



## **RECOMMENDATIONS AND GUIDELINES FOR REGIONAL POLICY MAKERS**

Mobile learning & cloud services - teacher  
induction and continuing professional development



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## 1. Executive summary

Mobile technologies and cloud solutions are playing an unprecedented role in today's society and are increasingly key to providing innovative teaching and learning in and out of school. Technology can be a very effective tool for empowering learning and digital competences are considered fundamental for both teachers and students. However, educators need to be trained throughout their careers to use technology effectively in their practice in order to realize fully its benefits in education and provide authentic active learning experiences. In this context, institutions have to put in place policies that facilitate constructive and flexible training opportunities for teacher induction and continuing professional development.

The Future Classroom Lab Regional Network project (FCL Regio) brings together a growing number of local and regional authorities, as well as a network of national ministries of education, to explore common challenges related to the integration and mainstreaming of ICT in schools with a particular focus on mobile devices and cloud computing.

During its second year, the FCL Regio project has particularly focused on the following key questions:

- **What are the frameworks and standards that should be used to describe and structure teachers' digital competences? What kind of competences should teachers master in order to make effective use of ICT in the classroom?**
- **Which are the most effective methods for training teachers and for attending to the induction of newly qualified teachers? How should these be implemented by regional public authorities and how can their impact be best assessed?**
- **What practical roadblocks or opportunities should be taken into consideration to guarantee the smooth deployment of training programmes for teachers? In particular, what measures should policy makers take to lower access barriers to training programmes on digital competences and technology enhanced teaching and learning?**



The project has also considered it important to focus on initial teacher education, which is likely to be prioritised by public authorities following the publication in May 2017 of the European Commission's publication, *School development and excellent teaching for a great start in life*, which sets out a European strategy to support high quality, inclusive and future-oriented education. The communication stems from the identification of three key challenges in education: basic competence acquisition, equity and social mobility, and the need to prepare young people for a digital world.

These and other topics and questions informed the discussions held at the second FCL Regio Strategic Seminar in Brussels on the 10th May 2017, informed the creation of an online questionnaire sent to local policy makers in the field of education, and inspired face-to-face consultations with national and regional decision makers.

The eleven key recommendations presented in this document highlight core elements that such training programmes should consider. Project partners initially stressed the importance of having a pedagogical and didactic framework in professional development programmes for teachers focused on the key competences required for a successful career in technology-enabled classrooms. All the teaching staff of the school should also be involved in training programmes which should be tailored to specific needs and open to innovative approaches. Mentorship schemes, online training and peer learning opportunities are all seen as key ways in which regions can significantly improve training outcomes.

Teachers, of course, should have the responsibility and be motivated to develop their teaching skills and competences themselves, but it is also important that the responsible authorities do their utmost to facilitate the process and duly recognise the effort of the teachers committed to keeping their competences up to date. Clearly, the adoption of a common, pan-European framework on digital teaching competences would be a very important step forward and could help policy makers working at both national and regional level to better align, both financially and in operational terms, strategies related to the pedagogical use of ICT in schools. A quality assurance mechanism for using and purchasing good digital content is also fundamental.

## **1.1. FCL Regio recommendations in a nutshell**

Work in the second year of the FCL Regio project has led the project consortium to formulate the following key recommendations for regional policy makers, for better teacher induction and continuing professional development related to mobile devices and K-12 cloud services.

**Recommendation 1:** Professional development must focus on key competences, always referring to a pedagogical-didactic framework.

**Recommendation 2:** Professional development pathways should be open to new and different approaches and should involve all the teaching staff of the school.

**Recommendation 3:** Teachers should be responsible for their continuous professional development which must be recognized within the different national educational systems.

**Recommendation 4:** Initial teacher education courses should help all student teachers to develop key digital competences that will provide the foundations for a successful career in technology-enabled classrooms.

**Recommendation 5:** Mentorship schemes should be considered as an important way to provide support for newly qualified teachers.

**Recommendation 6:** Peer to peer learning represents a crucial opportunity for teachers to develop continuously their competence learning from each other and co-constructing a trustful school community.

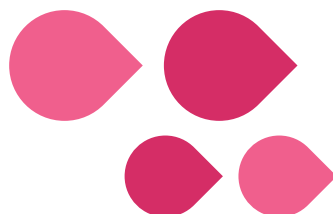
**Recommendation 7:** Online training can provide a central component of any teacher education strategy and be part of a blended learning approach.

**Recommendation 8:** The impact of teacher training programmes should be measured and documented to prove the effectiveness of the training including how it enhances the learning process of students.

**Recommendation 9:** Regional authorities should encourage the adoption of common frameworks, as the Digital Competence Framework for Educators, as a common instrument to help institutions recognise digital competence in teachers, and adapt this to the regional context of their teachers, regardless of their country of origin.

**Recommendation 10:** Policy makers need to find a balance between how to implement and finance a strategic national strategy for ICT in schools and how to allow possibilities for regions and municipalities to customise and adapt that strategy depending on local conditions.

**Recommendation 11:** To ensure that high quality digital content is used in schools, a local, regional or national non-profit stakeholder should provide a quality assurance mechanism so that schools know how to purchase good digital content that is closely linked to the national curriculum.



## 2. The Future Classroom Lab Regional Network project

The Future Classroom Lab Regional Network project (FCL Regio), funded by the Erasmus+ programme and coordinated by the Autonomous Province of Trento and European Schoolnet, is providing new opportunities for regional educational authorities to explore common challenges related to the integration and mainstreaming of ICT in schools. This project includes local authorities from three regions in Europe (Catalonia, Gothenburg and Trento) that are at the forefront of making innovative use of ICT. The project supports the integration of ICT in teaching and learning and aims to:

- Strengthen cooperation between decision makers developing and implementing ICT strategies for schools working at national and regional levels based on an exchange of practices and joint working related to the use of mobile devices and the development of cloud services;
- Showcase innovative classroom practice in regions and produce strategic guidelines for those attempting to mainstream ICT in schools, particularly related to pedagogical scenarios involving mobile devices and K-12 learning cloud services;
- Provide practical guidelines, recommendations, resources and other support materials for head teachers and school leaders developing strategies for whole school use of mobile devices and cloud services.

In the first year of the project, FCL Regio partners focused on how regions are responding to developing, accessing and using digital educational resources and published a report designed to inform and provide advice to decision makers developing regional and national ICT strategies. During this second year of the project, the consortium decided to focus on continuing professional development and induction programmes for teachers in the use of technology for educational purposes. A number of reports, studies, projects and pilots, summarised below, have provided the context for discussions within the project as well as helped inform the recommendations being made in this document.



### 3. Consultation on regional authorities common priorities and challenges

European Schoolnet, along with the consortium's partners, developed an online questionnaire during the second year of the project and conducted interviews with regional decision makers to identify common priorities and challenges.

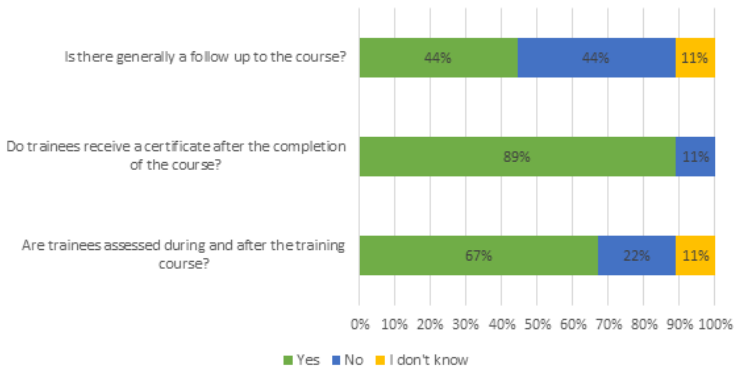
Teacher training programmes for educators' ICT competences and pedagogical use of ICT, successful modalities for delivering such training opportunities, strategies on assessment and accreditation of professional development programmes, were some of the main topics identified through this consultation. 21 regional representatives from 14 different regions and 9 different countries responded to the survey launched on the 3<sup>rd</sup> of October 2017. Below, some of the key findings are summarised and presented.

The survey highlighted that **the pedagogical use of ICT in schools is a priority for regional organisations** and, in most cases, it is part of the induction training of newly qualified teachers (67%) as well as of the continuous professional development of in-service teachers (78%).

However, in most regions (78%) induction training programmes **do not refer to any minimum standard related to the use of ICT** required for newly qualified teachers. Similar results appear also in the case of in-service teachers; most regions (67%) do not have a required minimum level of training on the use of ICT.

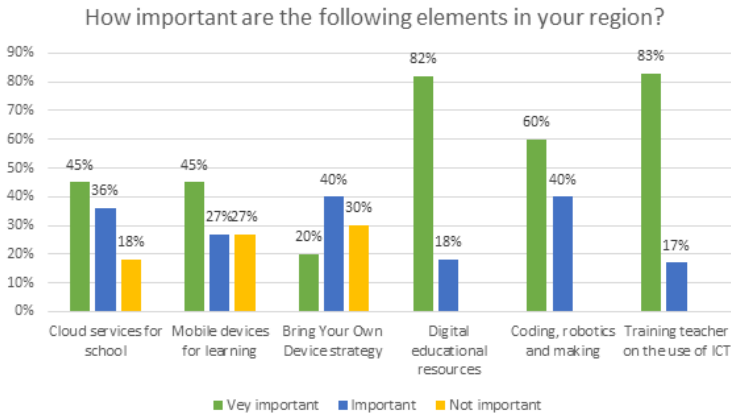
Despite regions not generally requiring a minimum level of competence in the use of ICT in education, **teacher training is assessed in the majority of cases where it takes place (67%), and trainees receive a certificate after the completion of a course in almost all the cases (89%)**. In addition, in almost one out of two courses provided (44%) trainers follow up with their trainees for additional support.

Assessment of teacher training



For the vast majority of respondents, **training teachers on the use of ICT** (83%) and **digital educational resources** (82%) were highly important issues in their regions. Training related to cloud services for schools, mobile devices for learning, coding, robotics and making were also considered important or very important elements in regions' policies. However, there are also some respondents that they don't consider important the mobile devices for learning (27%) and the cloud services for schools (18%).

Perhaps surprisingly, developing a Bring your Own Device strategy was identified as the least important issue at a regional educational level by respondents or was even seen as not important for the 30% of the respondents. A possible reason for this might be instances of national policies that have banned use of personal devices in schools; these may have prevented some regional decision makers from recognising the potential benefits of exploiting and leveraging BYOD approaches for educational purposes.

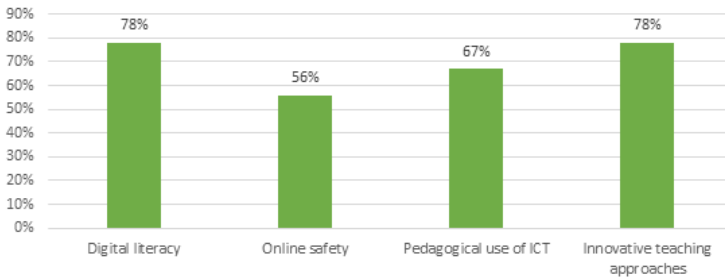


Regarding the competences considered important in the training of teachers, **digital literacy, online safety, pedagogical use of ICT and innovative teaching approaches**, were all highlighted as key elements to be integrated in teacher training programmes. Professional development related to digital literacy and innovative teaching approaches (e.g. flipped classroom, project based learning etc.) were equally ranked highest (78%), followed by didactic/pedagogical use of ICT (67%) and online safety (56%). An innovative mind-set, advanced collaborative and communication skills and flexibility were identified as some additional key competencies that teachers should develop according to the respondents' regional educational policies.





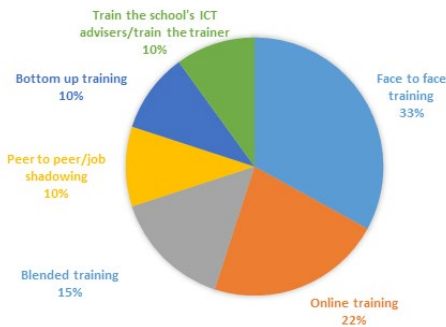
### In your region, how important are the following competences in the training of teachers?



“All basic competencies are relevant in terms of educational goals and methodologies in teaching. Digital competence must be achieved through specific approach and by embedding it across all curriculum.”

Respondents tended to consider **face-to-face training** the most successful modality for delivering teacher training in their region. However, online training and **blended training that combines online and face-to-face interaction were also considered advantageous**. The need for training a school’s ICT advisers was underlined by a number of respondents and peer-to-peer learning was similarly highlighted as a good option for the professional development of teachers.

#### What are the most successful modalities for delivering teacher training in your region?



As preliminary conclusions, the survey conducted confirmed the **need for providing online, on site or blended training opportunities** so that both newly qualified and in-service teachers can develop their ICT competences and their ability to make innovative use of technology within a pedagogical framework. New teaching approaches, digital literacy and online safety are considered

essential elements of these trainings and the use of cloud services and mobile technologies in schools, together with digital educational resources and a focus on active ways of using technology (e.g. making, coding and robotics) emerge as key points when developing teacher training programmes.

## 4. Introduction to the recommendations

Teacher induction and continuing professional development programmes play a crucial role in the integration of innovative teaching and learning practices into schools and the effective use of ICT for education. There cannot be innovation in the way students learn without the active involvement of teachers and it is therefore paramount to make sure educators have the skills and competences they need to be the drivers of the change in schools.

As stated in the handbook for political decision-makers of the European Commission on the transition to the teaching profession (2010)<sup>1</sup>, there is a broad consensus that becoming a teacher should be seen as a gradual process, including initial education, the induction phase and continuing professional development. The point at which newly educated teachers transfer from initial education and move into professional life is seen as crucial for further professional commitment and development and for reducing the number of teachers leaving the profession.

The use of new technologies in the classroom can help schools to support active and collaborative learning and provide teachers with opportunities to rethink their role within the education process so that they become facilitators as well as mentors, which implies a professional as well as a cultural change. However, to have an impact at systemic level, this process need to be extended, pervasive, widespread and not involve only the most motivated teachers.



.....

1 [Developing coherent and system-wide induction programmes for beginning teachers: a handbook for policymakers. European Commission Staff Working Document SEC \(2010\) 538 final](#)

Teacher training plays a key role in this new setting and, as such, represents a critical priority; yet, many of the institutional programs developed in the regions consulted, have focused on computer literacy, limiting their impact on teacher pedagogical practice.

In this document, the FCL Regio project partners identify three levels of recommendations that may guide other decision makers through designing and deploying better policies. This three-level analysis, which led to a number of specific suggestions, was centred on the following three main driving questions:

1. What are the frameworks and standards that should be used to describe and structure teachers' digital competences? What kind of competences should teachers master in order to make an effective use of ICT in the classroom?
2. Which are the most effective methods for training teachers and for attending to the induction of newly qualified teachers? How should these be implemented by regional public authorities and how can their impact be best assessed?
3. What practical roadblocks or opportunities should be taken into consideration to guarantee the smooth deployment of training programmes for teachers? In particular, what measures should policy makers take to lower teacher access barriers to training programmes on digital competences and technology enhanced teaching and learning?





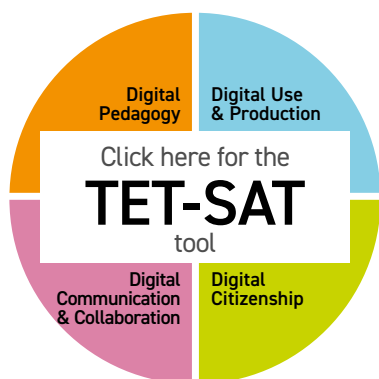
## 5. Recommendations on frameworks and standards for teacher digital competences

In today's information-based and technological society, teachers need to empower students to become conscious and active digital citizens by providing them with the necessary digital skills and technology-supported learning opportunities. Digital competency should be regarded as a set of skills and a mindset to be developed as both part of a specific discipline and elements intergrated across subjects and school levels. Students must be aware of their relevance but also understand that these competences are part of the learning process related to all their learning goals.

Teachers, therefore, must develop not only digital literacy skills but also the ability to use and implement digital tools and resources specifically for pedagogical purposes.

Discussions within the FCL Regio project in year 2 have highlighted that regional and national initiatives focused on teacher digital competences should increasingly aim to build on emerging pan-European pedagogical competence frameworks and projects.

In particular, project partners have followed the progress of DigCompEdu (2017) a scientifically sound framework describing what it means for educators to be digitally competent (<https://ec.europa.eu/jrc/en/digcompedu>). It provides a general reference framework to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education.



*TET-SAT, the online self assessment tool – MENTEP project*

This emerging approach can also find solid foundations in initiatives such as MENTEP (MENTORING TECHNOLOGY ENHANCED PEDAGOGY - <http://mentep.eun.org/>), a project that addresses the need in Europe for teachers to be able to innovate using ICT in their classroom and for improved data on teachers' digital competence. Based on this premise, MENTEP developed an online self-assessment tool to empower teachers to progress in their Technology-Enhanced Teaching (TET) competence. MENTEP provides teachers with a common tool for online self assessment that helps them to establish their digital competence and share it

through data collection at individual, regional, national and European level. The project also investigates the possible implementation of a European-wide certification of TET competence.

## 5.1. Referring professional development programmes to a pedagogical framework

### RECOMMENDATION 1: PROFESSIONAL DEVELOPMENT MUST FOCUS ON KEY COMPETENCES, ALWAYS REFERRING TO A PEDAGOGICAL-DIDACTIC FRAMEWORK.

In order to define a standard for digital competences it is advisable to take as reference and adopt existing and internationally recognized frameworks, such as DigCompEdu, published in March 2017 by the European Commission, or the UNESCO ICT Competence for Teachers of 2011. It is important to set out a core “base level” needed for everyone, a starting point to be implemented over several years which supports a meaningful and consistent continuous professional development process that is open to all teachers.

It is particularly important that the digital competences of in-service or newly appointed teachers should always refer to a pedagogical and didactic framework and not just to the technical-practical use of digital devices. Design, selection and production of digital educational material are in fact the key elements that teachers need to be able to apply in their work.

The “base level” of a teacher’s professional profile should be constructed using the following three dimensions: enhance student learning; design teaching activities involving ICT that include innovative methodologies and pedagogical activities; continuous professional development.

#### What should teachers do in order to enhance student learning?

- Be able to identify, evaluate, and select resources that can be accessible to everyone.
- Know how to create materials and resources with respect to copyright and accessibility.
- Know and be able to choose virtual learning environments in relation to the context in which they work.
- Encourage students in the efficient use of digital technologies.
- Know how to evaluate individual and group performance with digital instruments and resources.

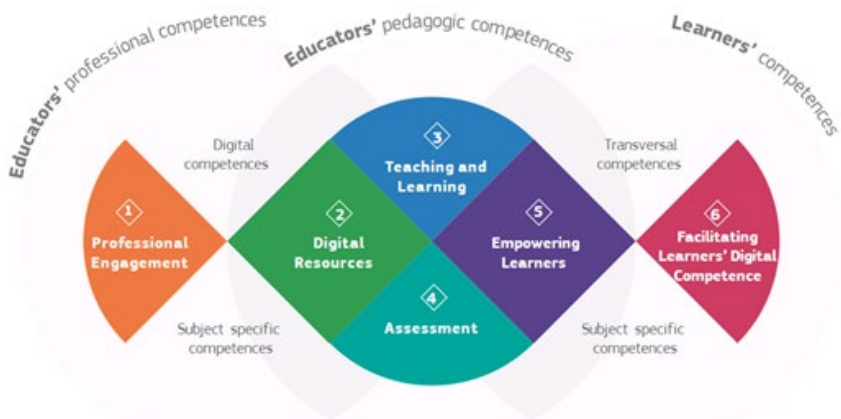


### What should teachers do in order to design and manage their teaching activities using digital instruments?

- Be able to design teaching activities by integrating them also with mobile technologies.
- Be able to manage their educational activities learning about innovative teaching methods (flipped classroom, cooperative learning, project based learning etc.) and apply them in the context in which they work.
- Know how to promote the legal and ethical use of technology and the web.

### What should teachers do in order to improve their professional development with Lifelong Learning?

- Know how to communicate on the internet by interacting with others, sharing and collaborating (from the correct use of e-mail to their participation within social and online community environments).
- Know how to safeguard their digital identity (from responsible and aware use of their devices to the management of their public image).
- Know how to build their own learning diary or digital portfolio as a tool for self-assessment and metacognition.



Digital Competence Framework for Educators (DigCompEdu)

The Department of Education and Catalan Universities have agreed to follow the framework rising both from Catalan regulations regarding digital competences together with the European framework under development (DigCompEdu). Hence,

the issuing of digital competences for teachers<sup>2</sup> establishes the identification of those competences as well as the framework for the means to acquire them and how they will be accredited. This accreditation is linked to a document that specifies the professional profiles depicted in accordance to those digital competences for teachers within a set of specific professional profiles for schools<sup>3</sup>. The profile “Digital Teaching Competence” describes the characteristics teachers must have or must have acquired in order to help schools to increase the didactic use of ICT in learning processes in accordance with the national ICT plan for schools.

In Trentino in Italy, digital teaching skills are being allocated, especially via continuous professional development programmes and compulsory trainings organized each year for all newly appointed teachers and for teachers who are attending CLIL Methods courses (<http://trilinguismo.iprase.tn.it/>). These trainings are focused on developing skills, teaching with CLIL methodology and pedagogical use of ICT, and they have been organized using a BYOD strategy, aimed at promoting this approach, which is still far from being practiced in local schools.

New changes in the Swedish curriculum are being implemented in the school year 2017-2018 to promote the acquisition of digital competences by Swedish students. These are aimed at embedding digital skills such as programming, into existing subjects and, more generally, at promoting the development of the digital competences within a pedagogical context with concrete learning goals. To this end, Gothenburg Region (GR) provides several teacher-training possibilities, as for example the [Teachers Night concept](#), which is free of charge for the members of Gothenburg and contains a wide spectrum of courses focused on 21<sup>st</sup> century learning and teaching skills.

## 5.2. Involving all school teaching staff and exploring new approaches

**RECOMMENDATION 2: PROFESSIONAL DEVELOPMENT PATHWAYS SHOULD BE OPEN TO NEW AND DIFFERENT APPROACHES AND SHOULD INVOLVE ALL THE TEACHING STAFF OF THE SCHOOL.**

The use of innovative pedagogical approaches in the classroom is a demanding task, challenging and full of uncertainties. It involves time-consuming work and without the proper support can lead to failure.



- 2 [http://dogc.gencat.cat/ca/pdogc\\_canals\\_interns/pdogc\\_resultats\\_fitxa/?action=fitxa&documentId=730633&language=ca\\_ES](http://dogc.gencat.cat/ca/pdogc_canals_interns/pdogc_resultats_fitxa/?action=fitxa&documentId=730633&language=ca_ES)
- 3 [http://dogc.gencat.cat/ca/pdogc\\_canals\\_interns/pdogc\\_resultats\\_fitxa/?action=fitxa&documentId=725394&language=ca\\_ES](http://dogc.gencat.cat/ca/pdogc_canals_interns/pdogc_resultats_fitxa/?action=fitxa&documentId=725394&language=ca_ES)

Today we are increasingly aware that training needs to go beyond a traditional, technology-focused and linear model. Flexible professional development plans designed for individual teachers are essential and should start by considering their preferred pedagogical approach and objectives before attempting to address what the teacher frequently perceives as mainly a need for technical skills training.



Training programmes should involve all the teaching staff of the school, including IT administrators, digital animators and other professionals contributing to learning activities. A whole-institution approach to developing the student digital experience is highly recommended, aiming at supporting people to work with digital technologies.

Theoretical knowledge must also be accompanied by a strong operational training and ‘hands-on’ approach; teachers will struggle to acquire and retain competences related to digital literacy and technology enhanced education if they do not directly apply them in their daily pedagogical practices. Moreover, teachers should be given initial support when they work in class, so that they can reflect on the difficulties and problems that may be encountered when using ICT for teaching and learning.

In addition, it is necessary to promote the creation of a community of practitioners that can share and collaborate, as well as support each other to become autonomous in their practice. In this context, it is perhaps not yet fully recognised that TeachMeets constitute a revolutionary option for teacher training. These organized but informal meetings for teachers to share good practices, practical ideas and personal insights on teaching practice can provide an effective way of developing teachers’ skills with minimal cost and disruption to teaching.

Also the involvement of other actors and the creation of new roles within a school can ensure that teachers are up to date with new technologies and approaches; this is the case in Italy with the introduction of so called “Digital Animators” in schools. In the Trentino Provincial Authority these “Digital Animators” may be either short-term or long-term employed teachers, appointed by the school head teacher. They have a dedicated training programme that includes the development of a “Digital Animators Community” to promote and create a shared digital culture and the aim is that they will work closely alongside the school head and technical staff to help implement the



school's ICT plan. These innovators, therefore, are able to build networks, to share, and collaborate. They organize training courses for their colleagues, and develop sustainable methodological and technological solutions to help spread innovation within the school. Finally, the Digital Animators need to have good communication skills, didactic-pedagogic skills in a variety of digital environments, and be able to design online teaching materials and activities to encourage cooperative interaction within their institute.

### **5.3. Teachers should have the ownership of their professional development path**

#### **RECOMMENDATION 3: TEACHERS SHOULD BE RESPONSIBLE FOR THEIR CONTINUOUS PROFESSIONAL DEVELOPMENT WHICH MUST BE RECOGNIZED WITHIN THE DIFFERENT NATIONAL EDUCATIONAL SYSTEMS.**

Teachers should be able to reflect on learning and teaching processes through continuous updating of knowledge of the subject taught, curricular content, pedagogy, innovation, research and the social and cultural dimension of education.

Professional development activities, therefore, should continue throughout a teacher's entire careers so that they are able to evolve and adapt to changes. Regional policy makers are also of the view that, on the basis of the frameworks proposed by DigComp and DigComp Edu, a professional accreditation system should progressively be built in order to make it possible to track the evolution of a teacher's professional profile and competency levels.

For this to happen, continuous professional development at regional level should be supported and encouraged by national educational systems and programmes. However, it should also involve actions at regional level by different stakeholders who can help explain how national, educational ICT strategies and initiatives can best be implemented in order to meet specific needs and conditions at local level.

Castilla y León regional authority, for instance, makes available a self-evaluation tool to teachers helping them choose the type of training they need the most according to their existing competencies (<https://autoevaluacionict.educa.jcyl.es/>). To assess the proper implementation of mobile technologies in the classroom, the Castilla y León region issued an ICT Plan which includes a grading of schools from 3 (Intermediate) to 5 (Advanced) based on standards.





### Herramienta de autoevaluación de la competencia digital (RedXXI)



El Plan de Formación para la adquisición y perfeccionamiento de la competencia digital se basa en distinguir cuatro espacios o dimensiones competenciales en la competencia digital y diferentes niveles de competencia.

Las cuatro dimensiones de la competencia digital que se contemplarán son:

1. Dimensión básica: Conocimiento de las tecnologías.
2. Dimensión educativa metodológica: Uso didáctico.
3. Dimensión profesional y de gestión.
4. Dimensión actitudinal o socio-cultural.



Se han establecido tres grandes niveles en el desarrollo competencial en TIC, con una producción interna en cada uno de ellos:

- Básica (1 y 2);
- Avada (1 y 2);
- Avanzada (1 y 2).



Para comprobar cuál es el nivel de la "competencia digital" se presentará a continuación el cuestionario (solo por cada dimensión) a los que deberá contestar guardando silencio a través de algún medio de las formas del navegador.

La **hoja de respuestas** está en la zona "SI".



Al finalizar el último cuestionario deberá pulsar en botón **AVANZADO** para comprobar su nivel de competencia digital.

LE RECOMENDAMOS QUE SU PARTICIPACIÓN ES TOTALMENTE ANÓNIMA Y LE PEDIMOS QUE RESPONDA CON LA MÁXIMA SINCERIDAD PARA QUE USTED CONOZCA SU PROPIO NIVEL.

Continúa



In Sweden, schools are obliged to follow up how they meet the requirements for schools set up by the national government, such as the curriculum, laws regulating schools and the general advisory material that the Swedish board of education provides. From July 1<sup>st</sup> 2018 a revised curriculum is in place, where digitization is very important. Programming, for instance, is now mandatory from first grade. The Swedish Schools Inspectorate scrutinizes and monitors how well Swedish schools meet the requirements from the government and will from now on add the use of digital tools or developing digital competences to their list of things to audit.





## 6. Recommendations on modalities for in-service training and induction of newly qualified teachers

In-service teacher training and newly qualified teacher induction programmes are key elements for guaranteeing high quality and ever-innovating education. However, many countries are still facing challenges when it comes to providing enough professional development opportunities to their teachers that are formally recognized and accredited. Moreover, while induction programmes for beginning teachers are increasing, this sort of training is still far from being formally incorporated as part of a teacher's professional development.

Public authorities, therefore, should strive to provide teachers with regular and system-wide training programmes that can be formally recognized. This seems to be a catalyst in empowering the profession as it not only recognizes the effort and time spent by teachers to be up to date, but it also help them to deal with the changing demands of our society.

In this context, it is important that public authorities first map and identify existing training programs in the region in order to have a thorough idea of the different existing modalities of teacher training. There must be a clear map of the different typologies of training, covering both newly qualified and experienced teachers. Initial training for future teachers must be also considered a relevant issue that cannot be neglected. Once the different types of training are identified, institutions and individuals must make the right choice according to their needs, their specific profile and the target students they will be teaching. Only then we can expect a successful outcome in the improvement of the students' learning process.

Below are some specific suggestions for implementing successful teacher professional development programmes for both experienced and newly appointed teachers.

- Mentorship schemes should be considered as an important way to provide support for newly qualified teachers.
- Peer to peer learning represents a crucial opportunity for teachers to continuously develop their competence learning from each other and co-constructing a trustful school community.
- Online training can provide a central component of any teacher education strategy and be part of a blended learning approach
- The impact of teacher training programmes should be measured and documented to demonstrate the effectiveness of the training and the improvement it implies in the learning process of students.

- Regional Authorities should encourage the adoption of common European frameworks, such as the Digital Competence Framework for Educators, to help institutions recognise digital competence in teachers regardless of their country of origin.

## 6.1. Initial teacher education courses for technology-enabled classrooms

### **RECOMMENDATION 4: INITIAL TEACHER EDUCATION COURSES SHOULD HELP ALL STUDENT TEACHERS TO DEVELOP KEY DIGITAL COMPETENCES THAT WILL PROVIDE THE FOUNDATIONS FOR A SUCCESSFUL CAREER IN TECHNOLOGY-ENABLED CLASSROOMS.**


Initial teacher education must open the way towards the future stages in a new teachers' professional career. The development of digital professional competence must begin at the early stage of university, when future teachers learn the foundations of their future profession.

There must be room for digital competency in the syllabus of all educational degrees, both for primary and secondary education. Institutions should ensure that all future teachers will have attained the basic aspects of this competence by the time they have finished their degree (whether initial or post-graduate) and regardless of the different curricula and/or subject specialism followed by the student teacher. A standard set of ICT competences at European level should be established for all student teachers in order to make sure that they can become successful professionals in today's technology-enabled classrooms and the future educational system.

FCL Regio partners are fully aware of the scale of the challenge involved related to this recommendation. Currently, the autonomy granted to higher education institutes in Europe has prevented the creation of a common approach to how the development of ICT pedagogical competences are incorporated in initial teacher education. In this context, the project is closely following the work of the [ITELab](#) project and is helping promote the new course modules and MOOC for student teachers developed in this project.

In terms of FCL Regio partners themselves:

At the local level, under the lead of the Catalonia Department of Education, Catalan Universities have set up an initiative whereby all of them share the common goals regarding digital competences for teachers in secondary education. They are working to establish the common goals teachers must attain in their Degrees in Primary Education and Master's Degrees in Secondary Education offered by different Catalan Universities, aiming at the effective and pedagogical oriented use of ICT in the classroom.



The Castilla y León department of education believes that the digital competences should be embedded transversally across the different subjects. This could result in more inclusive and effective training programmes. The region's public teacher training centres offer online as well as face-to-face training opportunities to this end. The regional and provincial teacher training centres offer training from initial to advanced level on the application of ICT tools for teaching and Computer Technology for Learning. Furthermore, Castilla y Leon schools can design their own personalised Teacher Training Plans to take place in their own school so that the training provided is adapted to the training needs teachers have regarding their digital competence. The impact of teacher training in Castilla y Leon has proved very successful and has had a positive impact in the digital competence of teachers.

## 6.2. Mentorship schemes to support newly qualified teachers

### **RECOMMENDATION 5: MENTORSHIP SCHEMES SHOULD BE CONSIDERED AS AN IMPORTANT WAY TO PROVIDE SUPPORT FOR NEWLY QUALIFIED TEACHERS.**

Schools should be able to pair new teachers with experienced mentors who are able to demonstrate innovative pedagogical techniques, methodologies and resources and who can foster reflection and debate. This will allow the mentored teachers to enrich their practice and gain in confidence, grow professionally, face all kind of situations, and offer students the best possible path to learning.

Mentors could be active observers of the new teachers' performance, giving constant feedback and encouraging reflection on this performance in order to improve and widen the perspective of new entrants to the teaching profession. They should also make sure that new teachers are able to create a place where they can retain these experiences, reflections and resources, as a professional portfolio.

Selecting mentors working in the same school as the new teachers would particularly facilitate contact and interaction. Trainees could not only have their own lessons observed, but they could also attend their mentors' lessons in order to observe a more experienced colleague in action. Should the need arise, it would also be an option to appoint mentors from other schools or centralised training services, although this would limit the opportunity for new teachers to observe their mentors' performance.

Key elements for the success of mentoring schemes can be summarised as follow:

- The selection of mentors should be based on their competences and not on their titles or position.

- Mentors should be open to change and innovation, and not mere promoters of the past or current practice.
- Mentors should be active observers, engaging effectively with the mentored educators.

Mentoring can be a meaningful professional development experience and can happen in different settings serving different purposes. An interesting example is [INDUCAS](#), a pilot project, launched in May 2017 and funded by the European Union, aimed at developing a network of newly appointed teachers and mentors from Italy, France, Sweden and Romania that were encouraged to participate via the establishment of four communities one in each country, in the local language, in the two different networks. Participants in the eight communities were able to interact, share and learn in their own languages with other peers to exchange ideas and build a community of practice and, ultimately, address issues and challenges in a more efficient, effective and engaging way.

Mentor can be not only an experienced teacher but also another stakeholder, such as a parent. A Belgian NGO in Antwerp, De Schoolbrug ('the Schoolbridge'), offers trainee teachers the opportunity to participate in [the Learning Train initiative](#). Trainee students have the opportunity to learn the importance of the parental involvement in the children's learning process and parents who experience difficulties in supporting their children at home for school related things benefit via such an initiative. Parents can serve as valuable resources for schools and to this end they could be invited to share their skills and expertise.

### **Improving in-service teacher continuous professional development**

Life-long training for in-service teachers is paramount in order to guarantee that professionals keep their careers at the level required by the constantly evolving educational ecosystem.

Teachers can benefit substantially from the mentorship of more experienced or specialised professionals. This should imply the creation of a structure whereby teachers are always present in a training schedule where they are scaled within a range of expertise, allowing them to train and be trained by others. Also the involvement of other actors within the school, can secure that teachers are up to date with new technologies and approaches, and this is the case in Italy with the institution of the so called "Digital Animator". The Trentino Provincial Authority also foresees the figure of the "Digital Animators", who may be either short-term or long-term employed teachers, appointed by the school head masters. They will have a dedicated training also aimed at the development of the "Digital Animators Community" to promote and create a shared digital culture.

### 6.3. Peer to peer learning for co-constructing a trustful school community

#### RECOMMENDATION 6: PEER TO PEER LEARNING REPRESENTS A CRUCIAL OPPORTUNITY FOR TEACHERS TO DEVELOP CONTINUOUSLY THEIR COMPETENCE LEARNING FROM EACH OTHER AND CO-CONSTRUCTING A TRUSTFUL SCHOOL COMMUNITY.

Peer to peer training is closely linked to mentoring but the emphasis is more on collaboration with a group of colleagues who have different competences and levels of experience. Teachers work with their colleagues by setting agreed goals, building together lesson plans, and implementing agreed methodologies and actions in their respective classrooms. Time is also frequently allocated so that teachers can observe each other's lessons, reflect on the practice of colleagues and draw conclusions together. A peer-to-peer learning strategy aims at developing a teacher community where teachers share their pedagogical successes and failures and are encouraged to improve their practice via a process of trial and error.

Work groups also represent effective forms of interchange where newly qualified teachers can reflect on the issues concerning their training (methodologies, problems, resources, best practices...) and share their experiences of their learning process. This will help to build a feeling of belonging to a wider professional community where learning and professional enrichment are enhanced through sharing.

It is important that public authorities encourage and support collaboration among their educators to further strengthening connectedness by utilising European platforms such as [eTwinning](#), the [European Schoolnet Academy](#) or the European Commission's [School Education Gateway](#). It is also possible to implement a peer-to-peer approach in combination with a system of mentorship, whereby new teachers can learn and grow professionally together with their mentors and their peers.

Regions are directly engaging in supporting peer to peer learning approaches, including Trentino and Castilla Y León, especially in order to promote innovative teaching and learning approaches and the integration of technology in the classroom.

In Trentino, the "*Caffé Digitale*" (Digital Coffee) provides an informal way for teachers to experience innovative practices, digital resources and techniques, together with their peers. Originally set up spontaneously, the Digital Coffee is structured as a laboratory and encourages the exchange of experiences among the participants. In this informal setting, small groups of teachers can also experiment the use of BYOD, helping each other and sharing experiences. The main theme of each session is shared among participants through easily applicable and replicable tasks in the classroom. The most successful aspect of this initiative, however, is not the tools demonstrated but the relationships established among the attendees. Sharing and collaborating in this way

enhances professional practice helps build relationships and networks, and widens the perspective of the participating teachers.

The department of education of Castilla Y León has started a program called OBSERVA\_ACTION, which has shown the benefits of job shadowing other teachers in the neighbouring schools; it is providing the most effective form of training for all teachers but particularly for newly qualified teachers. The program has three modalities: individual teachers observing other expert teachers, groups of teachers observing and being observed among themselves, and School for School option, which involves eight members of schools visiting and learning from other schools.



“It is crucial to share the experiences, the know-how, the skills, the abilities that you have, because you can also learn from others”

## 6.4. Online Training as a part of a blended learning approach

### RECOMMENDATION 7: ONLINE TRAINING CAN PROVIDE A CENTRAL COMPONENT OF ANY TEACHER EDUCATION STRATEGY AND BE PART OF A BLENDED LEARNING APPROACH.

Training aimed at improving the digital competences of teachers should have its online space. Online training represent a cost-effective and efficient modality to allow teachers to constantly update their methodologies and have access to teaching resources. Online training can be a central component of teacher training, or it can be a key element supporting other methodologies. Using blended learning strategies to address teaching development needs, which combine thoughtful integration of face-to-face and online learning, could also be beneficial.

The training of in-service teachers must have its online space. Teachers must have access to a virtual environment where:

- **Resources** are available, together with recommendations for useful sites with materials and classroom ideas.
- **Training** on general and specific issues is offered: online courses can be both open and tutor-guided.



- Teachers can **share** their thoughts, opinions and experiences with their peers, through forums, for instance, where teachers can recommend resources based on their first-hand experience.

Some regions have adopted an integrated approach, aggregating in the same portal the above mentioned elements; for example, this is the case for the Gothenburg community, Catalonia and Castilla Y León. Online and face-to-face training opportunities offered within the Gothenburg Region Community are presented and promoted in their portals (<https://iktockero.com>, <http://tellus.harrydaresurscenter.se>). The corporate [portal of the Castilla Y León Region](#) for online and face-to-face training offers activities specifically focused on digital competences

Similarly, the Catalan ministry of education aggregates the training opportunities for teachers on their online portal [Odissea](#). In Catalonia, the ministry of education steadily encourages the creation of MOOCs where learning and training takes place. Many teachers take part in these MOOCs and create their own Personal Learning Networks (PLNs) where they establish their long-life learning ecosystem (RSS, newsletters, materials, professional networks). Teachers can access the courses once they have been accepted after they have applied within the given deadlines. MOOC courses as well as tutor-led courses are provided. More than 20 different courses were offered in 2017-2018, covering mobile learning, app creation, coding and programming, Moodle environments (LMS) or geolocalization. The majority of these courses are 45 hours long, although there are some shorter ones (30h) and longer ones as well (60h). Teachers can also take courses on the creation of educational materials. Teachers can also access Xarxa Docent -Teaching Network- (<http://educat.xtec.cat/>) a space where they can share their experiences and thoughts. This is not a training platform per se but people use it as a source of opinions and materials.

## 6.5. Measure the impact of teacher training programmes

### **RECOMMENDATION 8: THE IMPACT OF TEACHER TRAINING PROGRAMMES SHOULD BE MEASURED AND DOCUMENTED TO PROVE THE EFFECTIVENESS OF THE TRAINING INCLUDING HOW IT ENHANCES THE LEARNING PROCESS OF STUDENTS.**

In order to monitor training impact, the goals of any professional training must be clear, precise and distinct. By knowing what the objectives of a training programme are, we are able to elicit what we will ideally achieve in terms of students' performances, and teaching goals. The achievement of these goals should be assessed in order to ascertain whether the training teachers have undergone has been designed and carried out successfully or not, and whether teachers who did benefit from it have been able to make good use of what learnt in their professional practice.

Training must clearly reflect what teachers need to improve, what that will imply in terms of changing classroom practice, and how that will improve learning. Strategies must be devised in order to demonstrate clear improvements in students' competences that are directly related to the training their teachers have undergone. In this context, it is important that institutions provide training that is customised to the specific requirements of each teacher and the different educational scenarios they are attempting to implement.

In Castilla y León, the training impact assessment is carried out by addressing three key elements: What is the impact of teacher training on the students? How can we help teacher after ending the training? Who should follow up on the training? To measure the impact of the training on the students, trained teachers fill in evaluation rubrics and demonstrate the practical application of what they learnt in their own classes as compulsory part of the course. The impact is very positive according to the evaluation rubrics, but is essential that the teacher trainers who organised the training programmes take responsibility to follow up with their trainees in the months following the training itself.

## **6.6. Adopting or tailoring a common European competence framework**

**RECOMMENDATION 9: REGIONAL AUTHORITIES SHOULD ENCOURAGE THE ADOPTION OF COMMON FRAMEWORKS, AS THE DIGITAL COMPETENCE FRAMEWORK FOR EDUCATORS, AS A COMMON INSTRUMENT TO HELP INSTITUTIONS RECOGNISE DIGITAL COMPETENCE IN TEACHERS, AND ADAPT THIS TO THE REGIONAL CONTEXT OF THEIR TEACHERS, REGARDLESS OF THEIR COUNTRY OF ORIGIN.**

The importance of digital competence was recognised by the European Parliament and the European Council (2006) when it identified digital competence as one of the eight key competences essential for all individuals in a knowledge-based society. Developing digital competence in education requires integration of ICT in the classroom and teachers properly skilled in that competence.

A common European framework for reflecting and recognising the digital competences of teachers is highly needed. Clear objectives and stages must be stated and specified and a methodology must be identified whereby all countries can offer this future certificate under the same conditions to all European teachers.

The European Framework for the Digital Competence of Educators (DigCompEdu) aims at guiding educators at all levels of education to reflect on and develop their digital competences. This framework details 22 competences organised in 6 areas. The six areas are: 1) professional engagement, 2) digital resources, 3) assessment,

4) teaching and learning, 5) empowering learning, and 6) facilitating learners' digital competencies.

It is particularly important that any framework that is adopted can record and show how teachers' digital competences have progressed throughout their careers. This certificate should not be a mere landmark showing a certain level attained at a certain moment, it must be a dynamic showcase of the subsequent enrichments a teacher attains in his/her career.

An example of such system of certification for teachers is deployed in the Öckerö islands in the Gothenburg region, Sweden. The training called SIKTA is for both teachers and school leaders and all teachers and school leaders are expected to be trained/examined on three levels. The training consists of how to use different digital tools, depending on the level the teachers currently is on, and also about how to think when you incorporate different digital tools in your teaching.

A common framework of digital competence for teachers has been published in Spain by the Ministry of Education, available since January 2017. The Spanish framework ([Competencia Digital Docente, CDD 2.0](#)) is based on the European framework for digital competence for citizens (DigComp 2.0), which identifies the main elements of digital competence grouped in five areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving. The same framework could be adopted in different regions and be adapted to the different needs of the teachers.

Training as a lifelong process in a teaching career should not only aim at impacting newly appointed teachers, but it should also target every teacher, including older teachers with more experience who may be left behind due to a lack of confidence stemming from their inability or unwillingness to use ICT. Training as a lifelong process could be accompanied at each stage by a certification process that recognises the skills level achieved, accompanied by either salary improvement or a certificate that enables professional advancement.



## 7. Recommendations on practical considerations to support the smooth deployment of training programmes

Quality continuous professional development of in-service teachers and induction of newly qualified teachers pose also practical questions that need to be answered. For instance: Who covers and manages the cost of training? Do educational publishers contribute to mobile learning by providing good and affordable content? If so, how do they do it? How can we make sure teachers' digital training does not bias them towards using only certain technologies?

These and other questions should lead decision makers to consider how to take the necessary practical and organisational measures that are necessary to ensure the smooth deployment of sustainable training programmes.


### 7.1. Regions and municipalities to tailor and adapt national strategies according to local conditions

**RECOMMENDATION 10: POLICY MAKERS NEED TO FIND A BALANCE BETWEEN HOW TO IMPLEMENT AND FINANCE A STRATEGIC NATIONAL STRATEGY FOR ICT IN SCHOOLS AND HOW TO ALLOW POSSIBILITIES FOR REGIONS AND MUNICIPALITIES TO CUSTOMIZE AND ADAPT THAT STRATEGY DEPENDING ON LOCAL CONDITIONS.**

Today there are different ways to cover the costs of training. In Catalonia and Trento Province, the state, region or the municipalities cover most of the cost and take care of the training. In Sweden it is covered within the school's budget and/or that of the municipalities and carried out by public regional actors or third parties such as universities or ED-tech companies specialized in teaching and learning. Which way to go depends on the different conditions in each region.

An advantage of the state, or government, handling the costs of training is of course the bigger financial capacity they have and that every school has equal opportunities for digitization. On the other hand, it is difficult for a state and regional government to meet all variations that exist between different schools and municipalities. For example, a municipality can have a low digital level but be socioeconomically very strong; at the same time another municipality can have the very same low level in digitization, but also have a low socioeconomic profile. The two municipalities need different support.

Today in Sweden, schools are making very relevant investments both on technology and on teacher training with digital content. Changes in the national curriculum has made it obvious that the inequality between different municipalities, and indeed between different schools in the same municipality, are significant. Non-profit organizations such as GR and SKL are supplying high quality teacher training and process management, and the main Swedish tech suppliers such as LiN and ATEA are focusing strongly on process management and teacher training. They supply solutions for making the journey from zero digitization to cutting edge digital schools which are used by many municipalities. However, while the quality of the provided solutions is high, so is the cost. There are no shortcuts or quick fixes to digitizing schools and sometimes training bought from consultants can be used as an alibi to avoid the thorough, step by step development of schools that is needed if a sustainable digitization is the goal. All these costs hit the municipalities. The Swedish government provides curriculum changes and MOOCs but, if schools are to realize the good intentions and high quality content in these resources, time is crucial and time costs money that municipalities sometimes do not have. If a region or a country wants to raise the total level of digitization in their schools, providing the means and opportunities for peer learning and collegial training is very important.



In Catalonia, the Ministry of Education covers the costs of professional training, which is offered on a yearly basis to Catalan teachers. This training can be done online or by attending a course or workshop. Nevertheless, there is also a wide offer of training courses provided by third parties, such as universities, teachers' associations or similar institutions. Eventually, schools can decide to use part of their own budget on training as well, and choose some specific training which can be adapted to their more precise needs. This can also be said about Resource Centres for teachers or other decentralized public educational institutions. The Ministry of Education is currently considering the possibility of implementing the use of the digital portfolio for teachers.

In Trentino, the Department of Education covers the costs of professional training that is carried out mainly by the provincial body IPRASE. IPRASE utilises its own resources and supplements this with European funding devoted to specific areas (eg languages, ICT, etc.). Schools have at disposal funds for internal training. These resources are provided by the Department of Education of the Province and schools can use them to plan specific training. Nevertheless, schools can also use training courses provided by third parties, such as universities, teachers' associations or similar institutions. In the Provincial Plan for Digital School, further funding will be provided for training activities on ICT in education. In particular, priority funding will be given to the Networks of Schools in order to optimize the use of resources and to encourage greater collaboration between different schools.

In Castilla y León the public administration covers the costs for training which is free for teachers and schools. For the education administration of Castilla this requires

a significant level of investment although this has a very positive impact on the level of teachers and students, which is reflected in the high scores achieved in the PISA evaluations. The education administration of Castilla y León covers all the costs and facilitates the support of public teacher trainers working in public teacher training centres.

## **7.2. Provide quality assurance mechanism for educational digital content**

**RECOMMENDATION 11: TO ENSURE THAT HIGH QUALITY DIGITAL CONTENT IS USED IN SCHOOLS, A LOCAL, REGIONAL OR NATIONAL NON-PROFIT STAKEHOLDER SHOULD PROVIDE A QUALITY ASSURANCE MECHANISM SO THAT SCHOOLS KNOW HOW TO PURCHASE GOOD DIGITAL CONTENT THAT IS CLOSELY LINKED TO THE CURRICULUM.**

In Catalonia, Gothenburg Region and Trentino publishing companies have started to adapt to a world in which more and more digital material is being created and offered to schools in these regions. To make it easier for the schools to use, the purchase of digital content from different publishers can be coordinated by a regional actor and accessed without registration or by the purchase of specific licenses. Nevertheless, most digital materials are still adaptations of traditional textbooks in a digital format. Publishers have some way to go in order to adapt their learning materials to the possibilities of the digital world and not just digitize old textbooks to a tablet format.

A trend in providing learning materials is that traditional publishers are under fierce competition from ED tech companies, such as LiN in Sweden who are providing digital tools with content, i.e. content such as lessons with a digital component both for how to teach a class in a certain subject by using digital tools as well as assessment, peer learning etc.

Another trend is that more and more learning content is produced by people and organizations outside the traditional publishing industry, often free and open source e.g. the [Learning Resource Exchange \(LRE\)](#).

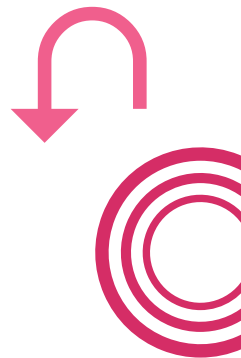
In Catalonia the educational publishing industry has historically been powerful. Publishers are now beginning to realize the need to adapt to a different action where textbooks are becoming less used and digital materials or materials created by the teachers are much more in use.

Nowadays there are different publishers who are already offering digital materials, which in some cases are responsive or have the adequate app and can be used in mobile devices. Publishers in Catalonia offer free resources that can be accessed with or without registration. Further resources can be accessed through the purchase of a license.

As in Catalonia, publishers in Gothenburg Region continues to adapt to a reality where digital materials are increasingly used in education. Gothenburg Region as a regional actor is adapting accordingly and has continued to centralize the purchase of digital tools for schools in the region. All purchasing and public procurement of teaching materials is coordinated by Gothenburg region and its teaching materials department. Historically the main products have been textbooks and videos. Now the Gothenburg region department that functions as the central buyer of teaching materials, digital or analogue, provides the teachers with any material he or she wants, but makes sure that the right procurement is used and that the material is legal to use. The quality review is done by each individual teacher. As there has been a progressive move towards more digital teaching, Gothenburg's region Teacher's Night concept has been more focused on digital tools, and the teaching materials department at Gothenburg region has hired new staff with specific competence within the field of digitization. Through the centralized purchasing of digital tools from publishers, the department at Gothenburg region will be distributing more and more digital tools by a public procurement process and ensure that the correct contracts concerning personal data acts will be in place.

In Trentino, some publishing houses at the national level are increasing the promotion of educational digital content. The process is still slow, often due to difficulties in accessing and using this content/tools, for example problems with non-interoperable platforms, registration difficulties and creating accounts. The Province promotes the use of Open Educational Resources and IPRASE has created a Repository dedicated to Lesson Plans in CLIL. Published resources can be re-used under a Creative Commons license.

The Autonomous Province of Trento, promotes and supports good practice in ICT based on the adoption of Open Source software. In line with provincial law, IPRASE uses open software such as LibreOffice, VUE, Scratch and interoperable programs. Administrative staff also attend training initiatives on open educational software and the management of Linux distributions.





TRENTINO

PROVINCIA AUTONOMA DI TRENTO

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