Erasmus+ project

DIGGING

DIGital competences for EngaGING Future educators

Project No.: 2021-1-ES01-KA220-HED-000030297

NEEDS ANALYSIS

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Introduction

The development of teachers' digital competence is now a political and social priority at European level.

The COVID 19 pandemic highlighted the need for teachers to be prepared and trained to deal with online education. This training must address, on the one hand, the use of digital tools and, on the other hand, at the didactic level, the adaptation of knowledge and the structure of subjects to online environments.

For this reason, the need for schools to be able to incorporate digital technologies into their teaching practice is currently a priority issue.

Today, all adults need digital skills, not just better literacy but also better digital literacy. Basic digital skills improve career opportunities, reduce social inequality and increase social cohesion, inclusion and active citizenship (http://www.moec.gov.cy/en/). The Organization for Economic Cooperation and Development (OECD) Learning Framework 2030 states digital literacy as a core fundamental competency for future education.

The digitization of the education sector has created new opportunities for teaching and learning, but it has also posed challenges for teachers, who must adapt to new technologies and teaching methods.

New technologies are constantly emerging, and teachers must keep abreast of the latest tools and methods to incorporate them effectively into their teaching. Many teachers have little experience with digital technologies and may lack the skills and knowledge to use them effectively.

Educators must not only be proficient in using digital solutions themselves, but also be able to integrate them into their teaching and instruct students in their use.

To ensure that teachers are equipped with the skills and knowledge they need, ongoing training and professional development will be necessary. Collaboration and sharing of best practices will also be important to ensure that teachers are able to effectively incorporate digital tools and methods in their teaching.

Situation in different countries.

The development of teachers' digital skills is now a political and social priority at the European level.

In Spain several authors have tried to analyse the reality of the educational system in terms of the degree of digitalisation of teachers. For example, in a study carried out by members of the Universitat Rovira i Virgili (García, Lázaro and Valls, 2022), an analysis of the self-perception of the competence of teachers at different stages was carried out. This study established different levels:
- Beginner level: novice teachers or teachers in initial training who incorporate the use of digital technologies in the teaching-learning process.
- Intermediate level: experienced teachers who make use of and manage digital technologies and adapt them to the needs of learners.
- Expert level: teachers who are role models or leaders in the use of digital technologies in their school.
- Transformative level: teachers who analyse their teaching practice in a reflective and systematic way, sharing their experiences in order to generate knowledge. Thus, Pre-school and Primary School teachers perceived themselves as beginners (10.3%), intermediate (55.2%), expert (31.0%) and transformer (3.4%), while Secondary School and Baccalaureate teachers perceived themselves as beginners (18.4%), intermediate (52.6%), expert (26.3%) and transformer (2.6%).

In **Cyprus**, almost one-eighth of Cypriots have never used the internet. During 2020 only 45% of people aged between 16 and 74 possessed basic digital skills (against the EU average of 58%) based on the European (DESI, 2020).It is noted that the majority of the adult population of Cyprus, who have no experience or basic computer skills, are people of low educational level and people belonging to the age group of 55-65 years. Although the country has improved its score in recent years, Cyprus is still below the EU average on basic digital skills. One out of two Cypriots lacks basic digital skills (DESI, 2022). Furthermore, the results of various studies underline the lack of digital skills in Cyprus's adult population. For example, in the Meletiou-Mavrotheris et al., (2017) research it was underlined that university students' knowledge and self-efficacy in using e-learning tools do not directly equate to being a digital learner equipped with the necessary digital skills.

In **Hungary**, since the publication in 2006 of the Recommendation of the European Parliament and the Council on critical competencies for lifelong learning, competencies have become a central concept in the essential documents, curricula, and research that define public education in Hungary. Digital competence is one of these key competencies. In 2016, Hungary adopted a government decree on the digital transformation of the public education, vocational education and training, higher education, and adult education systems and on Hungary's Digital Education Strategy (Digital Education Strategy, 2016. https://digitalisjoletprogram.hu/hu/tartalom/dos-magyarorszag-digitalis-oktatasi-strategiaja), which highlights the need to develop digital competence.

One of the primary challenges facing teachers in the **Netherlands** is the rapid pace of technology change. Another challenge facing teachers is the need to balance traditional teaching methods with new digital tools and methods. While digital technologies can offer many benefits, they must be used in a way that enhances traditional teaching methods rather than replacing them. Teachers must therefore be able to effectively integrate digital tools into their lessons while maintaining a focus on the core principles of teaching and learning. To address the challenges facing teachers, several initiatives have been implemented in the Netherlands to improve digital competences.

In **Latvia**, educators recognise the need for greater integration of digital solutions in the learning process, combining them with face-to-face teaching. However, some teachers currently feel unprepared for this change and have a negative attitude towards it due to feelings of insecurity.
Furthermore, organising the learning process digitally, including the creation of new digital content, is a lengthy and costly process, and there is often insufficient funding to support it.
Educators' desire to improve their digital competences increases as they gain positive experiences in using technology. It is therefore crucial to create such experiences consistently, gradually and at an appropriate pace, while providing the necessary support for educators to learn and apply digital solutions with confidence in their daily practice. When teaching to improve digital competences, it is crucial to demonstrate their practical application.

Efforts and initiatives towards the development of Digital Skills

Cyprus

In May 2019, Cyprus adopted its 'Cyprus Industrial Strategy Policy'. In January 2020, the government approved the national strategy on Artificial Intelligence (AI), while a new cybersecurity strategy has been in place since 2021. These strategies are aligned with and support the digital transition actions set out in the Recovery and Resilience Plan.

Furthermore, in Cyprus, the Ministry of Research, Innovation and Digital Policy was established in 2020. The mission of the Ministry is to support scientific research, invest in innovative entrepreneurship and implement an ambitious digital transformation reform. The Deputy Ministry aspires to develop a modern and efficient state, competitive at the European and international level, and a dynamic digital economy where every citizen and every business will be able to grow and prosper. The Ministry has created the Digital Skills strategic National plan 2021-2025, which it targets to create action towards digitalizing Cyprus across each of the three dimensions: government, society, economy. The 'Digital Strategy for Cyprus (2020-2025)', under the responsibility of the Deputy Ministry of Research, Innovation and Digital Policy (DMRID) should accelerate Cyprus' digital transformation (DESI, 2022).

In addition, there are co-funded European projects implemented in Cyprus that aim at advancing and developing Digital Skills. Some examples are the following:

- The Hopeful project aimed at extending teachers' competencies in effectively teaching literacy, numeracy and digital skills to refugee children https://www.hopeful-project.eu/

- The DigitALAD project aims to build the capacity of adult educators to improve their digital literacy skills through innovative learning resources and promoting awareness of the importance of digital skills in adults. Home - DigitALAD (digitaladproject.eu)

- The DRC project (Digital, Responsible Citizenship in a Connected World) aims to support teachers in developing a positive attitude towards digital citizenship and cultivating responsible, ethical, global citizens for a digitally, highly connected world. DRC – Digital Responsible Citizenship in a Connected World – Digital, Responsible Citizenship in a Connected World (digital-citizenship.org).

- The Digital Youth project aims to prepare youth workers to develop their skills and knowledge in order to be able to effectively engage in digital youth work Digital Youth – Preparing Youth Workers for a Digital World (digital-youth.eu).

- The 2B-DIGITAL aims at supporting the effective digital teaching and learning experience of VET teachers and learners, especially those at-risk of dropout and early leaving by adapting to the digital transition, magnified by COVID-19, in an attempt to avoid the increase of inequalities in education, and their consequent drift to youth unemployment and exclusion https://2bdigitalproject.eu/.

- The project ADULTDIGITALUP aims to support the Cypriot authorities to improve digital literacy of adults in Cyprus with a particular focus on adult educators and low-skilled adults https://adultdigitalup.eu/en/

Latvia

Based on the DigCompEdu framework an instrument was designed to collect information about participants' learning preferences in topics connected to technology enhanced learning by both determining their perceived usefulness of different aspects of technology enhanced learning and assessing their existing expertise in these areas. It was decided to use specific best practice examples concerning technology enhanced learning rather than descriptions of proficiency levels that tend to be widely interpreted and hence might not yield precise results. Specific examples also have the potential to give a better insight into possible learning outcomes hence helping participants formulate more specific learning goals which is one of the planned outcomes of this instrument. Multiple-choice tests were dismissed in this case for several reasons including the nature of learning content the tool was designed for - improving competencies rather than specific knowledge.

A flexible sequential design was used in this study and four consecutive research cycles were implemented.

We identified which statements educators find more important but struggle to implement fully, creating a list of their learning preferences (see Fig. 1). This information was then used to develop content for a professional development course.

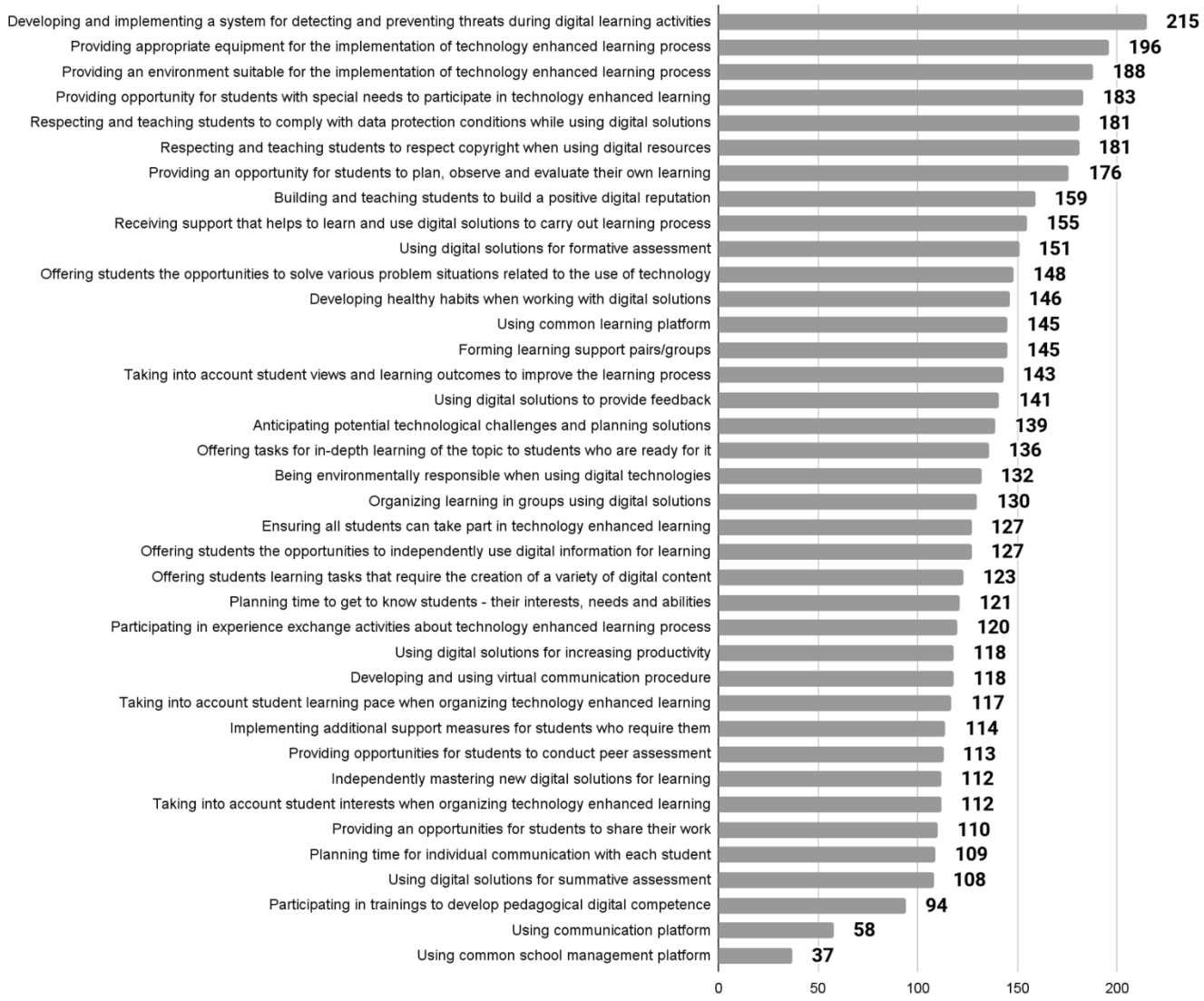

Figure 1. Educators' learning preferences concerning pedagogical digital competence (subtraction between importance and implementation)

Hungary

The Infocommunication Common Framework of Reference (ICFR) was developed due to the TÁMOP 2.1.2/12-1 priority project "Development of foreign language and IT competencies" in 2012. It aimed to support the development of training programs to enhance ICT competencies, and its four levels followed the division of the IKER.

The IKER is a tool for interpreting and self-assessing digital competencies as key competencies, using the five main areas of the DIGCOMP, with four levels aligned to the Hungarian Qualifications Framework levels 1-4.

In addition, one of the objectives of the Digital Education Strategy is the development of the Digital Name Record (DNR) system in Hungary, in line with the DigCompOrg framework, which was launched in 2020 to provide information on the level of digital maturity of public education institutions. The Self-Assessment and Monitoring module of the system will assess the digital maturity of the school through questions on its digital practices and capabilities.

Tools commonly used to support teachers' self-assessment of digital competence in Hungary:

MENTEP (Mentoring Technology-Enhanced Pedagogy - http://mentep-sat-runner.eun.org/) is a self-assessment tool in 4 areas (Digital Pedagogy, Digital Content Use and Creation, Digital Communication and Collaboration, Digital Citizenship), with 30 questions and five progression levels (Beginner, Novice, Proficient, Experienced, Expert), designed to help teachers analyze their knowledge and attitudes, on a pilot basis from 2015 in Hungarian.

SELFIE (Self-reflection on Effective Learning by Fostering the Use of Innovative Educational Technologies - https://education.ec.europa.eu/selfie/registration-procedure) is an online European self-evaluation tool, which the European Commission proposed in January 2018 as one of the initiatives of the Digital Education Action Plan (DEAP). In Hungary, institutions and non-individual educators register to use the tool.

In September 2009, the Master's level teacher training was launched in Hungary. ICT training was introduced in the founding document of the unified Master's degree in teaching, valid for institutions across the country, as a one-semester, 2-credit subject.

Another change affecting teacher education is the introduction of ICT competence in the description of the professional competencies of teachers in the teacher career

model (2011), not as a separate competence area but embedded in the eight competencies (Kotschy, 2011)

In 2003, the Ministry of Education organized a free training course for 10,000 teachers with twenty-two teacher training modules. Since then, every year, many teachers have access to this opportunity (Zagyváné, 2020).

EFOP 3.2.4 Developing Digital Competences from 01.01.2017 to 30.06.2023 aimed to contribute to the development of a quality and equitable public education system and to promote successful participation in the labor market/higher education/ lifelong learning by supporting the acquisition of digital competencies expected by society and the labor market (https://kk.gov.hu/digitalis-kompetencia-fejlesztese)

Spain

At the national level, as stated in the document Digital Spain 2026, different actions have been carried out to try to improve the digital competence of the education system. The National Institute of Educational Technologies and Teacher Training (INTEF) has adapted the DigCompEdu framework to contextualise it for the Spanish education system and to address teachers of the courses regulated by the Organic Law on Education. This framework, called Marco de Referencia de la Competencia Digital Docente (MRCDD) has the same six areas included in the European framework, except that it incorporates a new competence in area 1, related to the protection of personal data and digital rights and security in the use of technologies. Therefore, this new reference framework would have a total of 23 competences instead of 22.

Similarly, the Ministry of Education and Vocational Training has implemented a series of measures. Thus, the Plan for Digitalisation and Digital Skills in the Education System (#DigEdu) has been implemented. This plan focuses on 4 different lines:

- Line 1: Development of Digital Competence in Education (schools, teachers and pupils).

- Line 2: Digitalisation of the Education Centre. Digital Plan for the Centre.

- Line 3: Creation of educational resources in digital format.

- Line 4: Advanced digital methodologies and skills.

Focusing on this second line, the Territorial Cooperation Programme for the Digitalisation of the Educational Ecosystem PCT #EcoDigEdu "aims to advance and improve the digitalisation of education, both in terms of the technological means available to the educational community and the effective and efficient integration of technologies in teaching and learning processes".

On the other hand, the Territorial Cooperation Programme for the Improvement of Educational Digital Competence #CompDigEdu, also framed within the Plan for Digitalisation and Digital Competences of the Educational System (#DigEdu), "aims to advance and improve digital competences in the educational field, both in terms of the technological means available to the educational community, and in the effective and efficient integration of technologies in the teaching and learning processes".

The Spanish Ministry of Education and Vocational Training has included in the Official State Gazette new measures to ensure digital competence education for teachers in schools. These measures include accreditations of digital competence for schools that develop a Digital Centre Plan that evaluates the knowledge of their professionals based on the reference framework of teaching digital competence. This plan will establish indicators against which schools and their teams of education professionals can measure their level of competence and set achievable targets to improve their level of knowledge.
This accreditation aims to reach at least 80% of 700,000 teachers by 2024, thus ensuring the digital transformation of the education system. This accreditation will be managed at a regional level, having made a prior distribution of credits at territorial level. All this, within the framework of the Programme for the improvement of educational digital competence, published in 2021 by the Secretary of State for Education, known as CompDigEdu.

Netherlands

One such initiative is the Dutch National Education Agenda, which includes a focus on digital competences for teachers. The agenda includes a goal to improve digital competences of all teachers.

Another initiative is the DigLin+ program, which focusses on improving the digital literacy of adult learners. The program includes training for teachers on how to

effectively use digital tools in the classroom, as well as resources for teachers to improve their own digital competences.

Kennisnet is a public organization that provides digital tools, services and support for education in the Netherland. They offer a variety of resources for teachers, including online courses, webinars, and workshops om topics such as digital literacy and educational technology.

An important initiative is Edualdo, a digital platform where teachers can ask questions, share best practices, and collaborate with other educators. The platform incudes a section specifically for digital education, where teachers can find resources and tips on incorporating digital tools into their teaching.

In the Netherlands there also are several professional associations for teachers that offer resources and training on digital education. For example, the Dutch Association for ICT in Education and Training, VELON, offers training courses and workshops on topics such as digital literacy, educational technology, and online learning.

In addition to these national initiatives and associations, many schools and universities in the Netherlands have developed their own programs to improve digital competences. These programs include training sessions for teachers, workshops on specific digital goals and methods, and opportunities for teachers to collaborate and share best practices.

In conclusion, digital competences are essential for teachers in the Netherlands as they navigate the everchanging landscape of education. While there are challenges to be faced, initiatives and programs are being implemented to improve digital competences and to ensure that teachers are equipped to effectively use digital tools and methods in the classroom. For this purpose ongoing training and collaboration are very important.

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Η Κύπρος στον Δείκτη Ψηφιακής Οικονομίας και Κοινωνίας | Shaping Europe's digital future (europa.eu)

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