

## COVID-19: RETHINKING THE SKILLS REQUIRED OF 21ST CENTURY EDUCATORS

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### Abstract

The skills required of 21st Century educators are constantly evolving as it is important for teachers to stay current and develop their skills and knowledge to best support their students' academic and personal growth. Overall, there are numerous competency frameworks that provide standards or guidelines that outline the knowledge, skills, and attitudes that educators should possess to effectively support student learning and development.

Technological skills are increasingly emphasised: There are several competency frameworks that describe digital skills of educators, i.e. the knowledge, skills and attitudes that educators need to effectively integrate technology into their classrooms and support student learning in a digital environment.

Each of these frameworks offers a unique perspective on what educators should know and be able to do to effectively support student learning and development in a digital environment. The recent COVID-19 pandemic has highlighted the need for digital skills frameworks for educators to be more comprehensive, relevant, and aligned to the challenges and realities of teaching and learning in a virtual environment. It became clear that the effective incorporation of digital technologies and innovative pedagogies into education requires a rethinking of the digital competence portfolio of educators. Competencies to transition seamlessly into digital learning scenarios, as well as competencies and skills to respond to psychological effects such as technostress, depression or isolation are required.

The present paper examines some of the most commonly used digital skills competency frameworks for educators and discusses future directions for their improvement based on the lessons learned from the COVID-19 pandemic.

**Keywords:** *Digital competence framework, educators, distance education.*

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### 1. Introduction

Digital technologies are rapidly changing teaching and learning. Teaching in the 21st century is not the same as both teaching methods and priorities have changed. In addition to teaching core subjects, teachers must also instill and develop students' skills for the 21st century (P21, 2019). To ensure that students can develop, practice, and apply 21st century skills, teachers must be knowledgeable and competent in teaching and training students in 21st century skills.

Furthermore, education is increasingly enabled, supported, and guided by technology, including artificial intelligence, data management, ubiquitous technologies etc. However, the mere existence of digital technology does not guarantee its usefulness for quality learning. Educators need to learn how digital environments and resources can enhance and impact their classroom practice and learning experience. They need to be proficient in incorporating new technologies and using devices appropriately and effectively. This requires significantly different skills and competencies to function effectively in the classroom and respond to the demands of the 21st century. Technological skills in teachers are thus increasingly emphasised. There are several competency frameworks that describe the required digital skills of educators, i.e. the knowledge, skills and attitudes that educators need to effectively integrate technology into their classrooms to support student learning in a digital environment.

Each of these frameworks offers a unique perspective on what educators should know and be able to do to effectively support student learning and development in a digital environment. The recent COVID-19 pandemic has highlighted the need for digital competences frameworks for educators to be more comprehensive, relevant, and aligned to the challenges and realities of teaching and learning in a virtual environment. It became clear that the effective incorporation of digital technologies and innovative pedagogies into education requires a rethinking of the digital competence portfolio of educators. Competencies to transition seamlessly into digital learning scenarios, as well as competencies and skills to respond to psychological effects such as technostress, depression or isolation are required.

The following section presents some of the most commonly used digital competences frameworks for educators. We then discuss existing challenges and limitations, as well as propose future directions for their improvement based on the lessons learned from the COVID-19 pandemic.

## 2. Digital Competences for educators

The European Parliament and Council (2018) identified digital competence as one of the key competences that every person needs for “**personal fulfilment and development, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, health-conscious life management and active citizenship**”. Digital competence involves “the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society”. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking”.

In recent decades numerous **competence frameworks** have been proposed, outlining teachers’ required digital competences. Table 1 provides an overview of the most pronounced frameworks.

*Table 1. Digital competence frameworks for educators.*

Name	Author	Focus Areas	Scope
Digital Competence Framework for Citizens (DigComp)	European Union (2022)	The DigComp framework identifies the key components of digital competence in 5 areas: Information and data literacy, Communication and collaboration, Digital content creation, Safety, Problem solving	DigComp aims to be an enabling, descriptive and non-prescriptive reference framework for digital competence
European Framework for the Digital Competence of Educators (DigCompEdu)	European Union (2017)	the "DigCompEdu" framework provides a reference framework for the digital competence of educators, focusing on 22 competences organized into six areas: Professional engagement, Digital resources, Teaching and learning, Assessment, Empowering learners, and Facilitating learners' digital competence.	DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.
UNESCO ICT Competency Framework for Teachers (ICT-CFT)	UNESCO (2018)	The UNESCO ICT-CFT addresses all aspects of a teacher's work: Understanding ICT in education, Curriculum and assessment, Pedagogy, ICT, Organisation and administration, and Teacher professional learning. The Framework identifies three successive stages of a teacher's development: Technology Literacy, Knowledge Deepening, and Knowledge Creation.	The UNESCO ICT-CFT is intended to inform educational policy makers, teacher-educators, providers of professional learning and working teachers on the role of ICT in educational reform
Technological Pedagogical Content Knowledge (TPACK)	Schmidt et al. (2009)	The TPACK framework identifies three primary forms of knowledge that need to be integrated to effectively teach specific content using technology: Content Knowledge (CK), Pedagogical Knowledge	TRACK describes the knowledge and skills required for effective technology integration in teaching. Other important relationships

Name	Author	Focus Areas	Scope
		(PK) and Technological Knowledge (TK)	between knowledge forms include: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK) and Technological Pedagogical Knowledge (TPK)
The Norwegian Professional Digital Competence Framework for Teachers	Kelentrić et al. (2017)	The Norwegian Professional Digital Competence Framework for teachers describes 7 key competence areas of: subjects and basic skills, school in society, ethics, pedagogy and subject didactics, leadership of learning processes, interaction and communication as well as change and development.	Each of the 7 competence areas describes the knowledge, skills and competence to meet the requirements of each competence area and/or to action plan how to reach the described requirements
The International Society for Technology in Education (ISTE) Standards for educators	ISTE (2015)	The ISTE framework for educators includes seven competencies – profiles of the teacher as Learner, as Leader, as Citizen, as Collaborator, as Designer, as Facilitator and as Analyst	The educator section of the ISTE Standards provides a road map to helping students become empowered learners. Digital capabilities are implied in each profile/role.
Educators' digital competence framework (EDC)	Siina, C. (2022)	The EDC framework identifies 20 competencies organized into four sections: Knowledge development, Knowledge application, Knowledge sharing, Knowledge communication.	The EDC framework focuses on 'mobilising digital technology for improving inclusive and quality education for all children, with an explicit focus on the most vulnerable'.

These frameworks provide an understanding of what it means to be digitally competent as an educator. Overall, the common goal of all digital competence frameworks is to improve the teaching quality of educators in the digital age, i.e. to provide teachers with the necessary skills and knowledge to effectively navigate the digital landscape, improve their teaching practices, to empower and prepare students for the demands of the digital age. Digital competence frameworks consider multiple dimensions of digital competences, including technical skills, pedagogical knowledge, critical thinking, information literacy, digital citizenship and collaboration. Furthermore, they typically organise competencies into different areas, such as digital literacy, digital communication, digital content creation, digital collaboration, digital assessment, etc. The diversity of the examined facets illustrates the complexity of the task. It implies that digital competence requires more than just technical knowledge and encompasses a set of interconnected skills and attitudes. With technologies playing an increasingly important role in education, educators not only need to be able to use technology, but also to effectively integrate emerging tools and applications in teaching towards imparting 21st century skills. Educators' pedagogic autonomy in using technology is imperative. Teachers must understand and master the pedagogical use of digital technologies, as well as their potential and limitations. Therefore, alignment with curriculum standards and pedagogical approaches is central to digital competency frameworks.

### 3. Discussion: challenges moving forward

#### 3.1. The fast pace of change

As Information and communication technologies are rapidly changing, they are transforming both the scope, and the methods and instruments of teaching and learning in formal education. The Fourth Industrial Revolution (IR4.0) is characterized by disruptive technologies, processes, and practices. The educational paradigm that emerged (“**Education 4.0**”) is challenging core assumptions of traditional education. Education 4.0 is increasingly enabled, supported, and guided by technologies such as **artificial intelligence (AI), machine learning (ML), data analytics, mobile technologies, robotics, Internet of**

**Things, Cloud Computing, Big Data Analytics**, etc. (González-Pérez & Ramírez-Montoya, 2022; Huk, 2021). The Fourth Industrial Revolution is an ongoing process that continues to shape and evolve our world today. Possible future paradigms of education beyond Education 4.0 are constantly being discussed. Although significant strides have been made in integrating technology into education, there remains a need for comprehensive frameworks that provide guidance and support for educators to adapt their teaching practices to adapt to the changing demands of the digital age. Educators strive to keep up with the rapid pace of change. As a result, developing and implementing frameworks to support teachers and schools in preparing for Education 4.0 and Industry 4.0 is an ongoing challenge. New technologies and trends are constantly emerging, making it difficult to create comprehensive and static frameworks that remain relevant over time.

The recently accelerated pace of technological advances makes it difficult to develop frameworks that can keep up with the evolving landscape. The rise of **generative AI** (such as ChatGPT) is having far-reaching implications for pedagogy and teaching practice, raising ethical concerns related to issues such as bias and privacy, and highlighting the importance of critical thinking (Lim et al., 2023). As technologies advance, it is expected that more frameworks and resources will be needed to help educators effectively adapt their practices to meet the evolving needs.

### 3.2. The emotional challenges of distance learning

The recent COVID-19 pandemic has demonstrated the need to strengthen the resilience of education systems (UNESCO, 2020). Resilience and flexibility have become key to adapting and forward planning. Overall, a distance learning educator should be able to effectively support student learning and development in a virtual or remote environment. In terms of educators' competences, beyond a strong understanding of the various technologies and tools used in distance learning, this also calls for pedagogical skills for online and remote learning environments, including the ability to effectively communicate with students online, and the skills and strategies to create a positive and safe learning environment, to manage student behaviour, and to maintain an organised and effective virtual classroom. Educators should have the competences needed to create and facilitate engaging and interactive online learning experiences for students.

Furthermore, they should have the ability to address potential challenges of distance learning. The COVID-19 pandemic demonstrated that ensuring learning continuity goes beyond the mere adoption of distance learning modalities. Increased dependence and exposure to the use of technology for distance education can jeopardise the **well-being of individuals** as the boundaries of school and personal life are harder to maintain and negatively-associated outcomes and side-effects of technology use may arise, such as **stress from technology use (technostress)** (Tarafdar et al. 2007). The lack of awareness, capacity and professional skills in teachers for the design and implementation of positive distance learning interventions represents a significant barrier, yet a comprehensive approach to training for **eLearning positivity** is lacking. To increase the preparedness and capabilities to avert such negative aspects of distance learning, new capabilities must be created. In this light, the aspects of positive psychology/positive computing, as a means for teachers to create positive views, emotions, and atmospheres in times of crisis, emerge as a necessary skill to address psychological/emotional aspects of distance learning.

## 4. Conclusion

Digital competence frameworks should help educators develop the necessary skills, knowledge, and confidence in effectively utilising technologies in their teaching practices. Overall, teachers need a combination of **technical, pedagogical and social and emotional competencies** to harness the capabilities and better deal with the challenges of educational technologies.

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