performance in reading. Moreover, further analysis of students' browsing behaviour reveals that, among students of similar reading performance, the extent to which their behaviour conforms to targeted navigation ("think before you click") is associated with differences in digital reading performance. This reinforces the idea that navigational skills are more related to the ability to regulate and monitor cognitive processes or to spatial reasoning, than to the mere technical aspect of browsing.

Opportunities and potential of digital education to transform education

In recent years, the opportunities offered by digital technologies to improve the day-to-day educational practice of students and teachers in schools have been explored in greater depth. Digital technologies have fundamentally changed the way individuals access information and elaborate knowledge (OECD, 2016). In addition to increasing the demand for new skills, they offer new opportunities for education and training, raising high expectations as to their benefits and fuelling debate about why these benefits have not yet materialised. Some argue that ICTs bring unprecedented generational change, with far-reaching implications for education, while others argue that digital media and connectivity have more negative than positive effects on young people's education.

In fact, **digital technologies** have been shown to **hold great potential for educational transformation, as they can facilitate more personalised, flexible and student-centred learning at all educational stages and phases**.

The use of technologies can be a means to:

1. Facilitate **personalised learning** (OECD, 2016). The literature on education has identified learners' prior knowledge as a key factor for effective learning. Student-centred learning has thus become a paradigm for new forms of learning, which in turn are facilitated by the introduction of technology in the classroom.

2. Educate **students as active subjects** who reconstruct and give meaning to the wealth of information they obtain from the internet's numerous media and resources, as well as facilitating the development of competences **to make proper use of information in an autonomous manner**.

3. **Develop a teaching methodology** characterised by encouraging students to **search for new information** using a variety of sources and technologies, as well as to **reflect on and critically contrast** data constantly.

4. Present interesting and relevant problems/projects/tasks so that **the students themselves devise work plans and carry out** the necessary **actions** using technologies, with a view to developing and obtaining satisfactory answers to them, so that they learn to express themselves and communicate through different technological resources and methods.

5. Organise tasks and activities that involve students' use of technology for the development of **collaborative learning processes** among them. In fact, some cognitive theories suggest that learning is a social process, in which the construction of knowledge takes place through processes of interaction, negotiation and cooperation (De Corte, 2010). Neuroscience also shows that the human brain is amply prepared for such interactions and that while the act of study and self-discovery are still valuable, learning increasingly depends on interaction with others. Digital technologies facilitate learning through interaction and participation, beyond the passive consumption of information or knowledge. In technology-enabled learning environments, students work together (in groups) and/or interact with each other to optimise their learning with the help of various technologies and often a teacher. When combined with other learning approaches, technology-enabled collaboration can contribute to project- or problem-based learning or even complement face-to-face learning.

6. Advocate for the **role of the teacher in the classroom to be more of an organiser and supervisor of learning activities** that students undertake using technologies, rather than a mere transmitter of elaborated information.

7. Reduce **time and space barriers and allow access to resources for all** (OECD, 2016). The use of digital technologies has often been regarded as a way to facilitate and increase access to educational resources. However, while internet penetration in OECD countries has reached high levels, opportunities to level up access to education have yet to be fully harnessed. Virtual science laboratories have begun to flourish in some OECD countries, providing virtual access to real research facilities or creating virtual environments for research. Digital technologies are helping to redefine some of the characteristics of education: student's proximity with one another and their teachers, as well as the materials used. **By removing time and space barriers, ICTs can address the needs of students at risk of exclusion from formal education.**

8. **Increase teaching opportunities in the classroom through teacher creativity** (OECD, 2016). Teachers have a crucial role to play in facilitating the integration of digital technologies in the classroom. It is also true that having trained teachers is a prerequisite for implementing a curriculum that successfully fosters high-quality learning and the development of 21st-century competencies. It goes without saying that ICTs can contribute to this, but three decades of research have shown that ICTs alone do not facilitate new forms of learning. **It is teachers who enhance the opportunities presented by new technologies.**

9. **Support professional learning communities**. In addition to formal professional development, the establishment of learning communities among teachers can help them improve their practices and overcome individual challenges. The rapid growth of ICT and social networking has enabled teachers to become involved in physical and virtual learning communities. And this involves creating networks of teachers to share pedagogical experiences and manage knowledge, i.e. to spot talent (innovate).

10. Enable and **facilitate life-long learning**. Training workers in the use of new technologies and other 21st-century skills is a key priority for both policymakers and the private sector.

Furthermore, the latest UNESCO Global Education Monitoring Report 2023 (2022) clearly states that the COVID-19 pandemic marked a turning point in the role of ICTs in education[17] and proposes a number of lines of action. We also suggest reading the study on technology and educational quality by the Impuls Foundation (2022),[18] which shows that the digital school of the future will favour active and collaborative learning methodologies and will be open to the community and the world, with projects that reflect on real-world problems and challenges.

Requirements and criteria for digital education to transform education

However, while digital technologies facilitate a change in teaching and learning practices, they do not guarantee it. **Specific digital tools should not be the end but a means to achieve a better teaching-learning process**. To be effective, digital learning calls for activities to be redesigned using a more active and student-centred approach. Digital education should not replicate the "transmissive" model or reproduce face-to-face practices in the virtual environment, but should **favour learning through active methodologies that prioritise the student's practical experience and personal and intensive tutoring on the part of the teacher**.

The pillars of learning required of schools in the midst of educational transformation and digitalisation are as follows:[19]

17. For further information, see https://unesdoc.unesco.org/ark:/48223/pf0000378950
18. For further information, see https://impulseducacio.org/en/educational-technology-a-key-tool-for-quality-schools-in-the-digital-age-2/
19. See https://www.fundaciontelefonica.com.mx/cultura_digital/publicaciones/enlighted-telos-110/659/

1. **Broadening of methodologies applied**. Learning takes place in different scenarios and at different paces for everyone. More opportunities need to be given to all.
2. **Critical thinking culture**. Learning based more on curiosity, inquisitiveness and questions.
3. **Cooperative learning**. More and better learning takes place among peers, in a socialised manner. Students improve their performance when they act as teachers.
4. **Project-based learning**. Learning becomes real and relates to the world.
5. **Authentic assessment**. Assessment is the catalyst for planning and allows for maximum personalisation of learning based on real projects, assignments, tasks, tests and challenges.
6. **Creativity and "design thinking in the classroom" dynamics**. Stimulate creativity in a different way for each student.
7. **New learning spaces** (physical, virtual and community). Explore new innovative learning spaces conducive to creativity, collaboration, communication and critical thinking.
8. **Learning communities**. Creation of virtual and physical environments for management and communication with families, teachers and students.

This methodological change is one of the major challenges facing educational transformation, with a long way to go. According to PISA 2018 data (European Commission, 2020), only 39 % of teachers in the EU feel well or very well prepared to use digital technologies in their day-to-day work, while this preparation is one of the key requirements for the effective use of digital tools. In fact, according to several studies (Usart, 2020), the use of educational technology for the mere one-way presentation of content still predominates in teaching practice.

Some countries, concerned about the digital literacy of their children and young people, have realised that the development of digital competence among schoolchildren necessarily requires optimal preparation of their teachers to be able to respond to the needs and characteristics of today's

society. For this reason, some of them, according to Trujillo (2020), have carried out different initiatives to ensure that teachers have an adequate level of digital competence and at the same time guarantee that they are able to contribute to building the school population's digital competence.

This is one of the key challenges that has led the European Commission to roll out its Digital Education Action Plan 2021-2027,[20] and to focus its strategy on "inclusive and high quality digital education and training" as a key means for digital transformation.

The Plan has two strategic priorities:

1. **Fostering the development of a high-performing digital education ecosystem, which therefore requires:**
   - Digital infrastructure, connectivity and equipment.
   - Planning and development of effective digital skills, including up-to-date organisational skills.
   - Teachers and education and training staff with digital skills and confidence.
   - High-quality learning content, user-friendly tools and secure platforms that respect privacy and ethical standards.

2. **Enhancing digital skills and competences for the digital transformation, thus requiring:**

   - Basic digital skills and competences from a very young age.
   - Advanced digital skills that generate more digital experts and ensure that girls and young women are equally represented in digital studies and careers.

In this regard, some OECD countries have implemented policies to promote digital literacy and the inclusion of specific groups that may have

20. See https://intef.es/Noticias/digital-education-action-plan-2021-2027/

been left behind in terms of acquiring ICT skills, such as older people and women, to ensure that the use of digital technologies benefits all sectors of the population equally.

Current approaches in educational digitalisation processes

There is a wide range of possibilities when it comes to incorporating digital technologies in education. According to Usart (2020), **digital technologies can be integrated with varying degrees of virtualisation**, from their use in totally face-to-face formats to fully-fledged online systems, including a combination of both (blended or hybrid models):

- **Face-to-face, with no or little use of DT**: The teaching-learning (e-learning) process is facilitated by the teacher, who makes limited use of digital technologies in terms of time and frequency, and focuses activity in the classroom.
- **Face-to-face, with intensive use of DT**. The e-learning process is facilitated by the teacher, who uses digital technologies during the lesson, and in the physical classroom.
- **Blended or hybrid**. The e-learning process takes place through both the teacher and technology. The student learns both face-to-face and outside the physical classroom (>25 %), with some degree of learner control over time, place and pace.
- **Online**. The e-learning process takes place solely using technology. The teacher and the student interact remotely, outside the physical classroom. This format usually requires an internet connection and the use of digital devices. It should be differentiated from distance education, which has traditionally encompassed correspondence courses, instructional television and videoconferencing.

The range of educational methods that use digital devices in general and mobile phones in particular is very wide, as can be seen in the Figure 3.

FIGURE 3

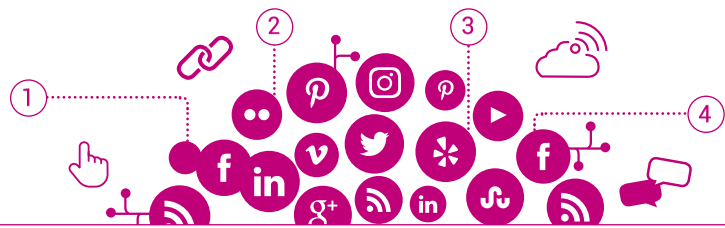
ICT and its forms

FACE-TO-FACE LEARNING WITH ICT

Education takes place in a classroom, this being the traditional form of teaching, where the learning processes involve the teacher and the student. New methodological strategies are implemented aimed at incorporating the use of ICT, as part of a face-to-face approach to learning that does not involve the use of virtual learning.

E-LEARNING

In e-learning, the teacher and the students are physically separated by space and time. There can be synchronous communication, in which teacher and students coincide in real time, through online tutorials and video conferences. Asynchronous communication, in which there is no real-time interaction, can also be established through forums, blogs, wikis, e-mails and e-portfolios.



B-LEARNING

This form of learning (blended learning) is a combination of face-to-face and remote learning, whereby there is an alternating physical separation between the teacher and the student, also known as a semi face-to-face approach. It is also called hybrid or mixed-mode instruction and uses classrooms on the one hand and educational platforms (Blackboard, Moodle) on the other, using existing online materials.

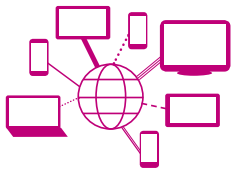
C-LEARNING

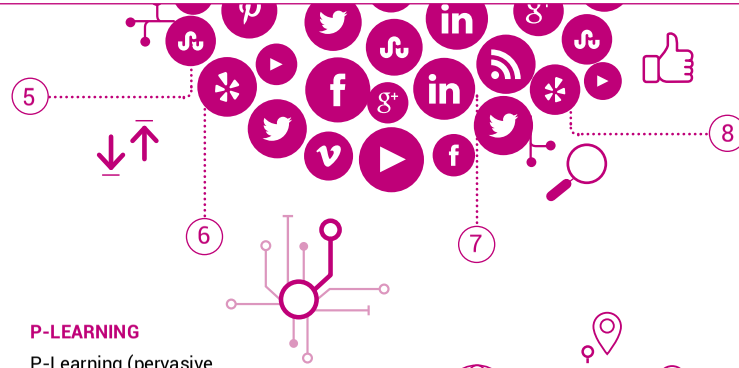
It is a cloud-based learning space. It refers to any kind of learning obtained using social media with open spaces for communication and collaboration. It is based on the integration of a collaborative working group that is not necessarily in the same room or virtual space synchronously, and thus proposes a set of highly beneficial tools in terms of asynchronous learning. Learning is extended to virtual reality tools (Second Life and OpenSim), social media (Facebook, Twenty, etc.), microblogs (Twitter), blogs, etc.

>>>

M-LEARNING

Mobile learning enables the user to learn from anywhere and at all times, as learning is achieved through mobile or portable devices.
This method allows the user to access their learning material from wherever they are (at home, at university, at work) and to pick it up right where they left off, thus following a continuous and flexible process.





P-LEARNING

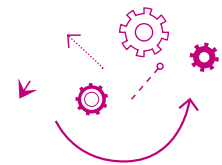
P-Learning (pervasive learning) is personalised learning available in different educational settings. It can take place in formal classrooms, or within courses based on new technologies in accordance with the education and learning needs identified.The learning process can be guided or a self-directed process.
An example of this form could be xMOOCs, a variant of MOOCs (Massive Open Online Courses), where conventional courses are taught simulating the pedagogy of classroom technology.

U-LEARNING

U-Learning is also called ubiquitous learning, which means that learning takes place outside the classroom environment, i.e. the information the user needs is available on different channels at the same time, which allows the available information to be accessed and retrieved from wherever the user may be.

T-LEARNING

In T-Learning (transformative learning), which is based on global learning, classes take place in the physical space of the classroom, which include e-learning platforms, digital television, social media and personal learning environments. It is here where the user's interest in self-directed rather than guided learning will be stimulated, using a variety of information sources and content.



Source: http://ticyrea.blogspot.com/2015/01/las-tic-y-sus-modalidades.html

Non-face-to-face, fully online methods have developed mainly in higher education, while in early childhood, primary and secondary education, digital technologies have spread within mainly face-to-face methods.

As a result of the COVID-19 pandemic, remote instruction unexpectedly stormed into compulsory education with unsatisfactory results for the most vulnerable groups (Goldhaber *et al.*, 2022), while hybrid models started to emerge as a worthwhile option that can combine the benefits and potential of face-to-face and virtual learning (Bettinger *et al.*, 2022).

Flexible or hybrid learning as an emerging trend: A brief overview

Flexible, adaptable, intensive, user-friendly and even entertaining: These are the characteristics of blended learning (or b-learning), according to Iñiquez de Onzoño (2019), which combines online learning with face-to-face classes. The advantage of online learning is that it can keep up the learning momentum by adapting to the student's circumstances. It also allows for greater interactivity with other participants. Hybrid approaches, both in upper primary and throughout compulsory secondary education, post-compulsory secondary education, higher education and continuing education, are the future. Nevertheless, there are still some analysts who downplay the importance of online learning or who argue that there is no substitute for face-to-face learning.

The blended approach combines face-to-face teaching at various points in the programme, providing a counterpoint to the personal rapport between participants and the teacher. The online sessions are made up of synchronous sessions held via videoconferencing, and there are also discussions in forums and chat rooms. This variety of teaching methods is adapted to the needs and availability of the participants and is conducive to interaction, both in the classroom and at school. The learning circle is completed through the use of multimedia teaching methods, along with interactive case studies and simulations that can be accessed from mobile platforms.

Interestingly, most educators with experience in hybrid approaches acknowledge that the results are as good as, or even better than those resulting from traditional teaching (Allen and Seaman, 2015). In general, resistance occurs among those who are unfamiliar with it: around 80% of teachers with no experience of online teaching claim that it is less effective than face-to-face teaching. Regardless of the claims, educational institutions offering hybrid courses, which combine high-quality online classes with traditional classroom teaching, are growing rapidly.

It seems logical that hybrid learning will play an increasing role in executive education in cases where participants are unable to attend classes face-to-face. So the key issue is: what percentage of face-to-face learning and what percentage of online classes is optimal to maximise learning? Obviously, achieving the right mix of online and classroom teaching will depend on the programme's objectives, the participants' profile, the content, the skills and abilities to be developed, and even the cost, infrastructure and capacity of trainers and teachers to teach online and in this mode. There are different degrees of hybrid learning analysed according to Barro, Cobo, Sánchez and Muñoz-Najar[21] (2021) published by Education for Global Development (Bancomundial.org).

In any event, the race to integrate education and technology began some time ago, and a large number of schools and universities are making rapid progress. Against this backdrop, **the role of the teacher will become decisive, moving from the role of driver of the learning process to manager and facilitator of online and face-to-face modules**. The new generation of teachers, besides having in-depth knowledge of their subject areas, will also need to coordinate online teaching methods, use educational platforms and handle information and multimedia materials, as well as optimise the use of the vast amount of digital content available worldwide. What we would also add is they will also need to be able to

21. For further information, see https://blogs.worldbank.org/education/what-hybrid-learning-how-can-countries-get-it-right

tutor and **provide personalised student follow-up**, providing appropriate and relevant feedback in each case.

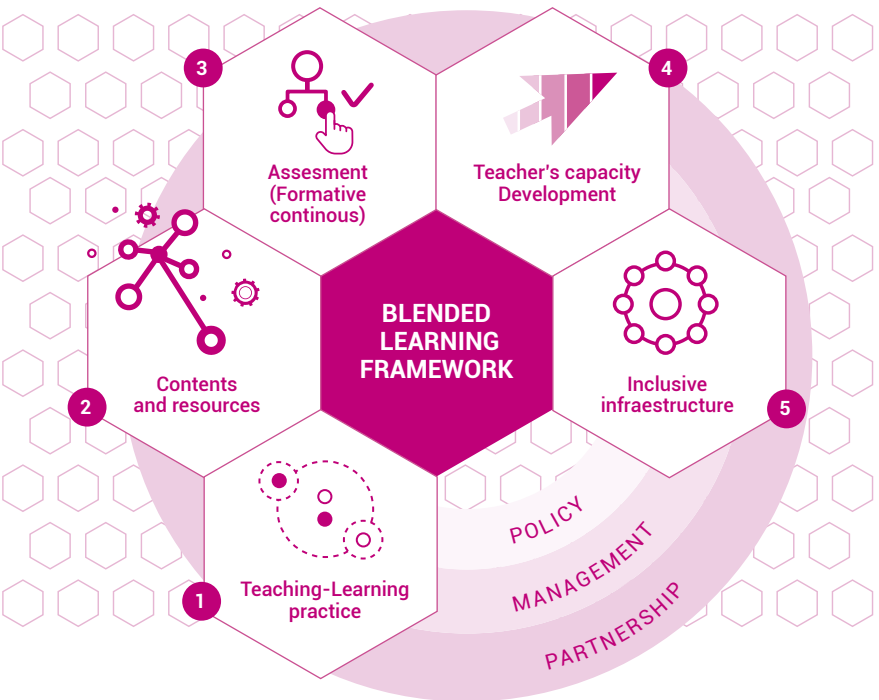
According to Onzoño (2019), **the available evidence reveals that, between these approaches, hybrid learning is more effective than online learning, and can also be more effective than exclusively face-to-face if a strong teacher presence is ensured and a good balance is struck between asynchronous activities (which promote learning and reflection and are more flexible) and synchronous activities (which are conducive to student involvement and motivation)**.

In conclusion, and following the latest contributions of the World Economic Forum on the learning of the future (2021),[22] the traditional education system is obsolete in the "new normality" brought about by COVID-19, where the combination of face-to-face and virtual learning is already a fact and where we need to talk about Education 4.0 in the context of the Fourth Industrial Revolution. In this regard, a first Blended Learning Framework is proposed, as shown in the Figure 4.

22. For further information, see https://www.weforum.org/agenda/2021/05/5-questions-to-ask-now-to-shape-blended-learning-of-the-future/

FIGURE 4

Blended Learning Framework



KEY ELEMENTS

1. **Teaching-learning practice**
   Prepare learners for the future with 21st century problem solving skills through synchronous and asynchronous interactions.

2. **Content & Resources**
   Accessible, aflordable, reusable, interactive, and personalised educational contains and resources for all.

3. **Assessment (Formative/Continuous)**
   Real-time, performance based formative assessment through use of AI-driven tools.

4. **Teacher's Capacity Development**
   Blended and personalised Continuous Professional Development opportunities to prepare for Education 4.0.

5. **Inclusive Infrastructure**
   Digital friendly Physical Environments: Open, indusIve and accessible leaming Spaces for all.

ENABLING FACTORS

Policy
Comprehensive and practilioner- driven policy.

Management
Real-time and data driven monitoring and mentoring.

Partnership
Public-prlvate-people partnership.

Source: https://www.weforum.org/agenda/2021/05/5-questions-to-ask-now-to-shape-blended-learning-of-the-future/

Towards a digital education that bridges divides

The crisis triggered by the COVID-19 pandemic highlighted the **shortcomings of many education systems in terms of the digital resources available and the capacity of teachers, students and schools to learn and educate using technological means**. During the lockdown, emergency solutions were improvised without proper preparation or resources for schools, teachers, students and families. Most schools lacked the criteria required to implement an online learning system from one day to the next, to organise and execute remote activities or to provide the necessary support and guidance to all students. Virtualisation represented an enormous effort for teachers, who had to virtualise often without having the necessary resources, and had to improvise work strategies, online platforms, assessment mechanisms and a new way of relating to students and families when face-to-face contact was no longer possible.

The physical absence of the school brought educational and social inequalities to the fore and exacerbated them, as not all families had access to equipment and connectivity, or enjoyed the same possibilities to provide adequate educational support for their children. As a result, the closure of schools has affected students' development and learning in different ways, **hitting the most disadvantaged students particularly hard**.

One of the lessons learned is that **digital competence is essential for living in today's world and that all children should have equitable access to it**. Today, knowledge and competence in digital tools and processes should be part of the core basic skills that any citizen should have to be able to develop as a person; to participate actively in society and to exercise their fundamental rights. As defined by the UN, **digitalisation is indispensable to ensure quality and inclusive education** and to achieve the 2030 Sustainable Development Goals.[23]

23. For further information, see https://en.unesco.org/themes/ict-education/action

In this regard, UNICEF's latest guidelines and priorities (2022) on sounding out the essential components of digital learning[24] and outlining steps for educational recovery through innovative and equitable solutions, centred on students and teachers, are also relevant in this regard. Again, this is a major challenge, as the latest available data shows that one in five young Europeans have not yet acquired a basic level of digital skills,[25] and therefore do not have sufficient skills to be able to participate fully as citizens in the digital era.

For its part, the UN (2022) has described the impact of the digitalisation of education on the right to education.[26] It highlights issues concerning digital equity in a new framework of accessibility, availability, acceptability and adaptability.

It is often believed that digital inequalities are limited to the **different possibilities of accessing equipment or connectivity**. But today we know that **the digital divide also lies in the ability to use and benefit from digital technology**. According to the report by the Ferrer i Guardia Foundation (2020), the digital divide represents three dimensions of digital inequalities:

1. **The access divide**
   As mentioned above, the possibility of accessing different technology resources, i.e. access to the appropriate devices, the corresponding software and internet connection, is probably the most basic gap, first and foremost, but with the simplest solution, as it can be easily solved in material terms with the provision and distribution of connectivity infrastructure, hardware and software, from the government.

24. For further information, see https://www.unicef.org/media/132101/file/Pulse%20Check.pdf
25. For further information, see https://education.ec.europa.eu/focus-topics/digital-education/action-plan
26. For further information, see https://www.ohchr.org/en/documents/thematic-reports/ahrc5032-impact-digitalization-education-right-education

2. **The usability divide**
   Also known as the secondary divide, as it is related to the concept of understanding technology as a new language, as a tool and as a new space for socialisation (Prats, 2008), i.e. the ability to use technology with digital skills, abilities and competence. Having a device does not necessarily equate with knowing how to use it and how to fully harness the (educational) possibilities offered by digital culture. Therefore, providing access and equipment alone does not suffice, but training teachers, students and families to understand the current information ecosystem and to use digital tools and devices in a more meaningful, healthy, responsible, ethical, critical and secure manner is also necessary. And we can already say here that, according to the findings of the studies mentioned below, this divide was the most striking and revealed the confusion experienced at home: families encountered great difficulties when it came to assisting and supporting their children digitally in the use of technological devices.

3. **The utility divide**
   Also known as the third or educational divide. Beyond the ability to use technology, strategies need to be developed to enable beneficial and empowered use of digital tools. This "utility" is much more dependent on the cultural and relational capital at hand. And it is precisely that which is nurtured in schools. Therefore, the utility divide emerges in those schools that have projects that incorporate and use technology in a regulated, organised manner, in line with the school's vision, in a healthy and secure manner, compared to those schools that do not. It is related to the commitment to believe in teachers' digital competence; to understand that our students live in a digital and collaborative world inside and outside the classroom and that the issue of technology must be addressed, not through banning it, but through critical, healthy and secure use, and on the basis of a digital culture to prepare them for a changing and highly technological society.

The digital divide is, in reality, a series of cracks that prevent part of the student body, and citizens in general, from appropriating and making qualitative use of digital tools. **Digital inclusion, therefore, involves rolling out measures aimed at reducing the existing cracks, i.e. those that hinder access but also digital use and appropriation.**

A process carrying risks if not carried out according to inclusion and equity criteria

As much as digitalisation brings many new opportunities, it also carries risks. Although access to digital devices and the internet is becoming increasingly widespread, there are still many children of school age who are unable to follow online instruction from home, who do not have adequate spaces for this purpose, who do not have the support they would need, or who do not know how to use digital technologies responsibly and securely.

As we have seen, the closure of schools and the spread of improvised online education during the COVID-19 health crisis brought to light the shortcomings and difficulties of online learning and education, and, above all, showed that the closure of schools hits the most disadvantaged students especially hard, with losses in cognitive and non-cognitive learning and skills acquisition (Di Pietro, G., Biagi, F., Costa, P., Karpiński Z., Mazza, J, 2020).

Although no one was prepared to properly cope with this situation, **some countries that had already developed strategic plans for the digitalisation of education** (such as **Estonia**, **Denmark** and **England**) **were better able to withstand the closure of schools**. Likewise, those **schools with more experience in online education were able to keep up their educational activity with greater reliability during the lockdown**.

We have learned from experience that digitalisation can further exacerbate existing inequalities when introduced without the necessary preparation

(infrastructure, resources, skills, pedagogy, schools' digital culture, etc.) and when there is no intensive and constant follow-up and support for students, especially those from the most vulnerable backgrounds. **Equity and inclusion become paramount in the planning of any digital education strategy**.[27]

It is therefore important to bear in mind what we mean by the level of digital inclusion, i.e. according to the European Commission,[28] we refer to citizens at risk of digital exclusion as those who do not have access or basic digital skills. In this sense, socio-digital inclusion can be broken down into two main areas:

a) **Digital access:** Citizens who do not yet have the necessary mechanisms or tools to ensure access to the internet, ICT and other technologies. In other words, it should be noted that, to achieve digital literacy among citizens, people need to have the necessary mechanisms or tools to ensure access to the internet, ICTs and other technologies. Thus, access is a key element to ensure citizens' digital inclusion.
b) **Digital literacy:** Citizens who do not have basic digital skills and do not yet understand the opportunities and benefits that ICTs provide and how their use can improve their quality of life. Digital inclusion is based on digital literacy, which is not only about knowing how to use a digital device, but also about understanding how its use can make our lives better or make us more productive and efficient.

Ultimately, digital inclusion will establish citizens' basic digital literacy as a basis for addressing digital empowerment. However, **there is currently no index or scale that allows this prior assessment of digital**

27. For further information, see https://obrimeducacio.cat/blog/pol%C3%ADtiques-dispositius-electr%C3%B2nics

28. For further information, see https://digital-strategy.ec.europa.eu/en/policies/digital-inclusion

inclusion to be made. We can obtain, as in the case of the COTEC[29] study, the data provided by the population's digital skills indicator integrated in the human capital dimension of the DESI[30] (Digital Economy and Society Index) synthetic index produced by the European Commission, as well as the microdata from the Spanish National Statistics Institute's Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H Survey).[31]

29. For further information, see https://cotec.es/proyecto/competencias-digitales/51a02688-a11f-4fee-b047-41288ea0e0ac

30. For further information, see https://administracionelectronica.gob.es/pae_Home/pae_OBSAE/Posicionamiento-Internacional/Comision_Europea_OBSAE/Indice-de-Economia-y-Sociedad-Digital-DESI-.html

31. For further information, see https://www.ine.es/prensa/tich_2022.pdf

3 Hybrid school: A flexible model offering personalisation and equity

Various international organisations such as UNESCO, OECD and UNICEF are urging governments to combat the digital divide and push for significant progress in educational digitalisation to improve learning and educational personalisation through investments in infrastructure, digital education and training, and the development of hybrid learning models.

Hybrid learning is currently the solution being tested in most countries to deal with one or more years of partial lockdowns. Faced with possible interruptions and partial lockdowns, strategies are being devised that alternate face-to-face and online instruction to deal with the uncertainties of the following year[32] and be prepared to reach and cover the entire student body (UNESCO, 2020). **The real opportunity offered by hybrid school is that it allows for a progressive shift towards an inclusive and quality learning model**.

As we have seen briefly above, hybrid or blended learning[33] combines sessions in which teachers and students get together in the same space and time (face-to-face) with interaction and work sessions in virtual environments, in accordance with the learning needs of the class or the subject to be taught (Kowalski, 2020).

32. See https://www.mckinsey.com/industries/public-and-social-sector/our-insights/back-to-school-a-framework-for-remote-and-hybrid-learning-amid-covid-19

33. For further information, see https://www.codlearningtech.org/PDF/hybridteachingworkbook.pdf

In reality, it is not a new concept, since education has traditionally combined different types of methodologies: lectures, exercises, tutorials, internships, etc. The newness of the term[34] is due to the fact that the educational and teaching space is broadened and time is modified: students do not need to carry out the task in the same place and time, but learning activities can be carried out in virtual spaces. In this way, learning becomes more flexible and the possibilities for activities, communication among students, and between students and teachers, as well as for monitoring students' work, increase (Christensen, 2015).

The main challenge of this education model is that it needs careful planning that integrates the face-to-face and online parts, as a continuum. And the same applies to the moments of synchrony and asynchrony, establishing the links that will allow the activities carried out in one setting and time to be connected to the others. We recommend careful reading of the Blended Learning Implementation Guide 3.0 [35] offered by different international initiatives in support of educational technology (DLN, The Learning Accelerator, Getting Smart, etc.).

Opportunity for personalising and transforming education

During the 20th century, the concept of learning underwent major changes. Today, learning is seen as building horizontal connections, i.e. a key aspect of learning is students' ability to see connections and horizontal connectedness between the formal learning environment, the wider environment and society (Dumont and Instance, 2010).

"Authentic learning", which promotes these connections and learner autonomy, also fosters deeper understanding. Thus, hybrid learning models

34. For further information, see https://files.eric.ed.gov/fulltext/ED566878.pdf
35. For further information, see https://bplawassets.learningaccelerator.org/artifacts/pdf_files/BLIG-3.0-FINAL.pdf

open up pedagogical opportunities to personalise education, through flexible action that is paedocentric (focused on learning through hands-on experience) and socialised (combining face-to-face and remote peer learning), with individual follow-up and fostering students' autonomous learning.

Several studies (Usart, 2020) confirm that hybrid is the model of educational digitalisation that yields the best results at primary and secondary levels. It can prove even more effective than purely face-to-face learning, if an endeavour is made to redesign activities with a more active and student-centred approach.

One of the advantages of this education model is that it allows the best of both systems to be combined. Thus, face-to-face learning fosters group cohesion and identity, promotes collaboration and encourages student engagement; while virtual and asynchronous learning allows for more reflective student participation, offers greater flexibility in location and time, and shows better learning outcomes (especially in later years). The combination of the two allows for the inclusion of more authentic and varied instructional materials and innovative learning activities.

The versatility of this model leverages the advantages of face-to-face and online learning, according to the needs and characteristics of each age group. With a hybrid model, older students can personalise their learning, understand what they want to learn, what they like and what kind of support they need. Virtual learning platforms also allow these students to learn at their own pace and this gives them more flexibility during the day. On the other hand, younger students have more difficulties, as they have a lower degree of autonomy and, in these cases, teacher support in the use of e-learning platforms is essential.[36]

36. See https://www.edweek.org/ew/articles/2020/03/23/how-effective-is-online-learning-what-the.html

However, it is a method that also has its risks, especially in terms of the students' ability to manage time and self-regulate their learning. Therefore, **to achieve positive results, it must include intensive tutoring by the teacher**, who must be able to control the pace of learning and the time devoted by the students. Face-to-face learning is still the best way to guarantee the education of students from vulnerable backgrounds and who have less resources and support at home, as they may find it difficult to keep up with the pace and maintain the educational connection. For this reason, in hybrid school models, it is particularly important for teachers to closely monitor and support these students.[37]

According to Moreno (2020), **the basic principles to be taken into account when developing a personalised teaching-learning and assessment model**, and which should guide us towards a hybrid student-centred approach, are as follows:

a) **The school** should be a promoter of personal initiative and autonomy. It must recognise and accept students' capacity to make decisions about their own teaching and learning processes or rules of coexistence, and work with them to develop this capacity. It should also incorporate the student voice in the design and development of teaching, learning and school activities.

b) **The organisation** must ensure that teachers, students and families have a voice in decision-making and hold responsibilities. Teachers should share information, teaching and responsibilities, and collaborate in the holistic education and progress of each student. All staff should be involved in education.

c) **The curriculum** should be flexible, diversified and a vehicle for people's transformation. Goals should be agreed in terms of

37. See https://www.edweek.org/ew/articles/2020/03/23/how-effective-is-online-learning-what-the.html

competences. Content should be key, applicable to different situations and problems and ultimately adapted to the context and uniqueness of the student. Learning that enables further learning is important.

d) **Methodologies and strategies** for building and integrating knowledge should be varied. They should be chosen based on competences, objectives, needs and context in accordance with the UDL (Universal Design for Learning) framework, and it should be ensured that they accommodate differences in the classroom.

e) **Assessment** should be part of learning and evaluate the student's progress and effort rather than their performance. It should be continuous, based on metacognition, recognition of error and clear and agreed objectives. It needs to be diversified with self- and peer assessment, while marking should be left to the end of the process, when there is evidence of learning.

f) **Teachers** should encourage reflection on learning and should connect and integrate it with real life and understanding of the world. They should have full confidence in the potential for growth and progress of each of their students and show this, for example, by acknowledging each small achievement and with a friendly and optimistic attitude.

g) **Personal guidance** should be available. Individual tutoring aimed at self-awareness and the discovery of talents beyond purely cognitive ones, so that each student achieves maturity and holistic development. It needs to include support in the development of critical thinking and a questioning mind in preparation for adult life.

h) **School-family collaboration** must take place. Families should be actively involved in the education and decision-making of their children in conjunction with teachers. They should have the

responsibility to cooperate with the school so that the school has better information about the student's profile and to provide their children with moments, experiences and guidance in certain aspects that may require individual learning, both to overcome difficulties and to develop strengths. Parents should be involved in the organisation of school events: cultural, recreational, social and academic.

i) **Technology** should facilitate the provision of support for each student both in their school and learning trajectories. In turn, it can be of great value to teachers through curriculum, assessment and learning management tools, cooperation between the teaching team and communication with families.

Hybrid school can lead to a new, more flexible, inclusive and diverse education. Learning becomes more flexible and the possibilities for activities, communication among students, and between students and teachers, as well as for following up on students' work, become more diverse. There is a growing capacity to respond and adapt the learning process to the diversity of students' rhythms, levels, interests and needs.

In short, an educational model is needed which is capable of reimagining human connections,[38] emphasising the reconceptualisation and reinvigoration of face-to-face learning, harnessing the potential of digital technologies. UNESCO[39] adds that hybrid approaches are an invitation to reflect on the education of today and of the future, so that the new generations can be masters of their own fate.

38. For further information, see https://www.worldbank.org/en/topic/edutech/publication/reimagining-human-connections-technology-and-innovation-in-education-at-world-bank

39. For further information, see http://www.ibe.unesco.org/sites/default/files/resources/ocho_claves_sobre_los_modos_hibridos_en_educacion_espanol.pdf

Opportunity for bridging divides, equipping schools and community settings with technological equipment made available to students

The combination of face-to-face and online learning **breaks with the traditional organisation of schools, which must restructure spaces, times, groupings and activities as best suits them, both inside and outside the school premises**.[40] This inevitably involves:

- **Greater teacher collaboration and coordination** to organise schools, their activities and the management and coordination of teams.
- **Coordination and involvement of the community** around the schools in the organisation of educational activity.
- **Families must also be part of the solution**. Training, communication and support for families play a key role in enabling them to support their children's learning.

Several countries have moved towards an education model that connects schools to their territory and have tapped into municipal and community resources to support students who need space, equipment and support to carry out digital tasks.[41] In addition to devices and connectivity for schools and students, municipal and community resources must be incorporated to support the most vulnerable students who need space, equipment and assistance to carry out digital tasks. **A solid strategy for equity must include the creation of a network of facilities in neighbourhoods to foster and support digital learning, and to collectively prevent students from becoming excluded**.

40. For further information, see https://blog.enguita.info/2020/06/un-decalogo-para-la-vuelta-la-escuela.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+CuadernoDeCampo+(Cuaderno+de+campo) i https://theconversation.com/como-organizamos-la-vuelta-a-la-escuela-139064

41. For examples, see https://restart-reinvent.learningpolicyinstitute.org/

Rethinking times and spaces using a hybrid approach leads to the opening up, in a literal sense, of schools, which become part of a network of facilities prepared to offer a diversity of educational times, both face-to-face and online, broadening educational opportunities as never before. **Spaces prepared to support autonomous, cooperative and participatory learning for students, open to the inclusion of families, which promotes teacher collaboration and finally breaks away from the traditional concept of one teacher-one classroom-one hour-one subject**.

In this regard, and with a view to further exploring this point, we recommend reading the UNESCO report (2021)[42] on the different possibilities of hybrid learning as a model that also seeks to connect and establish a link with the different "spaces and times" of learning.

42. For further information, see https://broadbandcommission.org/wp-content/uploads/dlm_uploads/2021/09/Digital-Learning-Report-Broadband-Commission.pdf

4 Objectives and priorities for a hybrid school based on quality and equity

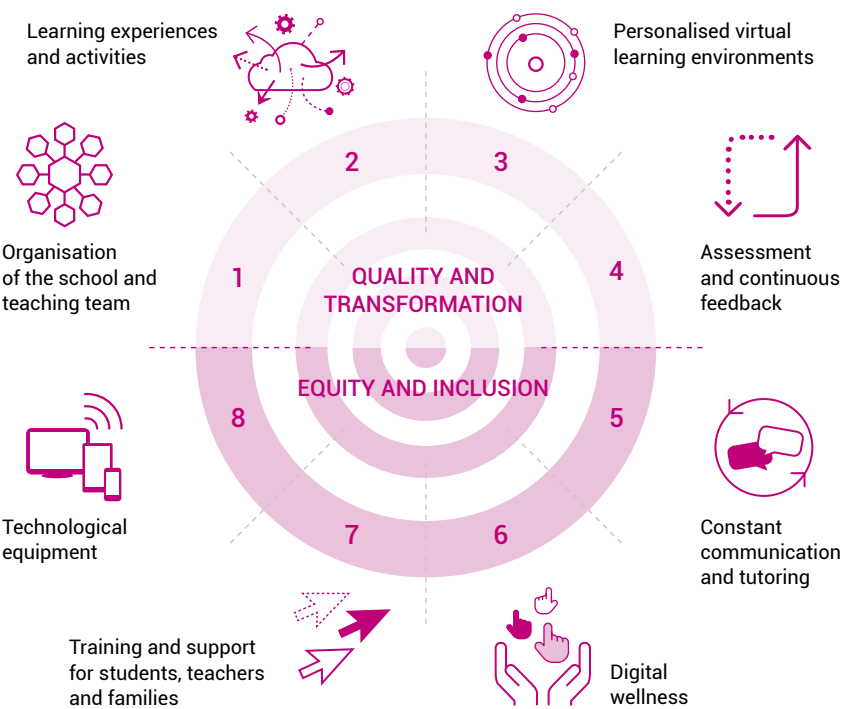
The development of an inclusive hybrid school framework (for all) that allows us to move forward in terms of equity (justice) and quality (character) calls for measures to be taken in **eight major strategic lines of action**:

1. **Schools and teaching teams organised for hybrid school**. Train, train and support teachers so that they can incorporate digital technologies into their *day-to-day educational practices*, thus improving their internal coordination and communication with families.
2. **Authentic learning experiences**. Design *activities with an experiential approach*, which offer students meaningful learning.
3. **Personalised virtual learning environments**. Put virtual learning environments in place that facilitate *collaborative learning and communication amongst the teaching team and with students and families*.
4. **Diversified assessment and continuous feedback**. Develop *formative, continuous and competency-based assessment* models, diversifying the tools for monitoring and continuous feedback to ensure equity and quality of learning.
5. **Constant monitoring, communication and tutoring**. Ensure *constant monitoring, communication and tutoring* to guarantee the connection and personalised assistance for the student.
6. **Digital wellness, safety and autonomy**. Prevent the risks associated with the use of technologies and promote *wellness, safety and autonomy* in digital uses.

7. **Training, support and capacity development for teachers, students, families and the community**. *Train teachers and students in digital skills and competences, as well as families and community agents* with whom we collaborate in a network, so that they can provide appropriate pedagogical and technological support to students and can actively participate in the dynamics of hybrid learning.
8. **Technological equipment**. Have the *appropriate infrastructure, guaranteeing technological equipment, connectivity and resources and materials* to be able to carry out educational work in any digital model, both inside and outside schools.

FIGURE 5

Strategic objectives for hybrid learning



Source: authors' creation.

Based on this approach, **we outline below the main objectives, priorities and measures that should be undertaken to develop hybrid digital education during compulsory primary and secondary education**.

Schools and teaching teams working towards hybrid school

The changes that need to be made by schools and teachers call for a new culture of co-operation and co-ordination within schools. During the pandemic, schools that showed leadership on the part of the management team, good coordination strategies and cooperation among the teaching staff were able to deal with the situation more effectively (Trujillo, 2020). The fact is that educational digitalisation entails significant changes in the way a school works, in consensus within schools and with different community stakeholders. As defined by the DigCompOrg framework, deep **integration of digital technologies requires significant educational innovation and implies a process of planning for change on three basic dimensions: pedagogical, technological and organisational**.

If the coordination of activities and educational teams is fundamental in a face-to-face model, it is essential when carried out in digital environments. Design, planning and organisation based on face-to-face and synchronous learning must change substantially when virtual and asynchronous learning is introduced.

Such a change requires **defining, designing and planning the digital dimension of each school**, i.e. how the school organises itself, its activities and the management and coordination of teams in a hybrid environment. **Tools such as assessments of the school's digital maturity can help educational organisations to shift towards digitalisation in a systematic and strategic manner to become digitally competent institutions**, as well as to identify the gaps to be filled and the bottlenecks to be overcome. Key aspects such as the school's leadership and

governance (Edutech Cluster, 2020) have an impact on such sensitive issues as the planning of activities and associated timetables, the organisation and coordination of teaching teams and the resources and spaces needed to carry them out, as well as the processes of awareness-raising, communication, promotion and exchange with teachers, families and students. It is therefore neither a trivial nor a technical matter; **the management of organisational change to work under hybrid models demands a very cultural and adaptive change of outlook**.[43]

For its part, in a hybrid organisational framework, **having virtual environments is a key element for the coordination and communication of the management team and the teaching team to be able to communicate better with families**. The teaching team's coordinated action, the monitoring of asynchronous and synchronous tasks, workload or tutoring and student follow-up can only be offered in a joint and coordinated strategy. Basically, we are referring to the organisation's own knowledge management capacity using digital devices and thus promoting the reflective and documented practice of everything that is carried out, as a principle of quality.

Finally, **a key figure is the school's Digital Strategy Committee** assigned the role of "developing the school's digital strategy" is required. Until recently, a school's learning and knowledge technologies (LKT) manager was mainly involved in technical responsibilities (guaranteeing technological equipment, configuring and installing software and hardware, and other technological coordination and assistance tasks). With the aim of the former establishment's LKT team taking on a greater role in the pedagogical design of the school's activity and given the introduction

43. For further information, see https://fundaciobofill.cat/blog/escola-hibrida-mes-enlla-ordinadors-internet

of digital competence in the primary and secondary curriculum decrees (Decree 119/2015 of 23 June and Decree 187/2015 respectively), their duties must be extended and their perspective must also be changed.

Objective 1.1. Design the school's digital strategy aimed at educational transformation.

Making digital technologies a key part of teachers' professional development and the achievement of Digital Competence for Teachers (initial training, continuous training and accreditation of teaching merits) should be one of the primary objectives as a system, as already set out in the Digital Education Plan. However, this training plan must be closely linked and related to the digital strategy proposed by each school (See strategic objective **Training, support and capacity development for teachers, students, families and the community**). This digital strategy should enable the school (digitalising the organisation) to develop its digital maturity, understood as a basic component of transformation, as it is there where innovation and transformation projects can be implemented in a more effective manner, with LKT as a driver of change (Edutech Cluster, 2020). For schools to develop their digital maturity, an assessment must be made of each school's stage in the process. Identifying schools' **baseline situation**, their strengths, weaknesses, threats and opportunities, should allow them to design **the roadmap to develop the organisation in a hybrid or flexible learning model**.

Measures

○ for the education authority ● for the school

1 Steer the school's digital strategy based on the assessment of its digital maturity

To guarantee the organisation's digitalisation process, the school — together with the management team and the school's Digital Strategy Committee — must lead the design and assessment of the school's digital maturity aimed at educational transformation (Edutech Cluster, 2020) and draw up a roadmap that adds to the school's Digital Culture Document.

- **The assessment of digital maturity** allows the school's strengths and weaknesses to be identified in relation to the implementation of technologies and to better focus its Digital Culture Document. This assessment should include data on the uses and integration of digital technologies in the school in aspects such as leadership and governance, curricular uses, assessment and guidance; environments, resources and tools; digital competence for teachers, students and families, and infrastructure conditions.
- The school's assessment should help to define a **roadmap** with regard to the objectives set, the timeframe for their achievement and how they will be evaluated, as well as the specific actions that will be rolled out. The roadmap should contribute to the school's Digital Culture[44] Document, which defines the school's organisation and management[45] based on the following dimensions and areas:

44. See https://documents.espai.educacio.gencat.cat/IPCNormativa/DOIGC/PEC_Cultura_digital.pdf

45. See http://cgtense.pangea.org/spip.php?article5780#.X3ApE5MzYWp

Schools and teaching teams working towards hybrid school

1. **Organisation**
   a) Leadership
   b) Governance of the process

2. **Pedagogical practice**
   a) Teaching and Learning Environments
   b) Resources
   c) Tools
   d) Creation and management of resources and tools
   e) Evaluation
   f) Guidance

3. **Culture of change**
   a) Professional development
   b) Collaboration and networking

4. **Infrastructure**
   a) Infrastructure services
   b) Devices
   c) Spaces

- To carry out this process, schools must be able to rely on **the support and guidance of local digital advisors**. The advisors need to incorporate this personalised advisory role in the assessment of the school's digital maturity and the design of its roadmap. For example, weekly sessions can be planned to monitor and develop assessment processes.
- The **design of the school's digital strategy** (former LKT Plan) is the plan that should govern the core guidelines of the educational innovation and transformation plan and should be linked to the school's education plan and annual general programme. In this

sense, the school must take into account the whole participation process with teachers, students and families, as well as the feedback and communication with each of the agents involved.

- The **Digital Strategy Committee** is responsible for:

  a) Promoting, developing and rolling out the digital technology plan and following up on it within the framework of the school's education plan.
  b) Periodically revising the school's rules of organisation and operation to bring them into line with uses and regulations on privacy and data protection that the school adopts in relation to digital technologies and personal devices.
  c) Promote the use of digital technologies in curriculum programmes with an inclusive approach.
  d) Ensure that students' digital competence is implemented in the curriculum.
  e) Promote the use of digital technologies in educational practice in the classroom, especially in STEM activities.
  f) Ensure optimal use of the school's technological resources.
  g) Ensure the digital inclusion of all school students, both in terms of access to technological equipment as well as to sources of information and communication.
  h) Promote the application of protection measures against inappropriate content in internet access, both in terms of the school's equipment and students' data.
  i) Promote the school's online presence wherever possible, using free software platforms that comply with data privacy (portal, VLE, blog, etc.).
  j) Develop the school's digital communication system with families and ensure compliance with said system.

k) Ensure compliance with data privacy and security policies and the school's digital infrastructures.

l) Ensure that families receive information about the school's rules regarding digital devices (uses, parental control, etc.).

m) Ensure that the school's digital materials, which are accessible online, respect the copyright and licences for use of the different constituent elements (images, diagrams, texts, audio, video, etc.), giving priority to the use of materials with free licences or licences that allow shared use, and ensure the use of plural language that respects gender diversity.

- A clear **distinction must be made between the tasks of ICT services** (updating, configuring and fine-tuning the school's existing equipment and different technological devices and technical assistance for teachers and school management) **and those carried out by the school's Digital Strategy Committee** (of a LKT nature, with teaching support and a clear pedagogical focus and commitment to the use of digital devices in the framework of the school teaching-learning processes).

Related links:

https://projectes.xtec.cat/edc-suport/

https://education.ec.europa.eu/selfie

https://educators-go-digital.jrc.ec.europa.eu/

Objective 1.2. Create virtual spaces that facilitate communication, coordination, the exchange of experiences and reflection on teaching practice.

The digital development of schools and the combined work of synchronous and asynchronous activities requires primary and secondary schools to have some kind of virtual environment as a tool for coordinating, organising and promoting the activity. In addition to acting as an organisational management system, it also acts as a channel for internal and external communication.

For the teaching staff, virtual spaces facilitate teamworking and the organisation of teaching activity, assignments and groups. It is an essential tool to ensure integrated management and decision-making. Given that it is also a matter of digitalising the organisation to facilitate the processes of educational transformation, the creation of a space that allows for the exchange of experiences, its corresponding documentation and reflection on teaching practice is crucial to ensure knowledge management.

This digital environment must also have spaces for communication with families to share information, prioritising the areas of health and emotional support and the learning objectives of their children, as well as their individual connection. (See strategic objective **Constant monitoring, communication and tutoring**).

Schools and teaching teams working towards hybrid school

Measures

○ for the education authority ● for the school

2 Select an internal and external management and communication framework

The school, together with its management team and Digital Strategy Committee, must select the virtual environment and manage its various sections in order to facilitate communication, coordination, the exchange of experiences and reflection on teaching practice.

- The structure and sections of the virtual communication environment should make it possible to **monitor** and **document the activities** carried out at the school and the interactions and decision-making of the different teaching teams.
- The school's Digital Strategy Committee should be provided with material and documentation to organise **internal training** days or seminars (within the school itself) on the most successful teaching activities and practices during the academic year.
- The school's Digital Strategy Committee should work in coordination with the heads of the Educational Resource Centres to network and **identify good practices and opportunities for inter-school projects**.

3 Document, collect and disseminate good practices

The education authority, together with Educational Resource Centres and different regional education services, should collect the most interesting educational experiences from schools that have been documented in virtual environments and make them available to the network and the educational community.

- It unlocks schools' educational talent, identifying diverse "expertise" in the area to build a map of experiences of educational transformation.[46]
- The Education Services should promote educational innovation conferences based on the experiences collected in order to stimulate the territory and create a network of schools and teachers.

4 Guarantee internal coordination to select information, which is communicated to families using the it manager or application

The school, together with the school's management team and its Digital Strategy Committee, must select the information and documentation that is worth communicating, publishing and sharing openly with all members of the educational community, especially with families and students (the agenda, updated information on educational measures and the priorities of educational measures). This guarantees transparency in the communication of the school's leadership and educational management.

- The school can incorporate communication tools with families associated with the management environments used, for example, the use of apps such as Dinantia (**https://www.dinantia.com/es/**)

46. See https://innovacio.xtec.gencat.cat/#/ and http://xtec.gencat.cat/web/.content/innovacio/marc_normatiu/documents/marc_dinnovacio_pedagogica.pdf

Designing authentic learning experiences

To bring effective hybrid models to fruition, **we need to change from an essentially transmissive model**, in which the student must undertake activities to reproduce information/knowledge, which is not always sufficiently relevant, **to other more competency-based models** where the proposed activities spark greater interest as they can be defined as authentic for students: the student has to answer (challenging) questions, problems or situations that require them to demonstrate proficiency in and coordination of a range of skills. In short, it is about giving assignments and/or digital projects based on an experiential approach that offers students learning experiences in context and based on authentic, real-life situations in their communities.

To address and design such authentic and challenging experiences in hybrid contexts, the latest report of the US Learning Policy Institute (2020) (Darling-Hammond *et al.*, 2020) confirms that, for these approaches to be highly effective, scenarios in which the teacher is just talking and presenting slides in front of a screen and the students are just listening need to be transcended**. It needs to be as interactive and authentic as possible, combining live interaction between students and teachers with interactive multimedia support materials, and with well-designed assignments and projects that students can do at school or at home**. Several studies on computer-supported distance learning (Means *et al.*, 2010) at compulsory and higher education stages, reinforced by other research (Bernard *et al.*, 2009), put forward the following guidelines:

a) Well-designed blended online teaching (hybrid model) can be as or more effective than face-to-face teaching by a single teacher in a single classroom.
b) Synchronous and asynchronous teaching should be combined strategically.
c) Students participate when they are aware of their time management and control the planning of the work to be done, i.e. they are

clear about what they have to do, with whom, how, by when and with what material.

d) Interactive materials are extremely important.

e) There should be frequent direct interaction with the teacher and with the wider group on meaningful topics.

f) Interaction should focus on problem solving, decision making, and idea development and creation.

g) Opportunities for formative feedback, reflection and revision strongly enhance their learning. Feedback from their teachers is key!

h) Self-regulation strategies and learning strategies should be taught.

Very often, and especially in secondary and post-compulsory secondary education, teachers, as experts in the subject they teach, tend to transmit knowledge already developed on the basis of their own mental frameworks, rather than encouraging pedagogical situations that make students aware of its complexity, to build it and synthesise it. That is why teachers at these stages should be especially oriented towards designing activities, projects or learning experiences that facilitate autonomy in terms of anticipating, planning and self-regulating students' actions (Sanmartí, 2020), i.e. that they are aware of what they are really learning and of the processes they set in motion.

Objective 2.1. Provide guidelines for the design, creation, use and evaluation of digital activities and tasks to foster the autonomy of all students.

The education authority should be able to provide guidance and processes for the design, creation, use and evaluation of digital activities and tasks to promote learner autonomy in an inclusive manner, together with model teaching proposals and/or examples of teaching units.

Designing authentic learning experiences

Measures

○ for the education authority ● for the school

5 Draw up a set of guidelines and teaching proposals for the design, creation, implementation and assessment of digital activities

The education authority should draw up a set of guidelines (as a practical manual) and teaching proposals for the design, creation, implementation and assessment of digital activities or tasks that promote competency-based learning in a hybrid learning model. Learner autonomy should be prioritised and inclusion should be guaranteed on the basis of the principles based on the UDL.[47]

The fundamental guidelines of these principles are summarised as follows:

a) Provide various options for perception
b) Provide options for language, mathematical expressions and symbols
c) Provide options for understanding
d) Provide options for physical interaction
e) Provide options for expression and communication
f) Provide options for executive functions
g) Provide options for recruiting interest
h) Provide options for sustaining effort and persistence
i) Provide options for self-regulation

Related link: https://xtec.gencat.cat/ca/recursos/activitats-autoaprenentatge/models-de-propostes-didactiques/

47. See http://xtec.gencat.cat/ca/curriculum/diversitat-i-inclusio/projectes-educatius-inclusius/disseny-universal-per-a-laprenentatge/ and the document https://drive.google.com/file/d/0B9TjPRfUZJUsZmNDVm5zOGNKak0/view

6 Foster teamworking between the diversity advisory committee and the digital strategy committee to create digital activities tailored to the school's needs

Each school, based on its context and its education plan, and on the general guidelines of the education authority, should have the school's Digital Strategy Committee and the Diversity Advisory Committee work together to create digital activities or tasks that promote competency-based learning in a hybrid learning model, prioritising student autonomy and guaranteeing inclusion in line with UDL.

- It is a good opportunity to create an educational repository of good examples of projects and activities by stage of education and curriculum area.

Related link: https://xtec.gencat.cat/ca/recursos/

Objective 2.2. Implement processes and techniques to foster autonomous learning for all students through digital resources.

Schools should incorporate projects with digital activities and tasks to foster learner autonomy in an inclusive manner (i.e. ensuring that it can be accessed, is used and generates learning for all students).

Measures

○ for the education authority ● for the school

7 Promote learning initiatives and experiences run by the social committee and the digital strategy committee.

The school, through the corresponding level and year meetings of the teaching staff, the Digital Strategy Committee and the Social Committee,

should promote learning initiatives and experiences that allow students to use digital tools for self-directed learning. In this regard, a reflective and critical spirit should be fostered through the documentation of evidence of learning (such as, for example, portfolios or learning portfolios, among others), as well as its subsequent evaluation, presentation and monitoring.

- The Social Committee[48] is an interdisciplinary space, which is part of the Diversity Advisory Committee, where the demands identified in the school or in other services regarding social problems are recorded, and where an analysis and reflection are carried out to reach a consensus on the assessment, to define the intervention and to establish a monitoring process, and it is here where professionals from the more social field are incorporated.

Personalising virtual learning environments

A learning environment is the face-to-face or virtual learning environment (VLE) in which the different elements necessary for students' learning process are integrated in a coherent manner, either synchronously or asynchronously. Castañeda and Adell (2013) define a Personal Learning Environment as a "set of tools, information sources, connections and activities that each person uses on a regular basis to learn".

Student-centred approaches that apply technology to learning empower the learner and foster positive learning experiences that would not otherwise be possible. In addition, technology often provides valuable tools for

48. See https://www.edubcn.cat/rcs_gene/extra/05_comissions_socials/01_Orientacions_funcionament_comissions_socials.pdf

other building blocks in effective learning environments including personalisation, cooperative learning, formative assessment management and many research-based methods (Dumont and Instance, 2010). In the same vein, a learning environment recognises students as its agents, encourages their active engagement and helps them to understand their own activity as students. Thus, learning environments should be places where: constructive and self-regulated learning is fostered; learning is sensitive to context; learning is often collaborative.

Moreover, a learning environment aims to develop "self-regulated learners" who develop metacognitive skills; monitor, evaluate and optimise the acquisition and use of knowledge; control their emotions and motivations during the learning process; manage study time well; and set high specific and personal goals and can follow them up through regular tutorials.

In any hybrid model, **a strategic objective is the proper establishment of learning environments that make it possible to alternate and/or combine face-to-face and remote learning, exchanging physical space for learning time**. In this regard, the proper establishment of learning environments should facilitate educational digitalisation in two main areas: the operational domain (use, availability and knowledge of instrumental functions and their pedagogical application) and the communicative domain (normative and regulatory, which allow safe and healthy interactions.)

In short, **simply having access to the virtual learning environment does not suffice: firstly, it must be a unanimous choice of the school**; secondly, **everyone must be able to use it functionally (instrumental – ICT) and teachers must be aware of its pedagogical implications in the classroom (methodological – LKT)** and, thirdly, **a protocol and**

regulations (rules of conduct and etiquette) for collaborative and communicative work tools must be in place, shared and agreed upon by the entire educational community.

Objective 3.1. Identify and provide an operational virtual learning environment that facilitates collaboration and synchronous and asynchronous communication.

Learning environments are needed that allow for alternating and/or combining face-to-face and remote learning, guaranteeing equity, accessibility and competence in the use of these environments by the entire educational community. Well-developed learning environments become ecosystems for personal work, communication and collaboration between all members of the community (teachers, students and families).

Measures

○ for the education authority ● for the school

8 Ensure a virtual learning environment that facilitates collaboration, communication and synchronous monitoring

The education authority should guarantee all schools a virtual learning environment that facilitates collaboration, communication and synchronous monitoring through video-conferencing (if possible) or chat.

- It is important to establish very specific criteria and guidelines for online behaviour. Each school (and not each teacher) should be responsible for defining the criteria for using a virtual learning environment, according to its context and its plan (school's autonomy) based on joint work between the teachers, the Digital Strategy Committee and the Social Committee.

Related link: https://xtec.gencat.cat/ca/recursos/activitats-autoaprenentatge/entorns-virtuals-aprenentatge/

Objective 3.2. Gain knowledge and competence in communicative virtual learning environments (VLE) and ensure their efficient, healthy and responsible use.

Providing digital tools, environments and resources to facilitate hybrid learning does not suffice. Support manuals and guidelines are needed, as well as training, support and contextualised guidance and mentoring in each school in order to be able to use these tools and resources applied to online teaching.

Measures

○ for the education authority ● for the school

9 Provide online training for the educational community to acquire VLE competence

The education authority should offer online training (which can be accredited in the case of teachers) for the entire educational community, especially families, aimed at the acquisition of competence in each school's communicative VLEs.

- It is worth considering whether some of these sessions should be carried out jointly with families and students.
- In the cases of students from more vulnerable backgrounds, schools need to be provided with support and tools to ensure communication with families. For example, each Territorial Service could identify the schools in need:

Personalising virtual learning environments

- Increase tutoring for teachers and specific support for families depending on the specific problems identified;
- Determine which digital learning environment and information-communication ecosystem is most appropriate based on the difficulties observed (video-calling, WhatsApp, Telegram, SMS, etc.);
- Generate specific plans for each school according to the needs and problems identified.

Objective 3.3. Establish the criteria for communication and collaboration in a hybrid working environment for all members of the educational community.

Besides providing the necessary tools, resources and technological equipment and the necessary guidelines and support to make it work, the rules and regulations of conduct and communication to be used during the online learning processes need to be established. Guidelines are needed that stipulate, so to speak, a certain "netiquette" for dealing with the technological tools that facilitate learning.

Measures

○ for the education authority ● for the school

10 Ensure constant communication with families on the usage criteria to be applied in digital environments

Each school, with the help of its Digital Strategy Committee and based on the agreements reached between the teaching staff and approved by the management team, must set out, communicate and provide the entire educational community with the agreed measures and protocols to be

adopted in e-learning environments, in order to communicate and work in a collaborative manner.

- Various communication strategies can be used, such as: using posters, leaflets, brochures and information bulletins of the agreements reached on paper and/or in digital format; awareness-raising talks where letters of commitment are signed by students, families, etc.; or the creation of each school's own badges where commitments and agreements are reaffirmed.

Objective 3.4. Identify accessibility, quality and equity criteria for the school's e-learning resources and materials, platforms and tools to guarantee their use for educational purposes.

E-learning resources and materials, platforms and tools must follow quality criteria, must be inclusive and therefore accessible to all students, teachers and families.

Measures

○ for the education authority ● for the school

11 Draw up and issue a set of guidelines for the evaluation and appraisal of e-learning resources

The education authority must draw up and issue a (brief) guide for teachers to evaluate and appraise the quality of e-learning resources and materials[49] (inclusion index, level of accessibility, level of sustainability, level of personalisation, data protection, level of interdisciplinarity, etc.).

49. See https://docs.google.com/spreadsheets/d/1SpzvZhxrQTVIKbwk4xWetZf9o2C988UOPWBWRV7Mr9s/edit#gid=2063103118 and https://www.researchgate.net/publication/281670043_Instrumento_para_evaluar_Recursos_Educativos_Digitales_LORI_-_AD

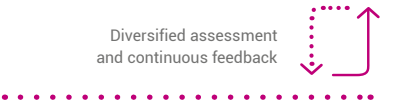
Diversified assessment and continuous feedback

One of the main changes brought about by the shift towards hybrid learning models is that it requires **continuous assessment to ensure students' educational progress**. In the framework of a school curriculum that proposes competency-based learning, **continuous assessment is part of life in the classroom — be it physical or virtual — and fosters the competences of learning to learn and personal autonomy and initiative**.[50]

Continuous formative assessment must be integrated into the learning process, and evaluates the student's progress and effort rather than the outcome. **Assessment is therefore a part of the learning process, not its end** (Dumont and Instance, 2010). A teaching-learning process that, according to Sanmartí (2016), identifies that teaching complex, abstract knowledge involves:

a) Proposing achievable goals, which will not necessarily be the same for everyone, usually within the framework of a group.
b) Verifying that knowledge of all kinds necessary to take this new step has already been acquired and is put into practice somewhat with a view to remembering it (if it has not been assimilated, the new goal should not be proposed).
c) Facilitating the construction of new knowledge step by step, contrasting initial ideas with new ones and gradually increasing the level of complexity and abstraction.
d) Promoting peer interaction so that they give each other ideas and help each other to regulate what they do not do well, and their emotions concerning the goal.
e) Providing opportunities for students to experience the pleasure of learning and verifying that they have achieved the goal, as they are able to use the new knowledge.

50. See http://avaluarperaprendre.cat/



In hybrid contexts, formative, continuous and competency-based assessment models should be developed, focusing on learning rather than the marks awarded. Assessment facilitates and supports learning more and better, focusing on regulating the learning process and contrasting the degree of achievement of different learning, i.e. focusing on what is to be learned and not so much on the mark that will be awarded. In this respect, **feedback is a core and honest element that helps the learner to understand what they know and what they do not know and why, helping them to activate correction mechanisms and to learn to learn** (metacognitive).

Moreover, **diversifying assessment activities and tools is a crucial factor in ensuring quality and fairness in educational processes that combine face-to-face and online learning** and that provide information for assessment from different and multifaceted sources (self-assessment and peer assessment), both in terms of their nature and in terms of who the assessor is (hetero-evaluation). Assessment must be a project for the class group as a whole, who help and support each other to learn more and better, focusing on what needs to be learned and not so much on the mark awarded.

The scenario experienced in the spring of 2020 revealed the system's difficulties in executing competency-based and formative assessment in the absence of attendance and with school 100 % online, as there were no mechanisms in place for assessment in this context. Having a set of diversified digital mechanisms (such as self-assessment and peer assessment grids, portfolios or learning portfolios, among others) can make assessment easier and more fluid in a model in which face-to-face and online learning co-exist.

Diversified assessment
and continuous feedback

Objective 4.1. Guarantee (formative, continuous and competency-based) assessment processes and the diversification of monitoring tools.

The government should foster formative and continuous assessment models (grids, learning portfolios, guidelines, etc.) as an integral part of the assessment system, with priority over final summative assessment models. Schools should be able to rely on a guide or framework that allows them to design and plan the student assessment process. However, special attention should be paid to those mechanisms that allow for a smooth transition between face-to-face and online learning for both students and teachers. Bearing in mind that work will have to be carried out intermittently (in-person and online), teachers should be provided with examples of the different possible scenarios and the associated digital tools and resources that allow the "continuum" of the teaching-learning process to be evaluated continuously and efficiently, thus ensuring that no student disappears, is left behind or isolated.

Measures

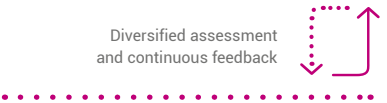
○ for the education authority ● for the school

12 Create a web portal dedicated to assessment

The education authority should create a web portal dedicated specifically to assessment, with formative assessment criteria, continuous assessment mechanisms and examples.

The portal should include:

- A framework reference document on formative assessment.



- A handbook on continuous assessment mechanisms, stating the source of the information, the frequency with which it can be applied, and the necessary conditions (associated digital tools and resources, classroom-based learning, etc.) to ensure that it is properly applied in hybrid learning contexts. To this end, the current XTEC[51] website will need to be developed further with these recommendations and documentation.
- Examples and good practices of schools, classified by level, stage and curricular subject, which already work with teaching projects and units and that conduct evaluations using formative assessment tools.

13 Provide mentors to deliver psycho-pedagogical support for teachers to assist and advise on e-learning processes

The education authority, through Territorial Services and Educational Resource Centres, should have agents and/or mentors to provide psycho-pedagogical support to teachers in schools as required to assist and advise on hybrid teaching-learning processes. These mentors can work in close collaboration with the school's Digital Strategy Committee. Ad hoc materials and resources should be created, especially for highly complex schools and vulnerable contexts.

14 Work in conjunction with universities, experts and research groups

The education authority, through Territorial Services and Educational Resource Centres, should also work with universities that offer degrees in education and research groups to carry out training, support and

51. See http://xtec.gencat.cat/ca/curriculum/xarxacb/avaluarperaprendre/

Diversified assessment
and continuous feedback

advisory processes. Networking (sharing knowledge, collaborating and coordinating) between different professionals should be encouraged.

15 Create diversified evaluation scenarios and mechanisms

The education authority should define a set of assessment scenarios and mechanisms to be applied by schools that are valid for students' official assessment process in hybrid learning situations.

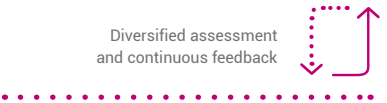
16 Personalise assessment mechanisms in line with each education plan and inform families accordingly

Each school should personalise the assessment mechanisms in line with its education plan and each educational approach, which should be communicated to students and families.

Objective 4.2. Promote teacher training and refresher courses in different digital assessment strategies and tools to allow for continuous feedback.

Feedback is central to learning[52] as the lynchpin of the pedagogical relationship in a flexible (hybrid) learning model. Feedback is key to learning. Growth occurs when someone offers a perspective that prompts a person to reconsider their stance. The same principle applies to students. Even more so if we have a hybrid context in which the pedagogical relationship needs to be maintained and followed up. When students receive

52. See http://avaluarperaprendre.cat/recursos-i-referents/retroaccio-i-retroalimentacio-feedback/ and https://www.edutopia.org/blog/timely-feedback-now-or-never-john-mccarthy



constructive feedback, they need to know what they have done well and whether their understanding is in line with the educational goal. Acknowledging what is being done well reinforces these practices. All too often the focus is only on what is missing or not well developed. In this respect, guidelines and direction should be given to teachers to work along these lines as part of a hybrid learning model.

Measures

○ for the education authority ● for the school

17 Offer online training courses on digital assessment strategies and tools

The education authority should offer teachers online training courses on digital assessment strategies and tools for continuous feedback.

18 Create a benchmark document on effective practices that defines the features of continuous feedback

The education authority should define the features of continuous feedback to put together a benchmark document on effective practices for both face-to-face and remote learning scenarios and include it on the current webpage of the Catalan Digital Education Network (XTEC).

Constant monitoring, communication and tutoring

As we saw during the closure of schools in the 2019-2020 school year, students from more disadvantaged social and cultural backgrounds had greater difficulties in pursuing e-learning, due to a lack of devices, connectivity, adequate study spaces or adult support (Tarabini and Jacovkis, 2020). During the first weeks of the lockdown, almost 30 % of students had virtually no learning activities or connection with their teachers or tutors, with the majority being students from lower-income families (Bonal and González, 2020).

Direct face-to-face education is currently the best educational guarantee for these students, while measures aimed at reducing the digital divide and ensuring equal educational opportunities for all students, whether face-to-face or online, are still being implemented. For this reason, **ensuring individual and specific support for students from especially disadvantaged and vulnerable socio-economic situations is imperative**: disadvantaged family, social, cultural or economic contexts, which understandably also give rise to special educational needs, and providing the necessary resources so that they can follow the educational process on an equitable basis and strengthen their educational and personal monitoring, to prevent them from becoming disconnected from school activity and, consequently, from the learning and socialisation process.

We know **that guidance and mentoring are crucial to students' educational progress and wellbeing** (Fundació Bofill, 2020). As the evidence shows, in the most vulnerable situations, intensive tutoring is a key factor in supporting students, averting the risk of students becoming disconnected, especially when working in virtual environments (Usart, 2020). The COVID-19 crisis has highlighted the importance of this role and the need to strengthen tutoring and guidance so that teachers can constantly support and mentor students, in person and online, both personally and in groups, and communicate with families (OECD, 2020).

Tutoring, in constant liaison and collaboration with other professionals and socio-educational services, should enable the tutor to gain in-depth knowledge of the student and their family and social context, with a view to helping them in their learning and their life plan and, in short, to **personalise their support as much as possible**. Moreover, **the tutor's role must be broadened to include competences for the coordination, monitoring and evaluation of the overall curriculum proposals** addressed at each individual student. Hence, the current tutor-student group ratio must be significantly reduced and the majority of the school's teaching staff must be assigned the task of tutoring.

Objective 5.1. Ensure constant monitoring and support for students, reinforcing the school's tutoring and guidance role.

All students must be guaranteed **the support of a point of reference, who provides constant monitoring and assistance to the student and their family**. The first step to be taken is to identify the needs of students and families from the most vulnerable backgrounds to ensure both the provision of connectivity and electronic devices, as well as to ensure on-going and quality monitoring and support from a point of reference. This means that schools need to strengthen their capacity to identify and provide the necessary support for students with needs.

Thus, the role of tutoring and guidance is key to students' adequate educational progress. In hybrid models, it is imperative to have clear figures for tutoring, guidance and regular and stable support for students and families, and therefore sufficient teacher-tutors must be present in both primary and secondary schools. This implies that each teacher-tutor is in charge of a small number of students with whom they can carry out

Constant monitoring, communication and tutoring

personalised and group tutoring in synchronous and asynchronous formats, with the aim of achieving greater support and guidance for students.

Preferential treatment should be given to students at risk of dropping out and those who, during lockdown periods, had no contact with their teachers or tutors, or who were unable to continue their schooling.

Measures

○ for the education authority ● for the school

19 Expand each school's diversity advisory committee to identify, appraise and jointly monitor sen

The education authority should constantly strengthen and/or expand each school's Diversity Advisory Committee, or if necessary, set up inter-professional (social, educational and health) teams to be able to work as a network that facilitates mapping and an effective appraisal of different SEN (special educational needs) and especially of students who have had difficulty accessing and/or following up online tasks during the academic year 2019-2020.

- The public authorities should increase **the number of professionals** (from social services, nurses/physiotherapists, pedagogues, psychologists, psycho-pedagogues, educational and social counsellors, teachers for diverse students, etc.) **for each school to be equipped with a stable team and conduct joint**, systemic (students and their peers) and constant **monitoring** of these needs (personal, pedagogical, financial, emotional, food, grants, etc.) so that any incident can be resolved immediately **by a point of reference**. It is this reference point who is familiar with and supports

the student and their family, using the most appropriate technological mechanisms (telephone, digital, etc.) and intensively (daily, if necessary).

- To be efficient and carry out this systemic and collaborative monitoring, it should be performed by a single integrated team and the government should provide and increase these professionals, encouraging recruitment and networking, which is coordinated between different departments and bodies, so that the teacher-tutor in each school feels fully supported and advised at all times.

20 Increase each primary school's number of tutors for every 12-14 students

The education authority should increase the number of tutors per primary school to ensure a tutor-student ratio of 1:12-14, which implies a percentage increase in the number of teachers based on each school's characteristics. Each tutor would be in charge of a small group of students with whom they would do most of their teaching.

- The school must guarantee the tutors' teamworking with the rest of the teaching team, as well as meetings and spaces for meeting and planning for the team of tutors.
- The team of tutors should work with the school's Digital Strategy Committee to have a specific portal of tutor resources (manuals, applications, audios, videos, dynamics, games, etc.).
- In the case of primary education, priority should be given to group tutoring spaces with the class group.

Constant monitoring, communication and tutoring

21 Encourage group support and emotion management in primary education

The school, on the basis of the joint work of the Diversity Advisory Committee and the tutors for each subdivision of the educational stage, should prepare support activities and/or dynamics that are more oriented towards groups and emotion management.

For example, the taskforce can:

- Create protocols on how to develop group and individual online communication between teachers and students.
- Generate dynamics of self-awareness and emotion management for face-to-face and online meetings.
- Schedule and plan individual and group meetings that are communicated to families.
- Produce audiovisual material (videos and/or podcasts) for personalised tutorial support for each subdivision of the educational stage and group-classroom and upload it on the school platform (with the corresponding security measures).

22 Increase each secondary school's number of tutors for every 12-14 students

The education authority should increase the number of tutors per secondary school to ensure a tutor-student ratio of 1:12-14, which implies a percentage increase in the number of teachers based on each school's characteristics. Each tutor would be in charge of a small group of students with whom they would do most of their teaching.

- The school must guarantee the tutors' teamworking with the rest of the teaching team, as well as meetings and spaces for meeting and planning for the team of tutors.

- The team of tutors should work with the school's Digital Strategy Committee to have a specific portal for tutor resources (manuals, applications, audios, videos, dynamics, games, etc.).
- In the case of secondary education, priority should be given to individual tutoring spaces.

23 Foster individual support and emotion management in secondary education

The school, on the basis of the joint work of the Diversity Advisory Committee with the tutors of each for each subdivision of the educational stage, should prepare support activities and/or dynamics that are more oriented towards individuals and emotion management.

For example, the taskforce can:

- Create protocols on how to develop group and individual online communication between teachers and students.
- Engage in coordination to perform individual student monitoring in a co-teaching format.
- Generate dynamics of self-awareness and emotion management for face-to-face and online meetings.
- Schedule and plan individual and group meetings that are communicated to families.

Objective 5.2. Move towards a model of tutoring as mentoring, which provides intensive and personalised support

In a hybrid model, the tutoring role is a cornerstone and, in particular, the figure of the tutor-mentor, who knows each student, their family,

Constant monitoring, communication and tutoring

their personal and social circumstances, digital equipment and working conditions well in order to adapt the education proposed to the real possibilities and circumstances of each student. In addition, it should be noted that this tutor-mentor figure works through networking with the different agents involved in the system (interdisciplinary work).

Hybrid learning formats therefore require moving towards a model of tutoring as mentoring, which provides intensive support, as part of a network and with regular personalised follow-up with the student and their family, allowing them to be guided from a personal, academic, social and professional point of view.

Measures

○ for the education authority ● for the school

24 Guarantee a higher level of support and on-going communication with students and families

The school must guarantee processes with a higher degree of on-going support and communication with students and their families, allowing them to be guided from a personal, academic, social and professional point of view (life plan). Spaces and/or means (synchronous and asynchronous) should be provided to guarantee this on-going communication.

At **primary** school level:

- The team of tutors-mentors must have sufficient time for group tutoring slots. These slots should be designed and planned in advance as a team. The school should inform families about the planning of tutoring sessions and the topics to be covered.

- The team of tutors should work with the school's Digital Strategy Committee to have a specific portal for the communication and presentation of the tutorial activities carried out with the class group.

At **secondary** school level:

- The team of tutors-mentors must have sufficient time for individual tutoring slots. These slots should be designed and planned in advance as a team and in a co-teaching format. The school should inform families about the planning of tutoring sessions and the topics to be covered.
- The team of tutors should work with the school's Digital Strategy Committee to have a specific portal for the communication and presentation of the tutorial activities carried out with the class group.

Objective 5.3. Implement a tutoring and guidance training programme for all teachers in the system.

For all teachers to be able to be tutors and, therefore, to acquire digital and online tutoring and mentoring skills, initial and continuous professional development in tutoring and mentoring should be implemented for all teachers in the system. This training should include both tutoring and mentoring competences (face-to-face and online), synchronous and asynchronous tutoring and guidance support, and the management of holistic curriculum plans.

Constant monitoring, communication and tutoring

Measures

○ for the education authority ● for the school

25 Design and implement a permanent tutoring and guidance training programme for teachers

The education authority, with the support of faculties of education and research groups, should design and implement a permanent training programme in mentoring and guidance for teachers. Based on the different needs of schools and their professionals, the training programme should incorporate the concept of tutoring as mentoring and the role of manager of the overall curriculum content, as well as digital and online tutoring and guidance competences and the exchange of experiences between schools and teachers.

Digital wellness, safety and autonomy

Digital wellness (also known as digital wellbeing or digital health) is the pursuit of an intentional and healthy relationship with technology, both in the workplace and in personal life. With many jobs and day-to-day activities relying on the internet and digital devices today, **the goal of digital wellness is that the user's experience of these technologies promotes healthy use habits and assists the user in maintaining a healthy lifestyle in their daily life**. There are several recommended practices to optimise digital health and wellness, such as implementing screen time limits, wearing blue light glasses to alleviate eyestrain, and silencing smartphone notifications to avoid constant interruptions. On a personal level, maintaining healthy habits such as physical activity, nutrition, sleep and controlling the amount of media and information we consume are also recommended. However, controlling and promoting a

good state of digital health based on the information we consume, whether adults or children, is often a challenge.

Another of the risks linked to digital technologies that the World Health Organisation (WHO) has condemned is the "massive infodemic" of disinformation (whether due to excess, lack, confusion or falsity of information sources). In the current context, the impact of this disinformation on children and adolescents is potentially very dangerous and urgent responses are also needed, considering the conclusions of the School Board document on the impact and contribution of digital technologies in education (2013). According to the document, expressions such as "digital natives" or "Facebook generation" or similar expressions describe a generational fact related to young people's familiarity with technology. Many schoolchildren have an extensive but poorly structured body of digital knowledge, experience and skills, which cannot be equated with digital competence because it does not ensure that children and adolescents learn and gain added value from the use of technology in intellectual endeavours. **Being born in a socio-technologically rich context does not automatically imply being able to work and study, nor — we add — having a critical understanding of digital environments in a beneficial and efficient manner**, which teachers observe on a daily basis.

Regularly using messaging systems and participating in social media is not synonymous with (ethical) competence in communication; searching for information and using office tools (sometimes little more than copying and pasting) is not the same as developing and managing knowledge. This is why, according to data obtained from Tarabini and Jacovkis' (2020) research report on schools on lockdown, 40 % of teachers state that some of their students had difficulties in carrying out the educational activities proposed during the first month of the lockdown. A number of difficulties were identified, linked to the households' lack of digital

Digital wellness, safety and autonomy

competence (33.6 %), the home's living conditions (30.2 %) and the students' lack of digital competence (24.9 %).

Mentors and specific spaces to support and raise awareness among children, adolescents, educators and families about communication education, on the one hand, and digital competence, on the other, will therefore be necessary **if we ultimately hope to achieve good levels of digital wellness, autonomy and safety**.

Objective 6.1. Promote and ensure the digital wellness of the entire education community.

The use of digital environments and tools, as well as the promotion of students' autonomy, calls for close and permanent support from the educational community in order to guarantee quality use in a way that protects them from potential risks.

Measures

○ for the education authority ● for the school

26 Create spaces and mentors to provide digital support

The education authority, based on the different territorial services and their respective reference points and area experts from the Educational Resource Centres, should create spaces and figures (mentors) for regular digital[53]

53. Based on the following dimensions: ergonomics and healthy habits, the excessive use of screens and digital balance: deciding when and how, the integration of the digital environment in everyday life: apps, ecosystems and platforms, the construction of digital identity, the promotion of social relations among young people: continuum between physical and online presence, a critical view of digital technologies: recreation and

and socio-emotional support[54] in schools and for each of the different groups (teachers, students and families).

For example, each mentor can:

- Plan and organise tutoring and/or webinars for each group (teachers, students and families) as the "digital" needs are often different. Each month, one hour could be dedicated to reflection-practice for each group on the relationship with devices, digital intensity or any doubts that may arise.
- Take advantage of these spaces to create ad hoc products from these sessions (reflective newspapers and/or video blogs).

Each school's mentor should be a member of the Digital Strategy Committee in which they can:

- Document the work carried out in the school's Digital Culture Document[55] (former LKT Plan).
- Create a community web space of FAQs (managed/moderated by the different members of the school's Digital Strategy Committee) of the most common technical issues and/or the most needed digital resources (repository of digital tools) similar to a forum space for territorial services and their corresponding schools (thus forming a network of schools).

responsible consumption. See https://projectes.xtec.cat/consescat/wp-content/uploads/usu694/2020/10/Conviv%C3%A8ncia-i-ciutadania-digital.pdf

54. Based on the following dimensions: emotional intelligence, emotion regulation, capacity to engage in positive social relations, teamworking skills and pro-social behaviours. See http://www.eduforics.com/es/educacion-emocional/

55. See https://documents.espai.educacio.gencat.cat/IPCNormativa/DOIGC/PEC_Cultura_digital.pdf

Digital wellness, safety and autonomy

Objective 6.2. Encourage responsible and safe use of digital tools and media consumption.

The use of digital environments and tools, as well as the promotion of students' autonomy, also requires good examples and good practices of their use at home and at school. Basically, the availability of digital resources (videos, infographics, images, animations, etc.) that help to exemplify these good practices and are made available to families and teaching staff to work with students at different stages of education, thus creating spaces for debate and reflection.

Measures

○ for the education authority ● for the school

27 Identify and map spaces for raising media awareness

The education authority together with social affairs and families (youth), the Catalan Audiovisual Council (CAC) and the Catalan Data Protection Authority (APDCAT) should identify and map possible spaces for raising media awareness among children, adolescents and young people. Through network building, a project can be created to promote the responsible and safe use of digital tools, digital literacy and media consumption.

- For example, consideration should be given to having a greater presence on social media and especially in media initiatives such as the Catalan Audiovisual Council (CAC)'s APDCAT, **Adolescents.cat**, TV3's InfoK and the Popap programmes or the latest Adolescents XL and KidsXs programmes on CatRadio.

- And to producing ad hoc audiovisual material among these projects and disseminating it among the educational community.

28 Ensure an ideology and guiding principles that govern the school's use of ICT

Each school should include in its Digital Culture Document and general annual programme the actions to be determined regarding its position on digital technologies at school (statement of principles or its outlook and what has been agreed by the management team and the teaching staff on these digital and technological issues).

- For example, the school's rationale and outlook on using technology, regulation of technologies by stages, types of platform and applications by stages, rules of conduct, etc.
- For dissemination purposes, the school, together with the Digital Strategy Committee, can:

  – Create a fortnightly newsletter with guidelines on safe internet[56] and media consumption, especially in the fields of digital entertainment, fake news and social media, aimed at families. If the school has a weekly follow-up protocol with families, these guidelines should be included in these communications and/or mailings.
  – During initial meetings with families and family tutorials, place emphasis on the role that technologies will play and provide families with documentation on regulation and uses, based on the stage of each child's life.

56. See the InternetSegura website at https://internetsegura.cat/families/ and the eduCAC website at https://www.educac.cat/confinament-i-educacio-mediatica

Digital wellness, safety and autonomy

- Take advantage of the production of audiovisual material and the updated resources of the different media initiatives to raise awareness among children and young people in order to disseminate them in this newsletter or in the school's regular correspondence.
- Create tutoring spaces where reflection on the subject can be generated periodically.

- In cases of more vulnerable backgrounds, specific solutions should be sought to ensure this communication with families, as indicated in point **Personalising virtual learning environments**.

Training, support and capacity development for teachers, students, families and the community

Digital competence is one of the key elements for schools' digital transformation and for the roll-out of hybrid learning models. One of the factors that most influence the work that teachers carry out in schools is associated with their competence as teachers. **Teaching competence largely determines the quality of their educational activities** over and above other circumstances — such as the socio-economic environment, the school's profile, the availability of resources, the characteristics of the student body, etc. — which also determine their professional activities (Catalan Dept. of Education, 2016).

In 2011, UNESCO[57] set out some basic principles regarding teachers' digital competence, indicating that **it is not enough for teachers to possess ICT skills and be able to teach them to their students, but that they must**

57. See the updated UNESCO Digital Competence Framework for Educators at https://www.oercommons.org/hubs/UNESCO and https://en.unesco.org/themes/ict-education/action

also be proficient in digital tools to help students acquire the necessary skills to become autonomous citizens, integrated in today's society, while developing their capacity for lifelong learning on an on-going basis.

On this basis, **the instrumental use of digital technologies and their methodological application in the classroom must become a fundamental part of teachers' professional development (Digital Competence for Teachers)**. Digital competences should be included in initial and continuous professional development, but other forms of teacher training and support linked to the school's education plan should also be encouraged. To bear a real impact on educational change, **providing general training in Digital Competence for Teachers does not suffice. Training adapted to the context of each school is also necessary**: ad hoc training in tools, methodologies or processes, based on the specific needs and realities of each school, linked to their digital plan and strategy and oriented towards specific actions.

As far as students are concerned, many education systems are striving to foster digital competence. **Today's schools must ensure students' competence training (Certificate of Digital Competence, ACTIC[58]) and guarantee that all boys and girls are digitally competent by the end of compulsory education**. It should be borne in mind that the new framework for Digital Competence for Teachers[59] (2022) is aligned with the European Digital Competence Framework for Educators (DigCompEdu) and already incorporates students' competences in line with citizens' digital competences (ACTIC or DigComp).

58. For further information, see https://actic.gencat.cat/web/.content/01_informacio/documents/arxius/proposta_continguts21.pdf

59. For further information, see https://educacio.gencat.cat/ca/departament/publicacions/colleccions/pla-educacio-digital/marc-referencia-competencia-digital-docent/

Training, support and capacity development

It is worth noting that digital competence is one of the eight key competences that any young person should have developed by the end of compulsory education in order to successfully enter adult life and be able to develop lifelong learning, according to the European Parliament's guidelines on key competences for lifelong learning.[60] Digital competence not only provides the ability to harness the wealth of new possibilities and challenges associated with digital technologies, but is also increasingly necessary to be able to participate meaningfully in the new society and knowledge economy of the 21st century.

In addition, several studies (Usart, 2020) note the importance of **educating families so that they can support their children properly and play a part in the dynamics of hybrid school**. Along the same lines, if public spaces and equipment are ultimately needed to carry out this monitoring and support, support staff are necessary.

In short, training and support must be geared towards making significant progress in the digitalisation of schools to provide flexible, personalised and paedocentric educational activities (focused on learning through the student's practical experience by interacting with other students).

The experience of the closure of schools during the COVID-19 crisis therefore shows that **support and training spaces for teachers and students, as well as for families that need them, must also be provided and increased, as well as for the community agents with whom they collaborate in a network, so that they can provide the appropriate pedagogical and technological support to students and can actively**

60. Recommendation 2006/962/CE of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning, Official State Bulletin L 394 of 30.12.2006.

engage in the dynamics of hybrid school (**See strategic objective guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff**).

Objective 7.1. Teacher training aimed at the acquisition of Digital Competence for Teachers.

Various teacher training strategies in Digital Competence for Teachers should be developed throughout the academic year, based on the identification of the training needs of teachers and schools, and enabling them to develop schools' digital strategies (Catalan Dept. of Education, 2016).

Measures

○ for the education authority ● for the school

29 Identify the (instrumental and methodological) digital competence training needs of teachers and schools

The education authority, based on the expertise of agents in Territorial Services and Educational Resource Centres and in coordination with the school's Digital Strategy Committee, must identify the individual training needs of teachers and schools to plan training at the beginning and throughout the school year.

Planning should include:

- Scheduling short training sessions (specific training modules/packs), to reflect on and thoroughly explore the methodologies to be implemented and the digital tools needed to do so.
- Prioritise the training of teams of teachers by level, in accordance with the school's digital strategy.

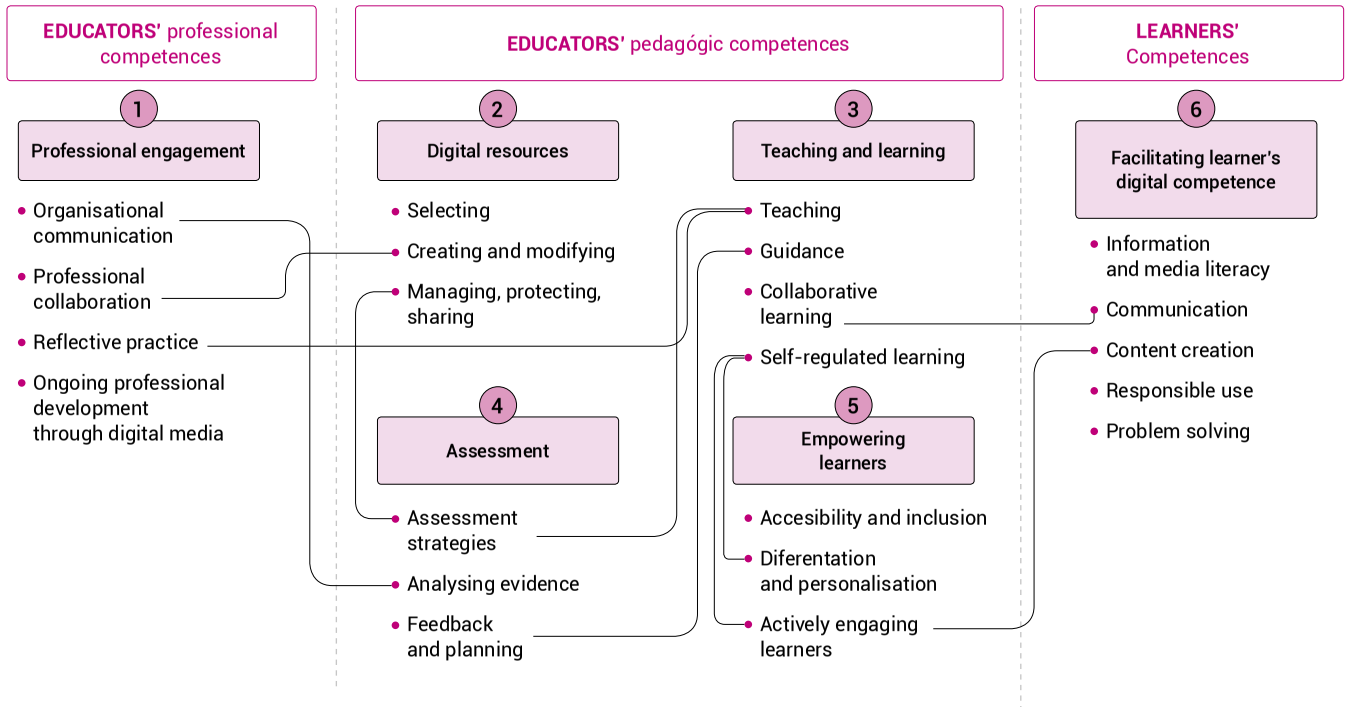
- Identify talent within the school itself to set up and/or nurture the school's Digital Strategy Committee.
- **The training needs can address issues related to the competency dimensions of the new Digital Competence Framework for Educators (2022) (see Figure 6).**

Among the different **training strategies to be implemented, the following are noteworthy**:

- **Sharing and peer learning through networks of schools**. One approach to this training can be achieved by "twinning" (from the same neighbourhood, the same community setting or working in existing networks) different types of schools where professionals can carry out the training process through peer tutoring (with the support of Educational Resource Centres and expert professionals from universities, etc.). This makes learning more meaningful and allows specific needs to be met.
- **Provide schools with stable professional teams for training, guidance and support** (each school should have a team assigned for this purpose). These teams must have an active role in the process and must provide guidance and immediate collaboration in the different (technical, pedagogical, methodological, diversity support, etc.) incidents and situations that arise on a day-to-day basis. They can be teams in collaboration with Educational Resource Centres or Institutes of Education Sciences.
- Training must promote the learning of technological tools that are more effective through collaborative methodologies and interaction with students, feedback rather than transmission methodologies, as well as evaluation and monitoring systems for learning. Consideration should be given to including the issue of digital wellness and safety in this training.

FIGURE 6

The DigCompEdu framework. © European union



Source: https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

Training, support and capacity development

Objective 7.2. Training of learners in digital competence, prioritising those who need it most.

To develop a good plan for training students in digital competence, the first step is to identify their training needs, based on the competences and levels of the ACTIC[61] programme or DigComp 2.2 (see Figure 7) and focusing training on those students with greater usage difficulties or from more vulnerable backgrounds.

FIGURE 7

The DigComp Conceptual Reference Model

Information and data literacy

- Browsing, searching and filtering data, information and digital content
- Evaluating data, information and digital content
- Managing data, information and digital content

Communication and collaboration

- Interacting through digital technologies
- Sharing through digital technologies
- Engaging in citizenship through digital technologies
- Collaborating through digital technologies
- Netiquette
- Managing digital identity

Digital content creation

- Developing digital content
- Integrating and re-elaborating digital content
- Copyright and licences
- Programming

>>>

61. See the page https://actic.gencat.cat/ca/actic_informacio/actic_competencies_i_nivells/

Safety

- Protecting devices
- Protecting personal data and privacy
- Protecting health and well-being
- Protecting the environment

Problem solving

- Solving technical problems
- Identifying needs and technological responses
- Creatively using digital technologies
- Identifying digital competence gaps

Source: https://publications.jrc.ec.europa.eu/repository/handle/JRC128415.

Measures

○ for the education authority ● for the school

30 Identify students' training needs

The schools, their Digital Strategy Committee and the teaching teams must identify students' training needs, based on the competences and levels of the ACTIC programme.[62] Priority should be given to digital training for those students who, due to personal or environmental circumstances, have more usage difficulties.

31 Organise tutoring dynamics to work on digital competence among students

Schools, their Digital Strategy Committee and the teaching teams should organise peer tutorials or cooperative groups with their students to work on specific digital competence activities.

62. See the page https://actic.gencat.cat/ca/actic_informacio/actic_competencies_i_nivells/

Training, support and capacity development

32 Create ICT expert figures among students

Schools, their Digital Strategy Committee and teaching teams should create the figure of "ICT experts or leaders" among students as promoters and facilitators among their peers (Ojando, Benito and Prats, 2017).

Objective 7.3. Identify the training needs of families and community agents and plan training sessions.

The increasingly widespread presence of digital technologies in everyday life is changing the way people communicate, access, share and create knowledge, i.e. the way they exercise their digital citizenship.

In addition, and as we already noted above, in order to significantly reduce the digital divide in the use of digital devices, training and support for families are key. Skills are needed to select, interpret and verify the information provided by various digital media, to adapt to an increasing number of digital tools and formats, to protect data and privacy, and to share and create one's own digital content. Harnessing the opportunities that digital technologies generate in different areas of knowledge calls for developing the necessary competences for their appropriate use. Therefore, the digital empowerment of all citizens (families and community environment) must be achieved to ensure their full participation in the 21st-century society.

Measures

○ for the education authority ● for the School

33 Create training plans for certain areas and specific needs

The education authority, together with Social Welfare and Families and the Department of Digital Policies, should generate training plans for

each territory, with the support of Territorial Services and Educational Resource Centres. The plans should be made taking the context of each establishment, each environment and the families into account to adapt these plans to the specific reality and needs.

For example, the Plans may include:

- Creation of a web portal for families with online resources, manuals and audiovisual training packs;
- Conferences on digital wellness and safety in schools;
- Practical workshops on the technological tools most used socially by children and adolescents and how to manage them in the domestic context;
- ACTIC digital competence training, intermediate level.

Guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff

One of the most basic aspects of the digital divide is the availability of devices for school and/or academic activity. However, the data show that the access divide is not absolute,[63] i.e. it is not a binary divide, but a very gradual but still significant inequality, and that it closes faster than for any other previous technology, and much faster than for previous education-related technologies (such as writing and books, or school itself, which took millennia or centuries to become widespread). In contrast, **what is emerging, beyond access, is a serious divide in its utility, in the**

63. See (Fernández Enguita, 2017) at https://www.fundacionalternativas.org/laboratorio/documentos/zoom-social/desigualdades-educativas-en-la-sociedad-digital

Guaranteeing technological equipment, connectivity resources and materials

ability to use and harness the resources of the new digital environment for one's own and other people's personal and social development.

In this respect, this strategic objective is not only about the mere provision of technological devices and their corresponding connectivity. We are also referring to the (minimum) "worthy" conditions for their use: firstly, **knowledge and literacy in each of these technologies**; secondly, **adequate spaces to be able to use them**; thirdly, **the necessary support to benefit from their use**; and fourthly, **the need to reorganise, if necessary, the spaces in the community context to meet these needs and new challenges**.

In short, **the availability of computer devices and internet connection** are two basic conditions to be able to carry out educational work in any of the current pedagogical models, **both inside and outside schools**.[64] The opportunity must be seized **to open up community facilities and make them available, where appropriate, to the most vulnerable students**. In addition, spaces and resources must be made available to support the **creation and/or use of these teaching materials and digital learning environments**.

Objective 8.1. Provide up-to-date technological equipment.

In accordance with the principle of equity, students and teaching staff must be provided with up-to-date technological equipment (tablets or laptops with the corresponding software and applications for commu-

64. For further information, see https://fundaciobofill.cat/blog/flexibilitat-espai-temps-requisits-indispensables-aprenentatge-hibrid

nication and collaboration that are used at the school), as well as its maintenance.

Measures

○ for the education authority ● for the school

34 Provide a computer device loan service for students and teaching staff

The education authority should provide each school with a loan service for up-to-date computing devices that can be used inside and outside schools whenever necessary.

- In the event of a lack of equipment, they should be able to rely on the community network of bodies, organisations and town councils.
- Priority should be given to those students who do not have computer devices at home to work with.

Objective 8.2. Ensure internet access for students.

Once we have a technological device, we need connectivity. And it is clear that there are students who do not have connectivity, devices or space at home to undertake their academic activities. Hence, the provision of spaces in schools and in surrounding facilities and spaces (libraries, community spaces, etc.) with connectivity and technological devices and with (technical) support staff available to students who may need them (either due to lack of equipment or space and suitable study conditions at home, or because they need to resolve a specific technical query) must be guaranteed.

Guaranteeing technological equipment, connectivity resources and materials

In this case, priority should be given to highly complex schools, as well as to facilities in neighbourhoods and cities facing the highest levels of social vulnerability.

Measures

○ for the education authority ● for the school

35 Reach agreements with the main operators on free internet access for students and teachers

The education authority, together with other Departments (Social Welfare and Families and the Department of Digital Policies), should work with the main telephone and data operators to ensure that internet access is a universal right for children, young people and adults in education.

36 Equip schools and community centres with fibre optics

The education authority should provide all primary and secondary schools, as well as public facilities (community centres or libraries, for example) with fibre optic connections or ADSL (USB) connections at an adequate speed and a solid Wi-Fi infrastructure based on specific agreements with telephone operators.

37 Map and distribute digital resources in the territory

The inventory of technological equipment must be available to students and teachers. The education authority and local authorities must map the material and personal resources in the territory and the community and ensure that there is equitable distribution for each school zone.

38 Inform families of ICT-enabled and study facilities

The school must inform families about the ICT-enabled and study facilities corresponding to their school zone.

39 Co-ordinate the school with the community's ICT-enabled and study facilities

The school should coordinate with the different ICT-enabled and study facilities that offer open access to determine its student occupancy levels and thus have a certain traceability of use and consumption and the type of students who need them (internal research is carried out).

Objective 8.3. Provide technological/pedagogical support services in schools and homes.

As we mentioned before, having a device and connectivity is essential, but does not suffice. Once the divide in access to a device, connectivity and the corresponding space has been bridged, **appropriate support is needed**. Many students do not have the support they need from their families or other adults to be able to do their homework or use their technological tools and devices appropriately. In other words, schools and public facilities must have spaces with connectivity and technological devices and **staff to provide assistance and support so that students (from vulnerable backgrounds) can carry out the tasks or projects that they have been assigned**.

Also in line with the previous goal, using the spaces available in the school, the community and network of associations (libraries, community spaces, museums, etc.) so that students and families who need them (unsuitable living spaces, family settings that do not facilitate it, etc.) can

use them to guarantee this learning in the hybrid setting, with the support of different professionals (teachers, educators, trainees, etc.) who provide pedagogical assistance and monitoring in these spaces.

Support staff must be guaranteed for students and families who may need it (either because they need specific pedagogical support to undertake the tasks, or because they need advanced technological support).

Measures

○ for the education authority ● for the school

40 Guarantee on-call technical and pedagogical assistance services for families

The education authority should guarantee on-call technical and pedagogical assistance services or audio-visual resources (e.g. video tutorials) for families to resolve the most common queries and problems when working with technological resources. They should cater to the territory and be divided by topic (technological aspects of configuration and awareness) and for the different educational stages (primary and secondary), including aspects related to digital safety and wellness.

41 Coordinate the school with the community's ICT-enabled and study facilities

The school should coordinate with the ICT-enabled and study facilities that offer open-access facilities to determine what gaps and pedagogical needs are identified in students at different stages that are often addressed (internal research is carried out).

Objective 8.4. Promote access to e-learning resources and materials, platforms and tools for the entire educational community.

Once the school, the community and network of associations (libraries, community spaces, museums, etc.) have spaces available so that students and families who need them can use them to ensure learning, consideration must also be given to the virtual space for distributing quality digital resources and content. In this regard, a virtual space (website) should be created where students have access to specific content for downloading, the most relevant reference resources and links, the most noteworthy (reliable) news, a space for raising awareness about digital wellness and safety, and a web space or portal for students' educational support (by educational stage).

Measures

○ for the education authority ● for the school

42 Create a web portal with e-learning resources

The education authority must create and disseminate a clear portal (virtual space) that facilitates access to resources, manuals and e-learning materials, classified according to levels, interests, formats, etc., based on quality and equity criteria, i.e. a LKT portal and support for teaching, also using a hybrid approach.

43 Promote and disseminate digital resources to families

Through its mailings and newsletter to students and families, the school should promote and disseminate links and resources on the educational portal.

Guaranteeing technological equipment, connectivity resources and materials

Objective 8.5. Provide laboratory spaces (makers) and technological resources (AR, 3D, etc.) for the creation and/or use of teaching materials and e-learning environments.

Consideration must also be given to teachers and their constant refresher training. Making knowledge spaces available for the creation and joint discussion of technological tools and resources that can be applied in hybrid teaching is a goal that helps to create a teaching community. If, in addition, these knowledge spaces open their doors to families to hold seminars or workshops to learn about technological tools and their safe and critical use, all the better.

Measures

○ for the education authority ● for the school

44 Promote spaces for digital creation, networking and experimentation in teaching

The education authority, together with the community network of bodies, organisations and town and city councils, education faculties and educational technology research groups, should promote physical spaces[65] (knowledge centres or citizen laboratories for social and digital innovation) that allow for the creation and use of teaching materials and even the loan of learning materials for teachers. These centres should work together with Educational Resource Centres and should also be able to offer training for families and citizens. They should also be transferred to the virtual space.

65. For further information, see https://www.citilab.eu/

TABLE 1

Summary table of strategic lines of action, objectives and measures

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
1. Schools and teaching teams working towards hybrid school 	1.1. Design the school's digital strategy aimed at educational transformation		1. Steer the school's digital strategy based on the assessment of its digital maturity	1. Steer the school's digital strategy based on the assessment of its digital maturity	
	1.2. Create virtual spaces that facilitate communication, coordination, the exchange of experiences and reflection on teaching practice		2. Select an internal and external management and communication framework		2. Select an internal and external management and communication framework
		3. Document, collect and disseminate good practices			3. Document, collect and disseminate good practices
			4. Guarantee internal coordination to select information, which is communicated to families using the IT manager or application	4. Guarantee internal coordination to select information, which is communicated to families using the IT manager or application	

>>>

STRATEGIC LINES OF ACTION	OBJECTIVES	MEASURES			
		Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
2. Designing authentic learning experiences	2.1. Provide guidelines for the design, creation, use and evaluation of digital activities and tasks to foster the autonomy of all students	**5.** Draw up a set of guidelines and teaching proposals for the design, creation, implementation and assessment of digital activities		**5.** Draw up a set of guidelines and teaching proposals for the design, creation, implementation and assessment of digital activities	
			6. Foster teamworking between the diversity advisory committee and the digital strategy committee to create digital activities tailored to the school's needs	**6.** Foster teamworking between the diversity advisory committee and the digital strategy committee to create digital activities tailored to the school's needs	
	2.2. Implement processes and techniques to foster autonomous learning for all students through digital resources		**7.** Promote learning initiatives and experiences run by the social committee and the digital strategy committee		**7.** Promote learning initiatives and experiences run by the social committee and the digital strategy committee

>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
3. Personalising virtual learning environments	3.1. Identify and provide an operational virtual learning environment that facilitates collaboration and synchronous and asynchronous communication		**8.** Ensure a virtual learning environment that facilitates collaboration, communication and synchronous monitoring	**8.** Ensure a virtual learning environment that facilitates collaboration, communication and synchronous monitoring	
	3.2. Gain knowledge and competence in communicative virtual learning environments (VLE) and ensure their efficient, healthy and responsible use		**9.** Provide online training for the educational community to acquire VLE competence	**9.** Provide online training for the educational community to acquire VLE competence	
	3.3. Establish the criteria for communication and collaboration in a hybrid working environment for all members of the educational community		**10.** Ensure constant communication with families on the usage criteria to be applied in digital environments	**10.** Ensure constant communication with families on the usage criteria to be applied in digital environments	
	3.4. Identify accessibility, quality and equity criteria for the school's e-learning resources and materials, platforms and tools to guarantee their use for educational purposes	**11.** Draw up and issue a set of guidelines for the evaluation and appraisal of e-learning resources			**11.** Draw up and issue a set of guidelines for the evaluation and appraisal of e-learning resources

>>>

STRATEGIC LINES OF ACTION	OBJECTIVES	MEASURES			
		Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
4. Diversified assessment and continuous feedback 	4.1. Guarantee (formative, continuous and competency-based) assessment processes and the diversification of monitoring tools	**12.** Create a web portal dedicated to assessment		**12.** Create a web portal dedicated to assessment	
		13. Provide mentors to deliver psycho-pedagogical support for teachers to assist and advise on e-learning processes		**13.** Provide mentors to deliver psycho-pedagogical support for teachers to assist and advise on e-learning processes	
		14. Work in conjunction with universities, experts and research groups			**14.** Work in conjunction with universities, experts and research groups
		15. Create diversified evaluation scenarios and mechanisms		**15.** Create diversified evaluation scenarios and mechanisms	
			16. Personalise assessment mecha-nisms in line with each education plan and inform families accordingly	**16.** Personalise assessment mecha-nisms in line with each education plan and inform families accordingly	

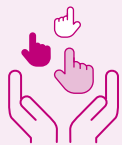
>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
4. Diversified assessment and continuous feedback 	4.2. Promote teacher training and refresher courses in different digital assessment strategies and tools to allow for continuous feedback	**17.** Offer online training courses on digital assessment strategies and tools		**17.** Offer online training courses on digital assessment strategies and tools	
		18. Create a benchmark document on effective practices that defines the features of continuous feedback			**18.** Create a benchmark document on effective practices that defines the features of continuous feedback

>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
5. Constant monitoring, communication and tutoring	5.1. Ensure constant monitoring and support for students, reinforcing the school's tutoring and guidance role	**19.** Expand each school's diversity advisory committee to identify, appraise and jointly monitor SEN		**19.** Expand each school's diversity advisory committee to identify, appraise and jointly monitor SEN	
		20. Increase each primary school's number of tutors for every 12-14 students	**21.** Encourage group support and emotion management in primary education	**20.** Increase each primary school's number of tutors for every 12-14 students	**21.** Encourage group support and emotion management in primary education
		22. Increase each secondary school's number of tutors for every 12-14 students	**23.** Foster individual support and emotion management in secondary education	**22.** Increase each secondary school's number of tutors for every 12-14 students	**23.** Foster individual support and emotion management in secondary education
	5.2. Move towards a model of tutoring as mentoring, which provides intensive and personalised support		**24.** Guarantee a higher level of support and on-going communication with students and families	**24.** Guarantee a higher level of support and on-going communication with students and families	
	5.3. Implement a tutoring and guidance training programme for all teachers in the system	**25.** Design and implement a permanent tutoring and guidance training programme for teachers		**25.** Design and implement a permanent tutoring and guidance training programme for teachers	

>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
6. Digital wellness, safety and autonomy 	6.1. Promote and ensure the digital wellness of the entire education community	**26.** Create spaces and mentors to provide digital support		**26.** Create spaces and mentors to provide digital support	
	6.2. Encourage responsible and safe use of digital tools and media consumption	**27.** Identify and map spaces for raising media awareness			**27.** Identify and map spaces for raising media awareness
			28. Ensure an ideology and guiding principles that govern the school's use of ICT	**28.** Ensure an ideology and guiding principles that govern the school's use of ICT	

>>>

STRATEGIC LINES OF ACTION	OBJECTIVES	MEASURES			
		Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
7. Training, support and capacity development for teachers, students, families and the community	7.1. Teacher training aimed at the acquisition of digital competence for teachers	**29.** Identify the (instrumental and methodological) digital competence training needs of teachers and schools		**29.** Identify the (instrumental and methodological) digital competence training needs of teachers and schools	
	7.2. Training of learners in digital competence, prioritising those who need it most		**30.** Identify students' training needs	**30.** Identify students' training needs	
			31. Organise tutoring dynamics to work on digital competence among students	**31.** Organise tutoring dynamics to work on digital competence among students	
			32. Create ICT expert figures among students		**32.** Create ICT expert figures among students
	7.3. Create training plans for certain areas and specific needs	**33.** Create training plans for certain areas and specific needs		**33.** Create training plans for certain areas and specific needs	

>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
8. Guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff 	8.1. Provide up-to-date technological equipment	**34.** Provide a computer device loan service for students and teaching staff		**34.** Provide a computer device loan service for students and teaching staff	
	8.2. Ensure interent access for students	**35.** Reach agreements with the main operators on free internet access for students and teachers			**35.** Reach agreements with the main operators on free internet access for students and teachers
		36. Equip schools and community centres with fibre optics		**36.** Equip schools and community centres with fibre optics	
		37. Map and distribute digital resources in the territory		**37.** Map and distribute digital resources in the territory	
			38. Inform families of ICT-enabled and study facilities	**38.** Inform families of ICT-enabled and study facilities	
			39. Co-ordinate the school with the community's ICT-enabled and study facilities		**39.** Co-ordinate the school with the community's ICT-enabled and study facilities

>>>

		MEASURES			
STRATEGIC LINES OF ACTION	OBJECTIVES	Education authority	School	Short-term (2 years)	Mid- to long-term (5 years)
8. Guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff	8.3. Provide technological/ pedagogical support services in schools and homes	**40.** Guarantee on-call technical and pedagogical assistance services for families		**40.** Guarantee on-call technical and pedagogical assistance services for families	
			41. Co-ordinate the school with the community's ICT-enabled and study facilities		**41.** Co-ordinate the school with the community's ICT-enabled and study facilities
	8.4. Promote access to e-learning resources and materials, platforms and tools for the entire educational community	**42.** Create a web portal with e-learning resources		**42.** Create a web portal with e-learning resources	
			43. Promote and disseminate digital resources to families		**43.** Promote and disseminate digital resources to families
	8.5. Provide laboratory spaces (makers) and technological resources (AR, 3D, etc.) For the creation and/or use of teaching materials and e-learning environments	**44.** Promote spaces for digital creation, networking and experimentation in teaching			**44.** Promote spaces for digital creation, networking and experimentation in teaching

Source: authors' creation.

Bibliography

Adams, S., Bali, M., Eder, Z., Fladd, L., Garrett, K., Garth-McCullough, R., Gibson, A. M., Gunder, A., Iuzzini, J., Knott, J. L., Rafferty, J. and Weber, N. L. (2021). *Caring for Students Playbook. Every Learner Everywhere.* https://www.everylearnereverywhere.org/resources/caring-for-students-playbook/ (Consulted on 28/12/2022)

Allen, I. Elaine and Seaman, J. (2015). *Grade Level: Tracking Online Education in the United States*. Online: http://www.onlinelearningsurvey.com/reports/gradelevel.pdf

Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., and Bethel, E. C. (2009). A Meta-Analysis of Three Types of Interaction Treatments in Distance Education. Review of Educational Research, 79(3), 1243-1289.

Bettinger, Eric, Robert Fairlie, Anastasia Kapuza, Elena Kardanova, Prashant Kumar Loyalka, and Andrey Zakharov. (2022). "*Diminishing Marginal Returns to Computer-Assisted Learning*". NBER Working Paper No. w26967: https://www.nber.org/system/files/working_papers/w26967/w26967.pdf (Consulted on 28/12/2022)

Bonal and González (2020). *The impact of lockdown on the learning gap: family and school divisions in times of crisis*, *International Review of Education*: https://doi.org/10.1007/s11159-020-09860-z

Broadband Commission (2021). *Connecting Learning Spaces: Possibilities for Hybrid Learning. Working Group Report on Digital Learning*: https://broadbandcommission.org/wp-content/uploads/dlm_uploads/2021/09/Digital-Learning-Report-Broadband-Commission.pdf (Consulted on 28/12/2022)

CAST (Center for Applied Special Technology) (2011). *Universal Design for Learning Guidelines Version 2.0*. Wakefield, MA: Author. Translation into Spanish Version 2.0 (2013): Alba Pastor, C., Sánchez Hípola, P., Sánchez Serrano, J. M. and Zubillaga del Río, A. *Pautas sobre el Diseño Universal para el Aprendizaje (DUA)*. Full text (Version 2.0): https://educadua.es/doc/dua/dua_pautas_2_0.pdf (Consulted on 28/12/2022)

CAST (Center for Applied Special Technology) (2018). *Universal Design for Learning Guidelines Version 2.2 [graphic organizer]*. Wakefield, MA: Author: https://udlguidelines.cast.org/binaries/content/assets/udlguidelines/udlg-v2-2/pauta-dua_v2-2_espanol.pdf (Consulted on 28/12/2022)

Castañeda, L and Adell, J. (2013). *Entornos Personales de Aprendizaje: Claves para el Ecosistema Educativo en Red*. Alcoy: Marfil.

Christensen, C.M.; Horn, M.B; Staker, H. (2013). *Is K-12 Blended Learning Disruptive? An Introduction to the theory of hybrids*: https://files.eric.ed.gov/fulltext/ED566878.pdf (Consulted on 28/12/2022)

COTEC-IVIE (2021) *Competencias digitales y colectivos en riesgo de exclusión en España. Determinantes en el contexto de la Covid-19*: https://cotec.es/proyecto/competencias-digitales/51a02688-a11f-4fee-b047-41288ea0e0ac (Consulted on 28/12/2022)

Darling-Hammond, L., Schachner, A., and Edgerton, A. K. (with Badrinarayan, A., Cardichon, J., Cookson, P. W., Jr., Griffith, M., Klevan, S., Maier, A., Martinez, M., Melnick, H., Truong, N., Wojcikiewicz, S.). (2020). Restarting and Reinventing School: Learning in the Time of Covid and Beyond. Palo Alto, CA: Learning Policy Institute.

De Corte, E. (2010). *Historical developments in the understanding of learning*. In H. Dumont, D. Istance, and F. Benavides (Eds.). The Nature of Learning. Using Research to Inspire Practice (pp. 35-67). Paris: OECD Publishing.

De Onzoño, I. (2019). La tecnología humaniza la educación. In *La educación en la era digital*. Telos enlightED. Fundación Telefónica. March 2019. No. 110. (pp. 52-57) Online: https://www.fundaciontelefonica.com.mx/cultura_digital/publicaciones/enlighted-telos-110/659/

Department of Education of the Government of Catalonia (2016). Resolution ENS/1356/2016, of 23 May, publicising the definition of "Digital Competence for Teachers". Online: http://ensenyament.gencat.cat/ca/departament/publicacions/monografies/competencia-digital-docent/

Department of Education of the Government of Catalonia (2022). Resolution EDU/2595/2022, of 26 August, publicising the updated reference framework of Digital Competence for Teachers and revoking Resolution ENS/1356/2016, of 23 May, publicising the definition of Digital Competence for Teachers. Online: https://educacio.gencat.cat/ca/departament/publicacions/colleccions/pla-educacio-digital/marc-referencia-competencia-digital-docent/

Department of Education of the Government of Catalonia (2017). *Framework for Pedagogical Innovation in Catalonia*. Online: http://xtec.gencat.cat/web/.content/innovacio/marc_normatiu/documents/marc_dinnovacio_pedagogica.pdf

Department of Education of the Government of Catalonia (2020). *Digital Education Plan, 2020-2023*. Online: http://ensenyament.gencat.cat/ca/departament/publicacions/monografies/pla-educacio-digital/

Di Pietro, G., Biagi, F., Costa, P., Karpiński Z., Mazza, J, *The likely impact of Covid-19 on education: Reflections based on the existing literature and international datasets*, EUR 30275 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19937-3, doi:10.2760/126686, JRC121071. Online: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC121071/jrc121071.pdf

Dumont, H.; Istance, D.; Benavides, F. (ed.) (2010) *The Nature of Learning: Using Research to Inspire Practice.* OECD Publications.

Educadua (2013). DUALETIC project website dedicated to Universal Design for Learning, https://www.educadua.es/inicio_eng.html (Consulted on 28/12/2022)

Edutech Cluster (2020). Digitalisation Framework. Online: https://edutechcluster.org/wp-content/uploads/2020/02/Resumen-Ejecutivo-Marco-de-Digitalizaci%C3%B3n-1-16.pdf

Elena Arias Ortiz, E.; Duenas, X.; Elacqua, G.; Giambruno, C.; Mateo, M.; Perez Alfaro, M. (2021) *Hacia una educación 4.0: 10 módulos para la implementación de modelos híbridos.* IBID.OEI. http://dx.doi.org/10.18235/0003703 (Consulted on 28/12/2022)

European Commission (2020). *Digital Education Action Plan 2021-2027*. Online: https://ec.europa.eu/education/sites/education/files/document-library-docs/deap-factsheet-sept2020_en.pdf

European Commission (2021). *Blended learning for high quality and inclusive primary and secondary education. Handbook*. https://op.europa.eu/s/xmN2 (Consulted on 28/12/2022)

European Commission (undated). *European Education Area: Quality education and training for all*. https://education.ec.europa.eu/about-eea/the-eea-explained (Consulted on 28/12/2022). See the "Council Resolution on a strategic framework for European cooperation in education and training for the European Education Area and beyond (2021-2030)" (2021/C 66/01), published on 26 February 2021 in the Official Journal of the European Union. https://www.boe.es/buscar/doc.php?id=DOUE-Z-2021-70017 (Consulted on 28/12/2022)

Fundació Bofill (2020). *Obrim l'educació. Mesures de xoc i reformes prioritàries davant la crisi de la Covid-19*. Online: https://obrimeducacio.cat/uploads/docs/b/z/e/syr-agendamesures-educativescovid19_160420.pdf

Fundació Ferrer i Guàrdia (2020). *Bretxes digitals: noves expressions de les desigualtats*. Online: https://www.ferrerguardia.org/download/BRETXADIGITAL2020_CAT.pdf

Fundació Impuls (2022). *Estudi sobre tecnologia i qualitat educativa*. Online: https://impulseducacio.org/download/22277/?tmstv=1673508960

Gisbert, M.; Prats, M.A. (2018). *Educació i tecnologia. Polítiques públiques i qualitat: dimensions prioritàries per a un ús eficient*. Reptes de l'educació a Catalunya. Anuari 2018. Barcelona: Fundació Jaume Bofill.

Online: https://fundaciobofill.cat/uploads/docs/p/l/h/f/k/e/0/v/y/02_cap-2anuari2018.pdf

Goldhaber, Dan; Kane, Thomas J.; McEachin, Andrew; Morton, Emily; Patterson, Tyler; Staiger, Douglas O. (2022). "*The Consequences of Remote and Hybrid Instruction during the Pandemic*". NBER Working Paper 30010: http://www.nber.org/papers/w30010 (Consulted on 28/12/2022)

Gómez Caride, E. (2021). *¿Qué es el modelo híbrido y cómo ponerlo en práctica?* Documento Nº 15. Proyecto Las preguntas educativas: ¿qué sabemos de educación? Buenos Aires: CIAESA. https://secureservercdn.net/198.71.233.106/rjh.422.myftpupload.com/wp-content/uploads/2021/06/15-Hibrido-nuevo.pdf (Consulted on 28/12/2022)

Gunder, A., Vignare, K., Adams, S., McGuire, A., and Rafferty, J. (2021). *Optimizing High-Quality Digital Learning Experiences: A Playbook for Faculty. Every Learner Everywhere.* https://www.everylearnereverywhere.org/resources/faculty-playbook/ (Consulted on 28/12/2022)

INE [Spanish National Statistics Institute] (2022). *Encuesta sobre equipamiento y uso de las tecnologies de la información y la comunicación (TIC) en los hogares. Año 2022*. https://www.ine.es/prensa/tich_2022.pdf (Consulted on 28/12/2022)

Joosten, T., Weber, N., Baker, M., Schletzbaum, A., and McGuire, A. (2021). *Planning for a Blended Future: A Research-Driven Guide for Educators. [Report] Every Learner Everywhere Network*. https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/ (Consulted on 28/12/2022)

Kienzle, R. (2022). *Hybrid Live Guide. Facilitating Workshops, Activities, and Discussions in Mixed Hybrid Environments.* https://www.amazon.com/-/he/Robert-Kienzle-ebook/dp/B09RW7MRCY (free ePub Kindle Edition) (Consulted on 28/12/2022)

Kowalski, James (2020). *An Introduction to Hybrid Teaching. Learning Technologies*. College of DuPage. https://www.codlearningtech.org/PDF/hybridteachingworkbook.pdf (Consulted on 28/12/2022)

London's Education Department (2019). *Realising the potential of technology in education: A strategy for education providers and the technology industry*. Online: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791931/DfE-Education_Technology_Strategy.pdf

Means, B., Toyama, Y., Murphy, R., Bakia, M., and Jones, K. (2010). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. Washington, DC: U.S. Department of Education. Online: https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

Ministry of Economic Affairs and Digital Transformation of the Government of Spain (23/07/2020). *España Digital 2025*. https://portal.mineco.gob.es/RecursosArticulo/mineco/prensa/ficheros/noticias/2018/Agenda_Digital_2025.pdf (Consulted on 28/12/2022)

Ministry of Economic Affairs and Digital Transformation of the Government of Spain (27/01/2021). *Plan Nacional de Competencias Digitales*. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf (Consulted on 28/12/2022)

Moreno, A. (2020). *Personalitzar, un model per a una educació de qualitat al segle XXI*. Delphi Expert Report. Barcelona: Impuls Educació. Online: https://impulseducacio.org/wp-content/uploads/2020/04/INFORME-DELPHI_CAT_DEFF.pdf

OBSAE [e-Government Observatory] (2022). Índice de Economía y Sociedad Digital. Año 2022. https://administracionelectronica.gob.es/pae_Home/pae_OBSAE/Posicionamiento-Internacional/Comision_Europea_OBSAE/Indice-de-Economia-y-Sociedad-Digital-DESI-.html (Consulted on 28/12/2022)

OECD (2016). *Skills for a Digital World: 2016 Ministerial Meeting on the Digital Economy Background Report. OECD Digital Economy Papers*, No. 250, OECD Publishing, Paris. Online: https://intef.es/Noticias/informe-resumen-competencias-para-un-mundo-digital/

OECD (2020). *A framework to guide an education response to the Covid-19 Pandemic of 2020*. Online: https://read.oecd-ilibrary.org/view/?ref=126_126988-t63lxosohs&title=A-framework-to-guide-an-education-response-to-the-Covid-19-Pandemic-of-2020

OECD (2020). *Coronavirus special edition: Back to School, Trends Shaping Education Spotlights,* No. 21, OECD Publishing, Paris, https://doi.org/10.1787/339780fd-en

OECD (2020). *Education responses to Covid-19: Embracing digital learning and online collaboration*. Online: https://read.oecd-ilibrary.org/view/?ref=120_120544-8ksud7oaj2&title=Education_responses_to_Covid-19_Embracing_digital_learning_and_online_collaboration

OECD (2020). *Schooling disrupted, schooling rethought. How the Covid-19 pandemic is changing education*. Online: https://read.oecd-ilibrary.org/view/?ref=133_133390-1rtuknc0hi&title=Schooling-disrupted-schooling-rethought-How-the-Covid-19-pandemic-is-changing-education

Ojando, E.; Benito, M.; Prats, M.A., *Els alumnes com a líders digitals a l'aula Descripció i avaluació de l'experiència dels alumnes experts TIC a l'escola Jesuïtes Bellvitge*, Aloma: Revista de Psicologia, Ciències de l'Educació i de l'Esport: Vol. 35 No. 1 (2017): Aloma 35(1). Online: http://www.revistaaloma.net/index.php/aloma/article/view/309

Prats, M.A. (2008). *Les TIC enteses com a llenguatges, eines i espais*. Quaderns digitals: Revista de Nuevas Tecnologías y Sociedad, ISSN 1575-9393, No. 51, 2008.

Prats, M.A. (2022). Viure en digital. Com eduquem per al món d'avui. Barcelona: Eumo

Punie, Y., Editor(s), Redecker, C., *European Framework for the Digital Competence of Educators: DigCompEdu*, EUR 28775 EN, Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-73718-3 (print), 978-92-79-73494-6 (pdf), doi:10.2760/178382 (print),10.2760/159770 (online), JRC107466. https://publications.jrc.ec.europa.eu/repository/handle/JRC107466 (Consulted on 28/12/2022)

QAA (2020) *Building a Taxonomy for Digital Learning. Guidance.* https://www.qaa.ac.uk/docs/qaa/guidance/building-a-taxonomy-for-digital-learning.pdf (Consulted on 28/12/2022)

Republic of Estonia (2020). *The Estonian Lifelong Learning Strategy*

2020. Online: https://www.hm.ee/sites/default/files/estonian_lifelong_strategy.pdf

Riera, J. (2018). *Introducció. La nova relació educativa i la dinàmica de la innovació: dos eixos crítics de la transformació educativa actual*. Reptes de l'educació a Catalunya. Anuari 2018. Barcelona: Fundació Jaume Bofill – Online: https://fundaciobofill.cat/uploads/docs/j/o/3/i/o/0/h/9/n/anuari2018_190619.pdf

Sanmartí, N. (2016). *L'alumnat*. Ara és demà. Online: https://participa.gencat.cat/uploads/decidim/attachment/file/28/ponencia5_NSanmarti.pdf

Sanmartí, N. (2020). *Avaluar per aprendre*. Online: http://www.xtec.cat/web/curriculum/competencies/basiques/xarxacb

Tarabini, A., Jacovkis, J. (2020). *Recerca Escoles Confinades*, Informe 1. GEPS-UAB: Barcelona

Tarabini, A., Jacovkis, J. (2020). *Recerca Escoles Confinades*, Informe 2. GEPS-UAB: Barcelona

Tarabini, A., Jacovkis, J. (2020). *Recerca Escoles Confinades*, Informe 3: Fer de docent en un context inèdit. GEPS-UAB: Barcelona

The World Bank (2020). *Reimagining Human Connections: Technology and Innovation in Education at the World Bank*. https://www.worldbank.org/en/topic/edutech/publication/reimagining-human-connections-technology-and-innovation-in-education-at-world-bank (Consulted on 28/12/2022)

Togo, F. (2019). Development of digitalization in the schools – insights from Denmark. Online: https://www.danskeforlag.dk/media/1782/finn-togo.pdf

Trujillo Sáez, F., Álvarez Jiménez, D., Montes Rodríguez, R., Segura Robles, A. and García San Martín, M. J. (2020). *Aprender y educar en la era digital: marcos de referencia*. Madrid: Fundación ProFuturo. Online: https://profuturo.education/publicaciones-descargables/

Trujillo-Sáez, F.; Fernández-Navas, M.; Montes-Rodríguez, M.; Segura-Robles, A.; Alaminos-Romero, F.J. and Postigo-Fuentes, A.Y. (2020). Panorama de la educación en España tras la pandemia de Covid-19: la opinión de la comunidad educativa. Madrid: Fad. DOI: 10.5281/zenodo-3878844

UN (2022). *Impact of the digitalization of education on the right to education*. https://www.ohchr.org/en/documents/thematic-reports/ahrc5032-impact-digitalization-education-right-education

UNESCO (2020). *Framework for reopening schools*. Online: https://unesdoc.unesco.org/ark:/48223/pf00003733488

UNESCO (2021). *Concept note for the 2023 Global Education Monitoring Report on technology and education*. https://unesdoc.unesco.org/ark:/48223/pf0000378950 (Consulted on 28/12/2022)

UNESCO (2021). *The platformization of education: a framework to map the new directions of hybrid education systems*.https://unesdoc.unesco.org/ark:/48223/pf0000377733 (Consulted on 28/12/2022)

UNICEF (2020). *La Educación frente al Covid-19. Propuestas para impulsar el derecho a la educación durante la emergencia*. Online: https://www.unicef.es/educa/biblioteca/la-educacion-frente-al-covid-19

UNICEF (2022). *Pulse Check on Digital Learning. Executive Summary.* https://www.unicef.org/media/132101/file/Pulse%20Check.pdf (Consulted on 28/12/2022)

USART, M. (2020). *Què sabem sobre l'efectivitat de les tecnologies digitals en l'educació?* Què funciona en educació. September 2020. No. 18 Fundació Jaume Bofill and Ivàlua. Online: https://fundaciobofill.cat/uploads/docs/j/1/z/m2c-que_funciona_18_educaciodigital_220920.pdf

VAN VALKENBURG, W. F., DIJKSTRA, W. P., DE LOS ARCOS, B., GOEMAN, K., VAN ROMPAEY, V., and POELMANS, S. (2020, May). *European Maturity Model for Blended Education*. EADTU. https://embed.eadtu.eu/download/2470/European%20Maturity%20Model%20for%20Blended%20Education.pdf?inline=1 (Consulted on 28/12/2022)

VARIOUS AUTHORS (2015) *Blended Learning Implementation Guide 3.0*. DLN Smart Series. https://bplawassets.learningaccelerator.org/artifacts/pdf_files/BLIG-3.0-FINAL.pdf (Consulted on 28/12/2022)

VUORIKARI, R., KLUZER, S. and PUNIE, Y., DigComp 2.2: *The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*, EUR 31006 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-48882-8, doi:10.2760/115376, JRC128415. https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

WORLD ECONOMIC FORUM (2015). *New Vision for Education. Unlocking the Potential of Technology*. Online: https://widgets.weforum.org/nve-2015/ - http://www3.weforum.org/docs/WEFUSA_NewVisionforEducation_Report2015.pdf

Annexes

References to read up on the eight strategic lines of action

Schools and teaching teams working towards hybrid school

We also recommend reading the updated documentation published by the World Bank on educational technology:

- https://www.worldbank.org/en/topic/edutech/brief/education-and-technology-publications
- https://www.worldbank.org/en/topic/edutech/brief/edtech-toolkit-for-remote-learning

There is a very interesting collection of documents and reports on Everylearnereverywhere.org, particularly on planning and implementation processes with members of the educational community and especially educators – *Planning for a Blended Future: A Research-Driven Guide for Educators*. A https://www.everylearnereverywhere.org/resources/planning-for-a-blended-future/

Another reference document that has recently been published by the Inter-American Development Bank (IDB) deals with education 4.0 and 10 Modules for the Implementation of Hybrid Models at https://publications.iadb.org/publications/english/viewer/Towards-Education-4.0-10-Modules-for-The-Implementation-of-Hybrid-Models.pdf

Finally, see the European Maturity Model for Blended Education at https://embed.eadtu.eu/download/2470/European%20Maturity%20Model%20for%20Blended%20Education.pdf?inline=1

Designing authentic learning experiences

The Department of Education's resources on the subject should be regularly consulted at:

- https://projectes.xtec.cat/eduhack/
- https://projectes.xtec.cat/eduhack/categoria/projectes2ed/inclutac/
- https://blocs.xtec.cat/mobilsperlainclusio/
- http://ateneu.xtec.cat/wikiform/wikiexport/cmd/tac/dua/index?_ga=2.203436951.683085091.1601183209-927034735.1567874018

The digital resources offered to schools by the initiative "La escuela es lo primero" [School Comes First] should be consulted regularly at https://laescuelaloprimero.es/ and, among other things, includes:

- Based on the different active methodologies, how to construct one's own methodological proposal, which is adapted to each teacher and situation, and which harnesses the best of each of them in a non-face-to-face scenario such as the one experienced. This resource deals with the different specifications of the main active methodologies and the authentic activities that can be replicated: flipped-classroom, project-based learning, gamification, visual thinking, service learning, cooperative learning and design thinking at https://laescuelaloprimero.es/reto-6-como-transferir-las-metodologias-activas-al-entorno-virtual/

The handbooks in the "Enseñar y aprender desde casa" [Teaching and Learning From Home] collection of the University of La Laguna and the edulLab research group should be consulted regularly at https://edullab.webs.ull.es/wordpress/ensenar-y-aprender-desde-casa/ (comprising five handbooks offering general guidelines on how to organise and develop remote teaching and home-based learning via the internet). These five handbooks are:

- L'ensenyament digital. Reptes i desafiaments
  [Digital Learning. Challenges]
  https://drive.google.com/file/d/1xu1jT3S3AwiuMkbQBGXEHjvKb7yu-fOj/view
- Guia per al professorat [Handbook for Educators]
  https://drive.google.com/file/d/1P5PXD7EB9slvMChWO3-Qe6YDN1xRPZtY/view
- Guia per als equips directius dels centres educatius [Handbook for School Management Teams]
  https://drive.google.com/file/d/1QFSuRJGLeCHacPuo_FvUORXkdYdLsbZd/view
- Guia a l'alumnat [Handbook for Students]
  https://drive.google.com/file/d/1q0ENQ9hTY9NxXsUR9DCV8LWxMMkkMDst/view
- Guia a les famílies [Handbook for Families]
  https://drive.google.com/file/d/1z-IsDwdFcjX8mXoltxEAyNHwrImRxAi0/view

Each of these handbooks provides practical recommendations, in the form of a set of rules for e-teaching and e-learning. The handbooks are published in the Media Library of the Regional Ministry of Education (http://www3.gobiernodecanarias.org/medusa/mediateca/ecoescuela/?page_id=3168) and are also on the portal for families (http://www3.gobiernodecanarias.org/medusa/ecoescuela/familias/ensenar-aprender-desde-casa/) created by the Canary Islands Regional Ministry of Education in the framework of COVID-19.

The UNESCO digital library and the books and handbooks associated with COVID-19 should be consulted regularly at https://unesdoc.unesco.org/

- *Enseñar en tiempos de COVID-19: una guía teórico-práctica para docentes [Teaching in Times of COVID-19: A Theoretical-Practical Guide for Teachers]* at https://unesdoc.unesco.org/ark:/48223/pf0000373868?posInSet=1&queryId=9d84907b-3c77-456a-8692-9c4751073267

One of the books (free EPUB on Amazon and in open format) that we recommend downloading is the Hybrid Live Guide with blended-learning resources and activities at https://www.amazon.com/-/he/Robert-Kienzle-ebook/dp/B09RW7MRCY.

Furthermore, there is a very interesting collection of documents and reports at Everylearnereverywhere.org, particularly with regard to the design and selection of learning experiences at https://www.everylearnereverywhere.org/resources/faculty-playbook/

Personalising virtual learning environments

The digital resources offered to schools by the Catalan Digital Education Network (XTEC) http://xtec.gencat.cat/ca/centres/centres-educatius-en-linia/ should be consulted regularly and that, among others, include:

- Estructura i planificació de l'entorn virtual d'aprenentatge
  [Structure and Planning of the VLE]
  https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/Estructura-i-planificacio-EVA.pdf
- Actuacions i decisions #centreseducatiusenlínia
  [Actions and Decisions #onlineeducationalestablishments]
  https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/Actuacions-i-decisions.pdf
- Orientacions per a la personalització de l'entorn virtual d'aprenentatge
  [Guidelines for the Personalisation of the VLE]
  https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/Orientacions-per-a-la-personalitzacio-entorn-virtual-aprenentatge.pdf
- Els recursos i continguts en l'educació en línia
  [Online Education Resources and Content]
  https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/Els-recursos-i-continguts-en-leducacio-en-linia.pdf

- La comunicació en l'educació en línia [Communication in Online Education] https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/La-comunicacio-en-leducacio-en-linia.pdf
- Dinamització de videoconferències [Promotion of Video-Conferencing] https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/videoconferencies.pdf
- Publicacions en nodes, webs, EVA... [Publication in nodes, websites, VLE, etc.] https://xtec.gencat.cat/web/.content/centres/centres-educatius-en-linia/Publicacio-en-web.pdf
- Recursos per al Disseny Universal per a l'Aprenentatge [Universal Design for Learning resources] http://ateneu.xtec.cat/wikiform/wikiexport/cmd/tac/dua/index

Also interesting to read, promote and disseminate is the recent document published in open access on the Decálogo para la mejora de la docencia on-line [Improving online teaching. Practical guide for quality online education] at http://openaccess.uoc.edu/webapps/o2/handle/ 10609/122307. The book presents a series of proposals for improving online education and for dealing with future situations of interrupted attendance that may arise due to potential further lockdowns, either total or partial. It aims to be a tool to support all education professionals who need or want to fully exploit the transformative potential offered by online education.

Also worth reading is the latest UNESCO document (2021) on the new framework for platforms in education, which provides some useful guidance: https://unesdoc.unesco.org/ark:/48223/pf0000377733.

Diversified assessment and continuous feedback

The following digital resources offered to schools should be consulted regularly:

- https://xtec.gencat.cat/web/.content/alfresco/d/d/workspace/SpacesStore/0088/d638bbf2-06d3-4e12-85ab-1b63f057d629/Decaleg-AxA.pdf
- http://edulab.uoc.edu/es/2020/03/16/decalogo-para-docencia-linea-inesperada-2/
- https://blogs.uoc.edu/epce/es/claves-evaluacion-en-linea-online-webinar-nati-cabrera-maite-fernandez/
- https://blogs.uoc.edu/epce/es/saca-maximo-provecho-feedback-aprendizaje-webinar-teresa-guasch-anna-espasa/
- https://laescuelaloprimero.es/wp-content/uploads/2020/09/06_Entregable_Metodologias-Activas.pdf

- Xarxa de Competències Bàsiques [Basic Skills Network]
  https://projectes.xtec.cat/xarxacb/
- Xarxes pel canvi [Networks for Change]
  https://www.edubcn.cat/ca/suport_educatiu_recursos/plans_programes/xarxes_per_al_canvi

There is a very interesting collection of documents and reports at Everylearnereverywhere.org, particularly with regard to caring for students in their learning processes, Caring for Students Playbook at https://www.everylearnereverywhere.org/resources/caring-for-students-playbook/

Constant monitoring, communication and tutoring

The following digital resources offered to schools should be consulted regularly:

- Model of tutoring as mentoring
  Deming, David: https://www.nytimes.com/2020/04/09/business/online-learning-virus.html#click=https://t.co/v0aAm6tZ72
  Roca, Enric: http://www.elpuntavui.cat/opinio/article/1782308-docencia-tutorial.html
- Organisation of the curriculum in a multidisciplinary, interdisciplinary and transdisciplinary manner
  Pardo, Fèlix: https://edu21.cat/tres-maneres-dentendre-les-disciplines-en-el-curriculum-pluridisciplinarietat-interdisciplinarietat-i-transdisciplinarietat/
  https://www.educat.cat/blog/wp-content/uploads/2014/03/UNA-EXPERI%C3%88NCIA-DE-TUTORIA-INDIVIDUAL-A-ESO.pdf
  https://projectes.xtec.cat/impulsfp/orientafp/experiencies-orientafp/lorientacio-i-la-tutoria-experiencies-de-lalumnat/

The latest European Commission document on Blended Learning addressing quality and equity is key to finding the reference framework for the implementation of monitoring and tutoring in primary and secondary education in the European Union at https://op.europa.eu/s/xmN2

Digital wellness, safety and autonomy

When the COVID-19 pandemic hit, several organisations created a specific web space or tab. For example:

- UNESCO produced visual, graphic and social media messages to combat disinformation, to fight discrimination and to promote best practices. In this vein,

the message is: "Together, we can build more media literate and tolerant societies, and share verified information during the current crisis." (See more at https://en.unesco.org/covid19/communicationinformationresponse/visualresources).

- The Spanish Ministry of Education, together with the OECD, created the space and the project https://aprendoencasa.educacion.es/, which provides access to digital resources for families, educators and the educational community in general.
- Recently, the Department of Education launched the "Safe School" label (http://ensenyament.gencat.cat/ca/actualitat/escolasegura/), which provides access to updated information and resources on the pandemic.

The following digital resources offered to schools by https://xtec.gencat.cat/ca/centres/centres-educatius-en-linia/ which provides access to updated information and resources on the pandemic.

- Decàleg per a grups de missatgeria escolars [Practical guide for School Messaging Groups]
  https://educacio.gencat.cat/ca/arees-actuacio/families/families-escola/escolaritat/decaleg-grups-missatgeria/
- Checklist per un ús responsable d'Internet [Checklist for responsible use of the internet]
  https://documents.espai.educacio.gencat.cat/RecursosTIC/Tips-seguretat-centres.pdf
- https://faros.hsjdbcn.org/ca/etapa/internet-redes-sociales
- https://agora.xtec.cat/iesmontgri/wp-content/uploads/usu613/2014/09/2015-Guia-digital.pdf
- https://mossos.gencat.cat/ca/temes/Internet-xarxes-socials-i-aplicacions/

See the Catalan Data Protection Authority at https://apdcat.gencat.cat/ca/actualitat/menors_i_joves/

We recommend the latest Government of Catalonia report-document on "Les tecnologies digitals a la infància, l'adolescència i la joventut" [Digital Technologies in Childhood, Adolescence and Youth] at https://internetsegura.cat/wp-content/uploads/2022/05/LesTecnologiesDigitalsInfanciaAdolecenciaJoventut-.pdf

Training, support and capacity development for teachers, students, families and the community

The following digital resources offered to schools by http://xtec.gencat.cat/ca/centres/centres-educatius-en-linia/ should be consulted regularly:

- http://xtec.gencat.cat/ca/formacio/formaciogeneralprofessorat/cultura-digital/planificacio-oferta-formativa-modalitats/kudis/

One of the key documents for understanding the concepts of Digital Learning is provided by the Quality Assurance Agency for Higher Education (QAA) and is a reference for understanding the taxonomy in the realm of blended learning at https://www.qaa.ac.uk/docs/qaa/guidance/building-a-taxonomy-for-digital-learning.pdf

In addition, a basic document for working with the blended learning approach for teaching staff and families can be found in this reference document at https://secureservercdn.net/198.71.233.106/rjh.422.myftpupload.com/wp-content/uploads/2021/06/15-Hibrido-nuevo.pdf

Guaranteeing technological equipment, connectivity and educational resources and materials for students, families and teaching staff

The following digital resources offered to schools should be consulted regularly:

- https://obrimeducacio.cat/blog/eixos-treball-tancar-bretxa-digital
- https://www.citilab.eu/covid-19/
- https://learningaccelerator.org/

Glossary of acronyms and abbreviations

ACTIC	Certificate of Digital Competence
CPD	Continuing Professional Development
DT	Digital Technologies
ICT	Information and Communication Technologies
LKT	Learning and Knowledge Technologies
SEN	Special Educational Needs
UDL	Universal Design for Learning
VLE	Virtual Learning Environments

Schools need to integrate and effectively use digital technologies to fulfil their core mission: to educate students to live, participate and thrive in a society facing major technological, cultural, economic, information and demographic changes. To bring this goal to fruition, investment must be made in infrastructures, devices, connectivity and training, but the path towards quality and inclusive educational digitalisation goes beyond that. Pedagogical approaches must also be fostered to help teachers and schools to use digital technologies with active and competency-based methodologies in line with the current educational transformation process and that help to bridge the digital divide.

This document proposes a hybrid learning model aimed at ensuring equity and improving learning outcomes, with a view to developing the digital literacy and competence of all students and moving towards a more flexible, personalised and student-centred model of education. With this purpose in mind, it sets out objectives, criteria, guidelines and key actions to implement a hybrid learning model in primary and secondary education in both public policies and schools.

FUNDACIÓ BOFILL

EQUITAT DIGITAL

ISBN: 978-84-126532-2-9