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UNIVERSIDAD AUTÓNOMA DE MADRID (UAM)

DIGITAL COMPETENCE FRAMEWORK BEST PRACTICE REPORT

COUNTRY CASE – SPAIN

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Contents

DIGITAL COMPETENCE FRAMEWORK (DCF) IN HIGHER EDUCATION

(Analysis of Digital Competences in Higher Education in Spain)

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Category	Key Findings*
Framework Name	(u) DigCompEdu and OpenEdu (experimental) (bu) Common Digital Competence Framework for Teachers
Year of Establishment	(u) 2022 (bu) 2017/2022
Target Audience	(u) University teachers (bu) Teachers before university
Competency Domains	(u) DigCompEdu and OpenEdu (experimental): 1-6 DigCompEdu competences + 7 Open education. (bu) Common Digital Competence Framework for Teachers: 1 Professional engagement, 2 Digital resources, 3 Teaching and Learning, 4 Assessment and feedback, 5 Empowering learners, 6 Facilitating learners' digital competence.
Proficiency Levels	(university) DigCompEdu and OpenEdu (experimental) and Digital Competence Framework for University Teachers have the same levels that DigCompEdu. (bu) Spanish Common Digital Competence Framework for Teachers (2017) has 6 levels, Newcomer A1, Explorer A2, Integrator B1, Expert B2, Leader C1 and Pioneer C2, while DIGICOMedu has proposed 6 proficiency levels for each one (Foundation a1 and a2, Intermediate b1 and b2, Advanced c1 and c2).
Assessment & Certification	(u) Certification of training (proposed Mora 2022) and the same that no university level (Castañeda 2023). (bu) Certification of training, passing of a specific test, official qualifications qualifying for the teaching profession, evaluation through observation of performance or analysis and validation of evidence. In the framework of teaching digital competence, there are Achievement indicators (sentence that identifies a behavior), Performance statements (sentences that show the characteristic

	activities at each proficiency level) that are progressive, and Examples (concretization of the statements).
Alignment with International Standards	Aligned with DigCompEdu, UNESCO ICT and EU recommendations.
Implementation Strategies	(u) Implementation linked to HEI (proposed). (bu) Implementation linked to digital school plan and ICT regional program.
Best Practices	The non-university model is very relevant as an example of how the future Spanish university model should be organized.
Challenges & Barriers	(u) Fear of the framework as a form of professional development control, in addition to many others accountability systems. (bu) Difficulties reaching level C (advanced), related by designers.
Recommendations for Improvement	- Plan of training linked to team teaching at university. - How to assess through observation of performance or analysis and validation of evidence in highs levels.

(*) university (u), before university (bu)

Introduction

Before university (bu)

Spain has a long history of technological integration as policy goal at school (McGarr 2021). The goal is to better prepare their students at the end of compulsory education.

Starting 1980's, with the appearance of the personal computer in society, Spain is developing policies aligned with European recommendations and resources about digital impact on life.

Digital competence is very relevant to national education and workforce development policies. It should be noted that the non-university education system had 4 curriculum regulations between 1990 and 2022. While the first laws were oriented towards initial teacher training, since the beginning of the new century the competency approach has been adopted, and in 2006 digital competence was adopted as a transversal competence that students as future citizens must reach by the age of 16.

In 1990, teacher education (teachers at school level) adopted a common subject for all Faculties of Teacher education, "New technologies applied to education". Initial training of pre-school and primary school teachers was mandatory. It ceased to be mandatory in the 2009-10 academic year. From then to now, 2025, it is mandatory in only half of Faculties.

Secondary teachers have a master's degree training (60 ECTS credits) that includes a common subject of ICT (2 ECTS credits).

Spain adopts from 1985 to 2015 each European digital program and adapts to schools: "White paper on education and training: teaching and learning - Towards cognitive

sociability" (1995), "eEurope 2002 - An information society for all" (2000), "eEurope 2005" (2002), "i2010 - A European information society for growth and employment" (2005), "Europe 2020 - A Strategy for smart, sustainable and inclusive growth" (2010), "Rethinking Education" (2012) (Sánchez-Antolín 2015). "Plan Avanz@ (Go to Internet)" (connected with i2010) is devoted to provision of ICT equipment, including equipment adapted to students with special educational needs, connectivity of centers, creation of public Internet access centers in schools, ICT training and guidance services for families, creation and compilation of content for the educational community, continuous teacher training in the use and management of ICTs, etc. "Programa Escuela 2.0 (School 2.0 program)" (2009-2012) was devoted to a model of 1 laptop per child. A long economic crisis thwarted the plan from 2012 to 2018.

The last educational law to organize educational system before university is influenced by supranational frameworks, as European Union's DigCompEdu (Redecker 2017) and the UNESCO ICT Competency Framework for Teachers (United Nations Educational, Scientific and Cultural Organization (UNESCO) 2011). These competency frameworks aim to assist national governments in embedding digital competence to citizens and in teacher education. Spain adopts a Common Digital Competence Framework for Teachers (INTEF 2017) at school level, modified by a document in 2022 (INTEF 2022). It could be used for training purposes and in evaluative and accreditive processes of teachers. It is designed to aid teachers and education stakeholders develop their digital competence models across all levels of education at schools. "There is considerable interest in equipping teachers with the necessary competences to fully exploit the potential of digital technologies for enhancing teaching and learning and for adequately preparing their students for life and work in a digital society" (https://unevoc.unesco.org/home/Digital+Competence+Frameworks/lang=en#tbar).

In the 20's, there were fewer national documents focusing on the development of digital technology in schools and teacher education referred to schools due to the decentralized nature of the educational system. The result of those policies is ongoing teacher training in short courses, support for selected initiatives, parental involvement in the purchase of equipment and software, and educational web portals with various resources. Policies shifted from promoting literacy, inclusion and connectivity at the European level to a focus on technology skills acquisition, first, and then it took the form of improving performance at school.

In any case, the teacher training and accreditation system is in place. Although it is known that there are more than 600,000 (over 900,000) accredited teachers in the country (INTEF 2025), there is no detailed national data, only regional. For example, the Community of Madrid (the 3rd in population in the country, 15% of the total) has accredited the level of digital competence to more than 71,000 teachers (of the more than 90,000 in the region), with more than 38,000 teachers at A1 or A2, 10,500 at B1 or B2 and a few hundred (300) teachers at C1 (Cervera 2023). Andalusia, the first region in population and teachers, has accredited 70% of its teachers (Andalusia 2025) and Catalonia, the second, 80% (the most advanced):

(https://www.elperiodico.com/es/sociedad/20240720/medio-millon-profesores-acreditan-competencia-digital-105391642).

University(u)

In Higher Education there are no regulations about digital competence. Spanish universities have broad autonomy. This means that national legal regulations are minimal, in aspects such as the creation and recognition of universities, the personnel and material conditions they must meet, the structure of official teaching, the approval of university degrees, the content of training in professions regulated by the state (doctors, teachers before university, judges). Then, it is difficult to align policies. There is a culture that supports the voluntary use of technologies, rather than imposing a university-wide policy enforcement.

In addition, it should be noted that aspects related to the accreditation and verification of university degrees, and aspects such as lecturer digital training and infrastructures are in the hands of para-state agencies that do accreditation, which are completely autonomous. There are not many elements in the evaluation of universities and face-to-face degrees that expressly refer to issues related to digitally supported teaching.

In any case, Spanish universities are coordinated in the CRUE (Conference of Rectors of Spanish Universities).

Spanish universities adopted e-learning platforms, as well as laboratories and computer rooms, in the 1990s. There was also an important digitalization in academic management and libraries. It supported innovative projects with technology. Contextual factors play a determinant role in the ability of an institution to profit from technologies to aid the educational process and guarantee its quality, as shows COVID pandemia (Rodríguez-Abitia 2020).

On the other hand, the initial training of university teachers in general remains in the experimental field, with some examples such as that of the UAM (www.uam.es/uam/media/doc/1606938196635/i.2.27.-acuerdo-29cg-de-13-07-23-por-el-que-se-aprueba-el-nuevo-plan-de-formacion-docente.pdf). Continuous training in technology is more common in university offerings, with isolated courses. A study that includes Spain shows that training programs are some difficulties as teachers' lack of time for training, non-positive attitudes towards technology, and lack of innovative capacity in their teaching processes. Among the positive outcomes, universities opt for programs with courses varied in content, to cover a wider range of skills, as well as offering courses at several levels of development so that all staff may improve, from the very beginners to more advanced tools (De Juana-Espinosa 2023).

European reference to digital competence framework is more recent, as Digital Education Action Plan 2021-2027 and the European Strategy for Universities, engaged with digital skills and competences (European Commission 2022). The idea is offering leading projects for the progress of the Spanish university system, which are reflected in agreements with other institutions and studies.

A study involving 5,073 lecturers from 51 Spanish universities found their median self-perceived digital competence at B2 level, with B1 being most common, highlighting the need for personalized training to enhance these skills (Alonso-García 2023). In similar terms, a study answered by 2262 teachers belonging to the 9 public universities of a Spanish region, Andalusia, who answered the DigCompEdu Check-In instrument adapted to the Spanish context, shows that the level of teachers is moderate (Cabero 2020). Specifically, the best rated areas were Digital Pedagogy and Digital Resources.

Likewise, it is shown that the self-perception before taking the questionnaire is higher than that made later. These data explain the phenomenon known as "competency idealization". For this reason, it is recommended to carry out personalized teacher training plans supported by solid frameworks such as DigCompEdu.

A working group of CRUE began to work on improving an experimental digital competence framework of university teaching staff in the Spanish university system (Mora 2022). In this project they add to the 6 dimensions of DigCompEdu a new, open education (use of open licenses in educational resources, open educational practices for more inclusive teaching, publication of research as 'open science' and availability of research data as 'open data').

As results of these studies it shows that it is necessary that will be working on the development of shared resources for all universities, make progress in the digitisation of processes related to administrative and academic management, create teaching-innovation units for each university to promote the innovative use of technology in the classroom, and establish a professional development process with mechanisms for the accreditation or certification of these competences that is taken into account in evaluations and accountability of teachers.

Another university experimental framework is "Digital Competence Framework for University Teachers" (Castañeda 2023), for training and accreditation. While maintaining the essence and structure of the DigCompEdu, contains some modifications specifically related to content (digital time management, open educational resources and practices, generative tools, etc.). It is proposed that it be assessed in the same way that Common Digital Competence Framework for Teachers (INTEF 2017).

Spain's digital competence framework has laid a solid foundation for integrating technology into education, yet significant challenges remain. To truly empower educators and prepare students for a digital future, it is necessary to refine evaluation methods, align university practices with international standards, and implement decisive actions. This framework must evolve continuously, ensuring that educational strategies keep pace with technological advancements, emerging pedagogical trends, and the diverse needs of teachers and learners in an ever-changing world.

Section 1: Framework Overview

- *Key focus areas and competency domains.*

(bu) Spanish Common Digital Competence Framework for Teachers (2017) has only 5 areas and 21 competences that comprise the digital competence for teachers, while DIGICOMedu has proposed 22 elementary competences organised in 6 areas (1. Professional engagement. 2. Digital resources. 3. Teaching and learning. 4. Assessment and feedback. 5. Empowering learners. 6. Facilitating learners' digital competence).

(u) The DigCompEdu and OpenEdu (experimental) adds 7. Open education; and Digital Competence Framework for University Teachers) (Castañeda 2023) adds some modifications specifically related to content (digital time management, open educational resources and practices, generative tools).

- *Alignment with international frameworks.*

Both (university and no university) are aligned with DigCompEdu, UNESCO ICT and EU recommendations.

- *Breakdown of competency levels.*

(bu) Spanish Common Digital Competence Framework for Teachers (2017) has 6 levels, Newcomer A1, Explorer A2, Integrator B1, Expert B2, Leader C1 and Pioneer C2, while DIGICOMedu has proposed 6 proficiency levels for each one (Foundation a1 and a2, Intermediate b1 and b2, Advanced c1 and c2).

(u) The DigCompEdu and OpenEdu (experimental) and Digital Competence Framework for University Teachers has the same levels that DigCompEdu.

- *Description of the progression model.*

(bu) The levels of progression are not based on the levels of specific technical knowledge. They are levels linked to the professional development of teachers and the use they can make of digital technologies in their practice. The stages of development of digital competence are 1st Stage (A), access to the profession. Either there is theoretical knowledge about the use of digital technologies in education, but no experience in their practical application, or there is not a sufficient level of digital competence for classroom work, although there is extensive teaching experience. The focus is on the acquisition of knowledge, procedures and attitudes that are applied in real situations with the help of a mentor. 2nd Stage (B), acquisition of experience through the application of knowledge, procedures and attitudes in the use of digital technologies in teaching practice. Once the exercise is consolidated, a transfer of knowledge, experiences and strategies to new situations that will improve the teaching practice is carried out. Stage 3 (C), innovation, is based on evaluation and research for the development of new practices. The perspective is broadened to carry out analyses, assessments and proposals that affect the whole center or, at the last level, the whole profession or the educational field in general, acquiring a referential role. Teachers can create knowledge and innovate in the use of ICT for the improvement of teaching practices and the design, monitoring and evaluation of the digital plan of the educational center.

(u). Not defined yet.

- *Assessment and certification mechanisms.*

(bu) The following are the main elements to be considered: certification of training, passing of a specific test, official qualifications qualifying for the teaching profession, evaluation through observation of performance or analysis and validation of evidence (https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-8042). In the framework of teaching digital competence, there are Achievement indicators (sentence that identifies a behavior), Performance statements (sentences that show the characteristic activities at each proficiency level) that are progressive, and Examples (concretization of the statements).

(u) Certification of training (proposed Mora 2022) and the same that no university level (Castañeda 2023).

- *Implementation strategies at institutional and national levels.*

(bu) Implementation linked to digital school plan and ICT regional program.

(u) Implementation linked to HEI (proposed).

- *Key Competency Areas.*

(bu) Please refer to the document INTEF (2022, pp. 23-194).

(u) Please refer to Castañeda (2023, pp. 50-129).

Section 2: Implementation and Adoption

- *National and regional policies supporting the framework.*

(bu) There is a national framework and regional policies (legal regulation by decrees).

(u) National framework (in draft).

- *Key government institutions and agencies responsible for digital competence policies.*

(bu) Department of Education (coordinator) and ICT regional program (training, accreditation).

(u) Training and innovative programs at university.

- *Availability of training and professional development opportunities.*

(bu) ICT regional program.

(u) Universities' training offer, innovative projects (funding), and accountability of teachers by each university with certification and promotion (in draft).

- *Integration in curricula at different education levels.*

(bu) Spanish model does not initially recognize any academic training or curricula integration of DCF into other courses until the teacher is into an educational institution.

(u) – No data.

Section 3: Best Practices and Case Studies

The non-university model is very relevant as an example of how the future Spanish university model should be organized with continuous training, assessment, and incentives for educators to enhance their digital competencies.

Section 4: Strengths and Areas for Improvement

- *Key strengths of the framework.*

(bu) The framework is strengthened by connecting seemingly technical aspects with pedagogical practice and student care.

(u) No data.

- *Identified gaps and opportunities for enhancement.*

(bu) An important gap is the evaluation of high level of digital competence.

(u) The problem of using a non-university framework in a university context is to blur the approach of students and future professionals to the research work that underlies the scientific knowledge handled at the university. There is a need for a research technology dimension linked to training.

- *Challenges faced during implementation and strategies to overcome them.*

(bu) Difficulties reaching level C (advanced), related by designers.

(u) Fear of the framework as a form of professional development control, in addition to many others accountability systems.

- *Recommendations for future updates and policy improvements.*

- Plan of training linked to team teaching.
- How to assess through observation of performance or analysis and validation of evidence in highs levels.
-

Section 5: Conclusions and Recommendations

- *Summary of key findings.*

See table p.1

- *Potential for international collaboration and adaptation.*

Full

- *Recommendations to the Armenian HEIs based on the country's experience to be taken when the Armenian National DCF is being compiled.*

How to manage accountability systems linked to teacher professional development.

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