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Strategic Approaches to Regional Transformation of Digital Education

European frameworks and tools in Spanish digital education

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Foreword

We live in an increasingly digitised, interconnected and globalised world that affects all areas of our lives: the way we work, communicate, interact, learn, buy, or access public services. The world is changing rapidly through the massive use of digital technologies, and these changes, especially after the COVID-19 outbreak, have highlighted the need to adapt quickly to new working, social and learning conditions.

To face these changes and challenges brought by digital transformation, individuals need to develop new skills and competences within a lifelong learning process. In 2018, the Council of the European Union adopted the Recommendation on Key Competences for Lifelong Learning, setting out a core set of skills necessary to work and live in the 21st century. Precisely, one of these key competences is the digital one.

The European Commission acknowledges the potential of digital technologies for inclusive and high quality education. The first strategic priority of its new Digital Education Action Plan 2021–27 is 'the development of a high-performing digital education ecosystem'. Under this priority, the Plan underlines 'the effective digital capacity planning and development' as 'vital for education and training systems'. Education and training systems require the support of tools and processes to capture needs, plan and develop their digital capacity, involving stakeholders at all levels.

The European Commission Joint Research Centre (JRC) has been working on digital education related matters for the last 15 years, supporting the development of policy and practice in the rapidly evolving field of digital learning. Our work has also helped Member States in the process of educational digital transformation by producing relevant research, including publications, recommendation, guidelines, together with frameworks and tools.

The JRC has developed frameworks, tools and studies to support European and national policies that deal with the challenges of modernizing and innovating education and training practices and to deliver the key competences needed for all to participate in our changing economy and society.

In particular, the JRC has produced:

- The Digital Competence Framework for Citizens (DigComp 2.2);
- The European Framework for Digitally Competent Educational Organisations (DigCompOrg),

both support the development of digital capacities within an educational organisation.

Together with the frameworks, SELFIE and SELFIE Work Based Learning (WBL) are the related tools that support self-reflection on the use of digital technologies for education in schools and Vocational Education and Training (VET) institutions with companies, respectively.

Additionally, the European Framework for the Digital Competence of Educators (DigCompEdu) supports the development of educators' digital competence and SELFIEforTEACHERS is the associated tool to support the educators' self-reflection on the use of digital technologies for teaching.

In the current study, we analyse the Spanish case, as one of the MS with a deeper and more extensive use of the aforementioned frameworks and tools, in order to learn from its practical experience. In particular, lessons are extracted on how to adapt, apply and use the above-mentioned frameworks and tools to digitally transform the Spanish educational systems and to increase the educators´ digital competences together with its educational organisations´ digital capacities.

We hope that the lessons learned from Spain can be of use for other Member States in their quest to adapt their educational systems to the ongoing digital revolution in order to ensure inclusive, sustainable and high-quality education for all European citizens.

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Abstract

The Joint Research Centre (JRC) of the European Commission has developed several frameworks and tools that scientifically define relevant aspects and processes related to the digital transformation of education. These resources aim to achieve more systemic and complex visions of these processes in education that will allow the agents involved to understand new constructs and to situate their reality within these proposals. The main goal of this study is to explore and understand the role of these European Commission frameworks and self-reflection tools (DigComp, DigCompOrg, DigCompEdu, SELFIE and SELFIEforTEACHERS) in the development of regional political approaches. In particular, this study explores the proposals and plans developed by every Autonomous Community in Spain to increase their teachers' and schools' Digital Competences (DC) in the last few years. The study is based on a collection of interviews with the government responsible for every Spanish territory. Based on these interviews, a case for each region is presented using a narrative and visual approach. The results highlight the importance of DigCompEdu as a framework that goes beyond the instrumental vision of the digital transformation of education, helping institutions to envisage, design and structure it. SELFIE is considered a critical tool for school awareness and digital planning. In addition, the results consolidate the evidence of diverse approaches towards digital transformation, especially given the context of Spain, where the remit of education lies at the regional level. Finally, we present policy recommendations based on the results found in this study.

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Executive summary

This report maps initiatives undertaken by the Spanish regional authorities to transform digital education through the use of competence frameworks and tools. The results are based on in-depth interviews with 16 education stakeholders who in some way or another are in charge of the digital transformation of education in their regions. Interviews were conducted between September and October 2022. Specifically, we examined how the European Commission's competence frameworks (specifically, DigComp[1], DigCompEdu[2], and DigCompOrg[3]) and self-reflection tools (SELFIE[4] and SELFIEforTEACHERS[5]) are used in Spain in the context of enabling the digital transformation of education. The aim of the study was to explore the diverse regional approaches for digital education to examine whether and if so how the European Commission's tools and frameworks are used as part of the digital transformation of a country.

Policy context

The digital transformation of education is a political and societal priority in Europe (European Commission, 2019). This effort has been strengthened over the past years by the requirement to use digital technology to address the disruption in schooling brought about by the COVID-19 pandemic. Additionally, this circumstance has brought attention to the necessity of having digitally equipped schools that are ready to capitalise on digital technology and subsequently become more prepared.

The European Commission (EC) has taken various actions in response to the difficulties affecting Europe's education systems. These messages are a part of a larger plan that aims to expedite the EU's transition to climate neutrality and digital leadership, as well as Europe's recovery and future growth, better known as the "twin transition". The Digital Decade[6] policy aims at ensuring that 80% of the European population attain basic digital skills by 2030. Moreover, the renewed Digital Education Action Plan (2021–2027) aims at enhancing digital skills and competences for a more effective and inclusive use of digital technology in education. Within the context of these plans, the European Union has financially supported the development of strategies for digital competence in the educational context in Member States.

Key conclusions

The findings from this study are based on input provided by national and regional authorities. It is the policymakers' perspective on how they designed their regional plans and how they opt to use existing frameworks and tools to reach their objectives.

Based on their needs and goals in relation to their digital transformation plans for education, Spanish policymakers, have used JRC frameworks and tools and overall find them reliable and valuable resources.

One of the main findings from the study is the risk of using unified tools among Member States and regions when there are no unified educational systems in Europe and considering the diverse needs of the regions. Based on that, a recurrent approach is to not only adopt the European Commission's frameworks and tools but to adapt them to national and/or regional needs, characteristics and interests.

In addition to that, another key conclusion from the work done is that it seems there is no clear understanding of the differences between assessment and reflection and the potential benefits of both

[1] The Digital Competence Framework for Teachers https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

[2] The Digital Competence Framework for Educators https://joint-research-centre.ec.europa.eu/digcompedu_en

[3] The European Framework for Digitally Competent Educational Organisations https://joint-research-centre.ec.europa.eu/european-framework-digitally-competent-educational-organisations-digcomporg/digcomporg-framework_en

[4] The online tool to help schools assess how they use digital technologies for innovative and effective learning https://schools-go-digital.jrc.ec.europa.eu/

[5] The online self-reflection tool to help primary and secondary teaching professionals learn more about their digital competences https://educators-go-digital.jrc.ec.europa.eu/

[6] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en#digital-rights-and-principles

approaches; therefore, as the tools analysed here are based on self-reflection, there is no full understanding of the potential (but also limitations) of the tools.

There is a great variety of approaches, not only to address the needs of the digital transformation in education, but also in the use and/or implementation of the tools and frameworks. The key conclusions of this study are:

- DigCompEdu is a reference framework in Spain and is used as a central instrument for the design and development of all regional policies and related actions, as it provides a common language, scientific grounding and a good basis to support the professional development of teachers in terms of digital competence.
- SELFIE is included in almost all regional policies and is considered a valuable tool to support digital development plans in schools. It is considered particularly valuable in providing a good understanding of the starting conditions of each school before the design of the school's digital plan and by involving the whole school community. The Spanish Ministry of Education and VET recommends the use of SELFIE as a preparatory stage for the elaboration of the digital action requested by each school to the government.[7]
- The use/or implementation of the European tools or framework can enable the understanding of the digital transformation of a region.

All findings of this study were validated by the regional authorities participating in the study.

Main findings

Prior to the COVID-19 pandemic, Spain had a heterogeneous situation in which the vast majority of regions aimed to offer equipment and devices for their educational centres. Teacher training for the "instrumental use of ICT" was also widely mentioned. At the time, the understanding and application of the various EC tools and frameworks were limited and, with a few exceptions, superficial. Only a few regions in Spain used the digital frameworks by the EC or the adaptations by INTEF (*Instituto Nacional de Tecnología Educativa y de Formación del Profesorado, Unit of the Spanish Ministry of Education and VET for the integration of technology in education and teachers training*) to establish or contextualise specific policies.

For Spanish regional governments, DigCompEdu is a key instrument to design, plan, organise and understand digitalisation in almost every region. At the time of this study, SELFIEforTEACHERS, the tool developed for this framework, plays a minor role in the Spanish regions, given that current needs are less focused on self-reflection and more towards certification and accreditation of teachers' digital competence. SELFIE is considered a valuable tool for schools' digital awareness, and the majority of regions use it as a starting point for schools to develop their digital plans. Our data show that there is some confusion in Spanish regions between DigCompOrg (the framework underlying the SELFIE tool) and DigCompEdu.

The need for teachers and schools to be digitally competent, although already important in previous years, became even more evident and crucial during the pandemic. Despite being a period of crisis, it also catalysed the mobilisation of numerous resources for the digitalisation of schools. Additionally, the arrival of European funds sparked a further significant movement that supported the continuation of the processes already in motion as well as a state-wide centralised collaboration process. A major initiative from INTEF was the update of the Spanish Framework for Digital Competence in Teaching, based on DigCompEdu and complemented by SELFIEforTEACHERS. This framework has

[7] In the *BOE-A-2021-15399 Resolución de 10 de septiembre de 2021, de la Secretaría de Estado de Educación, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación de 21 de julio de 2021, por el que se aprueba la propuesta de distribución territorial y los criterios de reparto de los créditos gestionados por Comunidades Autónomas destinados al Programa para la mejora de la competencia digital educativa #CompDigEdu, en el ejercicio presupuestario 2021, en el marco del componente 19 "Plan Nacional de Capacidades Digitales" del Mecanismo de Recuperación y Resiliencia.*[7], which translates as: the Official State Gazette BOE-A-2021-15399 Resolution of 10 September 2021, of the State Secretariat for Education, publishing the Agreement of the Sectorial Conference on Education of 21 July 2021, approves the proposal for territorial distribution and the criteria for distribution of the credits managed by Autonomous Communities for the Programme for the improvement of educational digital competence #CompDigEdu, in the 2021 budget year, within the framework of component 19 "National Digital Capabilities Plan" of the Resilience and Recovery Mechanism.

recontextualised the competence and localised the elements of which it is made up to the reality and sensitivity of teachers, unifying the goals and indicators of digital transformation for the entire nation.

Related and future JRC work

This study was conducted in order to examine the impact of the EC's competence frameworks and tools in Spain. Spain is an interesting case for this work for various reasons. To start with, Spain is a forerunner in the digital transformation of education in Europe. Moreover, Spain is interesting because while the remit of education is regional, there is still a national coordination that seems fundamental in driving such transformative change. Finally, at the European level, Spanish users of both SELFIE and SELFIEforTEACHERS make up 53% and 59% of all users respectively. Accordingly, the results of this study are useful to: (a) understand how the European frameworks and tools are used and contextualised in specific regions, in this case, regions in Spain; (b) Spanish policymakers, who might want to consider the use of the EC tools in the future Digital Competence Strategies; (c) other European regions or countries that are in the process of designing or updating their digital strategies for education; and (d) acquire a better understanding of the impact of the frameworks and tools in order to take action in ensuring they remain valid and relevant to educational stakeholders.

Quick guide

JRC T1, together with the University of Murcia, has carried out a study on the strategic regional approaches to Digital Competence in Spanish education using the JRC frameworks and tools (i.e., the DigComp, DigCompEdu and DigCompOrg frameworks and the SELFIE and SELFIEforTEACHERS tools).

The report summarises the strategies to promote the digital competence of the 16 territorial governments that have participated (all regions in Spain, except Andalucía and Galicia), and how they used the EC tools and frameworks.

1. Introduction

The integration of technology in all areas of education and the use of the entire digital pool in education systems has been an institutional goal for several decades now (Caena, 2014). However, digital transformation processes have gone from being a desirable goal on the horizon to a tangible reality in little more than a year – first in emergency mode but lately in a more long-term perspective (Bozkurt et al., 2020; Hodges et al., 2020).

As the use of technology has become more familiar and knowledge intensive, there has been a growing awareness that the impact of technology in education goes far beyond the idea of using one tool or another in the classroom. Thus, the vision of what it meant to be digitally competent has evolved from an almost purely instrumental vision, captured, for example, in the European definition of key competences for lifelong learning (European Union, 2006), to a definition – from 2018 (European Union, 2018) – that is much more situated, contextual and critical (Avello Martínez et al., 2013; Cetindamar Kozanoglu & Abedin, 2020).

Similarly, the vision of how changes associated with the impact of technology in different educational environments has gone from being a vertical and, in some cases, almost managerial task of providing devices and connections for teachers to "implement technology", to more coordinated and systemic processes, which conceive of educational systems and schools as complex realities that must function on many levels to achieve real transformation (Esteve-Mon et al., 2022, Timotheou et al., 2022).

To achieve this systemic and complex vision of transformation processes, the use of frameworks and tools that allow the agents involved to understand new constructs and to situate their own reality in these proposals is of great importance.

The EC has developed several frameworks that define with clarity some of the most relevant aspects and processes related to the digital transformation of education. Specifically, the Digital Competence Framework for Citizens (DigComp), the Digitally Competent Educational Organisation Framework (DigCompOrg), and the Digital Competence Framework for Educators (DigCompEdu). These frameworks aim at defining and reshaping digital education, helping educators to resituate themselves and clarify their role in these transformative processes.

Additionally, the EC has developed tools to help reflect on some of these competences, concretely: SELFIE, a tool for self-reflecting on the Digital Capacity of an educational organization; and SELFIEforTEACHERS, for the self-reflection of the digital competence of educators.

There is a wide variety of approaches on how to use such tools and frameworks in transformation processes, especially when specific locations are concerned. Transformation does not take place in a vacuum, but rather is influenced by cultural, political, contextual, social, and even academic perspectives, that consolidate different paths in different places. These influencing factors tend to answer to local needs and beliefs, so it is important to understand and analyse them to learn from them.

With all this in mind, the main goal of this study is to explore and understand the approaches undertaken by every Autonomous Community in Spain to develop and increase the Digital Competences (DC) of their teachers and schools. Specifically, we seek to examine how and if the EC tools (SELFIE, SELFIEforTEACHERS) and frameworks (DigCompOrg, DigCompEdu and DigComp) have been adopted and used – or not – in the strategic regional policy.

We selected Spain for the current study since the Spanish educational system has been a forerunner in the use of EC educational frameworks and tools from the very beginning, starting more than ten years ago with the first version of DigComp. In terms of participation, Spain is the country with the greatest number of SELFIE users, around 2.7 million out of 5.1 million users in total. Similarly, the highest number of users of SELFIEforTEACHERS are from Spain, around 89,000 users of 150,000 users in total. In addition to that, Spain has actively participated in all the developmental phases of the frameworks and tools, from the conception of the tools to the design, development and fine-tuning of the frameworks and tools. Finally, Spain presents a decentralised educational model, with a national approach led by the Spanish Ministry of Education and VET, and regional contextualisation of the national approach led by the regional educational authorities, which makes the case more relevant due to these different regional approaches and models. Accordingly, Spain makes an interesting case for studying the relevance and the impact of such European tools and frameworks, given as a country it

has an extensive experience in using, adapting and/or further developing the frameworks and tools to move forward in the digital transformation of the educational system.

The scope of this study is two-fold: (1) exploration of the national approach from the Ministry of Education and VET (embodied by the INTEF); and (2) exploration of the 17 Spanish Autonomous Communities: Andalucía, Aragón, Islas Baleares, Canarias, Cantabria, Castilla-La Mancha, Castilla y León, Cataluña, Comunidad de Madrid, Comunidad Foral de Navarra, Comunidad Valenciana, Extremadura, Galicia, País Vasco, Principado de Asturias, Región de Murcia and La Rioja, with the exception of Andalucía and Galicia.

This report is structured in four main parts: part 1 explains the methodology used, including a contextualisation of the specific case of Spain; part 2 presents the individual results for each of the autonomous communities, including a visual representation of the case; in part 3 the general results and conclusions are presented; and in part 4 policy recommendations are suggested.

While this report provides a very elaborate map of the digital transformation in Spain, it is important to highlight that some information might still be missing from the mapping given the methodology used and the number of participants in this study. While, future studies would need to triangulate this information and achieve more detailed results of how the strategic planning is implemented, the current results provide a good snapshot of the digital transformation of education in Spain, and its territories in recent years allowing a better understanding of the different policy mechanisms used for each region.

2. FRAMEWORKS AND TOOLS

2.1. DigComp. The European Digital Competence Framework for Citizens

Digital skills are increasingly necessary for studying, working and participating in society. In this text, we present the priority position of digital skills in European policy, highlighting the European reference framework for citizens' digital skills – DigComp – and the uses that are being made of it in different areas concerning digital skills such as strategy, policy, education, certification, employment and measurement, both at the European level and in Spain. There are different related tools and resources available to support the implementation of DigComp and the work being done to develop the European Digital Skills Certificate (EDSC), Action 9 of the European Plan for Digital Education (2021–2027), based on DigComp.

We live in an increasingly digitised and interconnected society, due to the digital transformation that is changing every aspect of our daily lives, from the way we communicate and interact to the way we learn or work.

For these reasons, digital competence, as proposed by the European Parliament and the Council in 2006 and again in 2018 as one of the key competences that every citizen should acquire throughout life for their full development, is increasingly necessary. It is understood as the set of skills, knowledge and attitudes that enable the safe, critical and responsible use of digital technologies in all areas of life. Being digitally competent can be seen as a fundamental task for citizens in the 21st century.

In line with Parliament and Council Recommendations on key competences throughout life, and in response to the request of Member States, the European Commission, and within it, the Joint Research Centre (JRC), in collaboration with multiple stakeholders in education across the European Union, has developed the European Digital Competence Framework for Citizenship, DigComp to support the development and assessment of digital competences. The first version of the conceptual framework (v1.0) was published in 2013 and was revised in 2016 (v2.0). In 2018, proficiency levels were added (v2.1).

In 2022, the DigComp v2.2 framework was updated to introduce more than 250 examples of knowledge, skills and attitudes needed to interact with recent developments, such as fake news and disinformation campaigns, telecommuting, artificial intelligence systems, search and data management, well-being and security, digital accessibility and finally addressing ecological and sustainability aspects of interacting with digital technologies. This latest version of the DigComp framework maintains the same conceptual framework as v2.0 in terms of competence areas, the competences themselves and levels of competence. The second part of the publication provides an overview of existing reference material for DigComp, consolidating previously published publications and references. The annexes include a specific appendix on the competences required of all individuals to be able to interact with applications integrating artificial intelligence, and on remote/hybrid working. Annex 4 is available according to digital accessibility guidelines, as the creation of accessible digital resources is an important priority in Europe today. This latest version of DigComp has been translated into Spanish by Somos Digital.

In practice, DigComp provides a common language for identifying and describing the key elements of digital competence.

The key components of digital competence in five areas and 21 competences are as follows:

1. **Search and management of information and data**
    - 1.1 Navigating, searching and filtering data, information and digital content
    - 1.2 Evaluating data, information and digital content
    - 1.3 Managing data, information and digital content
2. **Communication and collaboration**
    - 2.1 Interacting through digital technologies
    - 2.2 Sharing through digital technologies
    - 2.3 2.3 Citizen engagement through digital technologies
    - 2.4 Collaboration through digital technologies
    - 2.5 Network behaviour
    - 2.6 Digital identity management

3. **Digital content creation**
    - 3.1 Digital content development
    - 3.2 Integration and reworking of digital content
    - 3.3 Copyright and licensing
    - 3.4 Programming
4. **Security**
    - 4.1 Device protection
    - 4.2 Privacy and personal data protection
    - 4.3 Protection of health and well-being
    - 4.4 Environmental protection
5. **Troubleshooting**
    - 5.1 Technical troubleshooting
    - 5.2 Identification of technology needs and responses
    - 5.3 Creative use of digital technologies
    - 5.4 Identifying digital skills gaps

Since its first publication in 2013, the uptake of DigComp by EU Member States, as well as in neighbouring countries through the work of the European Training Foundation, has been increasing. Today, we record uses of the DigComp framework in all EU countries. Beyond Europe, the DigComp framework has been adopted by the World Bank and UNESCO as a reference framework for their e-skills development projects worldwide.

A key value of the DigComp framework is to provide, among the different actors, a reference, a shared language and a mutual understanding of what digital competence is. Beyond this common language, the framework is being used for different purposes in employment, education and training and social inclusion contexts. Mainly, it is being used for the following purposes:

a. The design of policies and strategies by political actors.
b. Curriculum development by education policy actors.
c. The cataloguing, design and development of training content by educational actors.
d. The definition of digital professional profiles by employment sectors.
e. The definition of digital skills in jobseekers' CVs by employment services.
f. The development of (self-) assessment tools, certification by different actors.
g. The measurement of digital skills, namely Eurostat's Digital Skills Indicator (DSI).

2.2. DigCompOrg, SELFIE and SELFIE WBL

The European Framework of Digitally Competent Educational Organisations (DigCompOrg) is an initiative of the European Commission

The impact of digital technologies, content and processes can be seen in all educational sectors (e.g., schools, higher education and also informal and non-formal learning), affecting all aspects of the educational value chain (e.g., curricular reform, teaching and learning practices, assessment, initial and continuing teacher professional development) and encompassing all educational actors (teachers, learners, school leaders).

Digital learning technologies, in the context of DigCompOrg, constitute a key enabler for educational organisations, which can support their efforts to achieve their particular mission and vision for quality education. Deep, as distinct from superficial, integration of digital technologies requires significant educational innovation and implies a process of planning for change on three basic dimensions: pedagogical, technological and organisational.

DigCompOrg provides a comprehensive and generic conceptual framework that reflects all aspects of the process of systematically integrating digital learning in educational organisations from all education sectors. It is adaptable to the particular contexts within which educational organisations, intermediaries or project developers operate (e.g., sector-specific elements, sub-elements or descriptors may be added).

DigCompOrg complements rather than supersedes other frameworks and tools already in use for specific purposes: e.g., the DIGCOMP framework that can be used to develop relevant aspects of students' digital competence.

The primary purposes of DigCompOrg are: (i) to encourage self-reflection and self-assessment within educational organisations as they progressively deepen their engagement with digital learning and pedagogies; and (ii) to enable policymakers (at the local, regional, national and international levels) to design, implement and appraise programmes, projects and policy interventions for the integration of digital learning technologies in E&T systems.

DigCompOrg is designed to focus mainly on the teaching, learning, assessment and related learning support activities undertaken by a given educational organisation. As such, it is not intended to address the full range of administrative and management information systems that may be in use within the organisation.

DigCompOrg includes elements, sub-elements and descriptors that may be regarded as linked to 'organisational responsibilities' (e.g., infrastructure) or to 'individual responsibilities' (e.g., teaching and learning practices). This reflects the fact that a digitally-competent educational organisation needs a balanced combination of strong leadership and governance (for vision and top-down strategies) and staff and stakeholders capable of taking personal responsibility (for self-initiated actions and bottom-up efforts and initiatives).

The DigCompOrg framework can be used by educational organisations (i.e., primary, secondary and VET schools, as well as higher education institutions) to guide a process of self-reflection on their progress towards comprehensive integration and effective deployment of digital learning technologies.

DigCompOrg can facilitate transparency and comparability between related initiatives throughout Europe, and it can also play a role in addressing fragmentation and uneven development across the Member States.

DigCompOrg can also be used as a strategic planning tool for policymakers to promote comprehensive policies for the effective uptake of digital learning technologies by educational organisations at regional, national and European level. It can also be used as a means to create awareness about the systemic approach needed for effective use of digital learning technologies.

SELFIE (https://education.ec.europa.eu/selfie) stands for "Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies". It is a free, web-based, self-reflection tool to help general and vocational schools develop their digital capacity. It is available in 40 languages and by mid-2023 it has been used by more than 5 million users from 38,000 schools from 91 countries (https://schools-go-digital.jrc.ec.europa.eu/). It was developed by the Joint Research Centre (Former Unit B4: Human Capital and Employment) and the Directorate General for Education, Youth, Sport and Culture (DG EAC). The JRC has been collaborating with DG-EMPL in extending SELFIE to include a module that supports work-based learning.

The tool integrates three variations of a validated questionnaire, which is designed for the school community: school leaders, teachers and students. Given the different profiles and needs of schools in different countries and regions, SELFIE is customisable allowing schools to integrate their own questions. Responses to the questions are anonymous.

After the completion of the questionnaire, SELFIE generates a report for the school to review. This report is available in the dashboard of the tool but also in PDF and Excel formats. This way SELFIE returns data to the schools and supports them in taking informed decisions with respect to the integration of digital technologies based on what works and what needs improvement.

SELFIE has four distinguishing characteristics underlying its design. First, the digital capacity of schools is not reflected in one person's views or responsibility. Instead, it is a concern of the whole school community. This is reflected on the SELFIE reports, which offer a multisided view on the use of technologies based on the data collected from the school leaders, teachers and students.

Second, SELFIE provides a structure to reflect on the digital transformation of schools with a pedagogical perspective, which is derived from DigCompOrg, a conceptual framework (Kampylis et al 2015) on the digital capacity of educational organisations.

Third, SELFIE approaches digital transformation as a process of continuous development, and as such it is meant to be used iteratively for the planning of schools' digital development, monitoring of

implementation plans, re-evaluating, re-planning, etc. To this end, the development of two shorter versions of SELFIE – min and midi – is in progress, and resources supporting the planning of a digital strategy have been created by the SHERPA Erasmus + Project (https://selfieptk.eu/). The SHERPA toolkit along with other resources produced by other stakeholders (e.g. the Spanish Ministry of Education) are gathered on the SELFIE website (https://education.ec.europa.eu/selfie/resources#guidance). This allows schools not only to monitor their progress but also to focus on different aspects in each iteration addressing in this way the rapidly changing landscape and the complex nature of using digital technologies in schools.

The fourth characteristic is the adaptability and expandability of SELFIE which takes two forms. One is that schools can add their own questions in the tool to address their particular needs. The other form of adaptation is that the SELFIE items are being expanded to include other emerging topics of relevance to the use of digital technologies in schools: blended learning and well-being in digital education (in progress).

SELFIE for work-based learning (WBL) is a free online tool for Vocational Education and Training (VET) schools and companies. It supports them in making the most of digital technologies for teaching, learning and training.

It is a new module/extension of SELFIE, so, SELFIE WBL is also based on self-reflection process, collecting and gathering perspectives from VET school leaders, teachers, learners and in-company trainers.

SELFIE WBL helps schools and companies become fit for the digital age. It is a specific part of the SELFIE tool, adapted to match the requirements of work-based learning. With SELFIE WBL, training companies are taken on-board in the self-reflection process about how to better use and integrate digital technologies for training purposes.

2.3. DigCompEdu and SELFIEforTEACHERS

The European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound background framework which helps to guide policy and can be directly adapted to implement regional and national tools and training programmes. In addition, it provides a common language and approach that will support the dialogue and exchange of best practices across borders.

The DigCompEdu framework is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational training, special needs education and non-formal learning contexts. It aims to provide a general frame of reference for developers of Digital Competence models, i.e., Member States, regional governments, relevant national and regional agencies, educational organisations, and public or private professional training providers.[8]

DigCompEdu details 22 competences organised in six areas. The focus is not on technical skills; rather, the framework aims to detail how digital technologies can be used to enhance and innovate education and training.

The European Framework for the Digital Competence of Educators (DigCompEdu) captures and describes 22 educator-specific digital competences in six areas. These areas correspond to three dimensions: educators' professional context, pedagogy and learners' competences.

[8] https://joint-research-centre.ec.europa.eu/digcompedu_en

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.

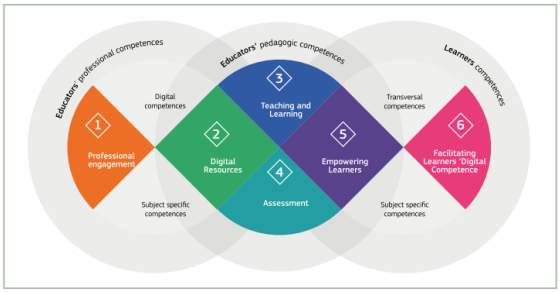


Fig. 1. The European Framework for the Digital Competence of Educators (DigCompEdu).

For each competence, a competence descriptor is provided, complemented by a list of typical activities that are examples of the competence. A series of proficiency statements exemplify the activities at six proficiency levels. The DigCompEdu framework sets out a six-scale progression model to capture educators' competence proficiency level: A1 = Awareness, A2 = Exploration, B1 = Integration, B2 = Expertise, C1 = Leadership, C2 = Innovation.

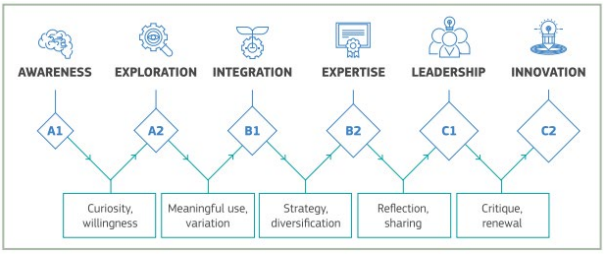


Fig. 2. DigCompEdu Progression Model.

The DigCompEdu study builds on previous work carried out to define citizens' Digital Competence in general, and Digitally Competent Education Organisations (DigCompOrg). It contributes to the Commission's recently endorsed Skills Agenda for Europe and to the Europe 2020 flagship initiative Agenda for New Skills for New Jobs.

SELFIEforTEACHERS (SfT)[9] is an online self-reflection tool to help teachers reflect on and further develop their digital competence. It is an action of the European Commission Digital Education Action Plan 2021–2027.[10] It was developed by the Joint Research Centre (JRC) in collaboration with the Directorate General for Education, Youth, Sport and Culture (DG EAC).

SELFIEforTEACHERS aims to empower teachers to actively engage in their professional learning process and to support them in their use of digital technologies in their professional context. It is not designed for external assessment of teachers' performance but for empowering teachers to identify their strengths and gaps to plan their professional learning (Economou, 2023).[11] Thus, the use of SfT is considered as a learning journey rather than an evaluation test. At the same time, SfT provides a tool for education systems to support teachers in their professional development. Aggregated results generated by self-reflections within a group, support the planning of professional development programmes.

[9] https://education.ec.europa.eu/selfie-for-teachers
[10] https://education.ec.europa.eu/focus-topics/digital-education/action-plan
[11] https://publications.jrc.ec.europa.eu/repository/handle/JRC131282
Economou, A., SELFIEforTEACHERS. Designing and developing a self-reflection tool for teachers' digital competence., EUR 31475 EN, Publications Office of the European Union, Luxembourg, 2023, ISBN 978-92-68-01809-5, doi:10.2760/561258, JRC131282.

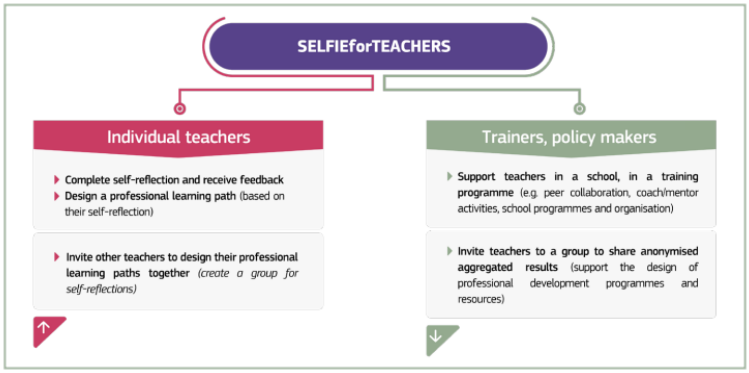


Fig. 1: SELFIEforTEACHERS scope

The tool is based on the conceptual European Framework for the Digital Competence of Educators (Redecker, 2017).[12] Through 32 self-reflection items organised in DigCompEdu's six competence areas, it guides teachers to reflect on their digital competence level. It follows a progression model with six levels of proficiency (A1-Newcomer, A2-Explorer, B1-Integrator, B2-Expert, C1-Leader, and C2-Pioneer). Upon completing their self-reflection, teachers receive a feedback report with their results and suggestions on how to level-up. Teachers are prompted to design their professional learning paths based on their identified needs.

SELFIEforTEACHERS is available online for teachers across Europe and beyond.[13] It is currently (May 2023) available in 29 languages, including all official languages of the European Union.

Fig. 2: SELFIEforTEACHERS areas and items.

[12] https://joint-research-centre.ec.europa.eu/digcompedu_en
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.
[13] https://educators-go-digital.jrc.ec.europa.eu/

3. AN EXPLORATORY STUDY

3.1. Method

In this section, the methodology of this study will be presented. This work is based on in-depth interviews. To reach the relevant stakeholders for this study, we first contacted the Spanish Ministry of Education and VET, specifically INTEF, the unit in charge of digital education in Spain. Through INTEF, all regions were informed, encouraged and invited to take part in the study.

In-depth interviews were conducted with the officials responsible for the digital education implementation of each autonomous community. Based on the request received, each regional authority appointed the person or team responsible to participate in the interview. Hence, this study is focused on the policymakers' perspective.

Through the interviews, we aimed to acquire a good understanding of what each region is planning and doing to ensure an improved DC in schools and for teachers of their autonomous community at the normative level. The scope of the study is achieving a good overview and understanding of the regional plans at the organisational and strategic level.

3.1.1. Data Collection Instruments

3.1.1.1. Interview Script

The interview script was developed in a double iteration among the different authors through the elaboration of a draft, analysis and feedback, with revision and elaboration of the final version of the script with the final approval of all authors.

The structure of the script includes:

- Framing the interview and presenting the objectives, the scope of the project and the exploratory nature of the study.
- A context section with an introduction and an overview of the respondents' backgrounds.
- A structural section including questions about educational digital transformation plans from the Autonomous Community, the use of EC tools and frameworks, the use of the INTEF tools, and final remarks (benefits, problems and challenges).

The script was developed in Spanish, given that all interviews were conducted in this language. Additionally, to facilitate consistency among interviewers, the research team developed a checklist for following the interview that summarises the task (the interview Checklist and Script are included in the Annexes).

3.1.1.2. Interview selection process

The sample of interviewed persons was self-selected by each region following a request from the University of Murcia for participation in this project with the support of the Spanish Ministry of Education and VET (led by INTEF in this case). The educational governments of each Autonomous Community (Consejerías de Educación) were contacted by email. This email introduced the project and requested the participation of an individual or a team in the data collection process. The email emphasised that the data collection was not evaluation exercise, but rather a study to understand and learn from the different experiences of the different regions.

Each regional government selected the most appropriate person – or team – to participate in the interview. In the case of some regions, the response was immediate, but in others, it was more complicated to get in touch with the person in charge and for that person to designate who would participate in the study. All interviews were conducted online through a video conference.

One week before the appointment, the team sent another email including a reminder for the appointment, an infographic with the main topics for the interview, as well as all the materials and documents that had to be signed to cover the ethical use of data in the research.

3.2. Participants

Out of 18 potential participants (17 Autonomous Communities and INTEF), 16 participated in the study (see all participating regions in the table below).

Participants in our study were the following:

Autonomous Community	Position in the Regional Government
Aragón	Chief of Innovation and Training Service of the Department of Culture and Sports of Aragon that belongs to the General Directorate of Innovation and Professional Training
Canarias	Responsible for the Educational Technology Area of the Education Bureau / TICN Coordinator
Cantabria	General Director of Innovation and Educational Inspection
Castilla y León	Technician at the teacher training service, educational innovation and the General Directorate of Innovation and Teacher Training
Castilla-La Mancha	Deputy Director of Education
Cataluña	Deputy Director General of Digital Research and Culture
Comunidad de Madrid	General Director of Bilingualism and Teaching Quality. In charge of this General Directorate is the Subdirectorate of Bilingualism and the Subdirectorate of Innovation and Teacher Training and the Subdirectorate of Evaluation and Analysis
Comunidad Foral de Navarra	Director of Technologies and Educational Infrastructure Service
Comunidad Valenciana	Specific CEFIRE Director of Teaching Digital Competition
Extremadura	Director for Educational Innovation and Inclusion.
INTEF	INTEF Director, which is a general deputy direction of the Ministry of Education and reports to the General Directorate of Territorial Evaluation and Cooperation
Islas Baleares	Technician of the Teacher Training Center
La Rioja	Director of the Riojan Center for Educational Innovation

Autonomous Community	Position in the Regional Government
Principado de Asturias	General Director of Management, Evaluation and Educational Equity of the Ministry of Education
País Vasco	Techno-pedagogical Digitalization and Innovation Coordinator
Región de Murcia	Chief of Teacher Training Service, who reports to the General Directorate of HR, Educational Planning and Evaluation of the Education Ministry

3.3. Data Analysis

Interviews lasted approx. 55 minutes on average (minimum 35 minutes, maximum 88 minutes). The interviews took place between September and October 2022. All the interviews were coded directly from the recordings, and the digital processing compiled with the ethical requirements of both participating institutions.

The first cycle of descriptive coding for each interview was developed based on the project goals and the interview script. After this first coding, a second simultaneous coding method that uses a deductive concept-driven approach was employed for all the interviews. For this second coding cycle, the research team collaboratively developed the code frame before viewing the data based on research goals and main topics (see Annexe 4). To ensure consistency of analysis and reporting, the entire process was monitored, and if any differences in criteria were found, discussions were held for necessary adjustments.

For each subcategory, we collected notes about the content, as well as quotations that should help illustrate the interviewees' opinion. The complete coding (as in the example included in Figure 3) was developed in Spanish.

	Notes	Quoting
Experiencias previas	Plan para introducir TIC en E&A, 30 años.	"La digitalización en la educación ya se venía trabajando desde hace 30 años, las iniciativas para introducir TIC en procesos de enseñanza y aprendizaje. El proyecto previo era Plan TAC. Herramienta para hacer diagnóstico y a partir de eso contemplar posibles acciones."

ARS-SELFIE Example of coding. Autonomous Community N.6.

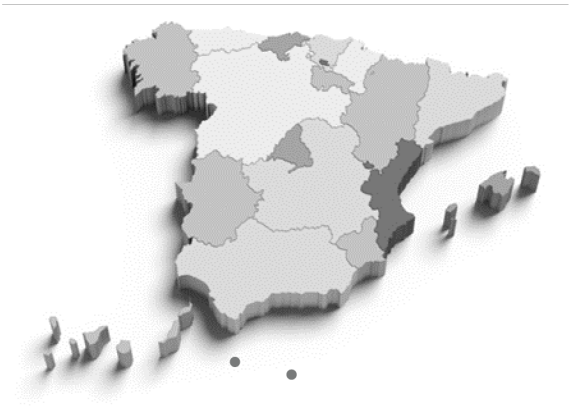
Also, specific coding of each individual case and its use or approach to each JRC tool and framework was developed. This coding process constitutes the tables included in the annexes.

Once the coding was finished, two data reports were developed: an individual written report with the main data for each Autonomous Community in English, and a visual report to offer an alternative perspective to each case. Each final report was sent to the Autonomous Community teams for their validation.

3.4. Technical meeting for findings discussion

As a final action, in March 2023, a technical meeting took place to discuss the preliminary findings of this study with JRC researchers and EC policy officers from the DG Education, Youth, Sport and Culture C4 Unit (Digital Education) and B2 Unit (Schools and Multilingualism). This meeting served not only to help the researchers fine-tune the main findings of this study, but also to, gain a better understanding of the needs of policymakers on the topic. Following this meeting, the presentation of the results was adapted to better facilitate the understanding of the impact, role and goals of the frameworks and tools for policymakers and end-users. Also, the needs and direct feedback from end-users about the tools and frameworks and how they are embedded in the regional plans was improved in the final report

3.5. Spain, the study context



The main goal of this study is to explore the diverse approaches of different regions and to examine whether and if so how the EC tools and frameworks are used as part of the digital transformation of a country. For this purpose, as mentioned above, the case of Spain has been chosen to observe how, even within the same country, different territories (some regions in Spain are islands, some are under or overpopulated, some are in Europe, others in Africa – such as the Canary Islands) with a common goal have different approaches on how they approach the digital transformation of their region.

Education in Spain is coordinated by the Ministry of Education and Vocational Educational and Training – VET – (hereinafter MEFP corresponding in Spanish to the *Ministerio de Educación y Formación Profesional*). This Ministry oversees the general educational laws and regulations. It assumes the coordination and regulation of those territories that do not have Autonomous Community status and the educational centres and missions abroad.

According to the Spanish constitution, education is the remit of different regions. Each region has the responsibility and authority to regulate education based on the standards developed at the state level; the executive-administrative powers to manage the education system in their territory; to support the autonomy of the schools; and the evaluation of school results, as well as the implementation of action plans.

The digitalisation of education in Spain was primarily promoted by INTEF. This institute has a long history of working on implementing technology in education.

The European Recovery and Resilience funds from 2021 allowed the MEFP to develop and implement a programme specifically designed for the improvement of the digital education in Spain (*Programa para*

la Mejora de la Competencia Digital Educativa).[14] This program is part of the Plan de Digitalizacion y Compentencias Digitales del Sistema Educartivo #DigEdu[15].

Among other actions focused on the digital transformation of the educational system in Spain, this program aims to achieve the following by 2024:

- Certify digital competences of teachers: at least 80% of the total amount of teachers in Spain must be certified at least with an A2 Digital Competence level (around 568,000 from the total of 700,000)
- Develop school digital action plans in all Spanish non-university educational schools, including pre-primary, primary and secondary schools, as well as VET schools, artistic schools and official languages schools (around 22,000 schools).

This programme, the funds associated with it and, of course, the requirements of these funds have been fundamental for all Spanish autonomous administrations and is the underlying ground to understand in what context the EC frameworks and tools have been implemented.

[14] In the *BOE-A-2021-15399 Resolución de 10 de septiembre de 2021, de la Secretaría de Estado de Educación, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación de 21 de julio de 2021, por el que se aprueba la propuesta de distribución territorial y los criterios de reparto de los créditos gestionados por Comunidades Autónomas destinados al Programa para la mejora de la competencia digital educativa #CompDigEdu, en el ejercicio presupuestario 2021, en el marco del componente 19 "Plan Nacional de Capacidades Digitales" del Mecanismo de Recuperación y Resiliencia.*[14], this translates as: the Official State Gazette BOE-A-2021-15399 Resolution of 10 September 2021, of the State Secretariat for Education, publishing the Agreement of the Sectorial Conference on Education of 21 July 2021, approves the proposal for territorial distribution and the criteria for distribution of the credits managed by Autonomous Communities for the Programme for the improvement of educational digital competence #CompDigEdu, in the 2021 budget year, within the framework of component 19 "National Digital Capabilities Plan" of the Resilience and Recovery Mechanism

[15] https://intef.es/Noticias/spain-looks-at-the-future-of-education-through-its-digital-spain-2026-agenda/

4. SPANISH REGIONAL APPROACHES

In this section, the reports of all the Autonomous Communities are presented individually.

In addition to a summary of the data included in the interview, to contextualise the information and allow readers to understand the local conditions, the reports include:

- demographic data about the region: estimated population, area and sub-regions included in each Autonomous Community (according to the latest data from the National Institute of Statistics (INE)
- and the number of schools that receive public funds and are affected by the European Programmes for educational digital competence and the educational system digitalisation programme (data included in the BOE "*Programa de cooperación territorial para la mejora de la competencia digital educativa #CompDigEdu*"[16]).

We first present INTEF's national approach and then the individual regions in alphabetical order.

For each regional approach, we have also included a visual representation of each region including the main data, as well the use of the EC tools and frameworks through circles. These circles are represented in solid colours if they use the tool or the framework, and only an outline if they report awareness of the tool or framework.

[16] https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-13096

4.1. INTEF

INTEF (*Instituto Nacional de Tecnología Educativa y de Formación del Profesorado*) is the National Institute for Educational Technology and Teachers Training in Spain. It is part of the Ministry of Education and VET. Even though it develops resources and support for the entire country, it is only in charge of regulating those territories not considered Autonomous Communities, i.e., the Autonomous Cities of Ceuta and Melilla (in the North of Africa). Therefore, even though some developments have been designed with the perspective of the entire country and it has coordinated the actions among the different Autonomous Communities for the most recent National Plans (depending on the European Funding), its regulatory influence is more limited (20 schools in two territories populated by 169,778 people with Spanish as the only official language).

4.1.1. Background

INTEF has extensive and long-term experience promoting digital transformation in the Spanish educational system, as well as in the development of resources, tools, courses and implementation programmes to increase the use of technology in education and develop the digital competences of teachers, students and educational organisations.

It has organised, developed and supported an important number of resources, repositories, courses and MOOCs (Massive Open Online Courses) to engage Spanish teachers and schools in using technology in education. It has created a wide array of repositories of open educational resources (pictures, sounds, learning objects and more), warehouses of Good Practices, Summer Courses and MOOCs about Personal Learning Environments, Educational Organisations Digitally Competent, Project Based Learning, Computational Thinking, among many others.

4.1.2. European Commission's Tools and Frameworks use

INTEF has used the EC Frameworks as a central resource upon which to base the development of tools and training.

The Institute supports the inclusion of the Citizens' Digital Competence (as outlined in DigComp) as a part of the general educational Spanish Law (that regulates 60% of the curriculum of the Autonomous Communities without another official language different than Spanish and 55% of the curriculum of those with another official language). In pre-primary and primary schools, DigComp is introduced as a transversal topic and in secondary education as a fundamental part of some courses.

Based on DigComp, in 2012 INTEF developed a Spanish Common Framework for Teachers' Digital Competences. The first draft with the indicators and descriptions was published in 2013, and the revised version was published in 2014. In 2015 the draft was translated into English, and in 2017 a new version of the Framework was launched. Some related training resources and courses were developed, for example: micro-training – using a specific App EduPills and MOOCs. INTEF updated this MOOC with a new version in 2020 and also an English version (SPOOC modality – self-paced) is also available.

In parallel, the EC also launched the DigCompEdu Framework (Joint Research Centre, 2017), and INTEF started a process of alignment of its national framework for teachers digital competence with the new DigCompEdu framework. INTEF began using DigCompEdu as a framework in 2020, and from January 2021 to January 2022 INTEF and Autonomous Communities developed a **National Framework of Digital Competence of Teachers 2022** (https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-8042) adapted from DigCompEdu and SELFIEforTEACHERS. This adaptation was negotiated, accepted and signed by all the Spanish Autonomous Communities and adopted as the regulatory reference framework in Spain, mandatory in the whole territory as of 4 May 2022. The adaptation includes the six areas of the original framework and some adaptations to local sensibilities (for example, a section about data protection).

In the case of DigCompOrg, INTEF launched a translation of the framework in 2016. Also based on this framework, the Institute created a MOOC called "*Organizaciones Educativas Digitalmente Competentes #DigCompOrg*" (Digitally Competent Educational Organizations) and launched it in 2017 to promote the creation of a School Digital Plan (https://intef.es/wp-content/uploads/2021/12/Guide_School_Digital_Plan_INTEF.pdf). Moreover, it developed a complete report on how to create a Digital School Plan based on DigCompOrg.

INTEF promoted SELFIE as soon as it was launched as a tool for a better understanding of the educational system in schools. In 2021, it conducted a joint study with JRC on, "The Digital Capacity of the Educational Schools in Spain", which included a representative sample of 492 primary and secondary education schools to study the digital capacity of Spanish schools using the questionnaires of the SELFIE tool.[17] Additionally, it started two initiatives[18] that consolidate the plan for digital transformation of the educational sector.

INTEF is in charge of regulating and coordinating the process in the two autonomous Cities of Ceuta and Melilla, as well as the abroad educational Spanish institutions. For those territories that are exclusively under the remit of INTEF SELFIE was made a mandatory requirement to create the Digital School Plan based on SELFIE. In addition, SELFIE was included in the INTEF training offer on the design of school digital plans at national level. This training is freely available through a MOOC.

INTEF also recommends SELFIEforTEACHERS as a self-reflection tool for teachers' professional development. For both tools, INTEF contributed to the Spanish version of the tool and coordinated its translation into the four co-official languages in Spain.

Since 2023, the MEFP has published a national framework on teacher digital competence development based on the EC framework DigCompEdu. This has become the reference document for all the Spanish different regions

4.1.3. Final remarks

In the words of INTEF's Director,

— "the Frameworks give you a path: what I have to do to improve, and it also serves as an evaluation tool",

and SELFIE and SELFIEforTEACHERS

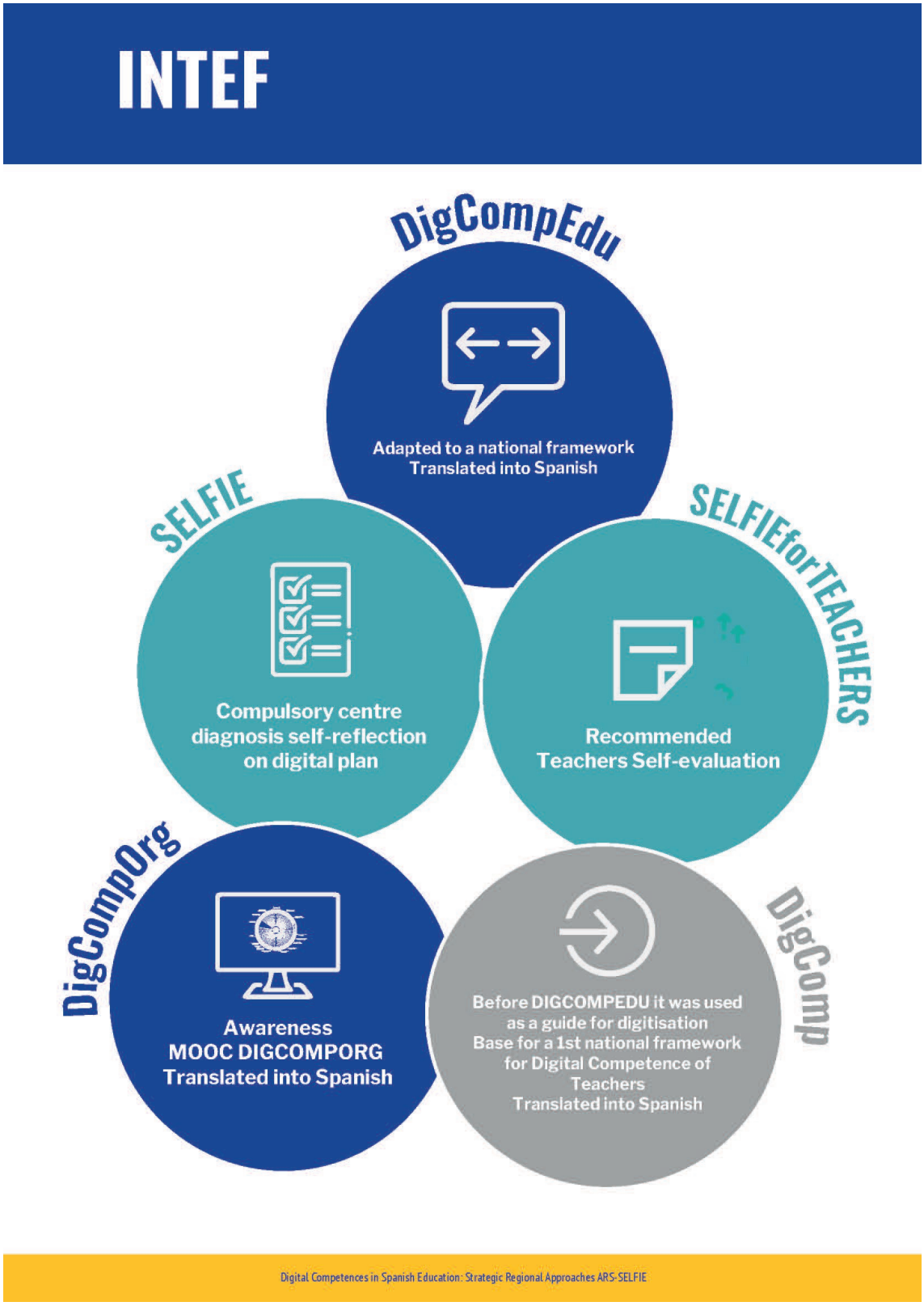
— "give you the opportunity to do a reflection that you don't normally do".

The main difficulty faced in Spain in the process of implementation of the EC tools and frameworks is the lack of teachers' knowledge regarding the EC frameworks and tools.

A crucial element for the implementation and development of Digital Competences is the guidance and coordination work by the central administration (in the Spanish case, the Ministry). It must be a consensual and a technical/intellectual work, not a political one.

[17] Castaño Muñoz, J., Weikert Garcia, L. and Herrero Rámila, C., Analysing the digital capacity of Spanish schools using SELFIE, EUR 30735 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-38651-3, doi:10.2760/947402, JRC125197. JRC Publications Repository - Analysing the digital capacity of Spanish schools using SELFIE (europa.eu)

[18] (1) Programa para la mejora de la competencia digital educativa https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-15399; and (2) Programa para la digitalización del sistema educativo: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-15397



Visual Representation INTEF

4.2. Aragón

Estimated population: 1,326,261

Subregions: 3

Extension: 47,720 km^2

Educational Institutions (excluding universities): 2102

Mother tongues: Spanish

Key websites:

https://www.aeducar.es/

https://www.cddaragon.es/

4.2.1. Background

Before the pandemic, the administration of Aragon started a line of work to develop digital competence, which was carried out in pilot schools and was more focused on seeing the impact of the use of technologies on student learning. Before the Digital Plan of Aragon, there was no plan, there were only training courses, so there was another line of work on training promoted mainly by CATEDU (the Aragon Centre for Educational Technologies, https://catedu.es).

CATEDU was created around 2009–2010. Until it coordinated with INTEF and the rest of the communities, it had not considered mapping all the training courses according to the type and level of competences. During the pandemic, CATEDU launched an urgent training on educational platforms, in addition to creating AEDUCAR (https://www.aeducar.es/ the educational platform for the Aragon Region), to offer a platform to those schools that did not have one. Until the pandemic, schools had no obligation to create anything that considered digital aspects.

However, some roles did exist and dealt with these aspects. For example, the role of the Coordination of Learning Technology Training (COFOTAPS) had existed for 7–8 years. There were also Training Coordinators in Schools (COFOS) for about the same time. The COFOS are essential in determining the real training needs that exist. Each school has been allowed to train a group of people dedicated to the design of the school's Digital Plan, which must include at least the head teacher and the COFOTAP. Last year, training was given to COFOS and COFOTAPS to explain what would be required of them. This year, the administration will receive feedback on how the use of SELFIE – that was considered compulsory for every school – has actually been received. In addition, the administration held meetings with the different collectives (e.g. head teams, coordinators or teachers) to facilitate the reception by the teaching staff. In fact, the interviewee mentions the following about the digital project:

— "We saw from the beginning that, depending on how this discourse was received by teachers, we were either going to fail or succeed."

With regard to the use of European funds, the administration considered that the maximum potential it had concerned the human resources to address all that was proposed through INTEF. Therefore, three people with a technical profile were hired to develop the structure they thought they would be needed. A further 12 people were hired (one for each territorial teacher centre) to oversee the design of the whole strategy, the entire training and certification itinerary, and the design of an objective test. These advisors are also in the schools helping to complete SELFIE and SELFIEforTEACHERS and generate training according to the school's needs and to help design the School Digital Plan.

4.2.2. European Commission's Tools and Frameworks use

The DigComp framework is considered part of the new digital strategy of the Autonomous Community. However, no specific actions were developed within the specific frame of the new digital project.

The DigCompEdu Framework is the main framework for the design of the digital strategy of this region. This framework has been used to map training according to teachers' competences in order to certify them. Specific training for certifying the levels of competence has been developed. Indeed, in

September 2022, training related to levels A1 and A2 were offered. In the school years 2022/2023 and 2023/2024, training for the levels B1 and B2 will be added to the current offer.

The administration has created a platform where each teacher can log in and see what training they have done so far and which areas of the framework they have acquired and which competences they are missing to reach the next level. In the future, they want to include the option to see what trainings are available to complete the missing competences of teachers. This platform is called ARCO. For the mapping, they have connected ARCO with other platforms that include all the trainings offered and done by teachers in the last five years. The mapping took place in January 2022. At the moment, all new activities are mapped directly. This Autonomous Community has offered the use of this platform to INTEF. Therefore, the national framework –based on DIGCOMPEDU – within the platform is used as a monitoring and self-evaluation tool.

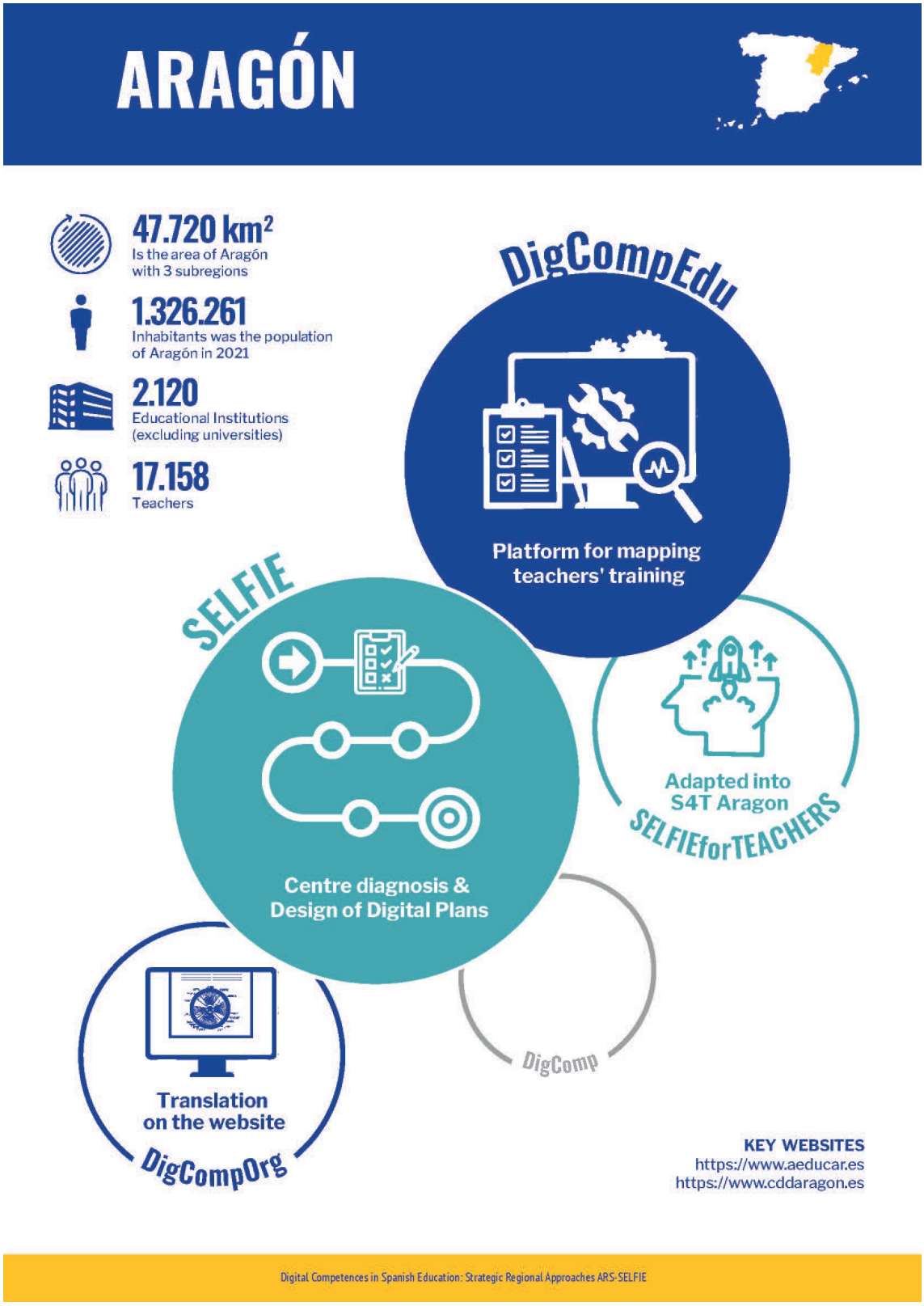
Regarding DigCompOrg, a translation and summarised version of it can be found on their website. They explained that SELFIE, which is used as a reflection tool for the design of the Digital School Plan, derives from DigCompOrg, so there is an indirect use of DigCompOrg through SELFIE.

The SELFIE tool was used for an initial evaluation of the digital capacity of schools around January 2022. However, the design of these plans had already started in May 2022. The interviewee highlights that one of the main advantages of SELFIE is that it helps to be aware of all aspects of technology outside of classroom work. The progress will be evaluated in the school years 2022/2023 and 2023/2024.

Regarding SELFIEforTEACHERS, the administration considered it as a source of inspiration for the development of a regional tool. Therefore, SELFIEforTEACHERS Aragón was created, which also included some parts adapted to subject speciality and the different school stages, for example, considering the peculiarities of Physical Education Teachers when it comes to the application of their Digital Competence. It was mainly used for self-evaluation. Regarding certification, the administration has advised teachers with a B1 level to attend an A2-level training, as they consider that sometimes self-perception could be a bit distorted.

4.2.3. Final Remarks

The interviewee considers that it would have been interesting to offer professional benefits to teachers in order to ensure a more friendly reception of the proposals of this strategy. On the other hand, he mentioned that it is important that the competences of teachers permeate into the competences of pupils.



Visual Representation Aragón

4.3. Canarias

Estimated population: 2,175,952

Subregions: 2

Extension: 7,447 km^2

Educational Institutions (excluding universities): 993

Mother tongues: Spanish

Key website:
https://www3.gobiernodecanarias.org/medusa/ecoescuela/programabrujula20/

4.3.1. Background

The Canary Islands is one of the outermost regions of Spain and of the European Union.

They have a long history of working with the inclusion of technology in education. Since 2000, they have worked on different projects (e.g. Medusa or Brújula20), always with a common focus on providing infrastructure and technology, teacher training and content creation.

— "We have worked on the development of resources (teaching programmes, learning situations and digital educational materials) that favours the use of innovative methodologies that facilitate the development and assessment of competences, the effective use of ICT and the transition from printed material to digital resources".

This means that, after the pandemic, and the crisis that forced the education system to move suddenly to an online format, the Canarias community was, in a way, prepared for it.

— "We had everything well documented before the pandemic. Covid caught us with our homework done. Today we have an explicit, documented, written, and published digital plan for education in the Canary Islands in the 21st century".

In this sense, the region's digital plan was already very advanced due to previous experience. They worked on the school plan with ICT agents, accompanying the schools since 2015, with the systematic use of SWOT and SELFIE since it was available.

— "The objective is that 100% of the educational centres should be certified in digital teaching competence, in the communities we are articulating to achieve the milestone."

Currently, the working team in the local ministry is composed of 17 individuals with different profiles (teachers from different fields, people with technology profiles with more awareness of teaching and pedagogical task). In addition, there are 73 zonal ICT agents that work in schools. They have divided the schools according to their level – those who only needed an update, and those who had no plan – and work with them according to their starting point.

— "We have catalogued the schools as a traffic light, those that needed updating for example in security issues or communication plan did not fit, those that were actualised already."

4.3.2. European Commission's Tools and Frameworks use

Concerning the use of tools and frameworks, they state that they know all the EC tools and frameworks and have used them to a greater or lesser extent in the process.

Regarding the DigComp Framework, they state that they know it and that they participated from the beginning in INTEF's work of the creation of a Framework for teachers' digital competence based on it, before having the DigCompEdu. However, presently they no longer use it in practice for educational purposes.

The framework they use predominantly is the DigCompEdu, which they have used as a reference and guide for all processes related to digital education and for updating materials and content, changing the language and focus.

— "We no longer talk about ICT training; we talk about digital competence in all documents. This makes a great difference"

They are familiar with the DigCompOrg framework and have used it to update the digital plan for leadership, governance and organisational topics. A guide and template for developing the plan, based on DigCompOrg, has been developed and published on the plan design resources website.

The DigCompOrg and DigCompEdu frameworks and the SELFIE tool are included as Guidance documents.

As we have previously remarked, the Canarias Community has used SELFIE since the beginning to help schools conceive their digital school plans. It was used in conjunction with a SWOT exercise. More recently, they have used it with school heads to develop the school plan in conjunction with the digital plan model. The guidance web section of the plan defines and recommends SELFIE for school evaluation. They have made an adaptation of the tool, requesting that some specific questions be considered when doing so.

The SELFIEforTEACHERS tool is known to them, but they have not used it extensively. They have used it as a basis for creating a very short self-diagnostic questionnaire for teachers prior to applying for the training they are offering.

As an aspect to improve, SELFIE is a very concrete questionnaire, which only includes quantitative data from 1 to 5, and does not allow for qualitative data. Although it allows for the addition of questions, they are not open-ended.

4.3.3. Final Remarks

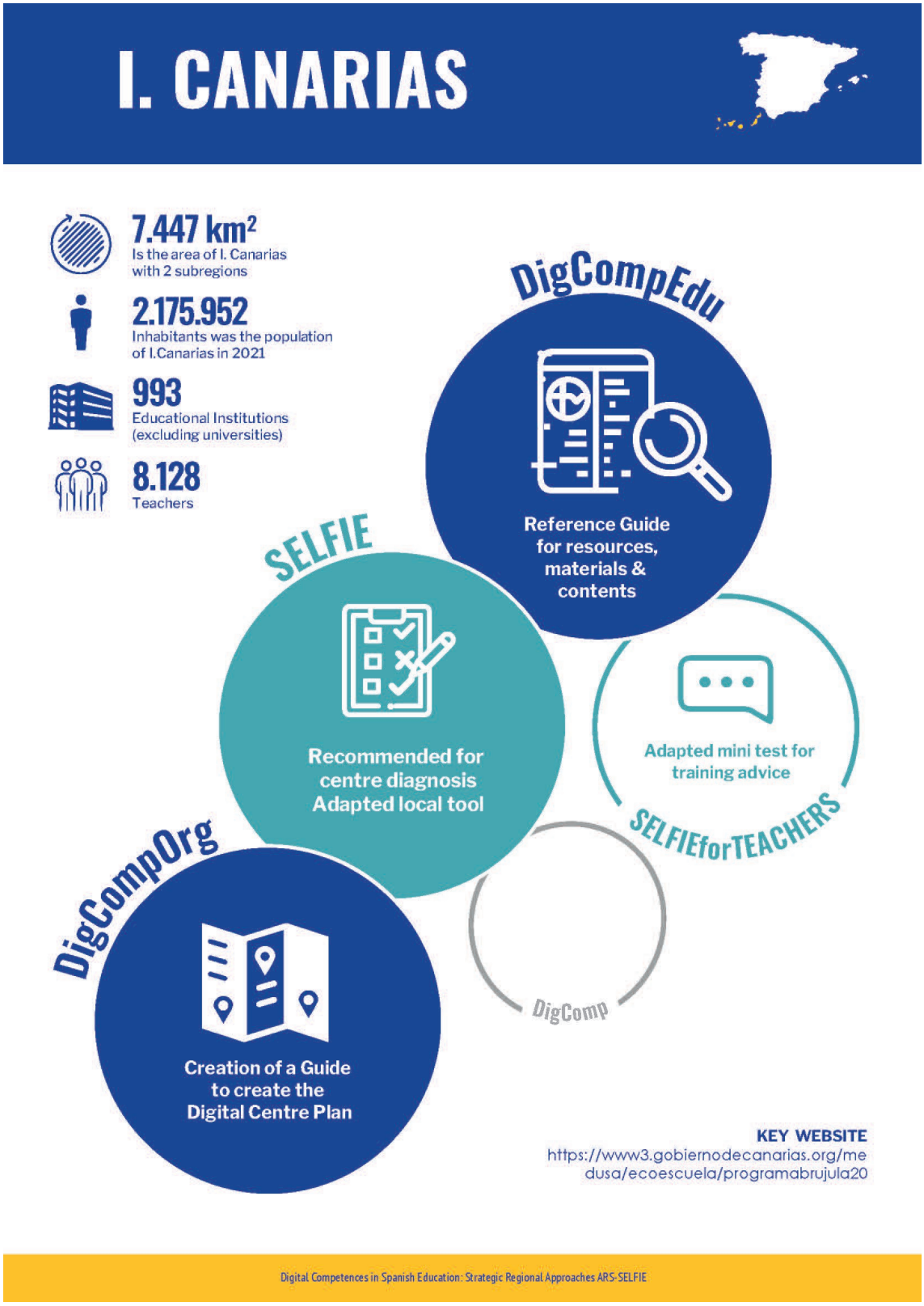
Regarding the frameworks, what they value most is the diversity of perspectives: researcher, expert and practitioner. Especially for being in a community far away from the Iberian Peninsula, they value having that global vision.

— "When I read or access these kinds of documents for me they are opportunities to have the big picture of what is the digitally competent educational organisation. So, this is the framework, this I can adapt, this I can take away, this is not in my context".

They also consider that every time the frameworks are updated, the points for improvement are identified and addressed.

One aspect mentioned by the interviewees is that they participated in the INTEF teaching competence assessment portfolio prior to DigCompEdu and have always used the INTEF versions.

The schools view the digital plan process very positively, stating that for all plans they should have experts and time for reflection, also for the digital plan.



Visual Representation Islas Canarias

4.4. Cantabria

Estimated population: 584,507

Subregions: 1

Extension: 5,321 km^2

Educational Institutions (excluding universities): 286

Mother tongues: Spanish

Key website:
https://www.educantabria.es/tic/plan-digital-de-centro

4.4.1. Background

Following the information offered by the Directora General de Innovación e Inspección Educativa (General Director of Innovation and Educational Inspection), Cantabria has more than 30 years of experience working on digitalisation education.

The current digitalisation plan DECODE Cantabria includes a complete plan with objectives, actions, a timetable and an assessment. It includes a piloting with 65 schools and a proposal for an open and flexible plan for each school that involves principals and leadership teams. The target groups of the plan are the leadership teams and the schools, as units.

The digital plan is led by two assistants from the Cantabria Government. At each centre, the project is led by one member of the leadership team and an ICT coordinator with a pedagogical and technical profile. Most schools have received the plan positively. Schools are engaged and participate with commitment.

Before this plan, some schools had already developed a digital plan for the centre, and some teachers had some certifications for their Digital Teaching Competence. At the time of this interview, more than 90% of the goals had been achieved.

They feel they have a strong connection with other territories, thanks to the monthly meetings they have all together, led by INTEF.

4.4.2. European Commission's Tools and Frameworks use

Regarding the use of the EC tools and Frameworks, Cantabria declares that they know and use all of them but with different approaches.

DigComp is known but has not been used from the Autonomous Community perspective within the educational context.

DigCompEdu, for its part, is very well known and it is used by the schools, the leadership teams and the regional administration. The administration is using DigCompEdu as a reference: they have it printed, and it is a permanent consultation source for developing the plan to improve the digital competence of teachers. They consider it as a good reference offering better methods. Also, they state that DigCompEdu facilitates the process, and it makes no sense creating parallel frameworks.

Moreover, they declare to know DigCompOrg and say that schools and leadership teams know it also. As an administration, they are using the DigCompOrg as a crucial reference for the development of the plan of digital improvement for schools.

Templates have been designed with suggestions for the use of the DigCompEdu and DigCompOrg frameworks and SELFIE and SELFIEforTEACHERS tools for each stage of the plan, indicating who can participate and including the access link to the tools.

The administration has known SELFIE since 2018, and they guess the schools knew it as well before they started to use it more systematically – it is compulsory for schools. Last year (2021–2022), the administration started to promote the use of SELFIE:

— "Last year, it [SELFIE] was presented to all the directors and, through the platform that we have to communicate with the directors, those who did not know about it were encouraged to use it."

In SELFIE, ease of use and agility are valued. It is considered an easy, intuitive and effortless tool. It has generated interest and curiosity even among students and families.

— "We have students and even families who have been curious about the tool and have used it".

SELFIEforTEACHERS, for its part, is known and is officially recommended for schools, but is not compulsory and has been less used in these processes.

Instructions for using the SELFIE and SELFIEforTEACHERS tools were developed and provided in the #DeCoDe manual.

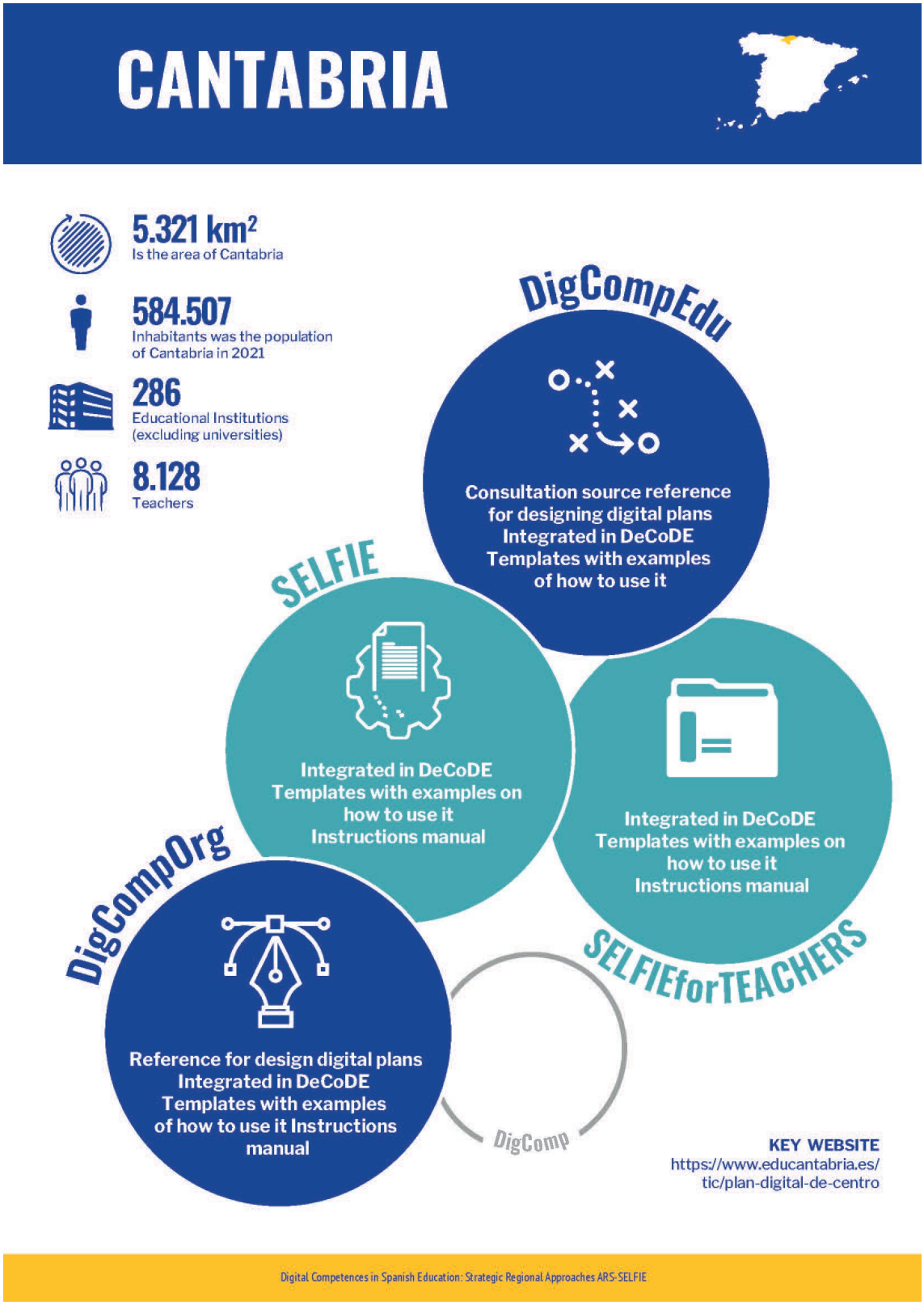
It is important to remark they are using the INTEF approaches and documents to access directly the frameworks and tools and to develop their approaches to the certification of the Digital Competence of Teachers.

4.4.3. Final Remarks

The existence of Frameworks and Tools is considered beneficial to have a clear reference to create materials for students.

The biggest concern in these processes is related to the struggle with external timetables, deadlines and funding justification.

They consider as fundamental the creation of clear paths – from the administration – that help schools to improve their processes and the creation of to support and foster the schools' approaches.



Visual Representation Cantabria

4.5. Castilla y León

Estimated population: 2,394,918

Subregions: 9

Extension: 94,224 km^2

Educational Institutions (excluding universities):

Mother tongues: Spanish

Key website: https://www.educa.jcyl.es/profesorado/es/cde_cyl

4.5.1. Background

The community of Castilla y León is the largest community in Spain.

In terms of the inclusion of technology in education, there is a long history. According to the interviewee, they have been pioneers in ICT certification of schools since 2009 through technical certifiers, and over the years they have been adapting, improving and digitalising this process. From the beginning, they have contemplated training programmes with a focus on classroom application. They already had a portal with educational resources by levels (pre-primary, primary and secondary), which also contains information of interest for the different profiles that form part of the educational community: teachers, students, families and schools.

With regard to the current plan, each centre has a twofold task: on the one hand, to work on the schools' digital capacity and, on the other hand, on teachers' digital competence. To this end, they collaborate with the CEIEs (Centre for Teacher Training and Educational Innovation) in detecting needs and accompanying the schools and taking specific actions if necessary.

For this academic year, all schools have a digital plan, but only 70% have CoDiCe TIC certification (Certification of the community's own level of digital competence regulated by the regional law launched on 12 June 2018 and available at https://www.educa.jcyl.es/profesorado/es/codice-tic-2021-22.ficheros/1503516-BOCYL-D-12062018-1.pdf). This year they are planning to achieve 80–90% certified Schools.

Since the launch of the European funds, teachers have been freed up to form provincial teams (ICT advisor, technical teacher advisor, one or two per province plus a team of mentors).

People work at different levels to carry out the digitalisation plan: on the one hand, the organising team, on another level the technical teacher advisors; and then, the mentors and collaborating teachers, who are partially released to work (this position already existed years ago). They currently have between five to ten mentors per province (subregion), and all the schools have reference mentors.

4.5.2. European Commission's Tools and Frameworks use

When discussing about the tools and frameworks designed by the JRC, they mention that they are familiar with all of them, but not all of them have been equally useful for their context.

Regarding the DigComp Framework, they have used the "CertiCyL" digital citizenship competence tool, which has been designed based on the DigComp framework by the Regional Ministry of Development and Environment (*Consejería de Fomento y Medio Ambiente*). Still, for the field of education, they have given preference to DigCompEdu.

They started applying the DigCompEdu framework before the INTEF translated version because of its focus on teachers. Once the INTEF translation was available, they switched to that version. They have used it as a reference for creating the materials and for adapting the trainings, and different explanatory videos for teachers have been created.

As soon as they have the certification standards, they plan to design a system that will allow them to certify and monitor competences.

— "We are going to design a follow-up system that includes the mapping of competences so that they can see what areas they have passed at each level, so that they know what they need to do to reach a complete level. If they have a complete level, a badge will appear and from there they will see if they want to improve, but they will already have a first picture of where they are and what they need."

According to the information shared, the DigCompOrg framework has been known and used by them since 2018, and they have used it as a reference for the certification of the schools.

The resources created include explanatory presentations on the context in which the digital plan arises, including all the frameworks (DigComp, DigCompEdu and DigCompOrg) and the SELFIE tool.

As far as the use of SELFIE is concerned, they emphasise their participation in the first SELFIE pilot from the very beginning.

It is a tool that they consider useful and that the schools also value.

— "Most schools use SELFIE, if they use it, they use it again. It provides a broad and realistic view, very useful, it is used more than the others."

They also promote the use of SELFIE, sharing their existence with the schools, encouraging them to apply it and rewarding its use.

— "If they participate and show evidence that they have used it, they are rewarded with half a school career point and are eligible for certification. What is certification good for? They are given priority in projects, they are considered for pilots, infrastructure."

The vision and evaluation of the SELFIEforTEACHERS tool is different. According to the interviewee, this type of evaluation does not address their current needs, with the focus more on certification of teachers' digital competence.

— "We need a self-diagnostic tool that tells us the real level and not a self-reflection tool".

4.5.3. Final Remarks

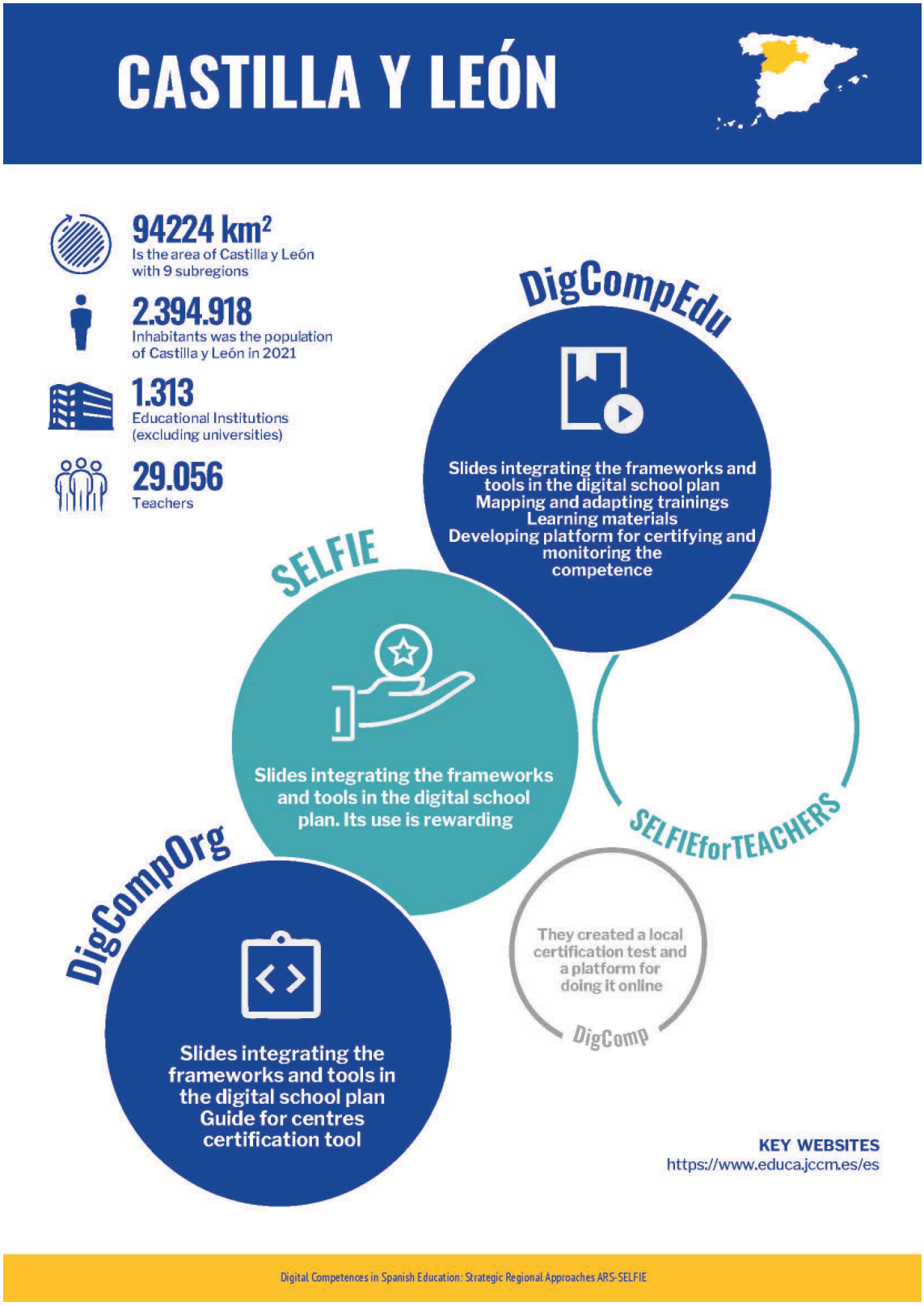
Among the aspects that stand out for consideration and are working best are mentoring and accompaniment: that the schools feel accompanied in the process and have one or two reference persons to consult.

Another aspect that they point out has to do with certification: certification must be useful for something, for example for transfers or for the management of schools. On the other hand, the deployment of competence is key,

— "The idea is that they are competent to apply it in the classroom, with their students".

When discussing the digitalisation plan and strategy, the importance of sustainability and a long-term view is emphasised.

— "We have to do our utmost to get it well underway. Not to make it something that will last 2 years, but to make it the basis of something that has to last for a long time and keep improving."



Visual Representation Castilla y León

4.6. Castilla La Mancha

Estimated population: 2,049,562

Subregions: 5

Extension: 79,461 km^2

Educational Institutions (excluding universities): 1230

Mother tongues: Spanish

Key website:
https: https://educamosclmportal.cm.jccm.es/

4.6.1. Background

Castilla La Mancha has an extensive territory with many educational centres in small towns and rural contexts.

The Autonomous Community has a long history of implementing technologies in education. Before the COVID-19 crisis, Castilla La Mancha had already implemented digital interactive panels in the classrooms, changed physical textbooks to e-books and implemented many programmes for teacher training, including courses for supporting technology enhancement of pedagogy. As they stated:

— "Before the pandemic, we had started on a path, which was accelerated by the pandemic, and which was strongly supported not only by the purchase of devices but also by the training of teachers from the earliest levels".

After efforts caused by the COVID-19 crisis, and thanks to European funding, the current plan for the region (2021–2023) includes the digitalisation of the entire educational community. It comprises three main focuses: improving the digital competences of teachers, students and schools. For that purpose, the administration employs 41 facilitators that must be present –itinerantly – at the different schools, to help, guide and support the creation of the Digital School Plan. Therefore, the intention is that those school plans could emerge from their previous experience and not solely from an administration mandate.

The implementation of this plan is perceived as very positive. 100% of the schools already have a School Digital Plan which started on 1 September 2022. Every program includes goals, actions, responsible individuals and evaluation; everything is based on the centre's previous experience, which allows the centre to evolve at its own pace.

4.6.2. European Commission's Tools and Frameworks use

The Vice-Counsellor for Education, who answered the interview, said that they know of the existence of all the frameworks and tools developed by the JRC. Nevertheless, he said there are different use levels for each of them.

In the case of DigComp, the framework is not directly used in the educational context because they consider that the indicators for the Digital Competence of citizens are already included in the general curriculum included in the national education law.

DigCompEdu has been explicitly used in developing the digital regional plan, primarily to focus on teachers' Digital Competence because they consider it as an ideal starting point. It is beneficial to use existing resources, even if they need to be adapted to the needs of the context.

Regarding teacher training, they have designed videos and a training module along the lines of the DigCompEdu framework.

The same approach is valid for DigCompOrg. The administration has used it to develop the regional plan and concretely the centre's digital evolution.

For the diagnosis and design of the plan, they have designed and published on the internet an interactive presentation and a template for the school plan, based on the DigCompEdu and DigCompOrg frameworks and the SELFIE tool.

SELFIE is mandatory for every centre to serve as the basis of their digital plan development. In relation to SELFIEforTEACHERS, although they know of the existence of the tool, SELFIEforTEACHERS is not included in the regional policy.

Regarding the use of the tools, they consider it positive to be able to reuse both the frameworks and the tools and, thus, to be aligned with the European vision.

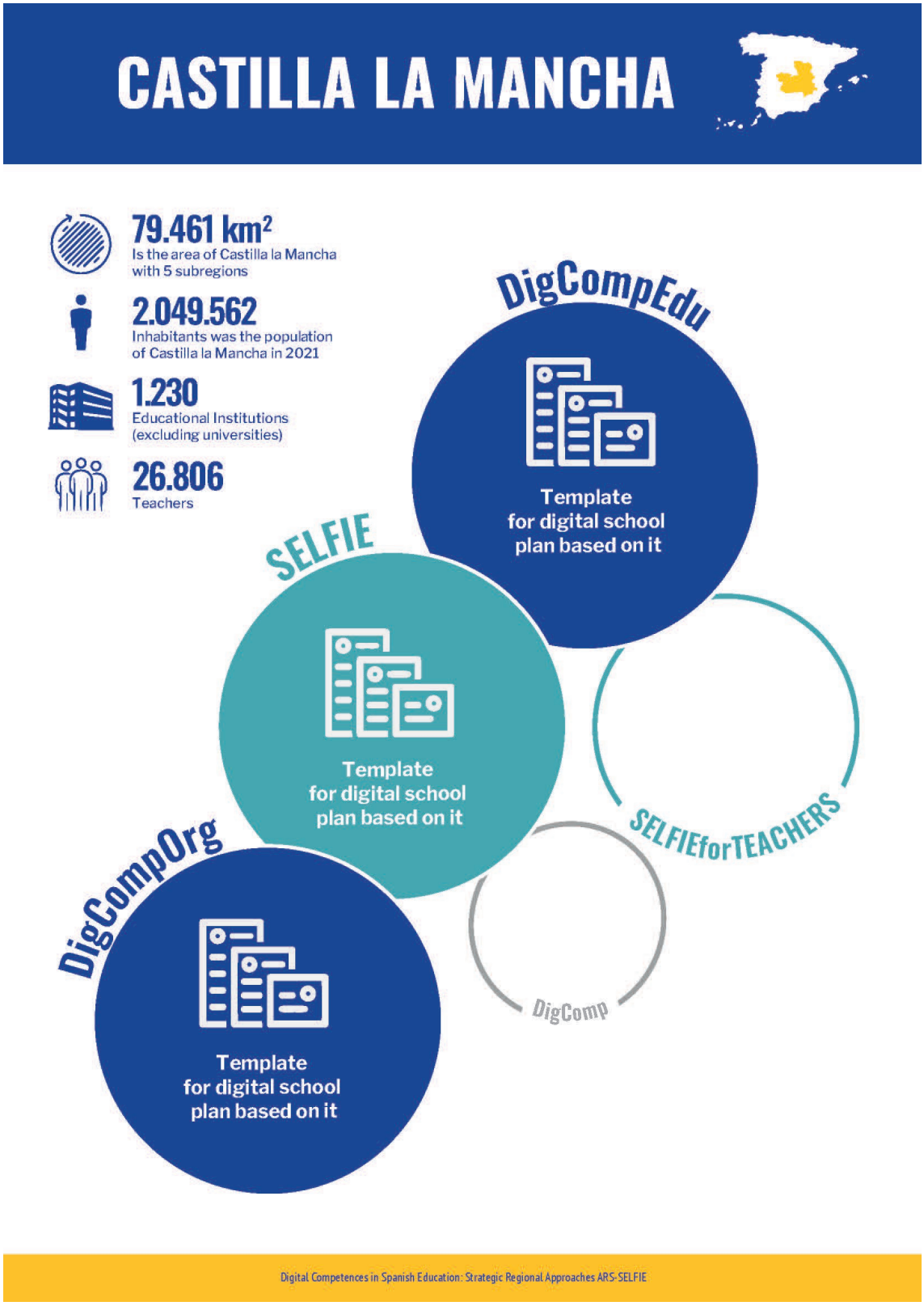
4.6.3. Final Remarks

Castilla La Mancha benefits from using the EC tools and frameworks to align with the European vision. Nevertheless, it is essential to ADAPT, not only to ADOPT frameworks and tools.

The main problems in digital transformation still come from connectivity and infrastructure maintenance.

Regarding European funding, there is a lack of autonomy to make the decisions and to have less time pressure to implement the strategy.

The critical challenges for the administration are teacher training/professional development, fostering digitally competent teachers, students and schools, and making Digital Technology invisible.



Visual Representation Castilla La Mancha

4.7. Cataluña

Estimated population: 7,780,479 people

Subregions: 4

Extension: 32,113 km^2

Educational Institutions (excluding universities): 3541

Mother tongues: Spanish / Catalonian

Key website:
https://educacio.gencat.cat/ca/departament/linies-estrategiques/pla-educacio-digital/

4.7.1. Background

Cataluña has a long history of working with the inclusion of technology in education. Initiatives to introduce ICT in teaching and learning processes have been in place for 30 years. The previous project was the TAC Plan (Technology, Learning and Knowledge) for schools, which involved aspects such as a process of diagnosing the school's maturity, planning and defining actions, monitoring and evaluation.

In 2018, the digital education plan began to take shape. It was approved in 2019 and began to be implemented in 2020 and will continue until 2023.

It mainly includes the design of a digitalisation plan for the whole community and for each educational centre, working along three main axes: improving the development of the digital competence of teachers, students and the centre.

This plan involves school principals, digital mentors and inspectors.

— "It works through digital mentors, who are teachers in the system who are released from classes for digital advisory tasks. They help to develop the plan. One mentor for several schools. [...] In addition, inspectors have been involved to present an overview of how the schools are doing and they have been trained for that."

The reception of schools to this plan has generally been positive. The need for digitalisation is clearly perceived and there is no discussion on this point. However, it was mentioned that there may be some resistance or differences regarding how it is accomplished.

— "It is compulsory to draw up a digital strategy for the centre. The underlying issues are not discussed, the need to do so is not under discussion. There is resistance on the 'how' to do it, on the concrete aspects to achieve digitisation, they don't like to feel that it is imposed on them from outside, or differences on how to use the funds, as there are some limitations on the use of funds."

4.7.2. European Commission's Tools and Frameworks use

When it comes to the use of tools and frameworks, they state that they know most of the EC tools and frameworks even though they have not used all of them.

They stated that there was already a Catalan framework. However, since it was very similar, the adaptation was not so drastic.

— "There was already a Catalan framework, and it was necessary to incorporate the European framework, but the change was not very big as it was very similar, which facilitated the process of adapting".

With regard to the DigComp framework, although they are familiar with it, they have not used it in education as they have mainly used the frameworks contained in the curricula and the LOE (one of the previous educational law, launched in 2006[19]) as a basis.

The framework mainly used by Catalonia is DigCompEdu, which they employed as a reference to update the plan and work on digital competence of teachers. Although work was already underway and they had their own framework, switching to DigCompEdu was not very difficult for them as they were similar.

They used the DigCompOrg framework as a guide for the development of the last digital plan and to work on the digital competence of the centre.

Both the DigCompOrg and DigCompEdu frameworks have been used as a reference and explicitly incorporated in the Digital Education Plan of Catalonia 2020/2023 documents.

The adoption of this set of frameworks as a reference is seen as an opportunity for greater coherence and cohesion between digital school plans, curricula and teacher education programmes, which are mutually reinforced by their interdependence.

They consider that the frameworks are a good basis that allows them to use existing resources, but that need to be given further thought and adapted to the context.

— "The framework is very good as a starting point because it guarantees quality, of course, everything is debatable, but they are frameworks that establish guarantees and as a starting point they are fantastic. It would be necessary to analyse the framework and analyse whether it is useful or not, because the situation in Romania is not comparable to the one in France, for example.

As a positive aspect, they highlight the fact that these frameworks are similar to the ones developed locally, so implementation did not require too much effort, and it allows them to be aligned with the EU. At the same time, they mention the risk of using unified tools when there is no unified education system in Europe and point out the need to adapt rather than adopt.

— "The good thing is that you don't need to invent anything, you can reuse what is already there and make [it] available to the whole community. If you create your own tools, you stay in the local environment, and it does not fit with the European vision".

In relation to SELFIE and SELFIEforTEACHERS, it is mentioned that they know the tools and that they have used them for self-assessment and diagnosis for the development of the plans, as they are the tools recommended by INTEF.

The use of these tools is seen as a facilitating convergence with other European countries in this area, as well as an opportunity for mutual recognition of qualifications and collaboration in the various initiatives that may be undertaken.

They also mention that they make use of the documents created on digital competence in teaching and the training offered by INTEF, as it allows them to take advantage of existing resources and adapt more easily to the requirements.

4.7.3. Final Remarks

As final reflections, the interviewee (Deputy Director-General for Research and Digital Culture for the Catalonia government) highlights the importance of being aligned with the European vision and the importance of reusing tools and frameworks.

Regarding possible obstacles, he mentioned aspects that may generate difficulties in carrying out the plan: external aspects such as the lack of autonomy for some decisions or the limited time, but also internal aspects within the community such as resistance from teachers or problems of connectivity and infrastructure.

— "Autonomy is limited, for example infrastructure cannot be decided. There is too little time to implement everything, there is a certain resistance to it being imposed".

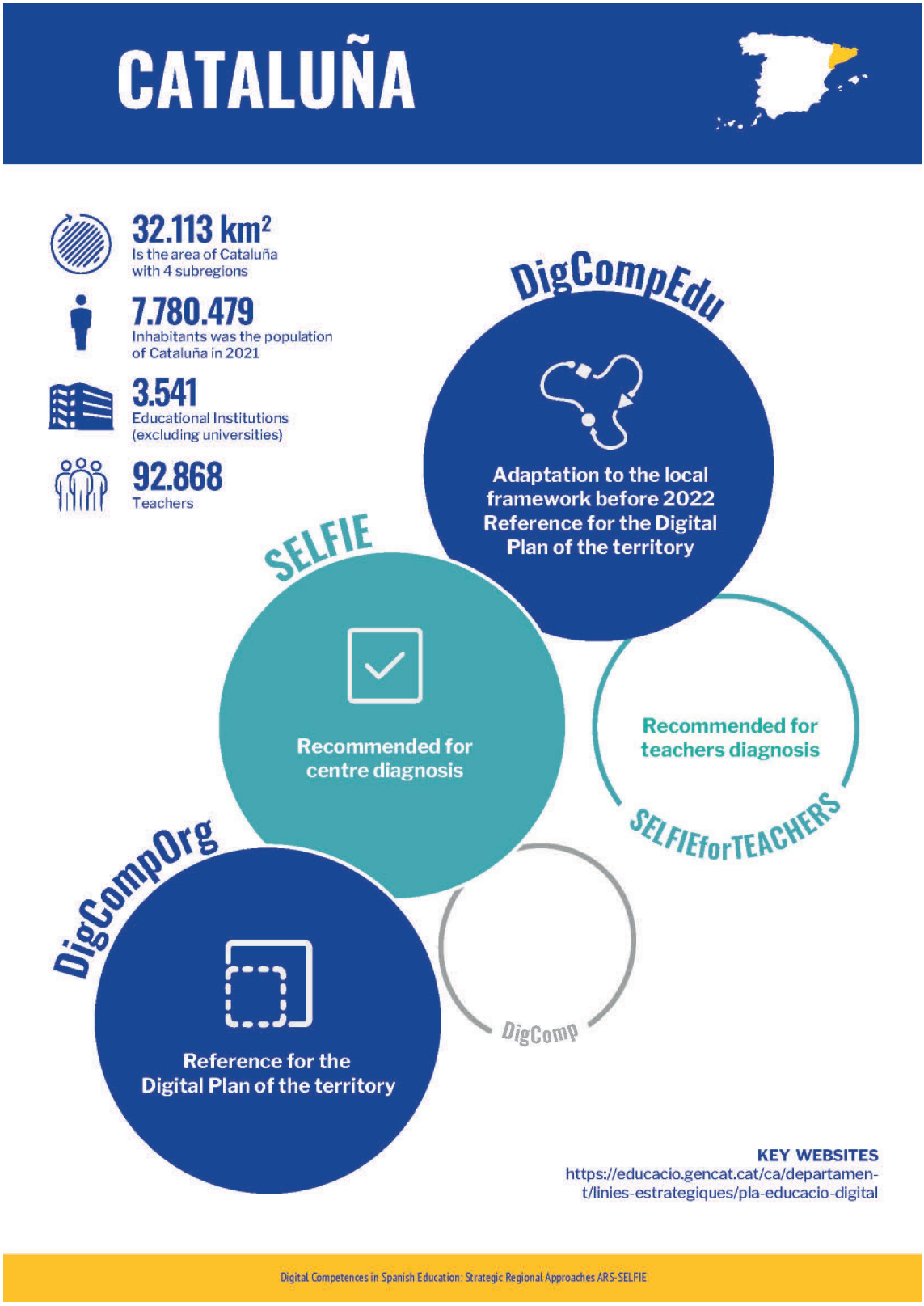
[19] https://www.boe.es/buscar/pdf/2006/BOE-A-2006-7899-consolidado.pdf

As recommendations, it is suggested to prioritise teacher training and professional development as pillars of the plan, the importance of having digitally competent teachers, students and schools in order to make digital technology invisible. It is also questioned what will happen with the support and maintenance of infrastructure in the long term and it is suggested to consider this issue.

— "Not only teachers and students have to be digitally competent, the centre has to be digitally competent as well. We must make technology invisible... the added value that technology gives.

— Another aspect is to consider who will oversee the maintenance and servicing of all this infrastructure, as it can be a problem. There are support channels, but they can be slow".

As a final thought, he remarked on the importance of adapting rather than adopting. This reflection is recurrent in many regions.



Visual Representation Cataluña

4.8. Comunidad de Madrid

Estimated population: 6,751,251 people

Subregions: 1

Extension: 8,028 km^2

Educational Institutions (excluding universities): 1707

Mother tongues: Spanish

Key website: EducaMadrid
https://www.educa2.madrid.org/educamadrid

4.8.1. Background

According to their response, the Community of Madrid has extensive experience introducing digital technologies in educational institutions and programmes.

The main plans of digital integration include two main focuses: technology provision and teacher training.

Regarding technology provision, the community has used different types of funding to provide classrooms with technological infrastructures.

Furthermore, two years ago (2019–2020), they developed two platforms for supporting digital innovation in education: (i) to collect and share digital educational resources, and (ii) to promote and encourage reading. Moreover, in the period 2020–2021, a platform focusing on STEM (Science, Technology, Engineering and Mathematics) was created. In addition, another platform was developed during the pandemic crisis to support teachers with the student assessment.

Regarding teacher training, the main goal is to support teachers in how to exploit all the institutional resources and assess their teaching competences – specifically, digital competences.

4.8.2. European Commission's Tools and Frameworks use

The region's decision-makers who answered the interview remarked that they knew of the JRC Frameworks (DigComp, DigCompOrg and DigCompEdu) prior to their recent work with INTEF and the arrival of European structural funding. Nevertheless, they expressed they did not use them directly. Neither particular actions nor specific training has been developed.

DigCompEdu was explicitly used during the creation of the Spanish adaptation (already mentioned in the general Spanish background and the INTEF case). In general, from their point of view and experience, frameworks are less practical for teachers, as they normally prefer/need more hands-on resources.

— "Frameworks are more distant from the teacher. Frameworks are more interesting for administrations. In the end, what the teacher wants is to work with the student, to make the student go to the next step, to know how to work with them and to have that facility in the use of resources, with devices... And not so much to know how this framework is set up or organised".

Moreover, they remarked as a positive point that DigCompEdu focuses more on pedagogical aspects that place technology in the service of teaching.

In the case of the current use of DigComp, Madrid considers that the most direct way to influence students' digital competence is through teachers' actions, thus it is considered a consequence of teachers' training.

On previous occasions, attaching the school's SELFIE report was already requested as a requirement for applying to educational innovation projects and funding at the regional level. However, using this tool is not mandatory for the School Digital Plan; it is only an option. Tutorials on how to use the tool

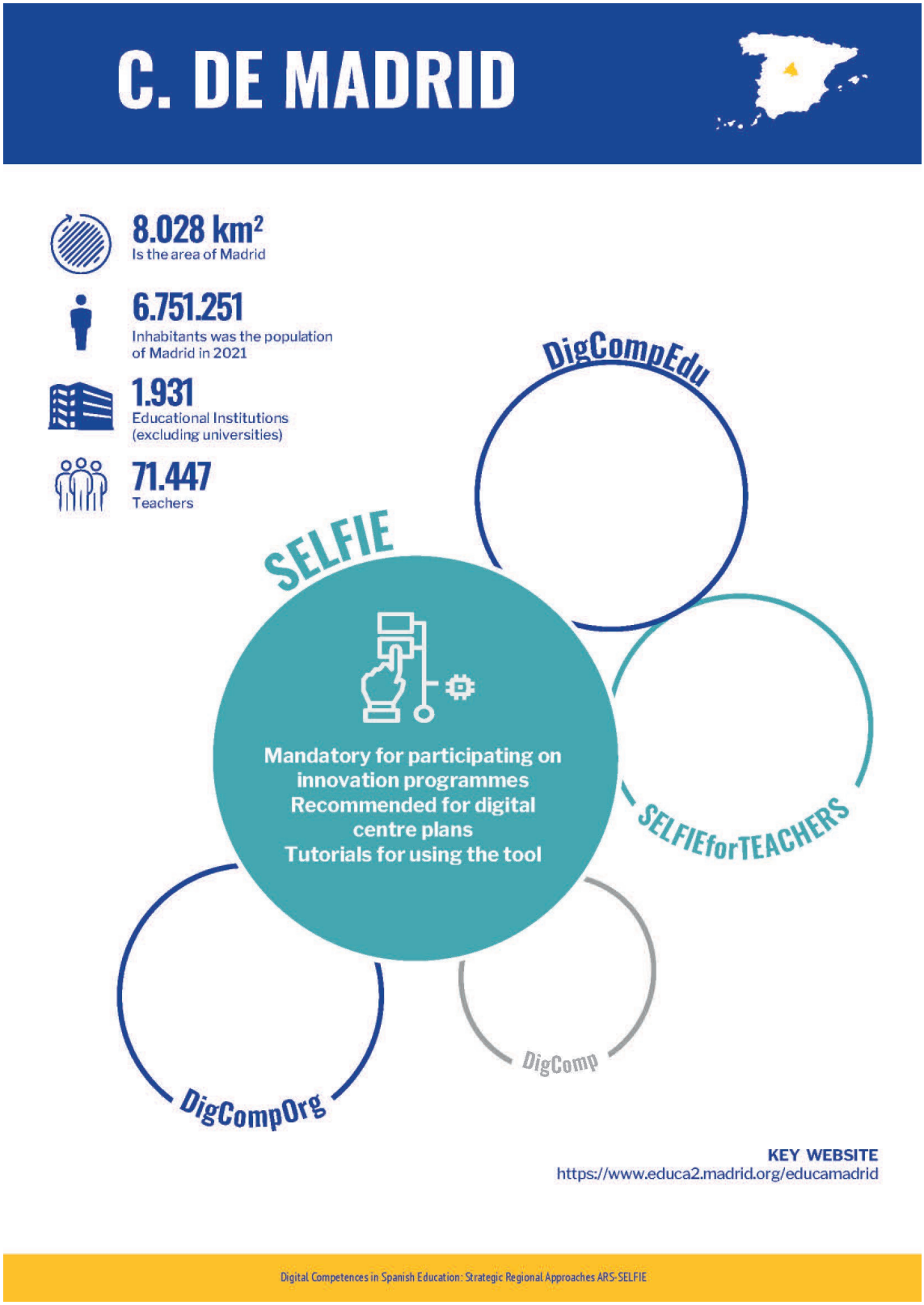
can be found in the EducaMadrid Media Library (https://mediateca.educa.madrid.org/usuario/educamadrid).

In the case of SELFIE and SELFIEforTEACHERS, participants in the interview remarked on the importance of these tools for supporting self-reflection in teaching practices.

4.8.3. Final Remarks

The existence of frameworks and tools for analysing digital implementation and progress has been beneficial. Nevertheless, nowadays, they consider as more crucial than ever the creation of an institution that would centralise competence evaluation and certification.

Regarding education, digital innovation should focus not on digital technology but on pedagogy. It is not about buying the latest device but about analysing why you want to use it and what you want to do with it.



Visual Representation Comunidad de Madrid

4.9. Comunidad Foral de Navarra

Estimated population: 661,537

Subregions: 1

Extension: 10,391 km^2

Educational Institutions (excluding universities): 323

Mother tongues: Spanish, Basque

Key website: https://www.educacion.navarra.es/web/dpto/formacion-profesional/formación-en-digitalización

4.9.1. Background

Before the pandemic, the Chartered Community of Navarre digital project focused mainly on infrastructure. By years:

- In 2011, the administration signed an agreement with Google, offering educational tools at no cost.
- From 2012, this agreement allows teachers to start including tools in their practice.
- In 2013, a pilot evaluation was made to determine what infrastructure would be needed.
- In 2014–2015, "Connected Schools" was started, but connectivity was still poor. As a result the "broadband plan" is initiated so that in 2018 there was connectivity in all secondary schools. After that the pandemic hit, but just before, it was planned to provide all cities with fibre-optic connectivity.
- In 2017, the Autonomous Community participated in a European project to improve the Digital Competence of Students, which was continue in 2019. In this project the Community also collaborated with Barcelona and the Junta de Andalucía. Also, in 2017, a renewal plan was generated in which all old equipment is replaced with new equipment. In addition, there was a commitment to providing interactive screens inside the classroom. In 2020, with the arrival of the pandemic, a plan was launched to provide equipment for students who had no resources.
- In the 2020/2021 academic year, tenders were prepared to secure equipment from primary to high school. In addition, security aspects began to be taken into account and security tools began to be included.
- Starting in 2022, the second phase of the IkasNOVA digital plan began (the original plan started in 2017), which will run until 2025–2030. This plan will include the milestones set by the European funding, but within a larger digital project. The idea is to use these funds as a boost, and to give continuity to its digitalisation project in the community. In fact, in 2024–2025 they want to launch a pilot for the certification of citizens' digital competence. Currently, in this academic year 2022/2023, the administration is conducting a pilot in 12 schools on digital content to evaluate what a proposal of this type of content should include

Regarding the use of European funds, they will be used mainly for the provision of infrastructure and teacher certification. As for the infrastructure, since it is so advanced due to the previous projects, each centre has been able to make requests as to what equipment they would like to obtain. In addition, 16 teachers have been released from their workload to be advisors for the development of the Digital School Plans. A pilot has was carried out in eight schools during the 2021–2022 academic year for carrying out the Digital School Plan. In this school year, the plan is intended to be carried out in the region's 323 educational institutions. There are also teachers partially released within each centre for the design of this plan.

4.9.2. European Commission's Tools and Frameworks use

The DigComp Framework was used to create a platform to certify the Digital Competences for students in a European Horizon 2020 project starting in 2017 (http://www.criss.tech). Additionally, a certification of the Digital Competences for citizens was created, based on the model that Castilla y León had developed, which was based on DigComp (TuCertCyL, see the Castilla y León report).

— "This whole journey should set the basis for starting already in the compulsory education stages to be able to certify the first levels of digital competence of pupils with DigComp reference (as they are starting to do e.g. in the distance learning language school and the Common European Framework of Reference for Languages)".

Regarding the use of DigCompEdu, it will indirectly be used for the certification of teachers' Digital Competence. The interviewee (Director of Technologies and Educational Infrastructure Service) states that INTEF is developing a certification tool based on the one already developed by Castilla y León but adapted to the new DigCompEdu. This autonomous community will use this tool. However, everything related to the certification is still to be published.

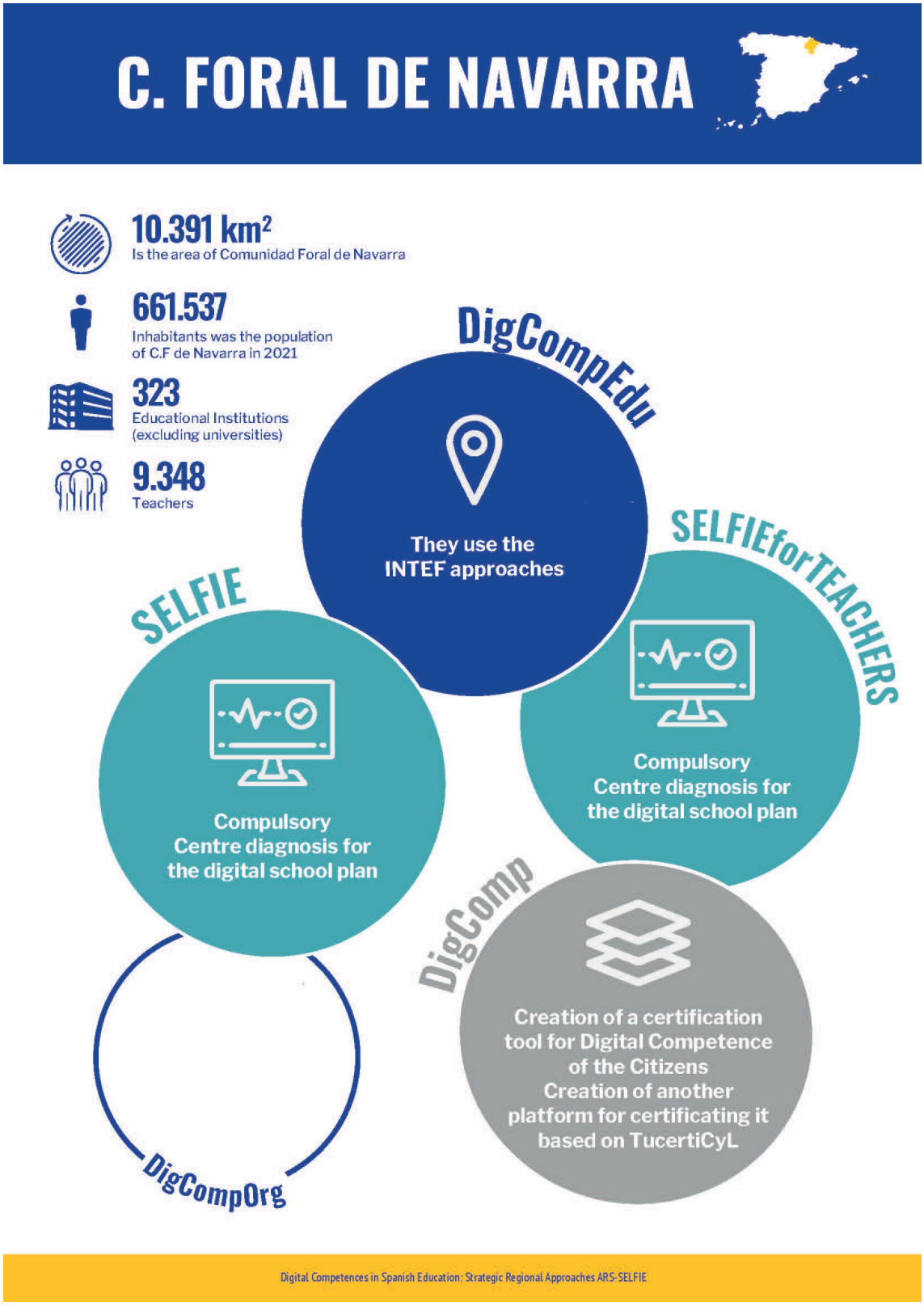
As for the DigCompOrg, no particular actions were specified. However, it is indirectly used in the evaluation with the tool SELFIE.

SELFIE and SELFIEforTEACHERS are used for an initial analysis of the educational centres, before they create their Digital School Plans. In both tools, anonymity plays a key role: (i) it preserves the anonymity of the participant, which facilitates the replies to the questions in a more honest way; (ii) but, on the other hand, the respondent feels that his/her participation is not relevant or useful for the rest.

In relation to SELFIEforTEACHERS, one key issue is that schools cannot access the results of individual teachers, so they have no details on how they can intervene regarding the training of teachers. On the other hand, SELFIE results are transferred to the school, but the administration cannot access and use them. Despite the aforementioned disadvantages of SELFIE and SELFIEforTEACHERS mentioned by the interviewee, the pilot schools of the digital project did not resist their use. It remains to be seen what the acceptance will be once implementation in all schools is required.

4.9.3. Final Remarks

The interviewee considers that, in the development of a digital plan, both infrastructure and competence must be taken into account, which are also the two main blocks in DigComp and DigCompEdu. In this regard, he adds that secure virtual environments and connectivity must be ensured.



Visual Representation Comunidad Foral de Navarra

4.10. Comunidad Valenciana

Estimated population: 5,058138

Subregions: 3

Extension: 23,255 km^2

Educational Institutions (excluding universities): 2102

Mother tongues: Spanish, Valencian

Key website: https://portal.edu.gva.es/pladigital/

4.10.1. Background

Comunidad Valenciana is an Autonomous Community with a long history regarding the implementation of digital education in schools. Even though there was already an intention to improve teachers' digital competence prior to the pandemic, training was more focused on ICT and tools. Nowadays there is a desire on behalf of the administration to change to a more competence-based training. In this sense, prior to the pandemic, the DigCompEdu and the DigCompOrg frameworks were barely used, and no other guiding framework was employed.

The turning point was probably the resolution of September 2021, after the arrival of European funds. A part of these funds will be dedicated to infrastructure and materials and another part to training. To reach the set milestone, each school has to develop its School Digital Plan and 80% of teachers (in the case of this community: 61,061 teachers) have to be certified with a Digital Competence of Teachers at level A2. However, how this certification will be achieved has not yet been regulated by the Valencian Community.

This Autonomous Community has adopted a strategy of proximity. Around 100 teachers have been released from their usual workload to become advisors. Their task consists of facilitating schools in the development of their digital school plans. The proximity approach is achieved by assigning a few schools to each advisor so that they – advisor and school – can be in constant contact with each other. The administration constantly promotes this close relationship:

— "Make everything easier. Let us not forget where we are from and where we come from, from the classroom".

A great deal of care is taken regarding contact with schools: not only are there many advisors who work almost personally with each school, but also the website of the new project for the development of digital competence in the Autonomous Community is being designed; so that, the role of advisors also has an instrumental character for the design of the school's digital plans.

There are also teams within the schools coordinating these plans. Regarding these teams, training is generated followed by a contextualisation and analysis stage (2021–2022), in which SELFIE is used and it is decided what is to be achieved with the centre's digital plan; a design stage (to be completed in this academic year 2022–2023) and an implementation and evaluation stage (planned for 2023–2024).

4.10.2. European Commission's Tools and Frameworks use

Regarding DigComp, its use for students has been pointed out and that, currently, there is no certification for this framework, nor are specific actions carried out.

The DigCompEdu Framework is the main tool for the design of their strategy. Therefore, it is also included as a part of the training for assessors and other assisting teams in the current Digitalisation Project. It has been used to produce a document to catalogue the digital competence training for

teachers until today. This catalogue indicates the percentage of which area and which indicators are covered by each training course. The idea is that each training course should indicate this information.

As for DigCompOrg, it is not currently used as much as DigCompEdu, and it is more focused on recreating situations derived from the digital school plans, as specified by the interviewer.

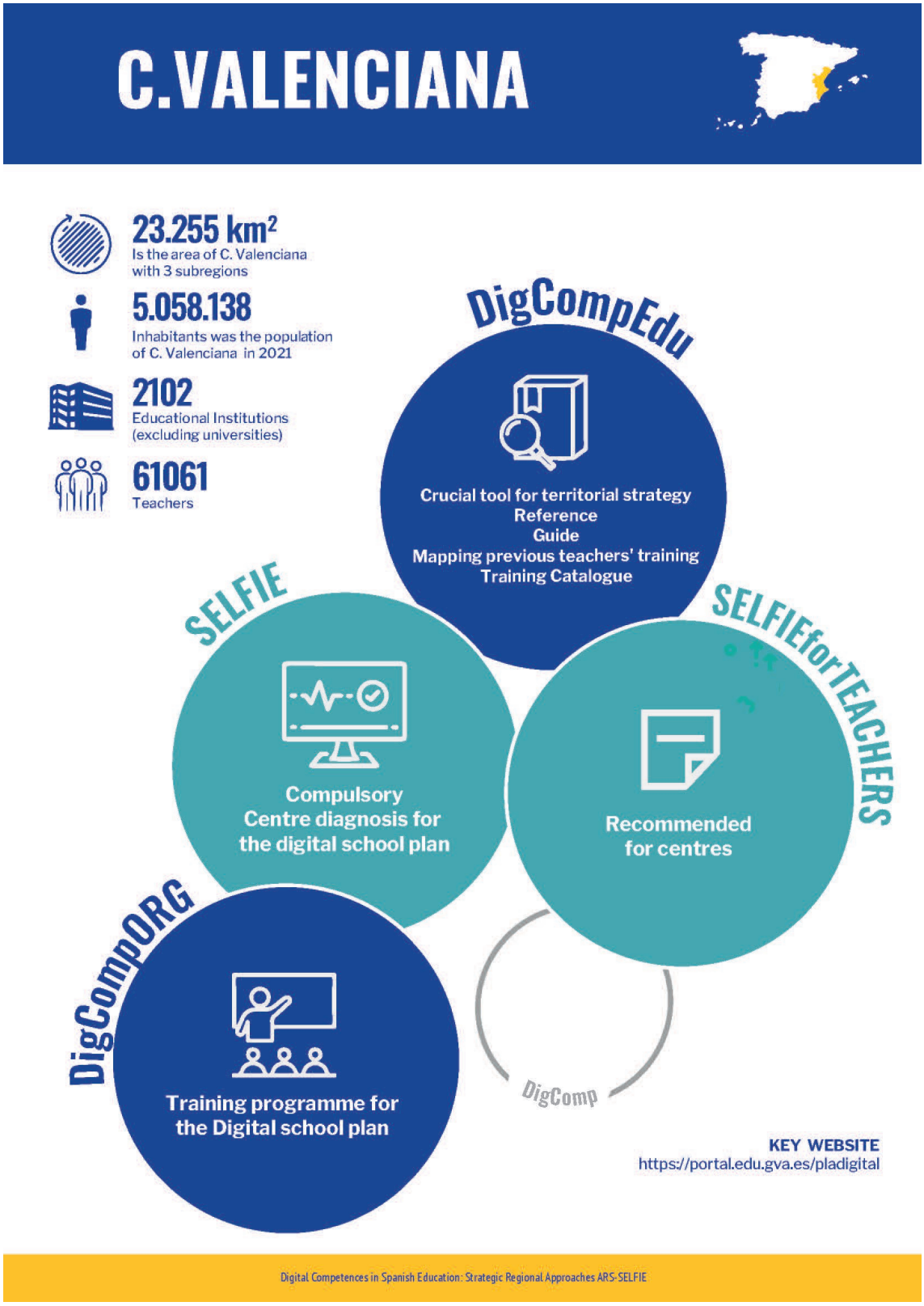
The SELFIE tool was used during a first phase (2021–2022) of analysis and contextualisation before creating the Digital School Pan. Its use assists in the decision-making process of the objectives for the Digital School Plan. It is complemented with a SWOT and a CAME analysis. It has been translated into different languages, included Valencian, which has helped the spread of its use. Currently, a specific training is available for the teams inside the schools who are in charge of the design of the Plan. The training is online and open and it consists of explanatory slides and a 40-minute recorded webinar (https://portal.edu.gva.es/pladigital/formacio/equips-impulsors-21-22/).

During this phase, the use of SELFIEforTEACHERS was also suggested but not mandatory, and it was oriented towards a more personal reflection. The useful presentation of the results in a very visual way was highlighted. However, they have the impression that it is more focused on the DigComp framework than on the DigCompEdu framework. The difficulties of its use are more related to the newness of the tool than to its content.

4.10.3. Final Remarks

The interviewee stresses the importance of listening to the schools and close support. The advisors have to develop the digital plans for the schools WITH the schools. Schools should not do it alone, nor should advisors do it for them.

— "Listen. And to listen you have to go, you have to go personally to the schools and once you have listened to the schools, work with them".



Visual Representation Comunidad Valenciana

4.11. Extremadura

Estimated population: 1,059,501

Subregions: 2

Extension: 41,634 km^2

Educational Institutions (excluding universities): 1,104

Mother tongues: Spanish

Key website: https://ped.educarex.es/

4.11.1. Background

Extremadura is a community with a long history of digitalisation in education, and almost all its initiatives and actions include a close collaboration with INTEF.

Before the pandemic, they already had INNOVATED (https://www.educarex.es/edutecnologias/innovated.html), the Plan for Education and Digital Competence of Extremadura. It had a focus on the integration of technologies in educational processes and the development of innovative programmes in the educational community. They also had educational management platforms such as Rayuela (https://rayuela.educarex.es/modulo_acceso/) and educational content platforms such as Escholarium (https://escholarium.educarex.es), focused on the different actors in the educational community, such as families, teachers or students.

This facilitated the management of the pandemic, as it was only necessary to reinforce some aspects of the infrastructure.

— "The shock plan during the pandemic was to improve the infrastructure for mass access, as the rest of the tools and platforms were already advanced and in use."

In this community and according to the information provided by the interviewee, 95% of compulsory education schools have first-level Wi-Fi networks and Extremadura is ranked as the number 1 community in terms of digital equipment in Spain. They also have several reference projects at the national level (e.g. eXelearning, programme 1-2: 1 computer - 2 students and EduRadio, among others).

They also have 18 teacher training centres that respond to an annual regional teacher training plan with one of its strategic pursuits being 'Digital Competence of Teachers training'.

Given this background and previous experience, access to the Recovery Funds has presented them with the challenge of integrating all these aspects into a single common strategy.

— "In Extremadura, the Recovery Funds created a healthy problem, of coexistence of devices and of making everything part of the same strategy that already existed".

4.11.2. European Commission's Tools and Frameworks use

As regards the use and knowledge of the frameworks, the General Director of Innovation and Educational Inclusion (depending on the Regional Ministry of Education and Employment) states that the DigComp framework has not been specifically used for educational purposes.

It is mentioned that they know of and have mainly used the DigCompEdu Framework and the DigCompOrg Framework.

Both frameworks are highly valued and have been used as a reference for adapting them to the community context, for taking and using materials and as informative reading for inspiration.

— "There is a work that has been done. There is a framework that has been very well elaborated by a group of people, which aligns a concept of citizenship that we identify with, a European vision. So, if this work has already been done, we are going to use it and adapt what we need to adapt."

The DigCompEdu framework is used as a reference "compass" for addressing the digital competence of teachers, especially for assessment.

The DigCompOrg is especially used as a reference, and they value the strategic vision it provides on all aspects of digitalisation.

— "It is a very useful tool, the circle with the areas guides you to look at the teacher training, to look at the competences, the active methodologies... It helps you to look at and to consider all the different areas."

There are support materials on the web regarding the DigCompOrg framework and its dimensions and how to work with it to make the SELFIE diagnosis the starting point of the Digital School Plan. Both informative videos and infographics about the DigCompOrg framework and the SELFIE tool have been created.

Regarding the SELFIE and SELFIEforTEACHERS tools, both are reported to be known.

It is stated that now they only use SELFIE for the diagnosis of schools, considering it adequate and recommending its use.

SELFIEforTEACHERS is not being used at this moment because, according to the respondent, their current needs (from the administration side) are more focused on certification of teaching competences and also to collect data to manage training to ensure the validity of such certification.

— "We prefer our own tool that we can use to 'take the picture' and decide on training, it is important to have control of the tool for management and certification."

However, the website recommends and mentions the possibilities of using it for the evaluation of the digital competence of teachers with explanatory materials.

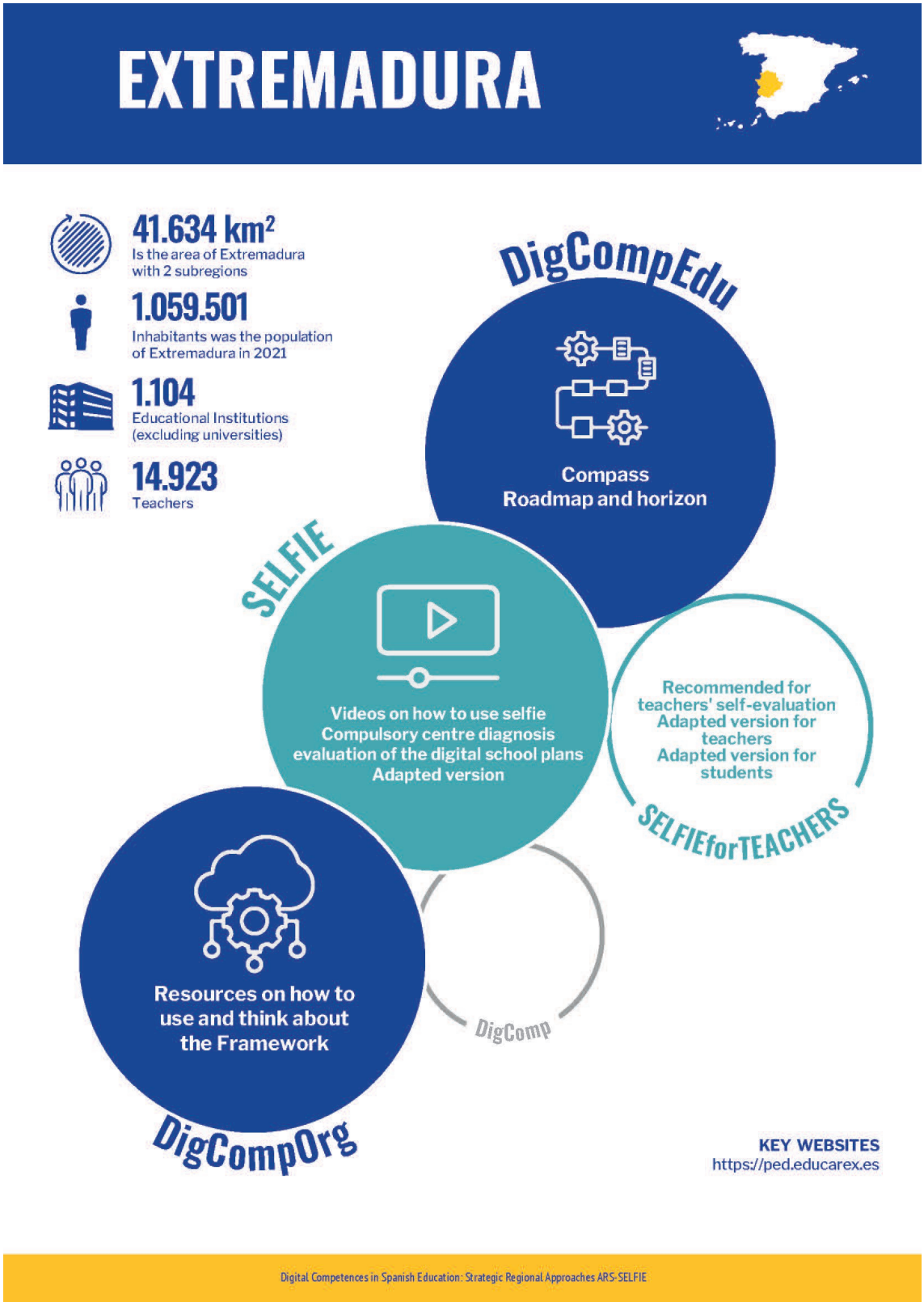
4.11.3. Final Remarks

Among the aspects highlighted by this community, there is the clear need to focus on teacher training and to consider the transverse nature of digital competence in teaching, especially when transmitting it to teachers.

They also stress the importance of collaboration, of using and sharing existing materials, like the tools or the frameworks, as well as the extension of successful projects.

Finally, they remarked on the importance of focusing on a methodological transformation and not only on infrastructure, relying on tools that enable this change at different levels.

— "The sense of digital competence in teaching is not associated with equipment, but with methodological transformation and the transformation of our classroom spaces and from there, to have tools that already exist such as DigCompOrg, and the SELFIE tool that allow a methodological change and connect the different aspects".



Visual Representation Extremadura

4.12. Islas Baleares

Estimated population: 1,173,008

Subregions: 1

Extension: 4,992 km^2

Educational Institutions (excluding universities): 456

Mother tongues: Spanish, Catalan

Key website: https://ibsteam.caib.es

4.12.1. Background

Before the pandemic, in the Balearic Islands, there was no formal structure for the development of a digital plan, although the administration had begun to form one. In 2019, a team of three persons was established to promote digital and STEM competence. After the pandemic, this team increased to ten persons; although, currently the team is going to increase to four times that number. IBSTEAM (https://ibsteam.caib.es) was created as a teachers' centre and this team was assigned with the role of training advisors. Currently, a restructuring is being planned to divide up who will be in charge of methodology, training and infrastructure. This team is also in charge of managing device loans. They are also in the INTEF meetings with the rest of the communities for the creation of the national framework. In addition, they are in charge of managing projects related to DigCompOrg and DigCompEdu.

In terms of training, there had been some training in robotics, and fostering digital competence had started to be addressed through the frameworks (the DigComp). During the pandemic, they tried to create tutorials and curate content so that teachers would have resources. Work is currently underway to create digital competence training for teachers and schools according to their starting level. In the first month of training, around 4,000 teachers out of 18,000 were trained. In the second month there were similar figures. The idea is to be able to offer training on an ongoing basis. Efforts are being made to meet the training needs of each type of centre. For example, in the case of Area 6 of the DigCompEdu in pre-primary education, it will have more to do with the digital competence of the family, rather than the students themselves. An attempt is also aimed at offering alternative timetables for training, so that teachers from schools with non-conventional timetables, such as the Official Language Schools, can also be trained.

As for the schools, there used to be an ICT advisor in each school, but there was no formal structure. In fact, during the pandemic, the aforementioned team was responsible for arranging equipment loans for students in need. The schools need to create a Digital School Plan. For this reason, there are digital advisors who manage both training and accompany the development of the digital plan. Also, part of the European funding is being used for the provision of laptops and screens.

4.12.2. European Commission's Tools and Frameworks use

The team in charge of teacher training and the development of the digital competence project in the region started using the DigComp framework for an initial approach to fostering digital competence of teachers before DigCompEdu was launched. They are now trying to transfer those initial approaches to DigCompEdu.

Regarding the use of DigCompEdu, the aforementioned team started to work with the framework from the meetings with the Ministry and the other regions to carry out its adaptation. Furthermore, they know that teachers also have to achieve a certification of their digital competence according to this framework. How this will be done has not yet been decided, but some options are evidence-based, training or examination. Therefore, another use of this framework is to inform the organisation of what type of training is needed in the post-pandemic period, i.e., to design the training that helps to develop the competences that teachers need or want to develop. The team started to map training using the national DigCompEdu-based framework from 2020–2021. This year, they have decided to offer training for levels A1 and A2. As far as higher-level training is concerned, it is only in Area 4 that they plan to offer training up to the B1 level because they understand that all teachers will be able to do it.

As for DigCompOrg, they have encouraged schools to use the model offered by INTEF to develop their Digital School Plan. This model, in turn, is based on DigCompOrg. The interviewee also declares that:

— "I don't know if at that time [just after the pandemic] we knew about the existence of DigCompOrg or not, but we said 'we have to categorise the schools'. We have schools that are very advanced, maybe they don't need help, but we have others that need to be supported from scratch."

In the school year 2021–2022, schools were required to use the SELFIE tool to reflect on the development of the Digital School Plan. The results of the analysis were carried out in June 2022 and during the school year 2022–2023, the plan must be developed. There will be a periodical evaluation of the plan. The interviewee draws attention to the fact that the SELFIE tool is not so useful for non-conventional types of schools, because it does not fit the special characteristics of these other types of schools, e.g., so-called learning camps, among others. Other mentioned problems related to SELFIE mainly concern organisational aspects of an administrative nature, for instance, the limits of access to SELFIE or the setting of dates. The interviewee believes that it should be open on a permanent basis and that schools should be able to change the dates. A positive aspect is that the use of the tool provides a common basis for analysing schools, and sometimes the results are unexpected. For example, the schools' reports show that the students had higher scoring probably due to the fact that often students are much more benevolent in their assessment than would be expected. An improvement would be to include families in SELFIE, especially at the primary education level, as they play a very important role at this stage. Regarding the results, most of the assessors who are going to assist in the elaboration of the Digital School Plan have asked the schools for them, but not all schools have provided them. In addition, the interviewee thinks that it would be interesting for schools to use the SELFIE tool every two or three years.

SELFIEforTEACHERS is not used at the moment in a standardised way. The teachers created a self-perception form adapted by the Autonomous Community because the administration did not want to overwhelm them with self-reflection tools. It is proposed that SELFIEforTEACHERS is used for those teachers who want/can be certified for higher levels.

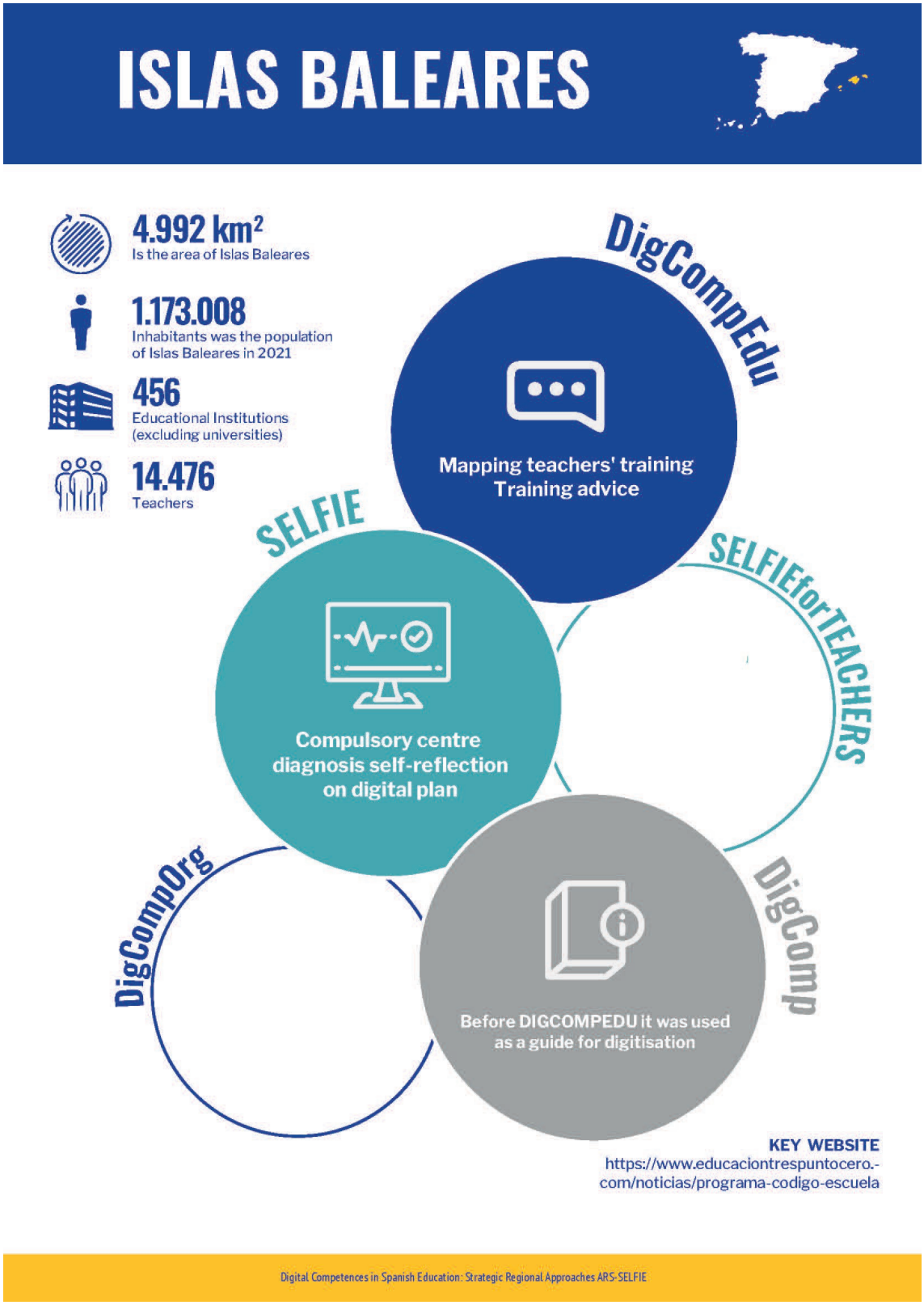
4.12.3. Final Remarks

The interviewee believes that there should be some professional incentive for teachers to undertake certification, such as merits for moving schools during their career (so-called transfer competitions). This request is possibly related to the concern he expresses about the emergence of many changes for teachers also introduced by the new education law. As teachers have to deal with so many changes, the interviewee fears that they will not attend training and therefore will not get certification.

The need to intervene in universities is highlighted, where it is considered that it is necessary to ensure that training includes aspects of the framework, especially in the Master's Degree in Teacher Training.

He believes that it would be interesting to reformulate some roles within the schools, for example, reformulating the idea of an ICT coordinator to a role that has a digital accompaniment character for colleagues.

Regarding the idiosyncrasies of this Autonomous Community, he has noticed many differences between islands, where he feels that some need more attention than others because of their level of digital competence.



Visual Representation Islas Baleares

4.13. La Rioja

Estimated population: 319,796 people

Subregions: 1

Extension: 5,045 km^2

Educational Institutions (excluding universities): 129

Mother tongues: Spanish

Key website: https://www.larioja.org/edu-innovacion-form/es/actividades-formacion-crie/plan-digital-centro

4.13.1. Background

For the last five years, prior to the European Structural funding, in La Rioja there was a project called Avanz@TIC dedicated to the digital transformation of the educational system. Within the framework of this project, tablets and digital panels were provided for the classrooms, so many classrooms were already well equipped before the COVID-19 crisis and the arrival of European funds.

The region had already considered the idea of creating a certification system, but did not begin working on it until now. There was already training but mainly dedicated to the use of digital platforms. As said, currently the regional government is focusing on the certification of the digital competences of teachers. This certification could be acquired through tests, future training or past training that teachers have already done in previous years or participation in previous projects offered by the administration, for instance, the Avanz@TIC project.

In 2021, a guide to elaborate the Digital School Plan was published, which each school should create in the following years. Some teachers have had hours freed up in order to coordinate this Digital School Plan and they will receive training every 15 days in order to accomplish that. In 2024, inspectors of the administration will check the achievement of the creation of a plan in every centre.

4.13.2. European Commission's Tools and Frameworks use

Avanz@TIC was carried out within the frameworks of DigCompOrg and DigCompEdu. In this project, the administration already suggested that schools make use of the SELFIE tool. No specific actions were carried out taking into account the DigComp framework.

The DigCompEdu framework is currently being used by the administration for the design of the certification level of teachers' digital competences. On the one hand, the already existing training and projects are being mapped by using the framework to check which skills were already included. On the other hand, creating new teacher training is taken into account. It is understood during the interview, that this part of the process is taking place right now, so this specific training and its results for certification have not yet been published.

DigCompOrg is also being used by the administration to inform the design of training for educational institutions. One example would be the creation of a training focusing on social media and digital communication. However, as with the training regarding DigCompEdu, it can be understood in the interview that the design process is still taking place. Probably its main use in the digital project of La Rioja is its inclusion as part of the guide that the administration has published to create the Digital School Plan (https://www.larioja.org/edu-innovacion-form/es/actividades-formacion-crie/plan-digital-centro/documentacion). In this document, a translation of the framework and a brief explanation of it appears as a theoretical justification of the design of the plan.

The SELFIE tool has been useful at the school level to think about strategies to develop the schools' digital capacity. Currently, the administration suggests its use by schools in order to reflect about the

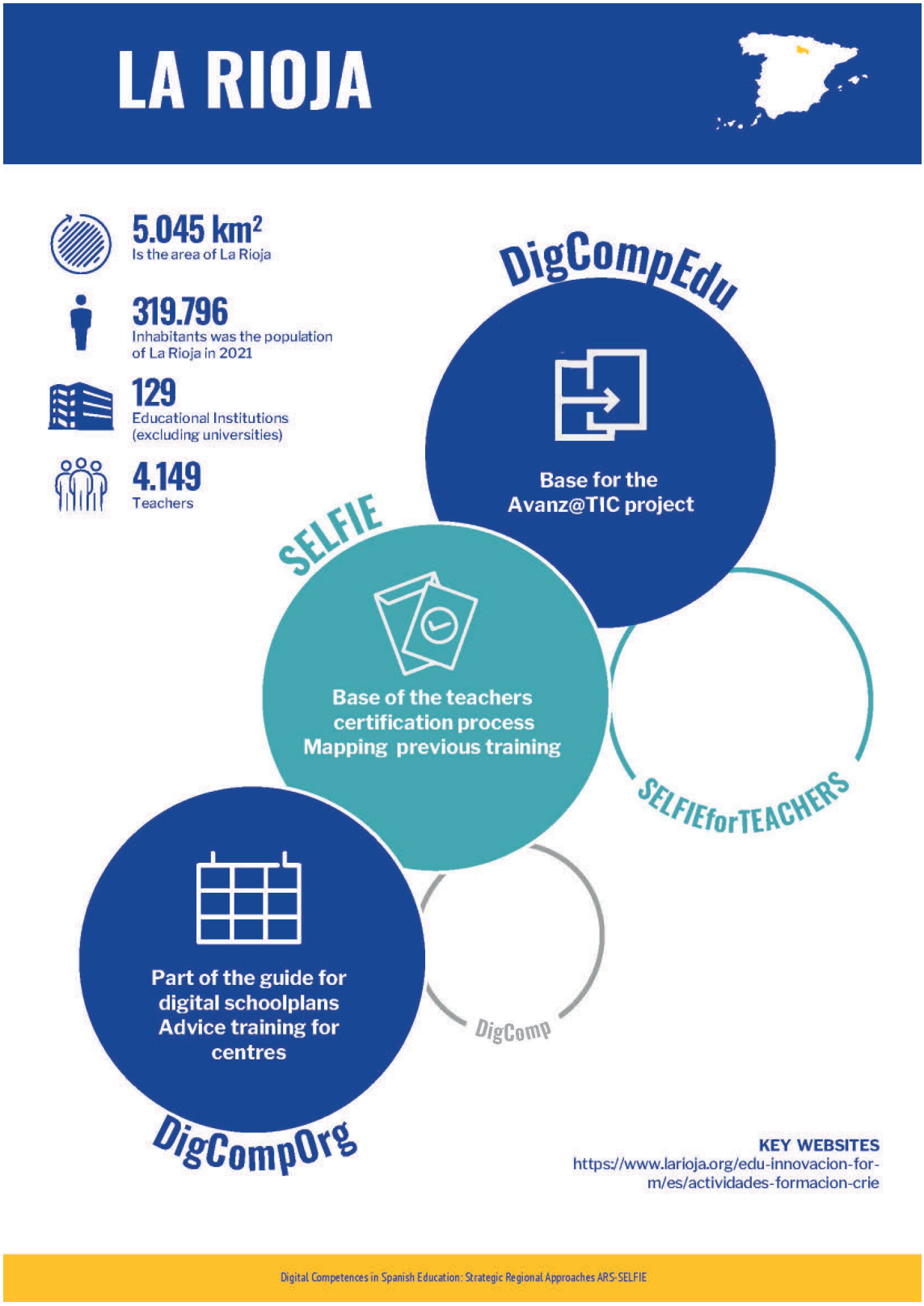
design of their Digital School Plan, but other tools may be used instead. However, it is stressed as being difficult to get all the teachers' collaboration in order to use it.

Regarding the SELFIEforTEACHERS tool, its use is not imposed by the administration, but it is promoted and recommended. The interviewee declares that it is also difficult to get all the teachers' participation.

4.13.3. Final Remarks

The interviewee misses more direct contact between the schools and the Administration, and it would be useful to plan a way to directly receive more information from them. They would like to have direct access to data from schools.

Another useful way to keep track of the plans, according to the experience of the interviewee, is to regulate every step and publish it officially. In addition, the creation of guides and materials is important to facilitate the process.



Visual Representation La Rioja

4.14. Principado de Asturias

Estimated population: 1,011,792

Subregions: 1

Extension: 10,604 km^2

Educational Institutions (excluding universities): 409

Mother tongues: Spanish

Key website: https://www.educastur.es

4.14.1. Background

Efforts for digitalisation in Asturias started some time ago. It started from the perspective of infrastructure, digitalisation of equipment and tools, accompanied by some training actions in their use.

— "The frameworks had arrived, INTEF was working on it, there were attempts to work on digital competence, but it was not landed yet."

This impulse to work on teachers' digital competence specifically comes mainly from the pandemic and from INTEF's common framework.

— "Now, we do have a roadmap which sets out what is understood that a teacher should have within their digital competence, from the DigCompEdu framework."

According to the Director, the focus that they have adopted in this community is towards a process of digital transformation, considering digitalisation at the level of infrastructure, training and centre plans.

— "Rather than talking about digital competence, I like to talk about the digital transformation of the education system. And the importance of working on 3 clearly identified pillars: Digitalisation: having optimal digital tools, computer equipment, network connections, interactive screens... Teacher training: based on the common framework guide for digital competence of teachers. And centre plans: what students are going to learn."

The aim of this process is to create a general Asturian digital plan as a framework and, from there, all schools will create their own plans adapting the general one to their context. It is expected that teachers will be trained and at least 80% of them will be certified in one of the competence levels. A cascade training is being carried out: in a first stage training 100 people, who in the second stage will train 400 people, including schools principals and CompDigEdu coordinators (responsible for the support in the development at regional level of the Programa para la Mejora de la Competencia Digital Educativa #CompDigEdu).

Mecanismo de Recuperación y Resiliencia para la Digitalización del Sistema Educativo - INTEF

4.14.2. European Commission's Tools and Frameworks use

As regards the use of SELFIE and SELFIEforTEACHERS, two moments are mentioned. During the pandemic SELFIE was one of the tools recommended and used as a guide for the work within schools. They consider it to be a good tool, but advanced knowledge is needed to use it correctly.

Nowadays, they do not consider it to be as practical as during the pandemic, as they have offered the schools a proposal for a digital plan that is firmly grounded and adjusted, and with the aforementioned strategy, the government considered they have the possibility of accompanying them more.

In relation to the frameworks, work has been carried out mainly with DigCompEdu as a reference framework. Until now, they have not worked with DigComp or DigCompOrg. The difficulty of incorporating these frameworks was mentioned because they were not perceived as directly related to teachers' concerns.

The DigCompEdu framework has been used as a roadmap for teacher training by level. The content of the training corresponds to each area of the Digital Competence of Teachers according to DigCompEdu. It is considered valuable because it is a common framework developed by experts, which can be reused, thus saving time, as well as being a good starting point that helps communities to work together.

— "The fact that a group of experts has started to revise, adapt and make it available benefits all of us because we are [teachers,] not specialists, and it saves us a lot of time. Having a framework makes it much easier to interact and for communities to work in unison."

While the frameworks are seen as key at the moment, the interviewer envisages that in the future, each community could develop and adapt its own frameworks.

— "I think this common framework will probably be valid, but maybe in 15, 20, 25 years' time each community will develop its own."

On the resources website, there is basic information about the DigCompOrg framework but no applications or adaptations (data 2020). In addition, there is basic information about SELFIE and the SELFIE forum event (2020–2021), but no evidence of applications or adaptations

4.14.3. Final Remarks

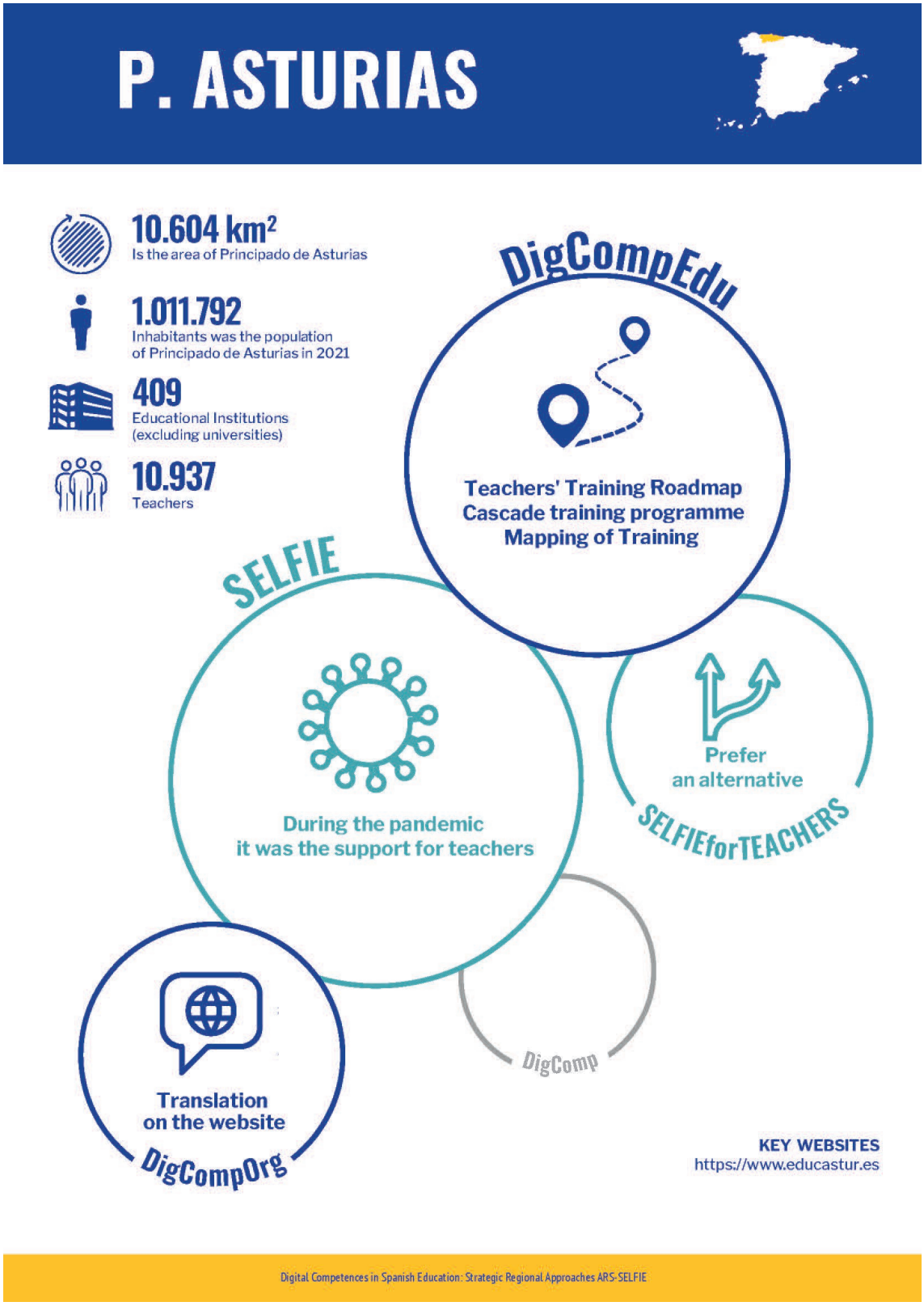
With regard to the evaluation of the process so far, there is optimism, and the Director considers that despite the stress generated by the changes, teachers have received the digital transformation strategy well. However, the need for more time to carry out the project was highlighted, as the deadlines are tight.

— "I would have liked all of this not to be so fast, as I mentioned before, those two more years would be very good for us, so that we don't have to do things in a hurry, basically because we are talking about something very important, which is the certification in digital competences."

As final recommendations, it is stressed that this type of project can only be approached in an interdisciplinary way, considering aspects such as access to tools, training and schools programming.

— "I believe that we need to work simultaneously and in parallel on these aspects: we need our schools to have optimal digital tools to access the teaching of the future or of the present. Another aspect is teacher training, the common framework of digital competence of teachers, and the third is planning at school level what my students are going to learn".

In addition, aspects that could be worked on over a longer period of time are proposed, such as a self-diagnosis processes at the regional level based on the common framework for digital competence of teachers, and the development of a self-diagnosis tool that allows work to be carried out at the level of the Autonomous Community or region.



Visual Representation Principado de Asturias

4.15. País Vasco - Euskadi

Estimated population: 2,213,993

Subregions: 3

Extension: 7,234 km^2

Educational Institutions (excluding universities): 399

Mother tongues: Spanish, Euskera (Basque).

Key website: https://digigunea.euskadi.eus/es/digitalizazio-plana_es

4.15.1. Background

At least 13 years ago, the Basque Country (Euskadi) started to work on the digitalisation of education, but their approach was always to let each school follow its own pace; it was not compulsory to follow any proposed model or plan. Schools proactively submitted their plans and could ask for a certification of the school's maturity.

The current digital competence improvement plan includes creating an online teacher training platform. An online course has been designed to fit the basics of the curriculum of the new educational law (LOMLOE) and digitalisation for all teachers to certify their competence. The timeframe for this plan is two years. The ambition is to train all teachers at different levels: at a first stage, levels A1 A2, and after having enough certified participants, to present level B. The participants in this plan are school principals, ICT coordinators and whomever the principals consider, plus one person in charge of innovation (not covered by the European funding).

The reception of the plan by the schools has generally been favourable. Some schools see the development of their plan as an opportunity, but others see it as an obligation. The current plan forces them to create a Digital School Plan, but people generally see the need to do it.

Formally, they have strongly coordinated with the other Autonomous Communities in the working meetings with INTEF, and more informally, ideas and experiences are exchanged with people from the other governments, with whom they have more close professional relations.

The European funds have imposed enormous time pressures that can lead to bad decisions, including double work.

4.15.2. European Commission's Tools and Frameworks use

According to the Coordinator of Digitalisation and Innovation in Technology and Education of the Basque Government, who answered the interview, DigComp was used in the region before DigCompEdu was created. Even if it was not ever compulsory, it was the reference for thinking about digital competences. Some schools already knew it and use it to support their digital transformation. It is currently published on the web but there are no specific actions mentioned.

Regarding DigCompEdu, they stated that, since the arrival of the European funds, it has started to be used massively. It was presented to all school principals with the intention of raising awareness and relocating the focus of digitalisation on education and not only on the instruments. Its use is valued very positively, since having a common language facilitates understanding and allows people to visualise the next steps.

— "We all talk about the same thing, things have names, it helps to understand each other. It also helps to know what the final goal is and what steps I have to take to get there.

In relation to this framework, various materials have been developed, including specific training workshops for teachers on the DigCompEdu framework. There is also a series of videos translated into Basque explaining the framework. As an aspect to highlight, all the documents and frameworks have been translated into Basque.

However, they feel that the adaptation made in Spain with the consensus of the Autonomous Communities is more complex and difficult than the original. Also, they consider the framework to be too long and exhaustive.

— "It is cumbersome, too many items, each one with its own example."

The DigCompOrg is used for awareness raising and for creating documents. These are included on the website and in the guides. It is considered very useful to change the vision and the point of view with respect to digitalisation, pedagogical use and awareness raising.

Various materials and templates have been created, both for the diagnosis and for the creation of the Digital School Plans based on the DigCompOrg framework. Specifically, regarding the diagnosis, an evaluation template has been created based on DigCompOrg and SELFIE.

The use of SELFIE is compulsory now for every school. Before SELFIE, the schools of Euskadi could use another maturity framework, but SELFIE is more focused on pedagogy and not only on administrative or technical aspects. Nonetheless, pre-primary teachers (with a different reality from the rest of the levels) are not included.

SELFIEforTEACHERS is not mandatory but recommended for schools. It makes it easier to see the next steps in the digitalisation process. Although the language and some concepts are complex for teachers.

— "It shows you the next step, if I want to improve, what I have to do, and the final goal is that. It helps to set your sights on a goal until you can get there" ... "It is difficult for the teachers to answer it, as they do not understand all the concepts".

4.15.3. Final Remarks

The timing of the publication of the frameworks and the "urgency" to start the plan before having all the documents updated generated more work.

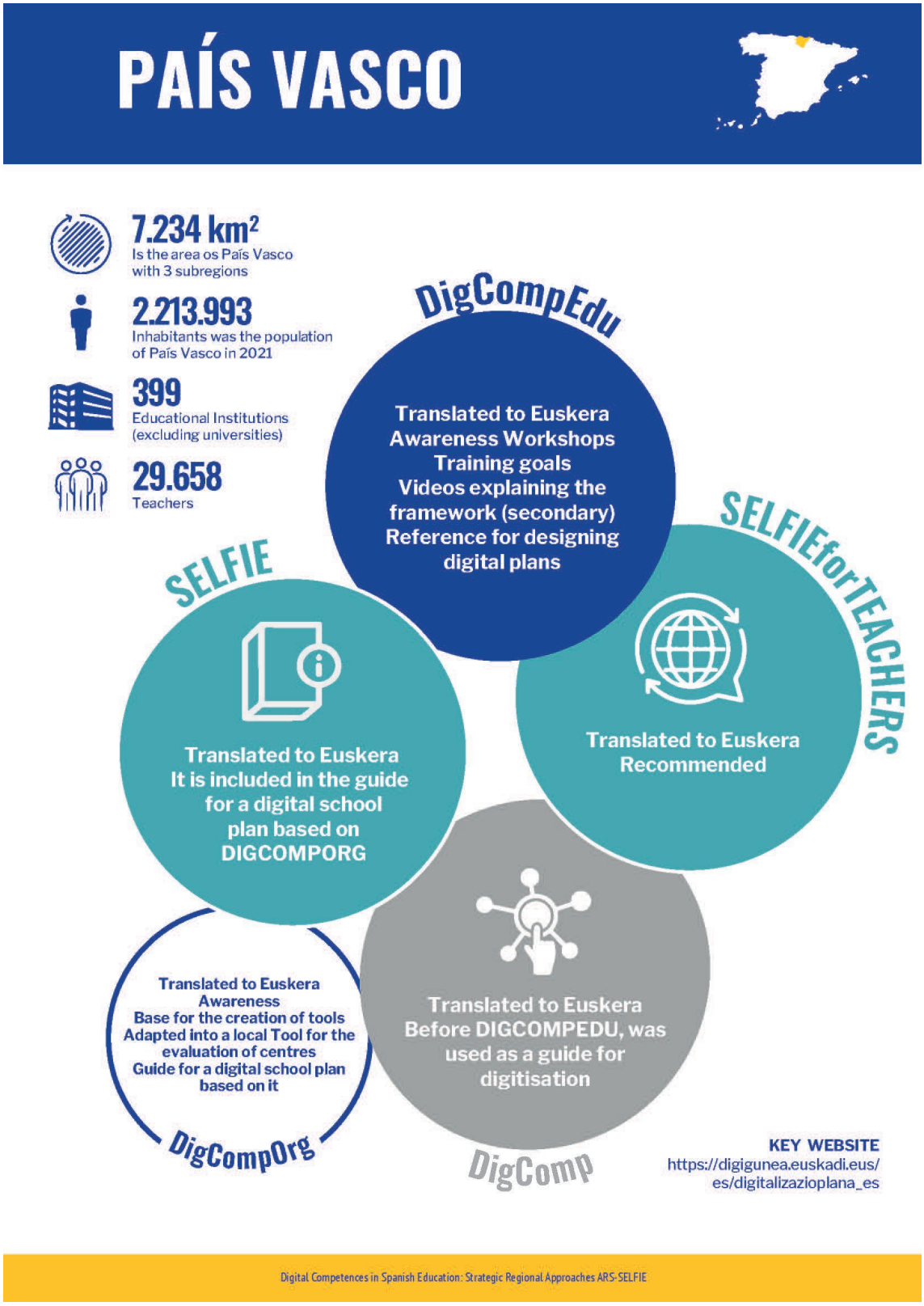
— "Materials were designed before the frameworks were clear and updated, and this generated more work, adaptation and changes, for example, adding 10 more hours of training".

The interviewee stresses the need not to do things in a hurry.

— "Don't rush, do things in time."

Charter schools have different conditions: there are digital mentors and each employer decides how to organise and they offer courses with a digital focus.

It is important to remark that in language schools (in Spanish, "Escuelas Oficiales de Idiomas"), and vocational training, the approach is different.



Visual Representation País Vasco - Euskadi

4.16. Región de Murcia

Estimated population: 1,518,486

Subregions: 1

Extension: 11,314 km^2

Educational Institutions (excluding universities): 667

Mother tongues: Spanish

Key website: https://digitalprof.es/

4.16.1. Background

In the Region of Murcia, even if they were always concerned with the development of teachers' competences, the plan for developing the digital competences of teachers, schools and students started after the COVID-19 crisis.

The current plan is called DigitalProf (https://digitalprof.es/) and includes: (i) Digital School Plans and (ii) training and a process for certifying digital competences of teachers. In the previous academic year (2021–2022), a course on the Digital School Plan was held for school principals. Prior to this, they created a training pathway in teaching competences (including digital competences), and some preferred training pathways were developed.

Since the first pandemic crisis, the Autonomous Community team started to meet with INTEF and the other Spanish regions to work on the adaptation of the DigCompEdu framework and to work on DigCompOrg. Additionally, they are currently sharing and collaborating with other regions on how they are meeting the milestones set by the European funds.

4.16.2. European Commission's Tools and Frameworks use

The interview was with the Head of the Teacher Training Service, who reports to the Directorate General for Human Resources, Educational Planning and Evaluation of the Regional Ministry of Education.

In the case of the DigComp framework, they declared that they do not work directly with this framework in educational contexts. Nevertheless, in the regional training centre for public servants, DigComp has been used as a base for exploring and evaluating the digital skills of public servants and some initiatives have been carried out to create a specific framework for the digital competences of civil servants (https://efiapmurcia.carm.es/web/descarga?ARCHIVO=Com_.%20Digitales%20EEPP%20CARM.pdf&ALIAS=ARCH&IDCONTENIDO=131371&RASTRO=c$m2813,5280,55544).

Regarding DigCompEdu, they have used it for the elaboration of the national framework together with the other Autonomous Regions and the Ministry. Only very few schools were previously aware of it. Also, they are using DigCompEdu to create teacher training courses to be published soon (to get levels A1 and A2 of the certification) and to map the existing digital competence activities. Moreover, they have analysed the available educational resources in order to situate them in the new Framework. Also, in the previous academic year (2021–2022), the course held on the Digital School Plan for School Principals also included training in this framework.

DigCompOrg is being used to carry out the Digital School Plan. In line with DigCompEdu, very few schools were previously aware of it. Therefore, in the previous academic year (2021–2022), a specific course held for School Principals also included training in this framework.

The use of the SELFIE tool is compulsory for schools. The course for school principals on the Digital School Plan also included training in the SELFIE tool. Thus, it has been used for the pre-assessment of each school before making the digital school plan, and it is intended to be used again for a final evaluation. Last academic year (2021–2022), it was used in a pilot experience in 100 schools, and this

year it is being implemented in the remaining 600 schools. A tutorial on how to use it can be found on their website.

As for SELFIEforTEACHERS, it is not compulsory, and it is being used as a basis for creating an adaptation for supporting local certification.

4.16.3. Final Remarks

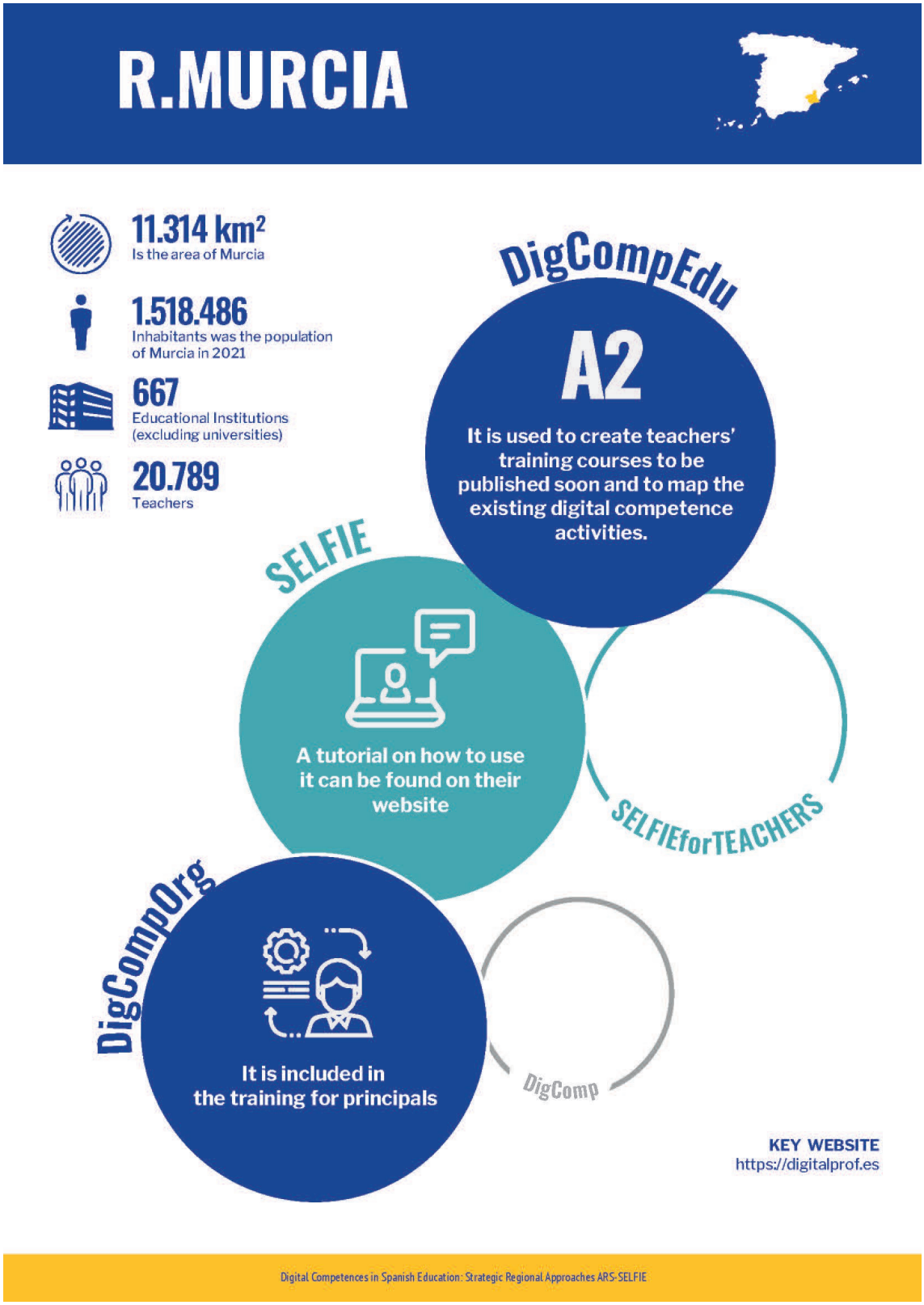
Murcia considers that the use of the JRC frameworks and the adaptation made by the Autonomous Communities and INTEF help to create a guideline, a consensual route to follow.

However, it is clear that this is a novelty for teachers. It has been well received by many, but, as for others, it creates a lot of resistance. In some cases, teachers think that digital competence of teachers only means "computer literacy". For many other teachers, these tools and frameworks are only useful to acquire certification.

Consequently, this region recommends:

1. To raise awareness among school managers and organisations within schools – "see the advantages of being a digitally competent school: to integrate your school in the city or in institutions, to make yourself known ..."
2. To remember the usefulness of using these frameworks for the benefit of learners.
3. To motivate innovation among people who are in doubt as to whether it is useful or not.

Additionally, the work inside the schools needs to be very well coordinated, and the Plans need to be carried out gradually, step-by-step.



Visual Representation Región de Murcia

5. GENERAL RESULTS AND CONCLUSIONS

Based on interviews with Spanish Autonomous Communities, we have collected data on the use of the EC tools and frameworks in the different regional contexts to promote and enable digitalisation in the educational field.

Undoubtedly, the first result of this study is the immense diversity in relation to educational innovation and the digital transformation of education, posed in a diverse and de-centralised political context. This is mostly evident when regions discussed their experience with digital transformation before the emergence of COVID-19, and prior to the arrival of European funds for transformation.

In the pre-pandemic situation, a widely diverse situation existed where regions focused their efforts on providing equipment and devices for their schools. Many also spoke of teacher training for the "instrumental use of ICT". At that time, knowledge and use of the different tools and frameworks developed by the EC were scarce and, with a few exceptions, superficial. Only a few territories in Spain were committed to the massive use of some EC frameworks or INTEF's adaptations, either for the development of specific policies or as a model for the creation of their own frameworks of thought and resulting policies.

During the pandemic, the importance and necessity of digitally competent teachers and schools became clear. While it was a time of crisis, it also served as a trigger to mobilise many resources for the digitalisation of schools. In addition, the arrival of European funds generated another important movement, which promoted the continuity of the processes that were already underway. Furthermore, a process of centralised collaboration, initiated with the launch of the Spanish Framework for Digital Competence in Teaching – adapted from DigCompEdu and complemented with SELFIEforTEACHERS – helped unify the objectives and indicators of digital transformation for the whole country.

In the next sections, we present some of the most relevant findings regarding the use of the EC frameworks.

5.1. European Commission's Frameworks

The **DigComp framework** is the least used framework in practice in the educational context in Spain. Although all of the Autonomous Communities mentioned they were aware of it, just four regions mentioned they used it, even if no specific aspects of its use were mentioned, with some exceptions (e.g., the development of a certification scheme developed by Castilla y León designed for citizens).

In some cases, DigComp was considered the guide and goal of digitalisation plans before the development of DigCompOrg and DigCompEdu.

Mostly, we found the mention of the framework in conjunction with the other frameworks through regional websites intended to disseminate information on digital plans. In the case of regions with more than one official language, translations were made available (as in the case of the Basque and Catalan translation); we have no information on possible translations into Galician.

The **DigCompEdu framework** is undoubtedly the framework which has been most widely used and mentioned by all the involved regions. Among its applications, we find predominantly – before the national strategic plans with European funding – that the framework was used as a starting point for the creation of regional digital plans and for the adaptation and creation of local frameworks (e.g., Extremadura, Catalonia).

Since its introduction, the framework has been used as a basis in different regions for the creation of materials and support guides presented to schools, as in the case of Valencia or the Canary Islands. Different multimedia have been created, such as videos explaining the framework and each of its component areas, along with infographics and reference documents, which can be found on the websites of each Autonomous Community.

Since 2021, when all of the regions started the creation/adaptation of DigCompEdu into the national framework for the digital Competence of Teachers, all of the communities considered this new framework as a clear goal to aspire to (we must remember at this point that 80% of teachers must be certified with the level A2 by 2024). Therefore, the uses of the framework have been even more generalised.

In many Spanish territories, DigCompEdu is used as a roadmap for the steps to follow in teacher training at different levels. Many of the communities have done – or are planning to do imminently – a mapping of all the training they have offered in the recent years in order to be able to analyse what training their teachers need, especially in view of the certification of the framework levels. This mapping is, in some cases, intended to become a long-term strategy, in which all training provision is consistently reviewed against the framework. In addition, through digital platforms (that are being developing), teachers can be offered a clear picture of their current state of training in relation to the framework and training alternatives to help them achieve higher levels of certification.

Regions have created resources and contents according to the different levels of the national framework – most of them to train teachers. Others have created templates with examples on how to use different areas of the framework in the teaching process. All regions are developing regulations to officially certify different levels of the national framework, and most of them are also planning or developing a platform to do so online.

With regard to its use for training, the Basque Country and Murcia have created courses in which teachers are introduced to the framework, explicitly, with each of its areas.

DigCompEdu is considered as a goal, a "compass", a "horizon", a clear path to be in line with the European strategy. Our interviewees mentioned that the framework is created by experts – a quality assurance guarantee – and the adaptation to the particularities of the Spanish context made it more accurate.

In addition, some of the regions that use it remark on the global character of the framework, and how this provides a global vision of the teaching process. From their perspective, it helps to understand and comprehend how the different aspects interact in the teaching process.

The **DigCompOrg** framework has been widely used as a reference for work at both the Autonomous Community and school levels. In this sense, several communities have incorporated the framework as part of the school plan, being the basis for diagnosis. Additionally, some of them included the framework as a part – as content – of the specific training they offer to schools. Some communities have adapted the framework and created their own versions (e.g. País Vasco – Euskadi), or created specific materials for better understanding it.

Based on our data, at least five territories state that they know of the framework, but they do not use it explicitly in any initiative. Those who explicitly mentioned that they do not use it explained that the framework, from their perspective, does not seem to be fully aligned with teachers' concerns and needs.

In general terms, regarding the use of JRC frameworks, it is worth mentioning that some people explained the complementary character of DigComp and DigCompOrg, and how adopting this "set of frameworks" as a reference:

— "Allows for greater coherence and cohesion between digital school plans, curricula and teacher education programmes, which are mutually reinforced by their interdependence" (Catalonia).

On the other hand, many of the interviewees do not differentiate very well among the frameworks, especially among DigCompEdu and DigCompOrg. Some interviewees focus only on the framework to define the competence of teachers, but not in the importance of the framework for schools.

5.2. European Commission's Tools

SELFIE is considered by large majority of the regions as the key tool for structuring the digital plans, regional plans as well as school plans. All the regions have used it, most of them in its original form, or adapted.

SELFIE – or the local adaptation (very few cases) – is compulsory in the majority of regions as a tool for school diagnosis, before creating Digital School Plans; in other regions, it is not compulsory, but its use is recommended.

Many of the regions also recommend the use of SELFIE for evaluating the Digital School Plan once it is implemented. For these purposes, some regions have created resources, courses, guides and tutorials for fostering its use, and they have included it as a content in the training plans for principals and leadership school teams.

Most of the regions value as a very positive aspect from SELFIE the opportunity of having different perspectives on the same process (from teachers, students and school principals). They considered the tool easy to use and intuitive. Regions highlighted the influence of this tool in the schools' awareness regarding the digitalisation process, thanks to the process of self-perception, and they emphasise the importance of having a report that is not perceived as an evaluation but as an instrument to better known themselves.

Just one region declared that they used SELFIE only during the pandemic restrictions for supporting teachers, but after the pandemic they ceased its use.

When they were asked about improvement possibilities for the tool, two regions remarked on their interest for the educational authorities to receive the school reports (given that the school reports are only sent to the schools) in order to have more information for governmental planning.

In the case of SELFIEforTEACHERS, use is not generalised. Even when regions declared that they know the tool, almost half of the sample (7 of 16) do not use it. SELFIEforTEACHERS is still a very recent tool, with less than a year of availability in the Spanish co-official languages. Prior to the launch of the tool, there was a recommendation from the Ministry that the regions use DigCompEdu to guide teachers' professional development.

It is only compulsory in one region to use SELFIEforTEACHERS for the diagnosis of schools in order to complete the Digital School Plan. Five regions recommended it for teachers' diagnosis or self-reflection. Three regions have adapted it: Aragon (with the SELFIEforTEACHERS Aragon), Cantabria (including it in the DeCoDe programme) and Canarias, (which created a mini test based on SELFIEforTEACHERS for training advice).

One region declared using a different tool for teachers' self-evaluation. In many cases, it appears that the regions following INTEF's policy for the certification of teachers' digital competence look to SELFIEforTEACHERS as an answer to their needs for an evaluation and certification tool. However, the tool is not designed to address this purpose. In fact, one region specified that they use a different tool given that their interest is teacher evaluation.

In this case, some regions drew attention to three main issues that do not promote the use of the tool from the stakeholder/policymaker perspective:

- Firstly, in SELFIEforTEACHERS there is only one (unique) source of information: the individual self-perception of an individual teacher. In sum, it can be considered as a personal exercise; this fact makes the data not relevant enough for policymakers' work. On the contrary, they highlight, by contrast, the role of triangulation of information from various sources in SELFIE. Some regions are looking for a tool for teacher evaluation and accreditation based on the INTEF policy. This is not within the scope of SELFIEforTEACHERS as it is a self-reflection tool to support teachers' development of their digital competence. The tool aims to support teachers in designing their professional learning while aggregated results can support planning professional development programmes.

- Secondly, the regions mentioned that the self-reflection exercise already requires an established level of digital competence (both in terms of skills in using the tool and in terms of content and language used). This at times potentially excludes some teachers with low digital skills. Several of the interviewees showed concern that given the high level of digital competences required to use SELFIEforTEACHERS, the results may be used against them in the future.

- Thirdly, some regions mentioned the inability to access regional data and the lack of qualitative information of the tool as an obstacle for its widespread use.

The interviewers remark that, in most of the cases, once one of these resources is integrated in the digital plan of the territory, other resources related to the same aspect are less used or even ignored. Therefore, DigCompEdu – or more precisely, the Spanish adaptation – is key in the plans for training and certifying teachers. Nevertheless, SELFIEforTEACHERS is almost overlooked, i.e., it is recommended as a possibility, but in reality none of the interviewees considered the tool as a key resource for the digitalisation plans. SELFIEforTEACHERS aims to complement the DigCompEdu framework as a self-reflection tool and not replace the framework. Since 2017, the regions have used the DigCompEdu competence areas, as well as

the progression model, to develop their programmes and resources, and this is aligned with SELFIEforTEACHERS and the new Spanish Framework by INTEF from 2022 (which was based in both DigCompEdu and SELFIEforTEACHERS).

Self-reflection is not clearly understood by all teachers, nor are the values and benefits. It is important and necessary to make clear the distinction between self-reflection and self-evaluation and the kind of information and feedback each type of activity can provide. Along the same line, there are some misunderstandings or mixing among the different educational frameworks and tools, which do not facilitate their use.

For its part, the use of SELFIE has been recommended by almost every region as a diagnosis tool for starting the process of the Digital School Plan. Still, very few of those interviewed mentioned or remarked on the relevance of the framework DigCompOrg. They considered that SELFIE includes DigCompOrg, and once the tool is being used, the framework is being used.

Finally, differences among tools and frameworks directly affect the differences in the acceptance level by users.

- SELFIE is a tool that supports the management of the school institution and, to some extent, facilitates the work and provides insights that can be useful for the school management.
- SELFIEforTEACHERS is more focused on teachers' development, so it requires leadership work and professional development management, which is not already in place, according to the study. While it is a very powerful tool, it also requires more contextualisation and work on the part of school leaders and the knowledge to do so.

6. POLICY RECOMMENDATIONS

In this section we have formulated a series of recommendations based on the findings from the current study to inform policymakers in the use of EC educational frameworks and tools to support the digital transformation of the educational system.

Based on our study, we have identified a number of topics, with some relevant reflections based on the analysis of the Spanish case, which can be very helpful for other Member States and regions when designing their policies for the digital transformation of education.

This report maps different strategic approaches to support the digital transformation of education from a regional perspective. The Joint Research Centre, as the science and knowledge service of the European Commission, provides scientific analysis and evidence for direct use in EU policymaking. Based on this mandate, the current study aims to support education policy developments in relation to the digital transformation.

Due to the characteristics of this study, involving both a national approach for educational digital transformation by the Spanish Ministry of Education and VET and different regional approaches, the following policy recommendations are shown according to these two different levels or organisations (when a distinction is needed).

6.1. Recommendation 1: Contextualisation of plans

According to the information analysed in the current study, every regional plan is fully contextualised and adapted to regional circumstances, needs, goals and interests. This also applies to the role played by the EC frameworks and tools. Their use is contextualised to the regional "context".

Most of the participants in the study recognize the need and relevance of being aligned with the EU vision. Using EU resources, such as the educational frameworks and tools, sharing a common view with the rest of the Member States is one way of being aligned with the European vision.

However, creating/generating regional independent tools by the regional authorities with no alignment with the EU vision is not considered to be a positive or recommendable way to proceed. In this case, the focus is only on the local environment, and the opportunity to be aligned with the EU vision and other Member States is lost.

Almost all the regions express their willingness to contextualise the use of the tools and frameworks to their environment, reflecting a global awareness and a community approach. Based on the findings and feedback from the participants, a balance between using EU resources with a global European vision shared with other Member States and adapting them to the national/regional context appears to be the best way to proceed.

The adoption of this set of frameworks as a reference is seen as an opportunity for greater coherence and cohesion between digital school plans, curricula and teacher education programs, which are mutually reinforced by their interdependence. As the remit of education lies with Member States, EU frameworks are valuable in providing a European vision for the transformation of digital education. As we have seen from this study, contextualisation of these reports is common and useful, given each region has found the need to adapt the framework to fits its context. Accordingly, our recommendation would be to continue providing the EU vision through these frameworks, but also to allow flexibility for regions and national governments to adapt the frameworks to their context.

6.1.1. Recommendation at the national/regional level

There is a clear need to adapt the use of EC tools and frameworks to the specific features of the region, i.e., to contextualise their use to regional demands within a strategic national/regional plan. This would include, among other key elements, the rationale behind the plan, the goals to be achieved, the starting point, investments, timing, and the role to be played by the EC tools and frameworks.

6.2. Recommendation 2. Space for flexibility and adaptation

Based on the findings, flexibility should be always be possible. Among the Spanish regions, there has been an immense variety of approaches in the use of the frameworks and tools, ranging from a direct use to a full modification and generating new tools or frameworks, as well as from very elaborate

professional development plans based on the work of teachers, to more prescriptive strategies with standard plans. Some of these variations are a consequence of the particularities and the needs of the territory, the political perspective underlying the plans or the historical moment and the provision of funds.

It is very important to highlight a recurrent idea from the study: adapt vs adopt. Many of the participants argued that it is essential to adapt the frameworks and tools, not only to adopt them. The risk of using unified tools when there are no unified education systems in Europe and the diverse needs of the regions was highlighted on various occasions. Participants in this study consider that the frameworks provide a good basis that allows them to use existing resources but that they need to be contextualised and adapted.

At the same time, a significant challenge is the lack of autonomy for some decisions and the limited time given. There are also internal aspects within the community such as resistance from teachers or problems of connectivity and infrastructure. These challenges are well known and apply to many other educational aspects.

Sustainability and a long-term approach were also mentioned as concerns. Designing a policy for a very short period of time with no follow-up planned generates frustration and concerns among the school community in general.

6.2.1. Recommendation at the national/regional level

Due to the specificity of each region or country, and based on regional or national plans, needs, interests and goals, when designing a policy, flexibility should be a central factor, in order to deal with unexpected situations or developments. Also, in the case of the European Commission's tools and frameworks – especially in the case of the frameworks – adoption alone is not enough and some kind of adaptation to the national or regional context is highly recommended to better address specific needs and characteristics.

6.3. Recommendation 3. Need of transparency and clear goals

From the policymakers' perspective, it is essential to understand the potential of the tools and frameworks and what can be accomplished with them in relation to the goals and interest of the digital transformation plans. It is not enough to enlist the main possibilities, potential and uses of the tools and frameworks. Our stakeholders mentioned that it is difficult to design the use of the tools and frameworks within a regional or national plan, and thereby to achieve the intended goals and needs. During the design of a policy initiative for the digital transformation of education involving the tools, it is key to elaborate how such tools and frameworks are to be integrated and used in order to be able to make the most of them Sometimes, mismatches exist between the potential of the tools and frameworks and policymakers' needs. These could be a result of national and regional policymakers not understanding the full potential of the tools and frameworks. The tools and frameworks are not suitable for all purposes; there are limitations, both technically (e.g. management of a group of schools) but also conceptually (e.g. self-reflection vs assessment). They serve to provide a European vision to educational communities and enable national and regional governments to work towards a successful digital transformation.

From the findings, it appears that there is no clear understanding on the part of our stakeholders between assessment and reflection. As has been mentioned before throughout this report, both SELFIE and SELFIEforTEACHERS are based on self-reflection. This generates a difficulty when trying to use both tools for evaluation and assessment purposes. We have found a similar situation with the frameworks; sometimes the distinction between DigComp, DigCompOrg and DigCompEdu was not clear.

From the research done, it can be said that frameworks are more relevant for educational policymakers, for consideration and use in the development of their policies; whereas, the tools are more relevant for educational stakeholders, such as teachers and school directors, due to their practical applicability in the schools.

When the need for digitalisation is clearly perceived by the whole school community (and even beyond, e.g., families), it is easier to have the school community on-board in any policy initiative. This enables the whole school community to face the challenges and work together in the digital transformation of

education. Accordingly, it is crucial that national and regional policymakers convey the strategy in a clear way, explaining and describing the necessity of a strategy as well as the necessary steps and actions.

6.3.1. Recommendation at the national/regional level

From the policymakers' side, it is crucial to clearly define the goals of the digital transformation plans, not only to have a common path to follow, but also to transmit the message to the school community as clearly as possible. In this way, it will be easier to convey the message and "get the school community on-board".

When defining a policy for digital transformation based on these frameworks or using them as a reference, it is very relevant to gain a critical knowledge of them to be able to take advantage of each one in the proper context.

At the European level, it is important that updates undertaken in relation to digital education are well communicated to Member States, so that they can adapt their strategy accordingly.

6.4. Recommendation 4. Information must reach the end-users. Awareness

In relation, to the previous section about transparency and clear goals, awareness is also vital.

Each tool and framework has different audiences. However, in all cases, it is important that these audiences understand the scope of the tool/framework, to trust it, to develop a culture of self-reflection or collaborative learning. This understanding cannot rely on teachers' efforts alone. Educational authorities have a key role here in ensuring the provision of training and dissemination activities.

Conveying the proper message to the proper audience is key for success. School communities need to know the rationale, the importance and the goals of the different initiatives and how their efforts fit into the European, national or regional strategy.

Acceptance of policy initiatives is often related to the clarity of the information conveyed. Ensuring that teachers and other members of the school community are aware of the policy plans is critical.

6.4.1. Recommendation at national/regional level

In line with previous recommendations, it is key that enough relevant and clear information reach the end-users (school community) in order to get them motivated and easily involved in the policy initiatives. Information is needed not only about what it is expected from teachers and the rest of the school community, but also about the rationale behind the goals, benefits, challenges, resources and many other aspects that could be of interest.

6.5. Recommendation 5. Support to teachers as agents of change

Finally, it seems quite clear that digital transformation cannot rely solely on the individuals' development. The context and the underlying systems is key and makes a difference in the success of the process. As such, it is necessary to underline the importance of the teachers' agency: teachers can be successful agents of change, but they need support. Agency, as a sociomaterial and cultural construction, refers not only to the people that develop a competence, but also to having available resources, infrastructure and opportunities to act as agents. According to school organisation research (e.g., Fullan, 2007 or Starkey, 2012), the main unit of change is not the teacher, it is the school, and schools are dependent on systems. Digital competence cannot be placed on the shoulders of teachers, but must follow from the digital transformation of systems.

6.5.1. Recommendation at national/regional level

There is a need for teachers to be supported and guided on how to use the different EC resources (in this case, educational frameworks and tools), which will enable them to reflect on the use of digital technologies for teaching and learning, and make the necessary informed decisions and actions to move ahead in this digital transformation process.

Teachers are indispensable in promoting changes in education. Based on the analysis of this work we conclude that teachers should be involved when drafting policy recommendations that would affect them directly. Moreover, they should also be given the necessary autonomy to implement changes in class and in school.

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1 Annexes

Annex 1. Guion semiestructurado para las entrevistas (Spanish)

Presentación

El objetivo principal de esta investigación es explorar y comprender los enfoques que las autoridades educativas de cada Comunidad Autónoma de España han adoptado para desarrollar las Competencias Digitales (CD) de su estudiantado, profesorado y centros educativos. NO pretendemos evaluar o valorar cómo lo están haciendo, sino conocer y comprender qué están haciendo (qué están implementando) para el fomento de la CD en sus centros a nivel normativo.

La meta principal es identificar cómo las herramientas del JRC (SELFIE, SELFIEforTEACHERS) y los marcos europeos (DigCompOrg, DigCompEdu y DigComp) han sido incluidos/utilizados o han servido de inspiración -o no- en estos desarrollos, al menos a nivel normativo e inspirar prácticas en otros contextos de la unión.

A continuación, si le parece bien, le haré unas cuantas preguntas, las grabaremos, y con ellas intentaremos esbozar un modelo que resuma lo que nos ha contado y, en un tiempo –esperamos que corto– volveremos a contactar con usted para pedirle que nos indique si hemos captado la esencia de lo que usted y su CA están haciendo sobre este particular.

Sección estructural (CCAA)

Sobre el plan o proyecto:

- ¿Podría indicarnos qué están haciendo en su CA (qué están implementando) para el fomento de la CD en sus centros educativos y para sus profesores a nivel normativo?
- ¿Qué se ha desarrollado?
- ¿Hay algún plan?
- ¿Cómo se estructura?
- ¿Quiénes lo llevan a cabo?
- ¿Cómo se garantiza su puesta en marcha?
- ¿y su desarrollo?
- ¿Se evalúa? ¿Cómo?
- ¿Desde cuándo?
- ¿Hasta cuándo durará este plan?
- ¿Cómo surge la idea?
- ¿Hubo diagnóstico?
- ¿Quién diseñó el plan?
- ¿En qué se basó su diseño?
- ¿Por qué se hizo en el momento en qué se hizo?
- ¿Se han coordinado con otras CCAA? ¿cómo? ¿en qué foros y organismos?
- ¿Cómo han influido los fondos europeos para la transformación digital de los centros en la planificación y realización del plan?
- ¿Podríais darnos acceso por favor al plan original (url, link, sitio, web, o a los documentos “oficiales”)?
- Las herramientas del JRC/INTEF:
- ¿Se utiliza o ha utilizado –aunque sea como inspiración– alguna de las herramientas del JCR (preguntar por SELFIE y por SELFIEforTEACHERS)?
- ¿Cómo?

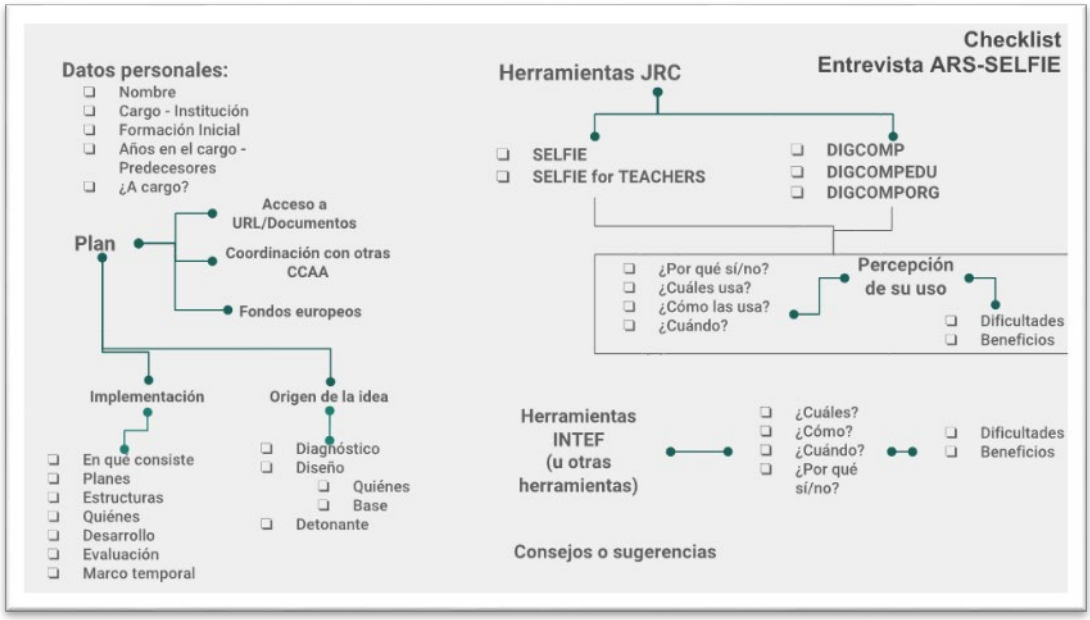
- ¿En qué momento del proceso y por qué en ese preciso momento?
- Si es que sí o no, ¿por qué sí, o por qué no?
- ¿Se utiliza o ha utilizado –aunque sea como inspiración– alguno de los marcos de Competencia Digital Europeos (DigComp, DigCompEdu, DigCompOrg)?
- ¿Cómo?
- ¿En qué momento del proceso y por qué en ese preciso momento?
- Si es que sí o no, ¿por qué sí, o por qué no?
- ¿Se utiliza o ha utilizado –aunque sea como inspiración– alguno de los recursos/materiales producidos por el INTEF?
- ¿Cómo?
- ¿En qué momento del proceso y por qué en ese preciso momento?
- Si es que sí o no, ¿por qué sí, o por qué no?
- Percepción general del plan:
- ¿Cómo cree que el plan está funcionando?
- ¿Cómo han recibido los centros y los docentes este(os) plan(es)?

Extras:

- ¿Cuál es (son) la(s) principal(es) dificultad(es) a la hora de utilizar los marcos, recursos y materiales del JRC en lo que se refiere a los centros? ¿cómo lo habéis gestionado/solucionado si es habéis podido gestionado/solucionado?
- ¿Cuál es (son) la(s) principal(es) dificultad(es) a la hora de utilizar los marcos, recursos y materiales del JRC en lo que se refiere a la infraestructura tecnológica (personal o institucional, global o local) ¿cómo lo habéis gestionado/solucionado si es habéis podido gestionado/solucionado?
- ¿Cuál es (son) la(s) principal(es) dificultad(es) a la hora de utilizar los marcos, recursos y materiales del JRC en la propia administración? ¿cómo lo habéis gestionado/solucionado si es habéis podido gestionado/solucionado?
- ¿Cuál es(son) lo(s) principal(es) beneficio(s) de poner en marcha este tipo de actividades utilizando los marcos, recursos y materiales del JRC?

Si otra comunidad autónoma /región como la vuestra quisiera poner en marcha estrategias como estás utilizando los marcos, recursos y materiales del JRC en su territorio, ¿cuáles serían los tres asuntos fundamentales que debería tener en cuenta? los tres consejos que le darías…

Annex 2. ARS-SELFIE Interview Checklist



Annex 3. ARS-SELFIE Interview Infographics

Annex 4. ARS-SELFIE Coding list

Category	Subcategory	
Experience	Before the arrival of European funds Before Covid-19 confinements	
Digital Competence Improvement General Plan	Structure of the Digital Competition Improvement Plan	
	Those who participate	
	How did the plan arise	
	Temporalization	
	Reception of Schools	
Coordination with other territories		
Use/influence of European Funds		
EC tools	SELFIE	How do they use it?
		Why?
		How do they value it?
	SELFIEforTEACHERS	How do they use it?
		Why?
		How do they value it?
INTEF	Do they use INTEF tools?	
	Which ones?	
	How do they use it?	
	Why?	
JRC frameworks	DigComp	How do they use it?
		Why?
		How do they value it?
	DigCompEdu	How do they use it?
		Why?
		How do they value it?
	DigCompOrg	How do they use it?

Category	**Subcategory**	
		Why?
		How do they value it?
Remarks	Benefits	
	Difficulties	
	Tips / suggestions	

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