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EDUCATORS' DIGITAL COMPETENCY FRAMEWORK



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I. Introduction

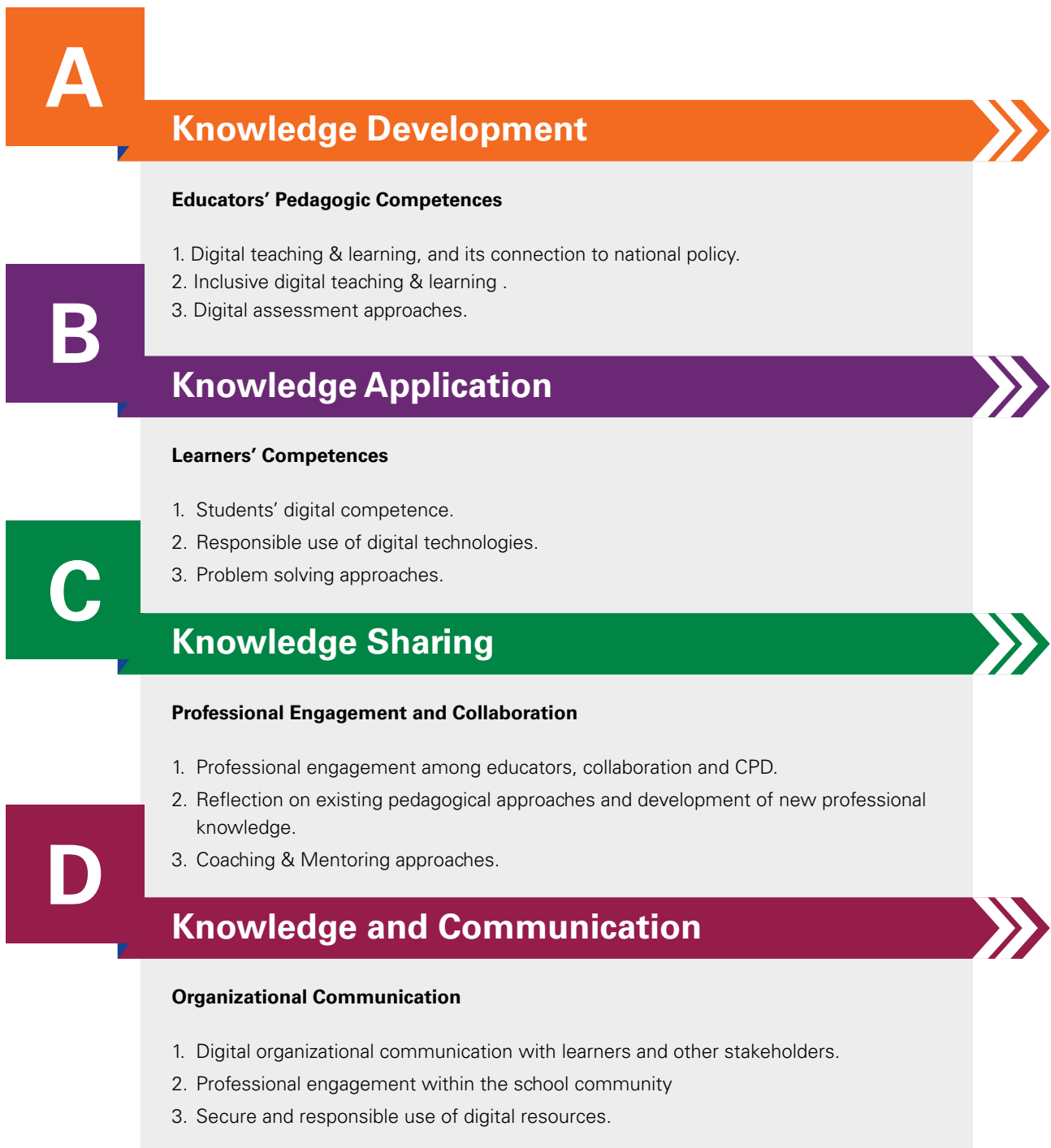
Purpose of the Framework

This report presents the educators' digital competence framework (EDC) and aims to assist the UNICEF Europe and Central Asia Regional Office (ECARO) with their efforts to empower teachers, improve online teaching and boost innovation in education. The framework is intended to support national, regional and local efforts to foster educators' digital competence by offering a common frame of reference that can be adapted in response to different needs. The EDC framework is part of the LearnIN project, which focuses on 'mobilising digital technology for improving inclusive and quality education for all children, with an explicit focus on the most vulnerable'. The EDC framework assists in discovering new ways to harness digital technologies and build on existing systems of digital learning. It aims to encourage innovation in education and training practices, improve access to lifelong learning, and promote the 21st-century (digital) skills and competencies needed for professional development, equity and inclusion. The framework can provide support to policymakers, schools, teachers, learners and parents to ensure a coherent system across each country of the region in the short and long term.

The EDC framework aims to capture 20 competencies organized into four sections. It offers detailed descriptions of a) 'what', i.e. what kind of educators' competencies are needed to harness digital technologies and empower educational innovation in the area of inclusive teaching and learning; and b) the 'how', i.e. how to offer practical knowledge and support on designing learning environments, facilitating students' learning, developing professional knowledge and settings as well as promoting organizational communication that can nurture such competencies in the four suggested areas (see Figure 1). These four areas are:

- **Knowledge development** – focuses on educators' digital competencies related to digital teaching and learning and its connection to national policy, digital teaching, learning and assessment approaches.
- **Knowledge application** – focuses on educator competencies in facilitating learners' digital skills for effective learning, using ICT responsibly and solving problems to develop, transfer and create new knowledge.
- **Knowledge sharing** – focuses on the use of communities of practice (CoP) to enhance competencies needed for engaging in practices that encourage constructive dialogue to develop a culture of collaborative professionalism.
- **Knowledge communication** – focuses on the use of digital technologies to support organizational communication. Educators need to understand how to improve their communication with learners and other stakeholders and use digital resources securely and responsibly.

Figure 1: EDC Framework



The EDC framework aligns with the 2030 Agenda for Sustainable Development, known as the Sustainable Development Goals (SDGs). These SDGs represent a framework for action that is universal, ambitious and, most importantly, 'of the people, by the people and for the people'. Specifically, the framework is based on SDG4, Education, which calls for the international

community to 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' (UN Statistics Division, 2017). In addition, SDG10 calls for 'reduc[ing] inequality within and among countries'. The importance of digital technologies and how educators effectively integrate them into teaching practice has been stressed continually (e.g. 2015 World Education Forum).

Specifically, effective integration of digital technologies with an inclusive approach to teaching and learning necessitates rethinking educators' roles and reforming teachers' pre-service and in-service professional development.

As UNICEF (2017) described, inclusive education includes all students. It welcomes and supports their learning, regardless of who they are or their abilities and requirements. This approach ensures that teaching, the curriculum, school buildings, classrooms, play areas, transport and toilets are appropriate for all children at all levels. Inclusive education means all children learn together in an environment that supports their

cognitive, emotional and mental growth. Equity in access and participation along with a positive approach that responds to each child's learning needs and competencies is important in order to ensure that every child can meaningfully participate and learn along with their peers. In this way they can experience a healthy progression and growth, with no one excluded. This approach improves learning for all children – both those with and without disabilities – and promotes understanding, reduces prejudice and strengthens social integration. Inclusive education also ensures that children with disabilities are equipped to work and contribute economically and socially to their communities.

Basis of the Framework

The EDC framework is consistent not only with the European framework for Digital Competence of Educators (DigCompEdu) (European Commission, 2017), but also with UNESCO's ICT Competency Framework for Teachers (UNESCO, 2018), along with other frameworks. EDC offers a holistic approach for developing educators' digital competence in the following areas: inclusion, diversity, pedagogy, digital literacy and communication. As described in this report, the EDC framework focuses on supporting schools and teachers to deliver effective inclusive teaching and learning as well as offering guidance on ways to promote organizational communication. Strategies include using digital technologies for all learners in classrooms or any kind of learning management systems (LMS) and synchronous, asynchronous or a matrix of approaches. In an era of accelerated technological innovations, education needs to progress in parallel and ensure learners are prepared, no matter the type of approach – online or classroom-based teaching and learning – for jobs of the future (OECD, 2019). However, technological progress in schools requires changing not just the learning structure but also the learning environment, social norms, and the expectations of parents, school administrators, inspectors and learners themselves. Using technological innovations invites opportunities and challenges, and everyone involved needs to take action and share responsibility. The teaching approach is changing from a static linear approach to a non-linear dynamic model.

Therefore, teachers need preparation to guide their learners through individualized learning paths and equip them with the relevant knowledge, values, attitudes and skills to progress. The EDC framework offers details on what kinds of competencies today's teachers must develop to support their learners' well-being and help them become well-rounded individuals. It also helps illuminate the ways in which teachers use their competencies to acquire teaching approaches to provide students with appropriate support. Accordingly, teachers' learning and digital-skill application are recognized as an integral part of teacher development, from pre-service to continuous professional growth throughout their careers.¹

Research has shown that for digital technology to positively affect learning outcomes, several conditions should be met for educators and students at all education policy and school levels (Redecker, 2017; European Agency for Special Needs and Inclusive Education, 2020; Vindaca, Lubkina, Abuze and Usca, 2021). Policymakers must promote a deeper understanding of learners' diversity, and schools' and teachers' needs for broader technology usage to ensure equity and inclusion. Educators require the opportunity for reflection to further pursue professional learning development in inclusive education using digital tools. Specifically, all education organizations should enable self-evaluations. This reflective approach helps organizations understand their existing capacity and professional development needs relative to inclusive digital pedagogies that align

¹ UNICEF ECARO offers the Learning Passport (LP) platform for supporting teachers and connecting students with digital learning content. In the absence of national or school-based learner management systems, LP will serve as the main platform. UNICEF ECARO works with countries' existing platforms and LP. For more information, please visit 'Learning passport: Transforming societies through education', www.learningpassport.org/

with national educational policies. Thus, educators can identify needs in relation to adapting educational systems and using teaching and learning materials in response to all learners' strengths and needs. Self-evaluation or reflection is critical, because it is difficult to establish a successful strategy for the effective use of inclusive digital learning unless individuals fail to first realize its value and understand the learners' needs. In response, educational systems could adopt bottom-up and top-down approaches by acting collegially and enhancing collaborative professionalism at all levels. Accordingly, this approach provides information regarding teachers' training practice, school support and improvement to other systems that are affected (e.g. teacher's evaluation, student's assessment process, curriculum, organizational communication and so forth).

Not all schools know how to integrate technology into teaching and learning, although they may have a digital strategy (European Commission, 2019). Thus, schools need to identify their strengths and weaknesses to act independently and engage other stakeholders (such as parents and members of the community) in their daily routine with a high degree of self-awareness and self-assurance while adhering to the Ministry of Education (MoE) guidelines and laws. Schools need a clear understanding of a) available technology; b) the meaning of a digitally capable organization; c) which self-evaluation tools to include when developing an improvement strategy (Costa et al., 2021; Chapman and Sammons, 2013; Antoniou et al., 2016); and d) how school leaders and administrators can support teachers in offering quality education for all, using digital tools. Teachers must be equipped with all necessary knowledge and skills to guide the next generation to embrace and achieve their goals. They need to develop their knowledge and skills in digital teaching practices and inclusive education. Thus, it is essential for teachers to participate in pre-service and in-service training opportunities that support their development of digital learning competencies. This training would focus on the initial preparation of digital pedagogic practices with an inclusive approach and include digital training opportunities directly relevant to teaching needs in classrooms and beyond. Ultimately, ongoing and informal pedagogical support for teachers' innovative and creative use of digital technologies is essential to addressing their daily needs and facilitating students' learning.

With the turn of the 21st century, a renewed focus emerged on teacher professionalism as key to education reform. Researchers in the field identified improving teaching practice as the fundamental factor for students' achievement.² Currently, the ultimate goal of education governance is to build a school system that simultaneously operates according to the law, allows autonomy and engages other stakeholders in the society (Fan and Popkewitz, 2020). This goal recognizes the need to consider the heterogeneity and inequality among schools, as well as the variations in and across schools, to respond to institutional demands and institute change (Chapman, 2019). The modern institutionalized education system has given rise to many different organizational systems in schools. There is participation by many different stakeholders, which is important for school improvement and effectiveness (Chinas, 2021). Developing an online CoP would support the enrichment of professional experience and the distribution of professional knowledge across educators and institutions. Likewise, the CoP would offer educators the autonomy to develop collaborations that boost constructive engagement and reflection in ways that allow a greater impact on teaching and learning.

Similarly, teachers need to not only feel accountable but also empowered to act as leaders. These factors foster ownership of the teaching and learning processes, which improves teachers' practice and encourages them to maintain continuous professional development. This process allows pedagogic autonomy in using technology and engagement within and across schools with all relevant stakeholders. Professional autonomy gives teachers the freedom not to do what they think or feel is right in a given situation. Instead, it empowers them to do what they know is right based on their pedagogic knowledge and experience. To develop this autonomy in a century where digital technologies are rapidly transforming teaching and learning in formal education, educators need to understand and grasp the pedagogical use of digital technologies. Therefore, all members of every educational institution must develop digital literacy (Ottestad and Guomundsdottir, 2018; Rogers, 2014; Skryabin et al., 2015; Costa et al., 2021). These skills will allow them to engage in career-long competence development for inclusion and promote a deeper understanding of quality education, diversity, innovation, autonomy and equity (European Agency for Special Needs and Inclusive Education, 2020). Additionally, organizational communication will be improved across all parties and levels.

² For further information, please see: Education Commission: *Transforming the Education workforce: Learning Teams for a Learning Generation*, 2019 <https://educationcommission.org/wp-content/uploads/2019/09/Transforming-the-Education-Workforce-Executive-Summary.pdf>

The added value of the EDC Framework

The EDC framework is the result of research following a needs assessment across five countries from the Western Balkans (Montenegro, Bosnia and Herzegovina, Kosovo, Serbia, and North Macedonia) and then expanding it to the rest of the region in Europe and Central Asia. This approach included an initial literature review, discussions with experts on local, European and international levels, as well as the synthesis of existing European and international frameworks (e.g. Redecker, 2017; UNESCO, 2018; European Agency for Special Needs and Inclusive Education, 2015; European Agency for Development in Special Needs Education, 2013).

The proposed framework does not intend to undermine or question the validity of similar models. The EDC Framework provides a basis for support to the national stakeholders while developing educational policy across primary and secondary education as well as it builds on existing knowledge, and it embraces diversity, inclusion and equity. with a special focus on communication. EDC Framework can offer common grounds for constructive dialogue while designing new teaching approaches, promoting educators' professional development and while supporting the debate for continuous change and improvement in the field of digital education. Its special focus is on communication within an organisation and across all stakeholders. With the help of digital technologies educators and schools can share information and increase communication with learners, parents, colleagues, the local community and other stakeholders. Investing in communication can have a powerful impact on the efficacy of a school. For example, at student level it can improve academic achievement (Helling, 1996), it can develop a positive attitude towards learning, it empowers the feeling of confidence and enhances the relationship among parents, teachers, and other stakeholders (Lupi and

Tong, 2001; McDermott and Rothenberg, 2001). Also, at a school level the way an organization communicates (or does not communicate) with the target audience has a pivotal effect on the outcome of efforts as well as on the organizational culture. There are internal, external and personal forms of communication which can benefit the education organization in different ways. For example, there is a direct effect on leadership style and cooperation, it reinforces trust and commitment between different stakeholders (Adams & Christenson, 2000) and it encourages higher and realistic parental expectations (Drake, 2000; James et al., 2001).

The amalgamation of existing frameworks, models and approaches has led to recommendations on specific training modules and tools to help educators keep pace with digital technological transformation while embracing inclusion and diversity to respond to the 'what' and 'how' questions that can nurture such competencies in the four suggested areas (see Figure 1). Examples and tools are available to help assess the current situation in education systems, schools and teachers' skills (for example, SELFIE³ and TPACK⁴ questionnaires) and suggest ways forward with ready-made training modules. The resources help educators understand how to develop such competencies at the policy, school and classroom levels. Worth noting is that the sheer existence of digital technology does not ensure its usefulness for quality inclusive learning. Teachers must incorporate this technology competently, using devices appropriately and effectively to ensure greater inclusion. Assistive technology can support various marginalized learner groups; for example, lower-attaining students, girls in certain contexts, minority language learners, or learners from low-income households.⁵

³ For more information, please see: European Commission, 'European Education Area: quality education and training for all', n.d. https://ec.europa.eu/education/schools-go-digital_en

⁴ For more information, please see: TPACKorg, 'Assessing teachers' TPACK' 2021, <https://matt-koehler.com/tpack2/assessing-teachers-tpack/>

⁵ Digital technology for inclusion embraces any technology use that enables all learners to access quality education designed to anticipate and respond to their diverse needs. It supports learning in inclusive environments while maintaining high learning standards for all. Such technology may include mainstream solutions commercially available to learners, such as laptops, tablets and mobile phones. It can also include Internet use, software and online communities. Digital technology also comprises any kind of assistive technology; i.e. any technology that allows learners with disabilities to use digital technology, makes their computer use more efficient or enables them to access online information. When this report refers to assistive technologies, the intended meaning is 'equipment and software that are used to maintain or improve the functional capabilities of a person with a disability' (Doyle and Robson, 2002, p. 44). Assistive technology is often associated with high-tech systems such as speech-recognition software, but it can include low-tech solutions such as armrests or wrist guards (Banes and Seale, 2002, p. 2). Thus, the focus is to bridge the 'access gap' between the teaching material and students.

Who is this Framework aimed at?

This document can be used as a stand-alone aid for:

- Policymakers in making decisions about the type of pre- and in-service teacher training/professional development needed to support the digitalization of the education system; b) designing curricula and identifying priorities for teacher education programmes; c) reshaping the school environment and offering the relevant infrastructure, tools and training for lifelong learning processes; and d) student transformation into active participants and co-agents with teachers who have an active role in shaping their educational environment (in a physical classroom or an online learning space);
- School leaders and administrators in a) self-assessing readiness, risks, needs, strengths and barriers for education's digital transition; b) prioritizing and selecting professional development courses for teachers; c) adequately preparing a teacher to respond to the needs of 21st-century learning;
 - d) connecting them with CoP for professional engagement, building collaborations, connecting with professional networks and facilitating CPD; and e) establishing a school culture that is engaged in digital pedagogies and encourages tech adoption and integration in the classroom;
- Teachers to a) align their understanding of their professional responsibilities and professional profile with those required for quality, inclusive teaching in the 21st century; b) support learners in discovering their individualized learning paths; c) devote themselves to a lifelong learning process to keep updated with technological advancement in education; and d) maintain communication with all stakeholders, e.g. informing them about school events, providing them with resources, supporting families with matters related to their children's education and sharing news on students' progress.



Section 1: Educators' Digital Competence Framework – In Brief

1.1 Introduction

As described previously, countries can use the EDC framework as a tool for answering the 'what' and 'how' questions while discussing, adapting and developing their data collection on educators' needs. Likewise, they can identify opportunities for CPD and teaching improvement to respond to SDG4 aims and focus. The framework considers each country's infrastructures for a) inclusive digital learning for promoting equity, b) access to digital learning as a prerogative, c) training of educational staff, d) continuous support of educators, and e) ways to enhance organizational communication. The framework has the potential for further development within individual country contexts to:

- ensure educators are supported in the process of developing professional knowledge;

- provide support to educators and students;
- provide a CoP and reflect on the digital ecosystem development levels, as well as present a short-, medium- and long-term road map for teacher professional development. These initiatives would support ongoing inclusive digital learning and enhance collaborative professionalism among teachers;
- ensure educators can share knowledge and support effective organizational communication.

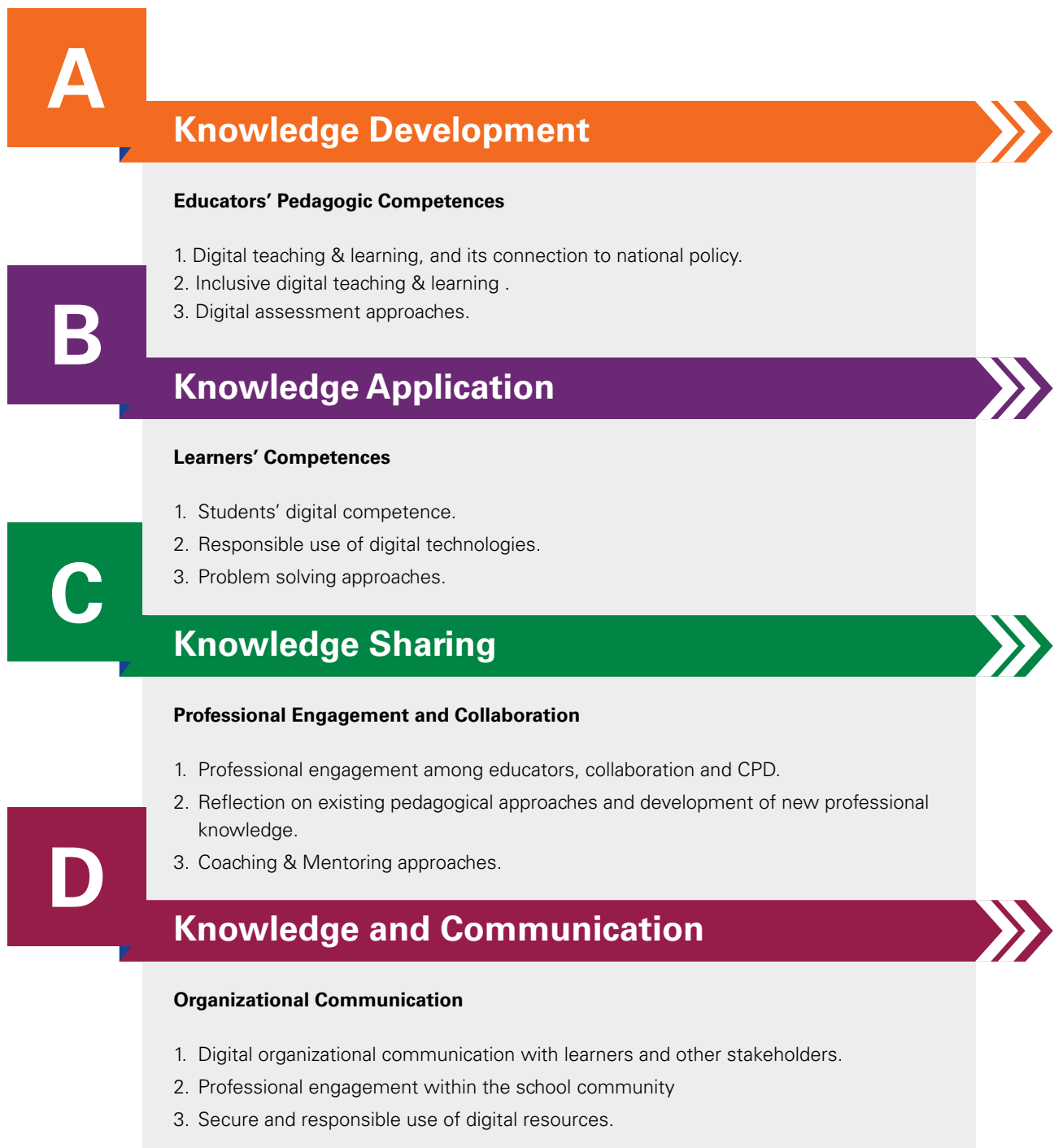
This section offers a short presentation of the EDC framework and introduces the four primary competency areas educators must develop in order to offer quality education to all learners.



1.2 Proposed EDC Framework in brief

The proposed EDC framework captures and describes teachers' specific digital competencies. It is divided into four main areas (see Figure 1) and presents the digital competencies that educators need for capturing the potential of digital technologies to enhance, support and transform inclusive education.

Figure 1: EDC Framework



1.2.1 Knowledge development – educators' pedagogic skills

Digital technologies are rapidly transforming teaching and learning. They demand a significantly different set of skills and competencies to function effectively at work and respond to 21st-century demands. Thus, new competencies and skills are required for accessing, evaluating and organizing information in digital environments, as well as new knowledge for the creation of new ideas. Educators are provided with a wealth of digital resources to:

- identify key national policies and understand how they influence their teaching practice;
- critique national and institutional policies and suggest revisions and improvements that will impact inclusive education;
- understand the ways to link curriculum standards with technology use in education to support students' learning;
- select digital resources and use them to offer guidance to learners;
- search, plan and integrate digital tools and materials to enhance teaching. Educators need to learn how these digital environments and resources can improve and affect their teaching practice and the learning experience. Additionally, they need to understand the reasons for using various inclusive pedagogic approaches and how technology use is consistent with these approaches and core beliefs about teaching and learning;
- understand how to incorporate learner-centred approaches and collaborative learning techniques to ensure multidisciplinary curriculum standards. Teachers need to enhance their competence in integrating technology, designing and planning processes and implementing these initiatives with an inclusive approach to different parts of their teaching;
- guide students in developing self-regulated learning skills in learner-centred and collaborative settings. Educators need to transform themselves into mentors and guides for learners as they move towards a more self-regulated, collaborative and autonomous learning process;
- expand their views on inclusive learning approaches. Teachers must address learners' diverse learning needs by letting them advance at different stages and speeds. The students create their learning pathways, while the teachers carefully scaffold their learning;
- discover self-assessment techniques and use formative and summative assessment. Discovering the different assessment strategies can assist in the selected approach's diversity and suitability. Teachers must understand the strategies around formative assessment to offer students evidence on learner activity, performance and progress. They use these strategies to provide constructive feedback to support learners' autonomous and self-regulated learning approach processes.

1.2.2 Knowledge application – learners' skills

One of the key points about the use of digital technology in education is that teachers must facilitate learners' digital competence and empower them through the ownership of their learning. To achieve this aim, teachers must learn how to accomplish the following essential steps:

- Facilitate students' digital competencies by incorporating learning activities, assignments and assessments. This approach encourages learners to articulate needs and resources in digital environments and recall, understand, process, apply, analyse, interpret and critically evaluate information and its reliability. Bloom et al. (1956) explained that this process guides students to innovate and develop new knowledge (factual, conceptual, procedural and metacognitive).
- Develop a pedagogical approach that encourages learners to use digital technologies effectively for communication, collaboration and community participation. These aims ensure accessibility to available learning resources and offer activities for all learners, even in low-resource environments.
- Develop learning material and apply teaching practices that assist learners in expressing themselves by creating digital content in different formats.
- Ensure learners' safe ICT use.
- Ensure learners can identify and solve technical problems or transfer technological knowledge creatively to new situations.

1.2.3 Knowledge sharing – communities of practice (CoP)

Digital technologies can offer educators online environments to develop collaborative professionalism. Accordingly, educators can reflect on their knowledge and experience and transform teaching and learning. Collaborative professionalism involves deep discussions, constructive feedback and continuous collaborative inquiry embedded in the school's culture and life. Educators actively care for and maintain solidarity as fellow professionals while pursuing their challenging work in response to the cultures of their learners, society and themselves (O'Connor and Hargreaves, 2018).

Educators will develop their competencies in:

- engaging with other educators nationally and internationally to share knowledge, exchange ideas, communicate challenges and discover new methods of professional development;
- using collaborative online networks to maintain well-being;
- using online environments to reflect, explore pedagogic practices and develop their professional knowledge;
- using online networks to discover new training and professional development opportunities;
- discovering new ways to search for, adapt or create subject content;
- using the CoP to co-design and co-construct new inclusive pedagogic approaches;
- using CoP to seek assistance, receive guidance, become a mentor and help others develop their digital and inclusive pedagogical skills.

1.2.4 Knowledge and communication – organizational communication with all stakeholders

Digital technologies can assist teachers and schools with distributing information and enhancing communication with learners, parents, colleagues and third parties. For these benefits to happen, educators need to contribute to developing and using technology to improve their communication with their learners and other stakeholders, as well as to manage, protect and share digital resources. Educators will develop their competencies in:

- engaging with parents via phone calls, emails, online platforms, etc.;
- communicating home-learning materials;
- guiding on how students and parents could use learning materials remotely;
- sharing organizational procedures with parents and students;
- informing students and parents on learning progress;
- sharing material, resources and information digitally;
- using a broad range of educational resources, inclusive learning tools and content to support students in all learning steps;
- developing leadership skills, improving organizational communication and designing a digital technology strategy;
- discovering students' cultural and social backgrounds and how interpersonal relationships affect their achievement;
- managing, organizing, sharing and protecting sensitive digital content.

Section 2: Educators' Digital Competence Framework – In Detail

2.1 Introduction

Each category and subcategory of the framework comprises smaller components. The following explanations present the meaning of these components in the framework. These explanations are intended to indicate the key principles and concepts relevant to each component and are not meant to be comprehensive.

2.2. Knowledge development – educators' pedagogic skills

The following areas of knowledge and competence are grouped under the heading 'Educators' digital pedagogic skills'. These areas are important because they provide a conceptual and theoretical basis on which educators consciously or unconsciously develop their personal understandings of digital teaching practices and learning.



Table 1: Educators' digital pedagogic competencies

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
1. Digital teaching and learning and their connection to national policy	1.1 Understand the ways their teaching practice aligns with the national policy.	1.1.1 Identify key national and ICT policies and list key points that influence their practice. 1.1.2 Critique national and institutional education policies and suggest revisions, design improvements and consider the impact of these changes. 1.1.3 Identify the broader system of culture and policies of educational institutions at all levels that affect inclusive education.
	1.2 Understand how they can link curriculum standards with the use of technology in education to support students' learning.	1.2.1 Consider the specific learning objective, context, pedagogical approach and learner group when designing digital resources and planning their use. 1.2.2 Identify software packages, applications and open educational resources (OER) that match specific curriculum standards. 1.2.3 Create or co-create new digital educational resources.
2. Digital teaching and learning with an inclusive approach	2.1 Search, plan and integrate various digital tools and resources to enhance the effectiveness of an inclusive teaching practice.	2.1.1 Plan for and integrate digital devices, tools and resources in the teaching process to enhance teaching intervention effectiveness. 2.1.2 Design and manage digital teaching strategies for online and classroom-based learning. 2.1.3 Experiment with and develop new formats and pedagogical methods for instruction. 2.1.3 Value the learners' diversity and make appropriate choices to support specific teaching and learning methodologies based on their needs and competencies. 2.1.4 Understand how to blend various digital tools and resources to create an integrated digital learning environment that supports students' higher-order thinking and problem-solving skills. 2.1.5 Discover presentation software and digital resources to support the teaching practice. 2.1.6 Develop text documents using Microsoft Word and prepare presentations using Microsoft PowerPoint.
	2.2 Understand the ways to incorporate learner-centred and collaborative learning to ensure mastery of multidisciplinary curriculum standards.	2.2.1 Analyse the curriculum standards to identify opportunities where students can master skills, such as problem-solving, critical thinking, analysis, collaboration, communication and understanding others' points of view. Additionally, develop the ability to use ICT, which is a key tool for handling information and complex cognitive skills, considering learning styles, abilities and sociolinguistic skills.
	2.3 Select digital resources.	2.3.1 Identify, assess and select digital resources for teaching and learning. 2.3.2 Identify safe and accessible ways of using ICT in education. 2.3.3 Consider specific learning objectives, context, pedagogical approaches, and learner groups when selecting digital resources and planning their use.

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
	2.4 Use digital technologies to offer guidance to learners.	<p>2.4.1 Understand how to utilize digital tools and services to enhance interaction with learners – individually and collectively – inside and outside the learning session.</p> <p>2.4.2 Use digital technologies to offer timely and targeted guidance and assistance.</p> <p>2.4.3 Experiment with and develop new formats for offering guidance and support.</p> <p>2.4.4 Guide students to make logical ICT choices and acquire the appropriate skills to search for, manage, analyse, evaluate and use information relevant to the curriculum.</p>
		<p>2.4.5 Guide students to make appropriate ICT choices to achieve curriculum standards that support reasoning, planning, reflection and knowledge building.</p> <p>2.4.6 Guide students to use ICT to achieve curriculum standards that support the development of communication and collaboration skills.</p> <p>2.4.7 Help students develop assessment strategies to test their understanding of key subject matter and ICT skills, including peer assessment.</p> <p>2.4.8 Blend various digital tools and resources to create an integrated digital learning environment that supports all students' higher-order thinking and problem-solving.</p>
	2.5 Guide students in developing self-regulated learning skills in a student-centred and collaborative learning setting.	<p>2.5.1 Explicitly model their reasoning, problem-solving and knowledge creation while teaching students.</p> <p>2.5.2 Design online materials and activities that engage students in collaborative, problem-solving research.</p> <p>2.5.3 Help students design project plans and activities that engage them in collaborative, problem-solving research or artistic creation.</p> <p>2.5.4 Help students create digital media resources that support their learning and interaction with other audiences.</p> <p>2.5.5 Help students reflect on their learning and provide evidence of progress, share insights and produce creative results.</p>
	2.6 Utilize inclusive teaching approaches.	<p>2.6.1 Understand inclusive education concepts.</p> <p>2.6.2 Expand their view of learner differences.</p> <p>2.6.3 Promote the academic, social and emotional learning of all students.</p> <p>2.6.4 Work with other educational professionals from a range of different disciplines by creating a multi-agency working model.</p>
	2.7 Employ self-assessment techniques.	2.7.1 The online tools to help primary and secondary educators reflect on how they use digital technologies in their professional practice and the ways to further improve their inclusive approach.

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
3. Digital assessment approaches	3.1 Use formative and summative assessments.	3.1.1 Discover the ways digital assessment tools can enhance formative and summative assessment strategies and monitor development. 3.1.2 Use digital assessment tools to monitor and improve learning. 3.1.3 Discover the use and variety of digital and non-digital assessment formats and be aware of their benefits and shortcomings based on learners' strengths and limitations. 3.1.4 Be a critical user of digital assessment tools and adapt strategies accordingly for personalized learning in inclusive settings.

2.3 Knowledge application – learners' skills

The following areas of knowledge and competence are grouped under the heading 'Learners' skills'. These areas are important because they provide a conceptual

and theoretical basis on which educators develop their personal understandings on ways to facilitate students' digital competence and responsible ICT use.

Table 2: Learners' competencies

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
1. Students' digital competence	1.1 Incorporate learning activities, assignments and assessments that encourage learners to articulate needs, identify resources in digital environments, as well as organize, process, analyse, interpret and critically evaluate information and its reliability. 1.2 Develop a pedagogical approach that encourages learners to effectively use digital technologies for communication, collaboration and community participation.	1.1.1 Incorporate learning activities that require learners to capture, communicate and respond to learning needs, information and content via digital environments. 1.1.2 Understand the ways learners can create and inform online search strategies, depending on the quality of the information found. 1.1.3 Assist learners in understanding how to organize, analyse, compare and critically evaluate the credibility and reliability of data and digital content sources. 1.1.4 Teach learners how to organize, store and retrieve data, information, and content in digital environments. 1.1.5 Teach learners how to organize and process information in a structured environment. 1.2.1 Present learners with ways of interacting through online environments. 1.2.2 Assist learners in understanding how to communicate for a given context and share data and digital content with others via digital technologies. 1.2.3 Help learners understand the significance of appropriate referencing. 1.2.4 Guide learners in ways to use digital technologies for collaborative purposes. 1.2.5 Understand how learners can use digital technologies for co-construction and co-creation of resources and knowledge.

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
		<p>1.2.6 Explain to users the ways to deal with data produced through several digital technologies, environments and services.</p> <p>1.2.7 Assist in developing an understanding of how to offer support to vulnerable learners and guidance or resources for learners' ICT usage.</p>
	<p>1.3 Develop learning material and apply teaching practices that assist learners in expressing themselves by creating digital content in different formats.</p>	<p>1.3.1 Develop material that encourages learners to create, edit and improve digital content in different formats.</p> <p>1.3.2 Encourage learners to express themselves through digital means.</p> <p>1.3.3 Understand how to guide learners in creating original knowledge and content, as well as modifying, refining, improving and integrating content into an existing body of knowledge.</p> <p>1.3.4 Encourage learners to plan and develop a sequence of understandable instructions to solve a given problem or perform a specific task.</p> <p>1.3.5 Enable learners to seek opportunities and design self-development strategies to keep up to date with digital evolution and how it can support their needs.</p>
<p>2. Responsible use of digital technologies</p>	<p>2.1 Ensure learners' safe ICT use.</p>	<p>2.1.1 Understand how to develop learners' skills (especially vulnerable learners) on Internet use and misuse (e.g. cyberbullying) to avoid risks and threats and protect their physical and psychological well-being.</p> <p>2.1.2 Explain to learners the ways to adapt communication strategies to specific audiences.</p> <p>2.1.3 Describe to learners how to protect their reputations, personal data and privacy in digital environments.</p> <p>2.1.4 Help learners understand how copyright and licences apply to data, information and digital content.</p> <p>2.1.5 Enable learners to protect their work and digital content, as well as understand risks and threats in digital environments.</p> <p>2.1.6 Describe to learners how to share personal information while protecting themselves and others from damage.</p> <p>2.1.7 Enable learners to realize how digital technologies can affect social well-being and social inclusion.</p>
<p>3. Problem-solving approaches'</p>	<p>3.1 Enable learners to identify and solve technical problems or transfer technological knowledge to new situations creatively.</p>	<p>3.1.1 Enable learners to identify technical problems when operating devices, using digital environments and solving problems.</p> <p>3.1.2 Assist learners in identifying, evaluating, selecting and using digital technologies.</p> <p>3.1.3 Teach learners how to adjust digital environments to personal needs.</p> <p>3.1.4 Develop learners' self-assessment strategies to understand the areas that may require them to improve or update their skills.</p>

2.4 Knowledge sharing – communities of practice

The following areas of knowledge and competence are grouped under the heading 'Communities of practice'. These areas are important because they provide a conceptual and theoretical basis for educators to understand how to encourage professional engagement and interaction to collaborate more deeply and achieve greater impact.

Table 3: Skills Linked to Communities of Practice

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
1. Professional engagement, collaboration and CPD	1.1 Engage with other educators to share knowledge, exchange ideas, communicate challenges and discover new ways for professional development.	1.1.1 Use digital technology to collaborate with other colleagues locally and internationally on specific content or tasks. 1.1.2 Use digital technology to share knowledge, exchange ideas, discuss challenges, and distribute resources and materials. 1.1.3 Use the communities of practices to communicate their professional experience with colleagues and co-construct new professional content. 1.1.4 Use professional collaborative networks to support and maintain well-being. 1.1.5 Use professional collaborative networks to discover new training and professional development opportunities. 1.1.6 Use professional collaborative networks to update subject-specific knowledge and skills.
2. Reflection on existing pedagogical approaches and development of new professional knowledge	2.1 Use online environments to reflect and explore pedagogic practices and develop professional knowledge.	2.1.1 Use professional collaborative networks to explore and reflect on new pedagogic practices and methods. 2.1.2 Use professional collaborative networks to critically reflect on personal pedagogic inclusive practices. 2.1.3 Use professional collaborative networks to co-design new pedagogic approaches and practices. 2.1.4 Use professional collaborative networks to identify areas for further professional improvement. 2.1.5 Use professional collaborative networks to reflect on educational policies and provide critical feedback.
3. Coaching and Mentoring approaches	3.1 Use CoP to receive guidance and offer assistance to others.	3.1.1 Use professional collaborative networks to seek help from others and maintain high-quality teaching practices. 3.1.2 Use professional collaborative networks to model and help others develop their digital and inclusive pedagogical skills.

2.5 Knowledge and communication – organizational communication

The following areas of knowledge and competence are grouped under the heading 'Organizational communication'. They are important because they provide a conceptual and theoretical basis on which educators develop their personal understanding of how to improve their communication with learners and other stakeholders and ways to use digital resources and materials securely and responsibly.

Table 4: Skills related to organizational communication

Area	Competency (What can educators do?)	Objective (How can educators nurture the competencies?)
1. Digital organizational communication with learners and other stakeholders	1.1 Contribute to developing and using technology to improve communication with learners and other stakeholders.	1.1.1 Understand the benefits of sharing organizational procedures (e.g. rules, registration dates, events, appointments) via technology. 1.1.2 Know how to use digital technologies or the organization's website to communicate with learners, parents, staff members, and other stakeholders to develop effective ongoing dialogue and consultation involving all learners. 1.1.3 Assist in improving organizational communication strategies and providing equitable support to all learners. 1.1.4 Develop a leadership role in developing a digital technology strategy to transform the school into a learning organization.
2. Professional engagement within the school community	2.1 Contribute to improve communication and collaboration with learners, guardians, and other stakeholders within the school community	2.1.1 Comprehend the benefits of providing extensive access to broader educational resources, inclusive learning tools, content and support for learners and their families in all formal and informal learning situations. 2.1.2 Inform learners and parents of progress. 2.1.3 Understand the ways of sharing learning resources and information. 2.1.4 Learn the cultural and social backgrounds and perspectives of parents and families. 2.1.5 Comprehend the ways interpersonal relationships affect the achievement of learning goals.
3. Secure and responsible use of digital resources	3.1 Manage, organize, protect and share digital resources.	3.1.1 Organize digital content and make it available to learners, parents and other educators. 3.1.2 Effectively protect sensitive digital content. 3.1.3 Respect and adhere to privacy and copyright rules. 3.1.4 Understand the use and creation of open licences and open educational resources, including their attribution.

Glossary

This list includes simple definitions of technical terms used in this publication.¹

Accessibility – the degree to which an environment, service or product allows access by as many people as possible; particularly, persons with disabilities.

Assistive technology – technology used to increase, maintain or improve functional capabilities of persons with disabilities.

Attitudes – feelings underpinned by values and beliefs that influence behaviour (UNESCO IBE, 2013[2]). Attitudes reflect a disposition to react to something or someone positively or negatively and can vary according to specific contexts and situations (Haste, 2018[1]).

Capacity-building – increasing people's abilities (usually their ability to conduct their work) by improving their knowledge and skills.

Collaborative professionalism – Collaborative professionalism refers to the ways teachers and other educators transform teaching and learning together. It aims to guide all students to develop fulfilling lives of meaning, purpose and success. It is evidence-informed, but not data-driven, and it involves deep and sometimes demanding dialogue, candid but constructive feedback, and continuous collaborative inquiry. Collaborative inquiry is embedded in the school's culture and life, where educators actively care for and maintain solidarity as fellow-professionals while pursuing their challenging work in response to the cultures of their students, the society and themselves (O'Connor and Hargreaves, 2018).

Competency – the skills, knowledge and understanding needed to perform something successfully to a professional standard.

Communities of practice (CoP) – groups that nurture diversity and take advantage of their many knowledge forms, from indigenous, local wisdom to technoscientific knowledge. In this context, CoPs are groups of educators who share their concerns or passion for their work and learn how to improve through regular interaction (Wenger-Trayner, 2015). In this CoP, educators can

acquire information and transform it into knowledge and understanding, which empowers them to enhance their work.

Digital literacy – the ability to use digital technology, communication tools or networks to locate, evaluate, use and create information. Digital literacy also refers to the ability to understand and use information in multiple formats from a broad range of sources when presented via computers. Additionally, it describes a person's ability to perform tasks effectively in a digital environment.

Digital technologies – digital content, digital devices, digital resources.

Digital tools – programs, websites or online resources that can make tasks easier to complete.

e-portfolio (also referred to as a digital/online portfolio) – a collection of electronic evidence created and assembled by a student, including text, electronic files, images, multimedia and blog posts.

e-safety – the safe and responsible use of technology, including the use of the Internet and communication using electronic media: also referred to as 'Internet safety'.

Flipped classroom – a blended learning strategy that mixes face-to-face interaction with technology; the traditional learning environment is reversed, with students first learning content at home through videos or digital content and active learning in the classroom.

Formative assessment (also termed assessment for learning) – an assessment that helps students learn (shaping or forming their learning) by showing what they have not understood, what they might need to repeat and their readiness to move to the next stage (see also summative assessment).

¹ Several definitions were adapted from UNESCO, 2018.

ICT – information and communications technology, including computers, mobile phones, digital cameras, electronic instruments and data recorders, radio, television, computer networks, satellite systems or almost anything that handles and communicates information electronically. ICT includes both hardware (the equipment) and software (the equipment's computer programs).

Inclusive – accommodating all people and ensuring that information and ICT use is accessible.

Knowledge society – a society that nurtures its diversity and takes advantage of its many knowledge forms. This concept emphasizes that knowledge is not only produced in a scientific laboratory but also represented in the accumulated experience of humankind in all nations.

Learning management system (LMS) – a software application or web-based technology used to plan, implement and assess a learning process. It allows teachers to create and deliver content, monitor student participation and assess student performance.

Learning organizations – organizations, such as a school or a company, that embrace the idea of lifelong learning for everyone. Thus, teachers continue to learn more about the subjects they teach and how to teach them.

Learning society – a society that embraces the idea that everyone should keep learning throughout life.

Open educational resources (OER) – teaching and educational resources that are openly licensed and available free of charge.

Pedagogy – teaching methods, styles and techniques, and how the teacher teaches. It can also simply mean teaching or the study of teaching.

Professional learning – the additional skills and knowledge that teachers acquire in their work beyond what they learned in order to become qualified teachers. Teachers can gain this additional knowledge and these skills in various ways: courses, programmes, conferences, seminars, events, workshops, from colleagues, through experience and experimentation, personal research, reflection, and through membership in professional networks and associations. The term is sometimes referred to as 'professional development' or 'continuing professional development (CPD)'.

Summative assessment – an assessment that sums up what the student has achieved and their learning level. The assessment determines if students qualify for a certificate or award or a place at university or a particular job. Summative assessment usually occurs at the end of a course of study and produces information used by third parties, such as employers or admissions officers. It contrasts with formative assessment (see the definition above). The difference between the two types of assessment lies in their purpose rather than the format of the test or exam. For example, a spelling test may be formative or summative depending on how the results are used.

Values – guiding principles that underpin what people believe to be important when making decisions in all areas of private and public life. Values determine what people prioritize when forming a judgement and what they strive for when seeking improvement (Haste, 2018).

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