ProFuturo

LEARNING AND TEACHING IN THE DIGITAL ERA:

REFERENCE FRAMEWORKS

In accordance with Organic Law 3/2007 of 22 March on effective gender equality, all nouns which, for the purposes of linguistic economy, are given in the male gender herein shall be understood as including both male and female genders.

LEARNING AND EDUCATING IN THE DIGITAL AGE

Education is one of the cornerstones for countries' socio-economic development, and technology and innovation are ways to take it everywhere. Accordingly, at ProFuturo we believe that digital education is one of the most powerful tools for transforming the world.

Our digital education programme was launched in 2016, in a challenging initiative shared by **Fundación Telefónica and "La Caixa" Foundation** to reduce the educational divide in the world by means of a proposal underpinned by technology and innovative teaching-learning experiences to bring quality digital education to children in vulnerable communities. In the last four years, our programme has benefited 11.5 million children and has trained over 400,000 teachers in 38 countries of Latin America, the Caribbean, Africa and Asia.

As the catalysts for learning and pivotal players in achieving meaningful change in education quality, teachers are at the core of the programme's success. The global and technological society of the 21st century needs digital teachers with specific competences to place technology at the service of the teaching model and to introduce it into the classroom with a view to boosting education quality. At ProFuturo, we focus on teacher training with a view to enhancing the way education harnesses technology.

The purpose of this document is to further our commitment to people who engage in lifelong learning. Especially to teachers, in their complex and paramount work that combines their own lifelong learning and the task of educating those who wish to learn in the digital age. The document presents a holistic view of the complex processes of learning and education, and incorporates new language in the description of the specific competences to help enhance these processes and strengthen the professional development of educators.

The **Global Framework of Competence for Learning in the Digital Age** (GFCLDA) and the **Global Framework of Competence for Education in the Digital Age** (GFCEDA) are living documents that can and must be adjusted to account for different social and national contexts. The idea is to provide a starting point for reflection among the educational community on what it means to learn and teach in the digital age, and on the pivotal role played by teachers in both processes.

I hope you find this work interesting and that, together, we can continue to contribute to it so that it becomes a reference document for our teachers.

Magdalena Brier
Managing Director of ProFuturo

TABLE OF CONTENTS

CONTENTS

INTRODUCTION

Learn

Educate

Learning and teaching are the two activities that most clearly define us as humans.

By means of learning and education, we are defined as individuals, and we also form part of myriad groups, societies and cultures that exert a decisive influence upon us and enable our development and growth: humans are social beings and learning and education are the gateway for our engagement in collective life.

In this connection, **learning and education are two profoundly interwoven, although not overlapping, terms**. On the one hand, today's individual has the opportunity and challenge of lifelong learning, not only to satisfy the innate curiosity of the human being, but also to be able to tackle with a guarantee of success the changing situations generated by the global and technological society of the 21st century. From this standpoint, **"learner" is currently a word applicable to any human being at any stage of their life**, whether childhood, youth, adult life or old age, in relation to the various social, professional or strictly personal activities they perform.

By extension, **an educator is a lifelong learner performing a specific task: to generate, accompany and facilitate learning processes**. Accordingly, the specific nature of educators, whether in formal or non-formal settings, makes them individuals who discharge two supplementary duties, lifelong learning and educating those who wish to learn, both of which require of the educators a specific competence beyond having themselves been educated or having learned.
Moreover, learning and educating in the digital age also means being aware of the complexity of both processes in the 21st century. The challenges to the environment and health, the quest for personal

and collective well-being, migratory flows and the awareness of diversity, changes in production methods or the search for employment, the impact of technology on all spheres of our lives, as well as scientific progress are all questions, among others, which subject learning and education to a constant need for regrouping and review.

Learning and educating are today radically more demanding and polysemous than in previous eras.

In particular, it is likely that few verbs have seen their meanings change so much in the 20th and 21st centuries as the verb *to learn*. What and how we learn has been expanded, what we learn for and with whom has diversified, and the number of tools, opportunities and places for learning have multiplied. In the information society, which is also the knowledge society, learning is an urgent need, a life experience rather than a simply cognitive exercise.

Furthermore, in an age in which it is possible to learn ubiquitously and permanently, educating is a verb that transcends the classroom and exceeds the already broad confines of the meaning of the verb *to teach*. Consequently, educational skills go beyond teaching skills or digital competences to tackle challenges that are not simply pedagogical or technological, but social and environmental, among others.

Accordingly, in this document we present a proposed approach to the complexity of learning and education in the digital age. The purpose of creating the Global Framework of Competence for Learning in the Digital Age and the Global Framework of Competence for Education in the Digital Age is to establish a holistic approach to the two most relevant processes for individuals and societies in the twenty first century, with the aim of providing a tool to analyse both learning and education for the individual and collective improvement of both processes.

Figure 1. Challenges of the Digital Age

DESIGN OF REFERENCE FRAMEWORKS

The Global Framework of Competence for Learning in the Digital Age (GFCLDA) and the Global Framework of Competence for Education in the Digital Age (GFCEDA) were designed with a dual logic in mind: on the one hand, the aim was to ensure that both are fully aligned with the international frameworks that are supposed to describe and define learning and teaching, as well as digital competence; on the other hand, both **the GFCLDA and the GFCEDA aspire to offer a novel, positive and complex approach to the learning process in the digital age.**

3 stages

As a result, the design process has entailed three clearly differentiated phases: firstly, a phase of reviewing the literature to map the most important frameworks in the international context; secondly, an ideation phase to synthesise the contributions of these frameworks and compile a new approach to competence for learning and educating in the digital age—an approach focusing on new language linked to the identities, roles, functions and practices performed by learners or educators over the course of their activity and development; and, lastly, both the GFCLDA and the GFCEDA have been scientifically validated by experts, stakeholders and users worldwide, with a particular presence of voices from Latin America, as well as having been used in a number of workshops by potential users of both Frameworks (teachers and advisors and teacher training advisors).

1 Review → **2** Ideation → **3** Validation

Figure 2. Design phases of the Reference Frameworks

In this connection, the GFCLDA and the GFCEDA are based on two fundamental knowledge sources.

Firstly, the main contributions from international reference frameworks are acknowledged, as evidenced by the related annexes, and aspects from various research projects and scientific publications are included that supplement the indications of the reference frameworks.

Secondly, both Frameworks incorporate contributions by experts and users of the Framework to ensure not only their scientific validity but also that both the GFCLDA and the GFCEDA include the knowledge and competence deriving from the experience of teachers, trainers, researchers and other potential users of both Frameworks worldwide.

Knowledge and experience

International frameworks
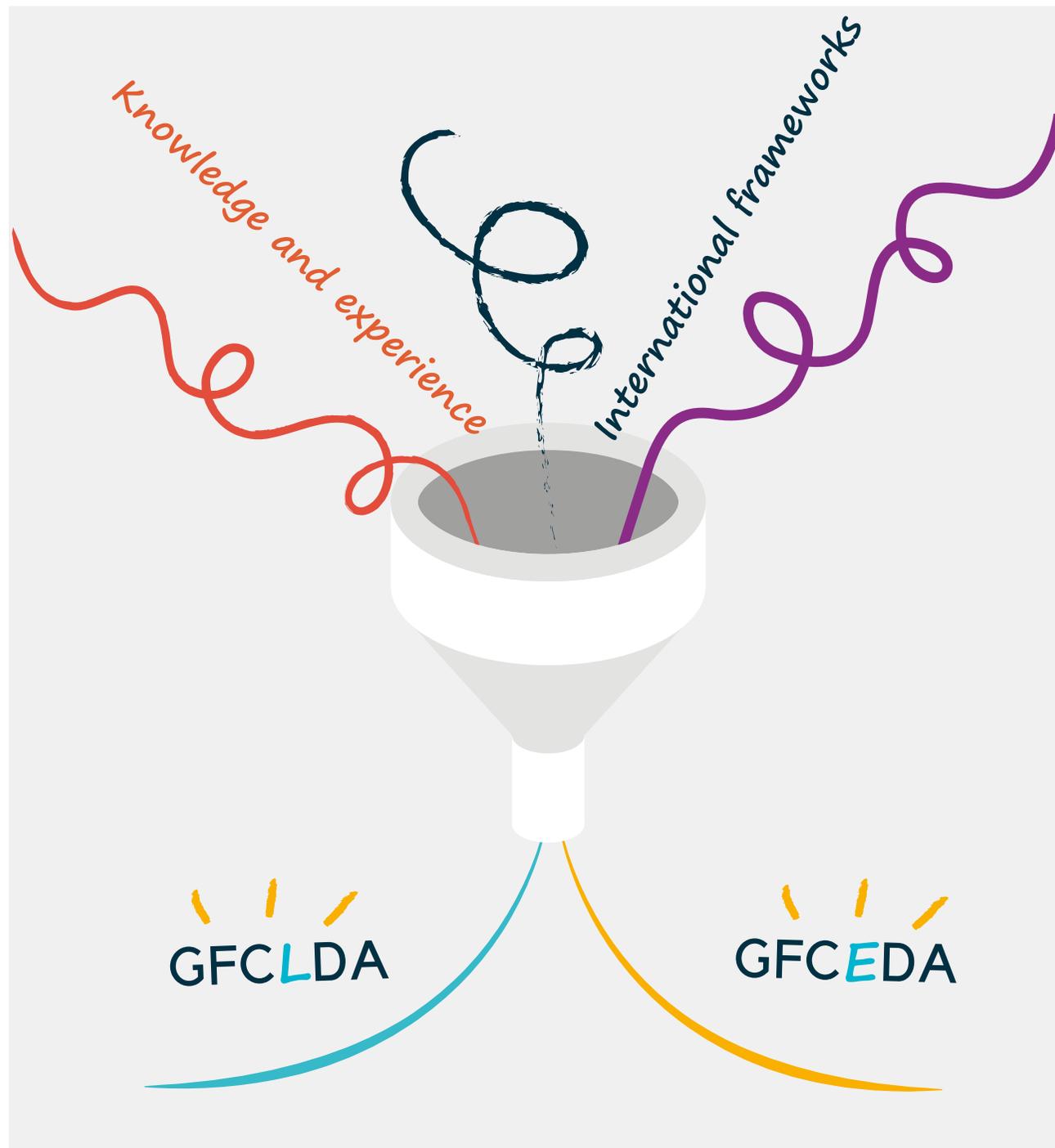
GFCLDA

GFCEDA

STRUCTURE OF THE GFCLDA AND THE GFCEDA:

A NEW LANGUAGE TO DESCRIBE COMPETENCES

Both the GFCLDA and the GFCEDA use **a new language to describe both competences**. Accordingly, the construction and use of the competences for learning and educating in the digital age are linked to three identities: in learning competence, these identifies are citizen identity, knowledge-building identity and connector identity; in educating competence, they are citizen identity, teacher identity and connector identity.

3 identities

As a citizen **In respect of knowledge** **As a connected person**
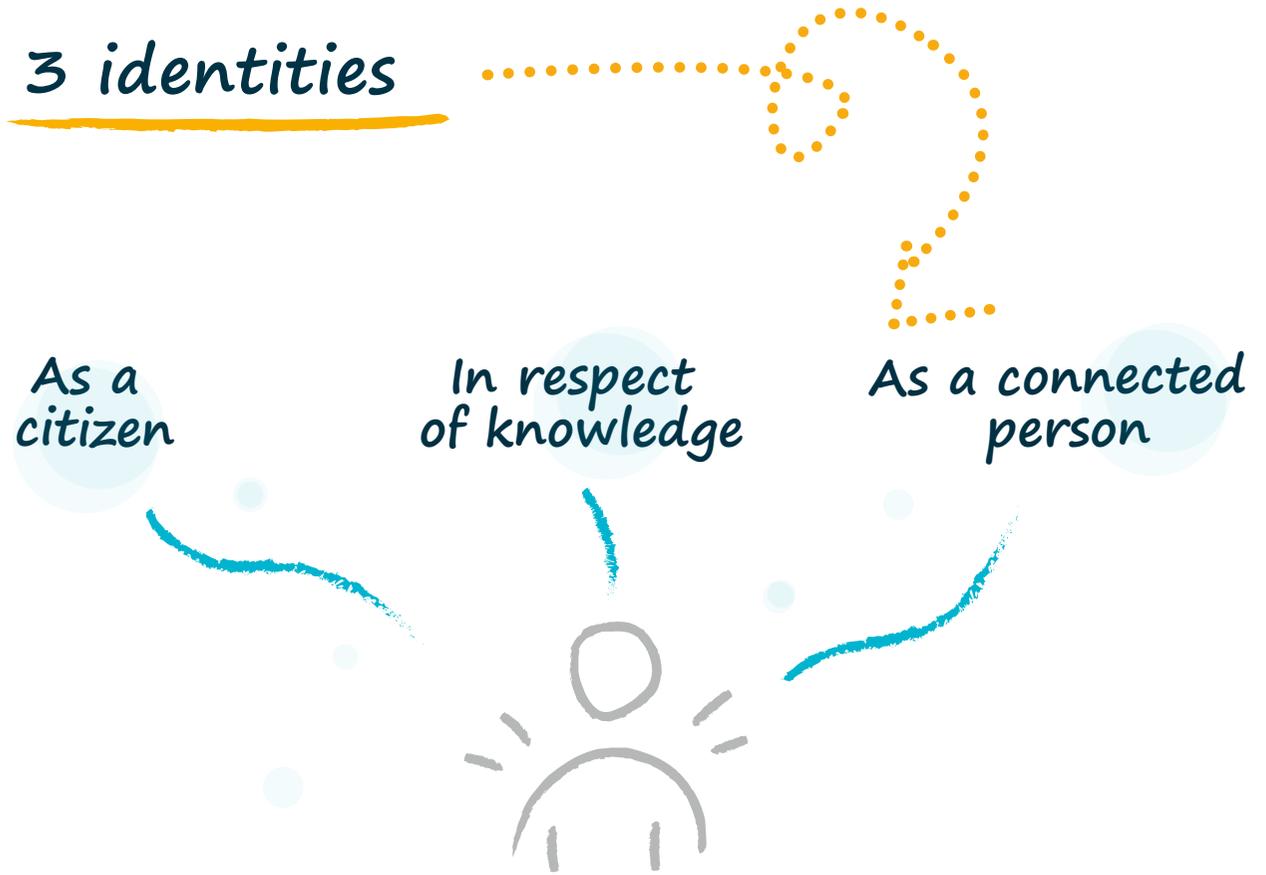
Figure 3. Identities

The use of these identities is an acknowledgement that **competence is a set of knowledge, skills and abilities linked to the various identities assumed by an individual in relation to the various social practices that individual undertakes**.

In this regard, both competence for learning and competence for educating feed the individual's actions over three aspects of their life: the individual as a citizen, the individual's approach to knowledge and the individual as a person in connection with other individuals, especially online.

Each of the three identities that enable the competences for learning or educating to be built are developed by means of a series of roles. These roles represent those that the individual takes on in specific situations relating to each identity.

Consequently, citizen identity links both the learner and the educator to environmental issues, the defence of human rights, or the quest for and preservation of their own health and that of others. In light of these challenges, the learner and the educator develop their role as engaged citizens, impacting on their citizen identity and on their competence for learning and educating.

Lastly, the roles present in each of the identities are not abstract descriptions of the individual's potential, but have rather been defined specifically as concrete functions and practices that take place over the lifetime of the learner or the educator. In this regard, both the GFCLDA and the GFCEDA were designed to be instruments for analysis and planning based on observation and reflection concerning each of the elements of the two Frameworks.

In short, the GFCLDA and the GFCEDA incorporate a new language into the description of competences so as to make both Frameworks useful tools for improving learning processes, education and the professional development of educators.

Structure of the Frameworks
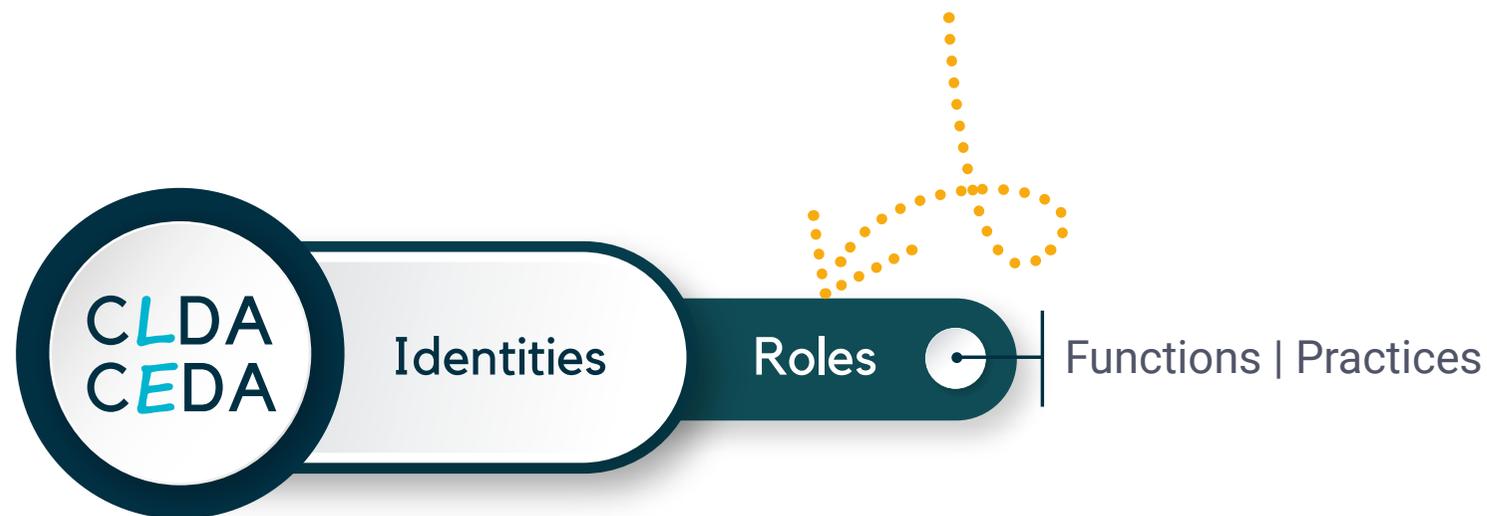
Figure 4. Structure of the Frameworks

CONTENTS

GLOBAL FRAMEWORK OF COMPETENCE FOR *LEARNING* IN THE DIGITAL AGE

This Global Framework of Competence for Learning in the Digital Age (GFCLDA) is aimed at fostering debate and reflection regarding the meaning and components of learning in the 21st century. Accordingly, the picture that is depicted is one of **lifelong learning, based on the interaction (immediate or by means of technology) with other people, and pivotal upon an image of learners as active agents**, not only in relation to their own development, but also in relation to the world.

The GFCLDA aims to respond holistically to the question of how to conduct learning in the digital age.

In other words, the GFCLDA is not a curricular design for regulated education, but an inquiry into the learning process itself, accepting the complexity of learning in the 21st century.

Accordingly, the GFCLDA is organised around three potential approaches to learning from the individual's standpoint; in other words, three identities in relation to learning: citizen identity, knowledge-building identity and connector identity.

In addition, these three identities point to various roles, functions and practices that enable us to understand the complexity of learning in the 21st century, as well as its dynamic, holistic and networked nature.

Global Framework of Competence for *Learning* in the Digital Age

Citizenship

Knowledge building

Connection

Figure 5. GCFLDA identities

In this regard, although each identity is broken down into roles, functions and practices, this should not lead us to a fragmented vision of learning activity. In other words, the learner does not opt explicitly for one or other identity, but rather one should think of the identities and their components as assets upon which the individual can rely to boost learning by various means and which, in any event, are implemented in specific situations, frequently partially and not necessarily exclusively.

Citizen identity

The first identity is citizen identity, which is linked to three components: active citizenship, agency and resilience.

The first role, that of active citizenship, links the individual to the world from an ethical perspective by means of processes of awareness, commitment, decision making and intervention on reality.

The second role defines the individual as an agent of their own learning through planning, control of the learning process and their own motivation to learn.

Lastly, the third role, through the functions of "overcoming adversity" and "tolerance of uncertainty", points to the concept of resilience, which implies a way to tackle issues that emerge during learning: enduring the impact of failure and error and being able to overcome them to learn efficiently.

Figure 6. GCFLDA: citizen identity

Knowledge-building identity

Secondly, individuals, in a learning context, implement their knowledge-building identity. This knowledge-building identity is comprised of three different roles: knowledge creation, multiple literacies and handling of learning skills. In the first case, the functions underlying the role of knowledge creation pose a cyclical process of searching and compiling information and building knowledge which, in turn, generates new learning opportunities. In the second case, individuals take part in various literacies which, in turn, provide a service to learning: linguistic, mathematical, scientific and technological, artistic, digital and media-data literacy. Lastly, the GFCLDA acknowledges the importance of three skill groups: firstly, physical skills (including skills linked to the body and its learning potential); secondly, socio-emotional skills needed to commence and continue learning; and, thirdly, cognitive and meta-cognitive skills linked to learning.

Figure 7. GCFLDA: knowledge-building identity

Connector identity

Finally, although there has always been contact with other individuals to boost learning and this is part of human nature, one of the main contributions of learning competence by technological development in the 21st century has been the expansion of opportunities of connecting with other world views and ways of life; in other words, with a huge variety of different people and situations. In this case, without sidelining factors such as agency or resilience, identity is developed by means of two interconnected roles: on the one hand, belonging and cooperation and, on the other hand, interaction with diversity. Accordingly, connector identity is not just learning in a network but rather a specific way of connecting by means of designing individual or group projects, appreciating diversity or empathy. In other words, **the goal is not only to connect; it is to connect in an ethical and engaged way**.

Figure 8. GCFLDA: connector identity

DESCRIPTION OF COMPETENCE FOR *LEARNING* IN THE DIGITAL AGE
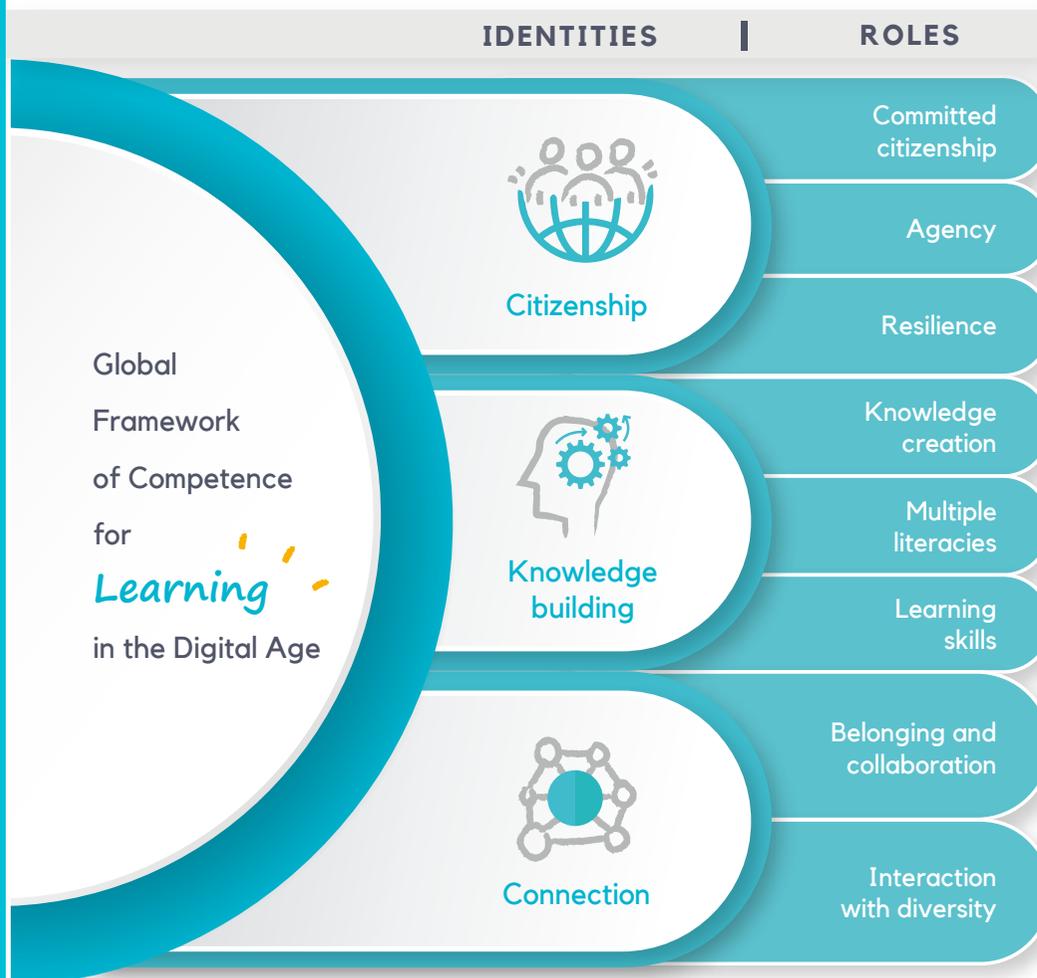
As we saw in the previous section, Competence for Learning in the Digital Age is described by means of three identities and a series of roles linked to each identity.

These three identities form a picture of the learner as someone who understands the need to learn continuously over the course of their lifetime and therefore turns their involvement in social and community life into an opportunity to learn.

In this regard, learning takes place in a wide variety of contexts, both formal and informal, and in relation to a broad range of people, resources and situations.

Consequently, it is important to recall that this Global Framework of Competence for Learning (GFCLDA) is not a curricular design of any kind: the GFCLDA does not determine what to learn in a specific circumstance, but rather is aimed at approaching, in all its complexity, individuals' competence, in society, to learn over the course of their lifetime, especially when supported by technological resources.

Each of the roles, functions and practices defined below can be activated independently or can interact in a complementary way so as to enhance learning in a given situation. Accordingly, these roles, functions and practices can be seen as assets possessed by learners that can be used (or not) according to the their specific learning situation.

IDENTITIES	ROLES
Citizenship	Committed citizenship
	Agency
	Resilience
Knowledge building	Knowledge creation
	Multiple literacies
	Learning skills
Connection	Belonging and collaboration
	Interaction with diversity

Global Framework of Competence for Learning in the Digital Age

Figure 9. GFCLDA: identities and roles

Hence, the following description of competence for learning in the digital age makes **learners agent of their own learning process**.

In this case, the aim of the GFCLDA is to empower learners to properly develop their learning competence by means of the identities, roles, functions and practices described below.

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor
Citizenship	Committed citizenship	**Active citizenship**	Learners intervene, act and participate in their natural, social and digital environment as part of their own learning process.
		Health, surroundings and environment	Learners foster their personal well-being, their health and a harmonious relationship with the surroundings and the environment within their own learning process.
	Agency	**Global and cross-cultural awareness**	Learners are aware of the impact on their own learning of their position in a globalised world and the need to provide a cross-cultural response to diversity.
		Planning the learning process	Learners establish their own learning plans.
	Resilience	**Control of the learning process**	Learners manage the learning process effectively.
		Motivation for learning	Learners are motivated to learn and invest adequate time and effort to achieve learning.
Knowledge building		**Overcoming adversity**	Learners are able to recover from adverse situations that occur during the course of their learning.
Connection		**Tolerance to uncertainty**	Learners effectively cope with dilemmas, problems and situations of uncertainty throughout their learning.

GFCLDA

Figure 10A. GFCLDA: Citizen identity: roles, functions and practices

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor
		Information management	Learners use the information at hand to foster their own learning and create new knowledge.
Citizenship		**Critical and creative learning**	Learners apply critical and creative thinking to the information they receive.
	Knowledge creation	**Linguistic literacy**	Learners use their literacy in one or more languages to foster their own learning.
		Mathematical literacy	Learners make use of their mathematical literacy to advance their own learning.
GFCLDA		**Scientific and technological literacy**	Learners use their scientific and technological literacy to promote their own learning.
Knowledge building	Multiple literacies	**Digital, media and data literacy**	Learners makes use of their digital, media and data literacy to advance their learning.
		Artistic literacy	Learners use their artistic literacy to advance their learning.
	Managing learning skills	**Managing physical skills**	Learners deploy physical skills to ensure effective learning on a lifelong basis.
		Managing socio-emotional skills	Learners deploy socio-emotional skills to ensure effective learning on a lifelong basis.
		Management of cognitive and meta-cognitive skills	Learners deploy cognitive and metacognitive skills to ensure effective learning on a lifelong basis.
Connection			

Figure 10B. GFCLDA: Knowledge-building identity: roles, functions and practices

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor

GFCLDA

Connection

Citizenship

Knowledge building

Belonging and collaboration

Link with the learning community	Learners have emotional ties with their learning community.
Participation in the learning community	Learners participate in collective projects within a learning community.
Leadership for learning	Learners lead their community to foster personal and collective learning.

Interaction with diversity

Interaction in contexts of diversity	Learners interact with heterogeneous people and groups to foster their learning.
Empathy	Learners show empathy in relation to other learners and their learning processes.

Figure 10C. GFCLDA: Connector identity: roles, functions and practices

21

CITIZEN IDENTITY

Citizen identity defines learners as individuals existing in the world and able to learn from their interaction with other individuals and citizens.

For this purpose, learners develop three roles, one of them linked to their engagement as citizens and the other two linked to their way of being in the world: agency and resilience.

Engaged citizenship role

Engaged citizenship defines learners as active citizens, aware of their place in the world and of how their presence impacts on their surroundings and on others, just as their surroundings influence their identity and learning.

In this regard, the function **of active citizenship** is linked to two fundamental proposals for understanding our engagement in today's world: the Universal Declaration of Human Rights and the United Nations Sustainable Development Goals. Accordingly, engaged citizenry means defending equality and democracy, as well as well-being and improving the environment.

Committed citizenship

The Universal Declaration of Human Rights

The Sustainable Development Goals

Committed to equality, democracy, social welfare and improving the environment.
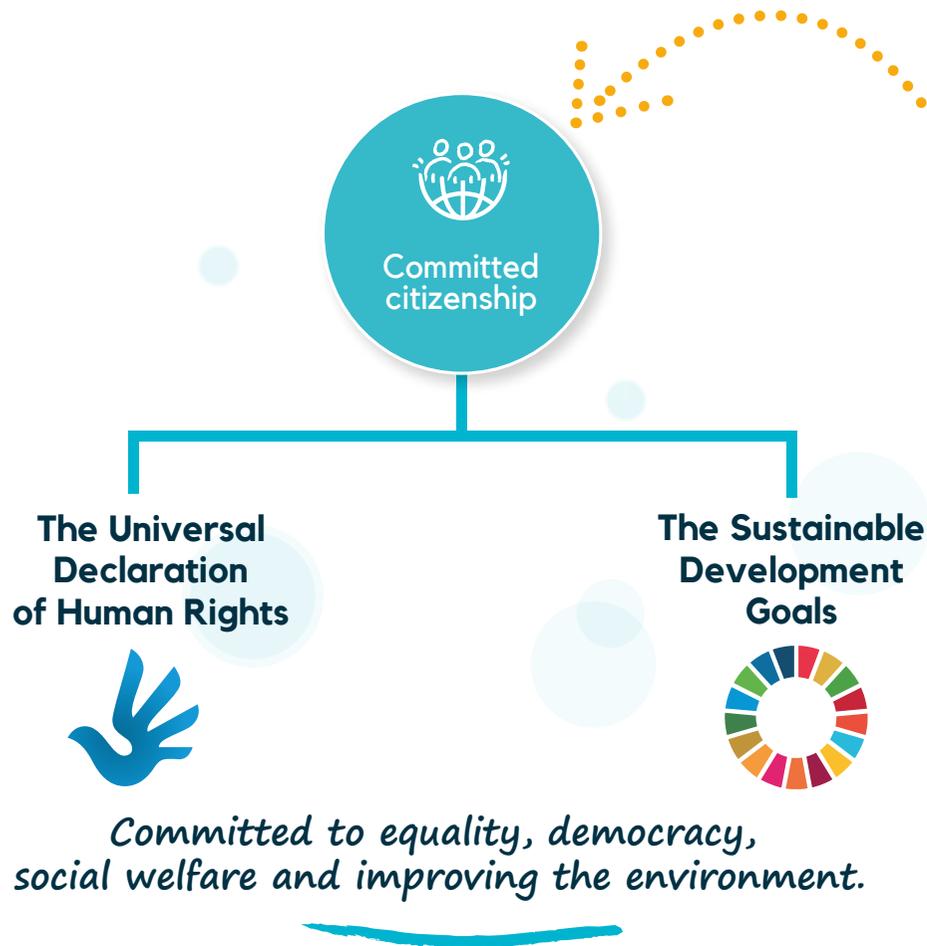
Figure 11. Citizen identity: engaged citizenship role

Health, surroundings and environment represent a pivotal axis of engaged citizenship. Learners must not only care for their own health, but also be an asset for the health and well-being of those around them, as well as an active agent of commitment to their surroundings and the environment. For this purpose, learners acknowledge both the need for responsible consumption and the obligation to reduce their own individual ecological footprint.

Moreover, **being a citizen today means being aware** of what is happening in a **global and multicultural world**. Around us are multiple ways of understanding and experiencing life and learners in the 21st century know and appreciate, without indulging in cultural relativism, the diversity of world views and cultural patterns that surround them. This diversity, including when it is experienced remotely, represents a huge opportunity for the learning process and personal development of learners in the digital age.

Agency role

Responsible for their own learning and a necessary partner in the learning of others.

Figure 12. Citizen identity: the role of agency

Citizen identity entails two interwoven roles: agency and resilience. In interaction with other people and in the various learning situations that are possible in social contexts, learners need agency and resilience to take control of their learning process and be able to maintain it properly over time.

In this regard, the role of agency can be unpacked into three supplementary functions: planning of the learning process, control of the process and learning motivation. By means of these three functions, learners take control of their learning throughout their lives, in different contexts and in relation to other individuals and groups, while at the same time being responsible for their own learning and a necessary collaborator in the learning of other learners.

The function of **planning the learning process** places the learner at the centre of their own learning throughout the course of their lifetime. For this purpose, learners establish their goals taking into account the resources available to them, then plan the learning sequence, monitor their progress and assess their achievements. Throughout this process, technology is a tool that enables more efficient planning.

The **control of the learning process** is the competence function for learning in the digital age that enables learners to regulate their own learning. Three practices are defined for this purpose, which are supplemented by the functions of the role of resilience (below): establishing the most adequate learning strategies at each given time, taking on responsibilities and influence awareness of the various agents and the surrounding environment in the learning process.

Furthermore, a key component of agency is **motivation for learning**. In this regard, two kinds of practice have been defined: on the one hand, the evaluation of one's own motivation, the adequate investment of time and effort for learning, and the use of strategies to stay motivated to learn (this applies to both individuals and the people around them); on the other hand, learners always learn within an environment and this has a clear impact on their motivation, whether explicitly by strengthening motivation through words or actions or because the necessary resources to learn are at hand.

Role of resilience

Supplementing the role of agency, citizen identity includes a third role, called resilience. **Learning is not a linear process. Often, progress or setbacks occur when difficulties or problems arise, the overcoming of which is inherent to the learning process**.

Consequently, resilience has been defined around two functions that enable us, firstly, to overcome adversity, and, secondly, to tolerate uncertainty.

Hence, learning is a complex process which often involves adversity.

In this connection, the function of **overcoming adversity** entails three important aspects to enable the learning process to continue: be aware of the challenges and difficulties, modify plans and strategies to overcome challenges or difficulties and manage the stress deriving from situations of adversity facing learners.

Capable of overcoming adversity and tolerating uncertainty.
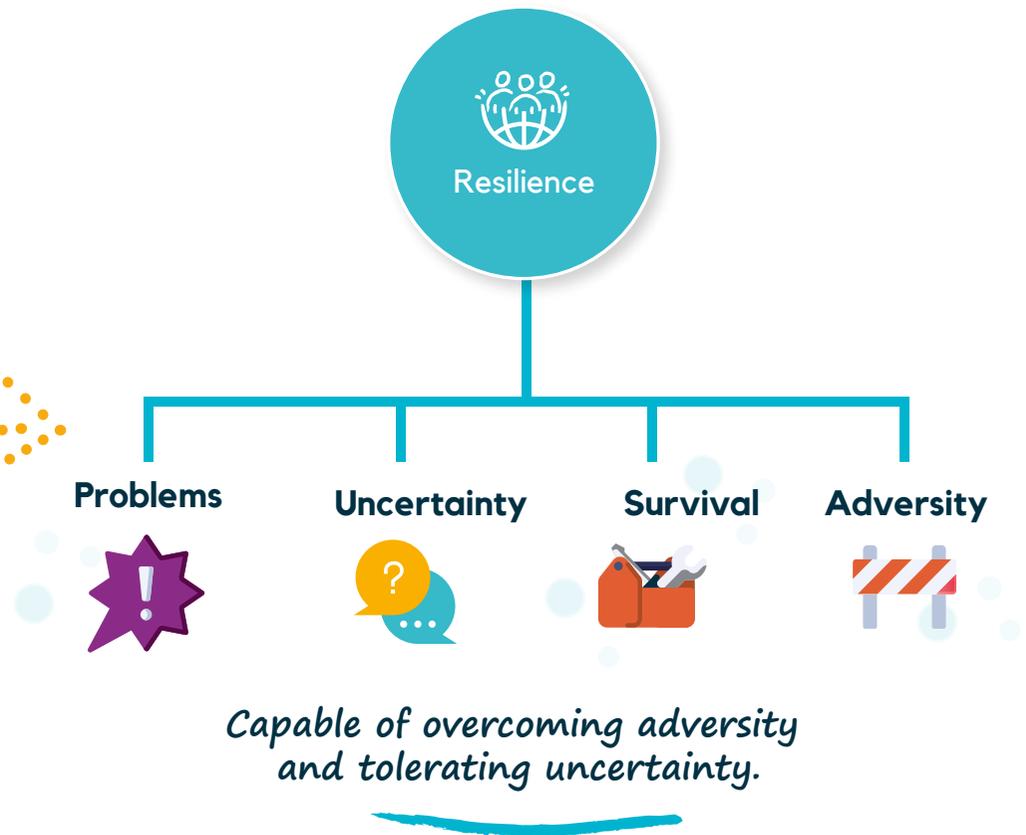
Figure 13. Citizen identity: the role of resilience

Moreover, learning also means managing uncertainty. In keeping with this idea, the function of **tolerance of uncertainty** proposes that learners accept both doubts and changes and mistakes as part of the learning process, making errors a lever from which to learn.

KNOWLEDGE-BUILDING IDENTITY

Role of knowledge creation

The role of knowledge creation has two functions: managing information and critical and creative learning. The first of the functions is linked to the search for and **information management**. Consequently, it entails the use of multiple analogue and digital information sources, taking into account their interdisciplinary nature and their theoretical and practical implications. Furthermore, the importance of technology to obtain and process information and build knowledge is highlighted.

> *Learning is a complex task in which learners put all their personal and social resources into play to build new knowledge.*
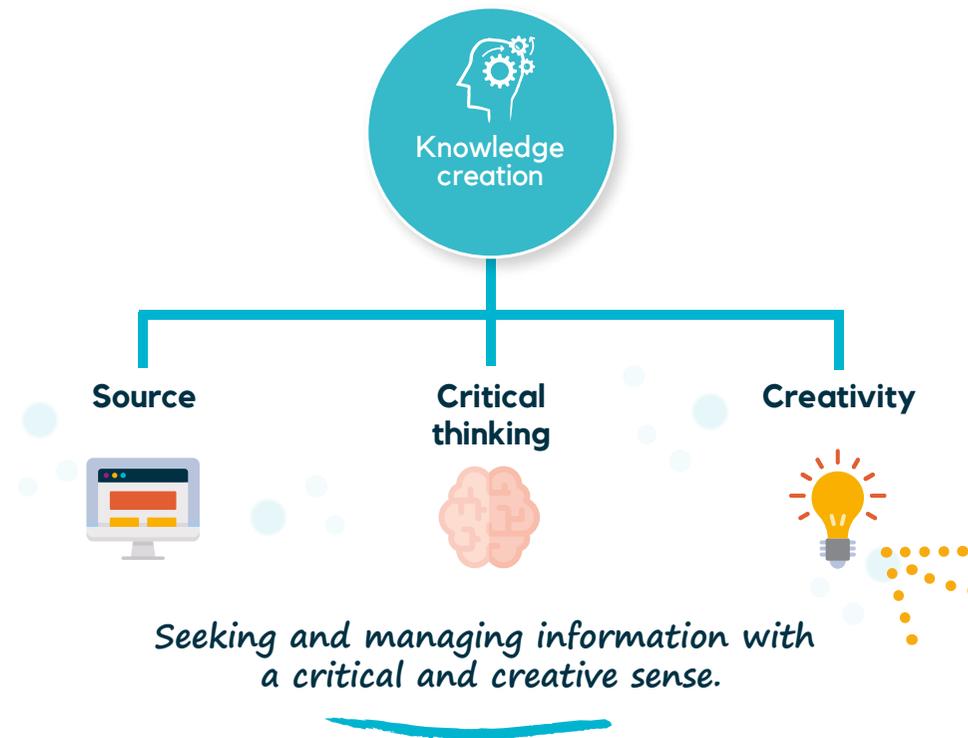
Figure 14. Knowledge-building identity: role of knowledge creation

This learning vision leads us to define three roles for knowledge-building identity: one role known as knowledge creation, a second role called multiple literacies and a third role called managing skills for learning.

A fundamental element of competence for learning in the digital era is the implementation of critical and creative thinking and its application to transforming reality. In this regard, critical and creative thinking is both a starting point for learning (critical and creative reading of reality or information) and a means of developing engaged citizenship (transformation of reality through **critical and creative learning**). Accordingly, technology also plays a key role in both instances.

Role of multiple literacies

The role of multiple literacies describes the command of an instruments series which enable learners to develop their learning. **These instruments have been coded as linguistic, mathematical, scientific and technological, digital, media and data, and artistic literacy**. Accordingly, a recursive vision of learning is proposed whereby learners implement everything they learn and have learned as an instrument for building new knowledge.

Multiple literacies

| Linguistics | Mathematics | Scientific and technological | Digital, media and data | Artistic |

Mastering the tools required to develop their learning.
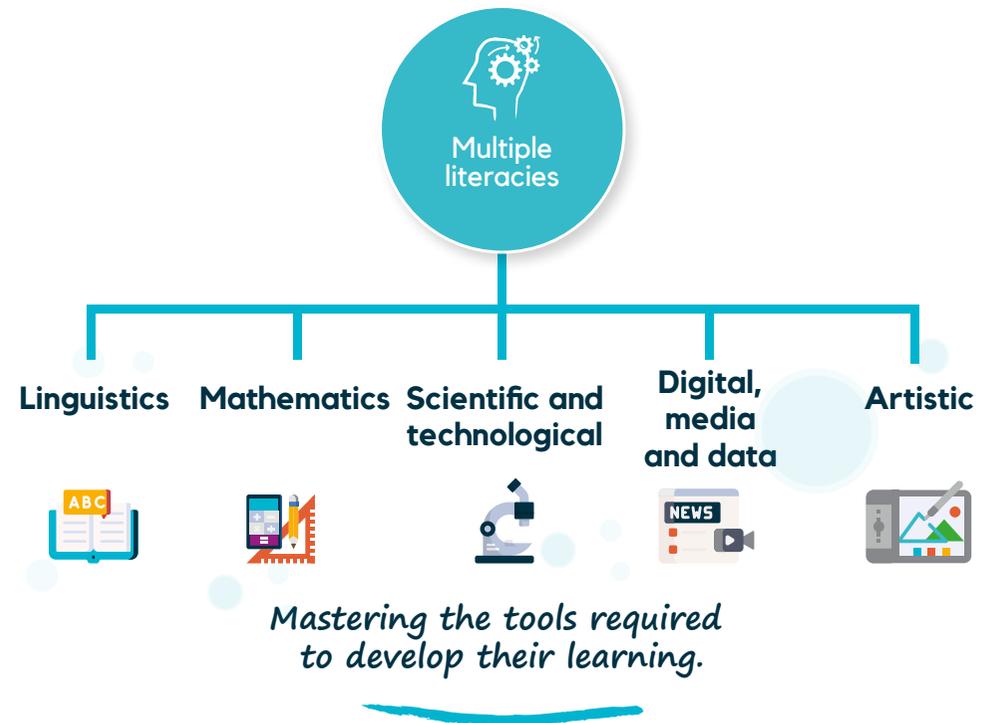
Figure 15. Knowledge-building identity: role of multiple literacies

The **linguistic literacy** function includes contributions from the command of one or more languages by the learner to the knowledge building process. Linguistic competence, which in the case of most of the world's learners is a plurilingual competence, allows the use of skills like oral and written communication, as well as the skills of mediation and interaction, to promote and facilitate learning. Furthermore, technology is an important factor in developing learners' linguistic literacy.

The function of **mathematical literacy** describes the potential of mathematics for learning: performing estimates, interpreting data, numerical, graphical and geometrical reasoning, expression in mathematical language or problem-solving are some of the potential applications of mathematical literacy in a learning context. Here again, technology can enrich the use and development of mathematical literacy in learning situations.

The function of **scientific and technological literacy** proposes the use of the scientific method, inherent to both natural and social sciences, as well as the use of technological tools to foster and facilitate learning. Likewise, scientific and technological literacy enriches communication and problem-solving in learning situations, as well as helping in the detection and critical reading of assertions that do not meet the standards of rigour of the principles of science and technology.

The function of **digital, media and data literacy** represents a significant sphere of opportunity for learning competence in the digital age. Obtaining and managing information, communication and cooperation, the creation of digital artefacts and the use of platforms today represent a fundamental contribution to learning facilitated by digital technology and the new media and information sources. Moreover, as with other elements of the GFCLDA, the digital, media and data literacy function also implies the critical judgement of the sources, resources and services we use to learn.

The **artistic literacy** function refers to human begins' capacity to learn by means of perception, comprehension and artistic activity in its broadest sense. In this connection, this function recognises the possibility of contemplating the presence of art in various learning situations along with the use of representations, languages, tools and proprietary equipment for artistic work, which may also be enriched by the use of technology to apply artistic literacy and, at the same time, to promote that very literacy.

Role of learning skills

The third role of the knowledge-building identity is to have a command of learning skills. This role includes three kinds of skills: physical skills, socio-emotional skills and cognitive and meta-cognitive skills. Accordingly, there is a recognition, on the one hand, of **the three-fold reality of learners as corporeal, social and thinking beings** and, on the other hand, of learners' ability to place these three dimensions at the service of learning.

Learning skills

Physical   **Socio-emotional**   **Cognitive and metacognitive**

A corporeal, social and thinking being who puts their skills at the service of learning.
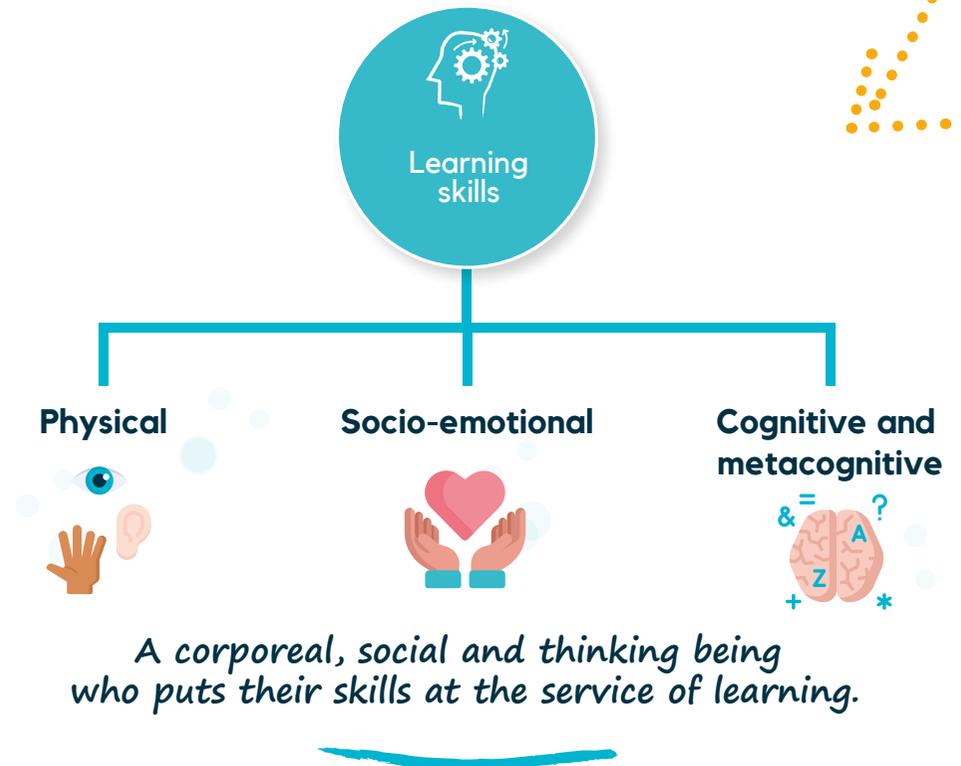
Figure 16. Knowledge-building identity: role of learning skills

With regard to **a command of physical skills**, the importance of the body and physical aspects in a learning situation is highlighted, including the adequate tools and techniques for their use. Learning takes place in a space and often requires, in both classrooms and other places (laboratories, workshops, sports facilities), the use, not only of one's own body but other utensils that facilitate or foster learning, from microscopes to written material, among others. Consequently, a good command of physical skills is a factor to take into account within the sphere of competence for learning in the digital age.

Learning is, at the same time, a cognitive and social process. In this regard, both the **command of socio-emotional skills** and of cognitive and meta-cognitive skills are fundamental to achieve profound and high-quality learning. Hence, on the one hand, it is important to know one's own emotions throughout the learning process and to be able to manage them adequately. On the other hand, learning takes place in society and competence for learning in the digital age recognises the value of social relationships both with one's peers and with teachers and other people with more knowledge or competence than the learner. In this regard, technology can also offer opportunities for the development of socio-emotional skills that foster and facilitate learning.

Lastly, learning inevitably requires **a command of cognitive and meta-cognitive skills**. In this connection, matters such as attention, memory, reasoning and decision-making are at the core of the learning process and, as a result, are pivotal for competence for learning in the digital age. As with previous functions, technology may serve to enhance cognitive and meta-cognitive skills over the course of learning.

CONNECTOR IDENTITY

The third identity that is deployed in developing competence for learning in the digital era is the connector identity. Beyond the idea of social learning outlined above, this identity places learners in the digital era in learning communities, both formal and informal, which enable them to foster, enrich and expand their learning beyond the strict individual framework.

Connector identity incorporates two fundamental roles: firstly, a role called belonging and collaboration; secondly, a role called interaction with diversity.

Figure 17. Connector identity: belonging and collaboration role

Belonging and collaboration role

In greater depth, the belonging and collaboration role incorporates three functions: relationship with the learning community, involvement in the learning community and leadership for learning. At the same time, the role of interaction with diversity proposes two functions: interaction in environments of diversity and empathy.

The function of **relationship with the learning community** shows the potential of belonging to a learning community. Identifying with the community and maintaining a positive relationship with the community and its members enriches learning and helps overcome the difficulties and problems that emerge over the course of the process.

Moreover, the function of **participation in the learning community** depicts learning that develops the learner's agency (discussed above) within their learning community.

In this regard, learners take part in setting learning goals within their community, collaborate with it and contribute to creating a shared repertoire of learning materials.

Thirdly, learners can also **take on leadership of their own learning community**. To do so, in addition to undertaking their own responsibility, learners also share their vision of the learning process with their community and even tutor or mentor other members of their community.

Lastly, both in this function and in those of relationship and participation in the learning community, technology plays an important part in constituting, maintaining and advancing the learning community.

Role of interaction with diversity

Lastly, the GFCLDA acknowledges the importance of diversity in any learning situation by means of the interaction role with diversity. In accordance with this role, learners not only recognise their strengths and weaknesses in relation to the learning process, but also recognise, respect and value diversity in the persons in their community and their environment since **satisfactory interaction with diversity** is not merely a lever for learning but actually a pivotal factor for harmonious living in society.

In this regard, the last function of the GFCLDA is **empathy**. Being able to share other people's emotions, adopt their view and make decisions or act in an empathetic way enables us not only to learn more and better but also to become agents of learning and well-being for the people around us.

Interaction
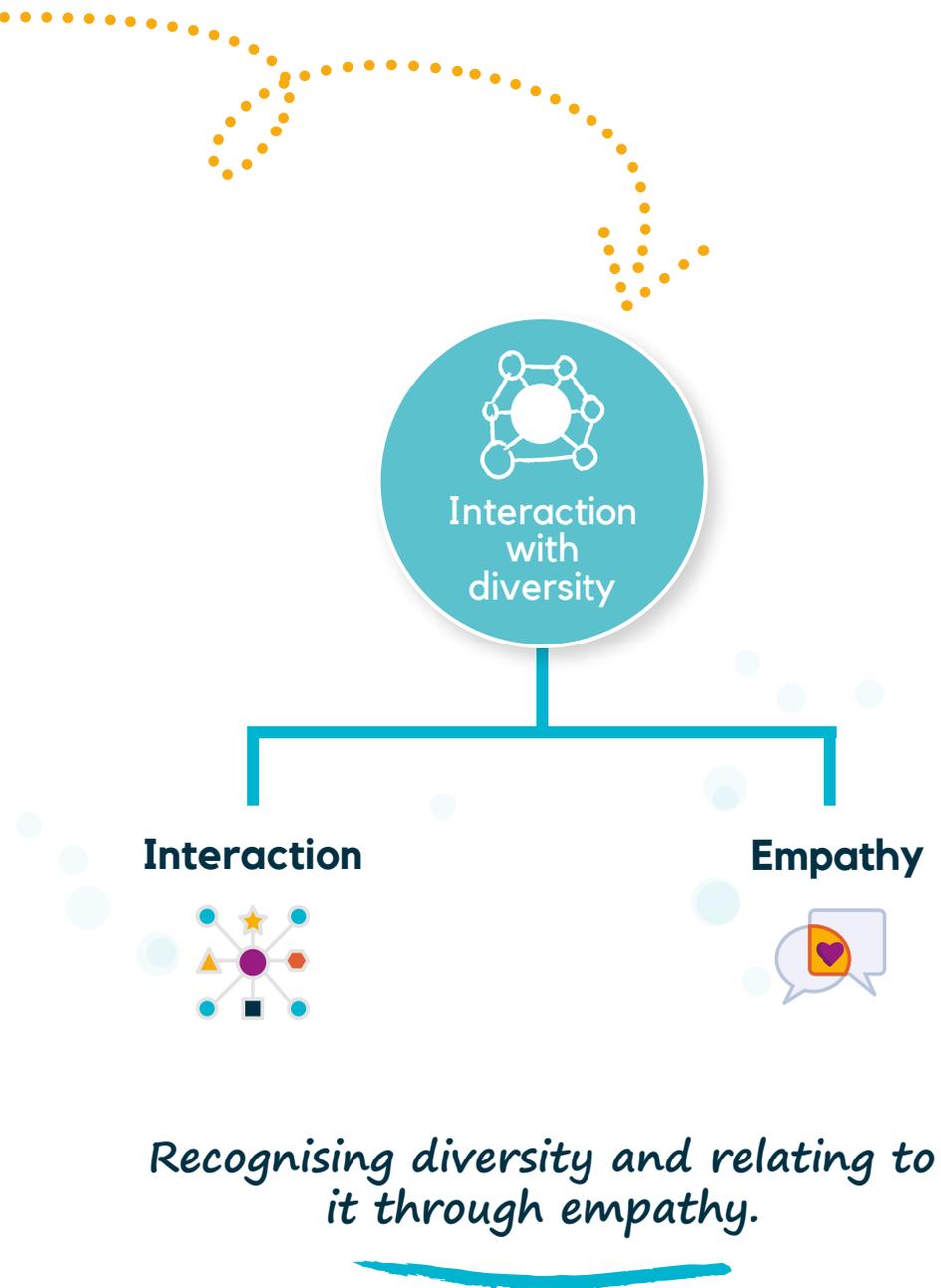
Empathy

Recognising diversity and relating to it through empathy.

Figure 18. Connector identity: interaction with diversity role

CONTENTS

GLOBAL FRAMEWORK OF COMPETENCE FOR _EDUCATION_ IN THE DIGITAL AGE

Here, we propose a framework with three application scopes: sphere 1 (essentially, educators), sphere 2 (educational organisations) and sphere 3 (regions and countries). The framework of reference may be applied to educators to foster their self-assessment or impact on their professional development; they may also be used by organisations to stimulate a process of continuous improvement, or even by regions and countries to define and evaluate public policies linked to professional teaching development.

Consequently, the Global Framework of Competence for Education in the Digital Age is, primarily, a framework to be used in the professional sphere, but one that, nevertheless, may also shed light on significant aspects of the organisational spheres and the spheres of regional or national policies.

A reference framework must at the same time fulfil two fundamental conditions: it must be realistic and be applicable to specific situations.

The first condition implies that the framework must be a construct that allows comprehension of reality by means of the use of a series of categories for specific phenomena; in other words, the framework must be sufficiently generic (in conceptual terms) and global (in geopolitical terms) so as to be used in a broad diversity of national and social contexts and organisations.

Secondly, the framework must be specifically applicable to concrete situations, and, in the case of this framework, to educational and teacher training situations and specific professional development.

In this regard, the framework must be, on the one hand, clear, simple and manageable so that its users can adopt it and apply it without difficulty in their specific context; on the other hand, the categories of the framework must be sufficiently well defined so that the different situations can be described and understood with rigour, but also with flexibility.

Figure 19. Application sphere of the GFCEDA

The proposed Global Framework of Competence for Education in the Digital Age seeks to make a qualitative leap with respect to the frameworks of reference analysed in this document, although those frameworks form its basic foundation.

Specifically, the framework described herein attempts to progress in the description of the roles of a person devoted to education in the 21st century, whose tasks extend beyond the traditional functions of teachers focusing on the transmission and assessment of learning.

For this purpose, we propose three broad identities (citizen identity, teacher identity and connector identity) which break down into a series of roles, in turn linked to a series of functions and practices (in line with the most significant international frameworks) in which technology appears explicitly and transversally.

Figure 20. Identities of the GFCEDA

The Global Framework of Competence for Education in the Digital Age sees educators as active individuals, aware of their reality and their capacity for transformation, and in contact (online and elsewhere) with other people with whom they share time and spaces, as well as interests and concerns.

Consequently, educators (identity 1) live and take part in society and their community through their sense of citizenship, (identity 2) are connected to other individuals, whether as leaders, collaborators or mentors for their own studentship and other teachers, and, lastly, (identity 3) understand their work from the standpoint of the design of memorable learning experiences, of facilitation so that all their students can learn successfully and of assessment to achieve a continuous cycle of improvement in their own teaching practice and in the learning practices of their students.

At the same time, each identity is structured around three roles: **citizen identity**, **teacher identity** and **connector identity**.
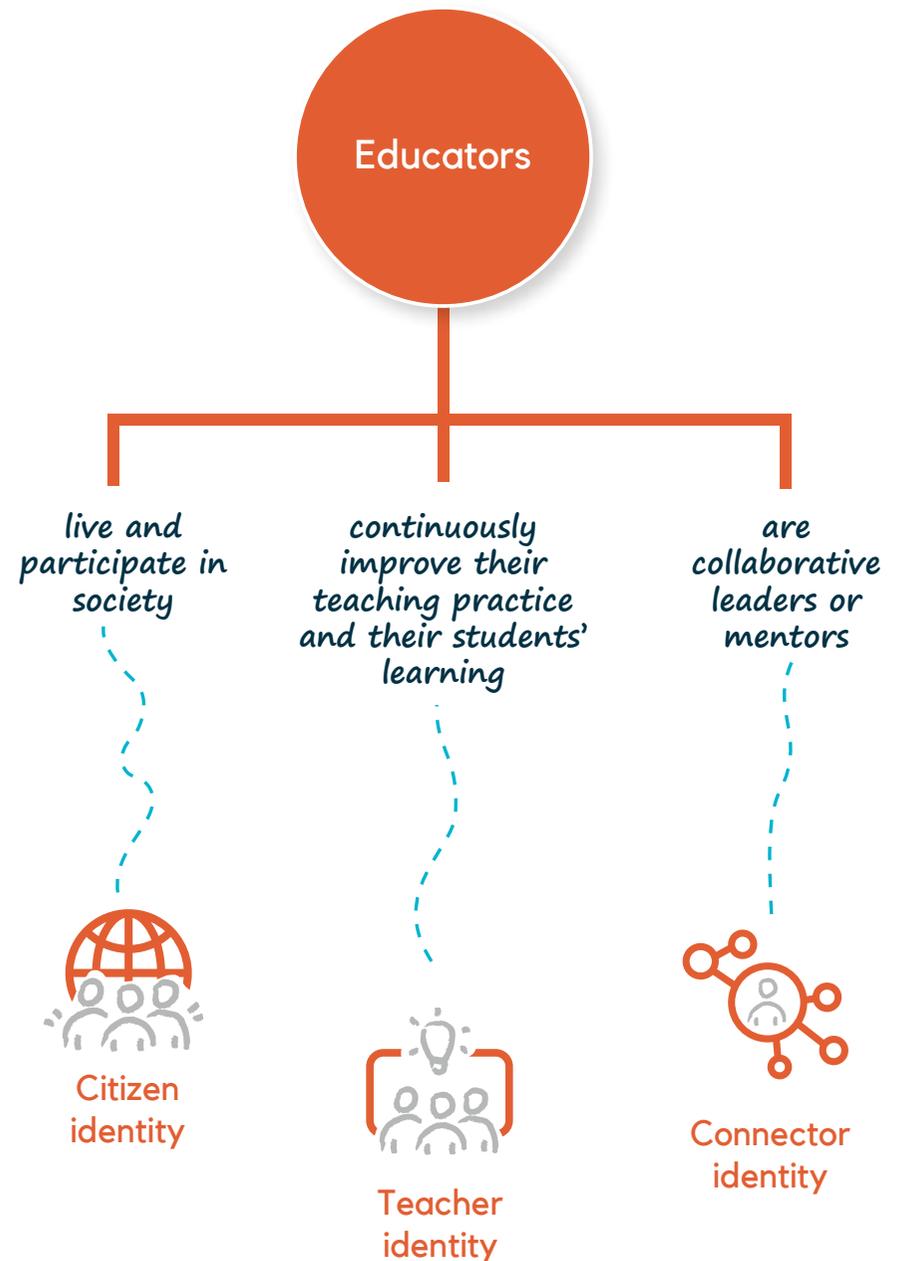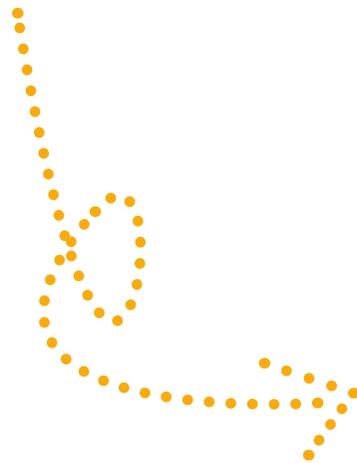
Figure 21. Educator identities in the digital age

Citizen identity

Citizen identity is developed on the basis of three commitments: first, the commitment to one's own lifelong learning; second, the commitment to one's own basic technological literacy; third, active engagement with society and the community, which entails understanding the social, political and economic factors and also their capacity to transform the environment to improve the conditions of one's own well-being and that of the people with whom one lives without damaging the natural environment.
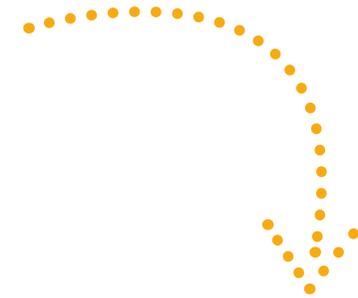
Figure 22. GFCEDA: citizen identity

Teacher identity

As far as **teacher identity** is concerned, it is based on three interconnected roles: the design of memorable learning experiences, facilitation to enable all students to learn successfully and assessment to enable the regulation of learning and to improve teaching practices.

In this sense, **teacher identity forms a virtuous circle of improvement (in which technology can impact positively)** by pursuing these three roles, while it is also connected to the citizen and connector identities: the professional development of teachers empowers them as citizens, enabling them to transform realities while at the same time converting them into a positive influencing factor for those around them, which is the key feature of connector identity.

Figure 23. GFCEDA: teacher identity

Figure 24. GFCEDA: connector identity

Connector identity

Lastly, educational competence is a competence in connection with various educational agents as well as the students themselves, an aspect which configures **connector identity**.

Consequently, educators are social and educational leaders in their context when they disseminate their practices and the reflections they perform based on assessment.

Moreover, collaboration with other educators (or educational groups and centres) enables the collective development of educational competence, including its transformational capacity through citizen identity.

Lastly, **educational competence also represents a commitment to the students' future in relation to their personal development and also to their potential professional career.**

These identities have a global value and meaning, but they surface as possibilities that are realised in the real context of each educator, depending on the circumstances in which they perform their work: competence for education in the digital age represents a professional development path that each individual, school, community, region or country can articulate at different levels and in different ways.

Accordingly, mapping the various frameworks of reference allows an understanding of the roles established for each identity:

DIMENSIONS	ROLES	UNESCO[1] ICT	ISTE[2]	DigCompOrg[3]	UNESCO[4]
		Competence Framework for teachers			
Citizenship	Committed citizenship	Understanding ICT in Education	Citizen	-	Competences 2.3, 2.5 and 2.6
	Lifelong learning	Teacher, Professional Learning	Learner	Professional development	Competences 5.2 and 5.4
	Basic technology literacy	ICT	-	-	Areas of competence 0, 4 and 5
Teacher	Design	Curriculum & Assessment	Designer	Content and Curricula	Area of competence 3
	Facilitation	Pedagogy	Facilitator	Teaching and learning practices	Area of competence 1
	Assessment	Curriculum Assessment	Analyst	Assessment practices	-
Connector	Collaboration	Organization, Administration	Collaborator	Collaboration and network	Competences 2.1, 2.2 and 2.4
	Leadership	-	Leader	Leadership and governance practices	-
	Mentoring	-	-	-	Area of competence 6

Table 1. Example of mapping the Frameworks

References:

[1] UNESCO. (2011). UNESCO ICT Competency Framework for Teachers. France: UNESCO and Microsoft.

[2] International Society for Technology in Education ISTE (2008). ISTE Standards for Educators. ISTE publications.

[3] Kampylis, P., Punie, Y. & Devine, J. (2015). Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organisations Kans. EUR 27599 EN. DOI: 10.2791/54070.

[4] Law, N., Woo, D., Torre, J., Wong, G. 2018. A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2. Montreal: UNESCO Institute for Statistics. Available at http://gaml.cite.hku.hk/final-report/

In short, **the Global Framework of Competence for Education in the Digital Age represents a holistic vision of teaching competence and digital competence**which can be applied and adjusted to various social and national contexts, as well as establishing different ways of approaching this educational competence on the basis of the current situation in each context.
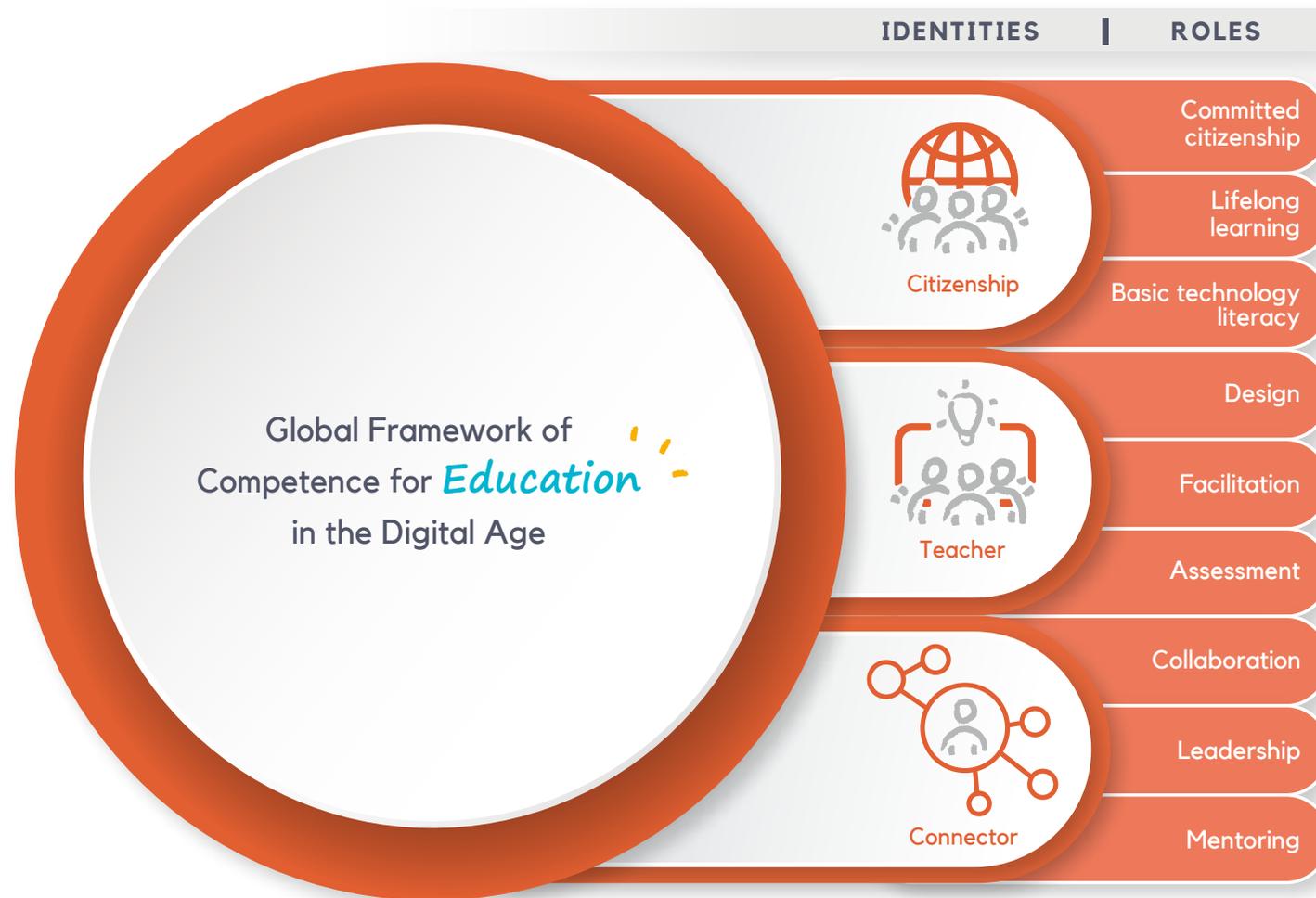
Figure 25: GFECD: identities and roles

DESCRIPTION OF COMPETENCE FOR EDUCATION IN THE DIGITAL AGE

Competence for Education in the Digital Age is described by means of three identities and three series of roles linked to each identity.

A positive, complex, situational and non-segmented vision of educational activity in the digital age.

Figure 26. Vision of the GFCEDA

To define identities and roles, the frameworks of teaching competence and digital competence were mapped and the items of these frameworks that may serve to devise descriptions of competence for education in the digital age are analysed, assessed and adjusted.

In this regard, **the Global Framework of Competence for Education in the Digital Age proposes a positive, complex, situational and non-segmented vision of educational activity in the digital age**. Thus, Sadler's (2013, p. 17) warning is heeded: "Although decomposition of a complex entity may be carried out in order to achieve some gain, this gain is accompanied by loss of a different kind: it becomes more difficult to see the whole as a unified competence", in other words, the figure becomes lost in the analysis when excessive attention is paid to each of the parts.

Consequently, Sadler (op. cit., p. 21) asserts that it is only in relation to complex situations that it is possible to judge competence and not by means of assessing their component parts on a standalone basis: "The whole (competence) does not necessarily equate to the sum of the parts (the competences)… This view implies that judgements of competence can properly take place only within complex situations, and not componentially".

Moreover, this working strategy avoids the definition of artificial levels of a competence as complex as competence for education in the digital age.

Although many of the frameworks present in the educational market include the definition of levels of competence, the reality is that educational competence in the digital age is holistic, situational and evolutionary in nature in relation to the formation of the personal, social and professional identity of each individual within each institution and in each regional or national context.

Accordingly, **the aim of the framework is to serve as a useful tool for the professional development, training or guidance of educators**, not merely the classification in sealed categories that move us away from the potential broad-spectrum vision of realisations of competence in accordance with the various configurations that can be adopted in specific situations. In that regard, educational competence in the digital age represents a catalogue of possibilities to be explored by individuals or institutions, rather than a list of determinations that pigeon-hole them in one or other category.

Multiple identities:

Indeed, educators are defined in relation to four axes that contribute to making up multiple identities:

• The **"classroom" axis**, where they lead the learning process and generate learning opportunities;

• The **"organisation" axis**, where they belong to a group of educators within a structure that establishes conditions and generates certain opportunities that powerfully shape what it is possible to do for each individual educator;

• The **"environment" axis**, which offers educators a variety of assets for learning (Trujillo Sáez, 2018) which they can introduce in the classroom and the organisation, as well as activities conducted in the classroom- and organisation-level environments which can contribute to enriching and improving the environment;

• And, lastly, the **"society" axis**, in which educators are responsible for their students' development, as well as being a social model of active citizenship.

These four axes determine three identities (teacher, connector and citizen), each of which is visible by means of various potential actions. In turn, roles are integrally and cyclically interwoven, thereby forming a continuous process that affords meaning and quality to the teaching process.

Classroom

Environment

Organisation

Society

Figure 27. Multiple identities of educators

Below is a detailed description of the three identities and the roles that develop them.

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor
GFCEDA / **Citizenship**	**Committed citizenship**	**Active citizenship**	Educators foster active citizenship in their social and digital environment.
		Promoting health and the environment	Educators promote health and environmental awareness, both their own and that of their milieu.
	Lifelong learning	**Knowledge of the political and curricular framework**	Educators are familiar with their political and curricular framework in which they immerse themselves and work to improve.
		Learning community	Educators form an active part of a learning community.
		Professional development	Educators pursue both their own professional development and that of those around them.
	Basic technology literacy	**Implementation of lifelong learning**	Educators introduce what they have learned through their own professional development into their teaching practices.
		Basic technology literacy	Educators possess sufficient technology literacy to use technology resources.
		Guarantee of privacy and secure use of technology	Educators promote the secure use of technology and use it securely.
Teacher			
Connector			

Figure 28A. GFECD: Citizen identity: roles, functions and practices

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor
Citizenship			
Teacher (GFCEDA)	Design	Designing experiences	Educators design memorable learning experiences.
		21st century learning	Educators design memorable learning experiences.
	Facilitation	Knowing the student	Educators have an integrated knowledge of the student.
		Methodological and resource diversity	Educators use different methods and resources in teaching practice.
		Concept understanding	Educators promote students' understanding of the educational content.
	Assessment	Regulated learning	Educators conduct assessment activities to ensure learning and solve difficulties.
		Information about the learning process	Educators provide students or their legal guardians with information.
Connector			

Figure 28B. GFECD: Teacher identity: roles, functions and practices

43

IDENTITIES	ROLES	FUNCTIONS	PRACTICES: Key descriptor
Citizenship			
Teacher			
GFCEDA **Connector**	Collaboration	Student collaboration	Educators promote safe and equality-based collaboration among and with their students.
		Collaboration with other professionals	Educators collaborate with other professionals in their lifelong learning and their teaching practices.
		Personal learning environment	Educators are aware of their personal learning environment and endeavour to enrich it.
	Leadership	Pedagogical leadership	Educators exercise pedagogical leadership in their environment.
		Empowering leadership	Educators use their pedagogical leadership to empower the whole education community.
	Mentoring	Personal initiative	Educators promote personal initiative in their students.
		Connection with the environment	Educators link their students up with social agents, institutions, organisations and companies in their environment.

Figure 28C. GFECD: Connector identity: roles, functions and practices

CITIZEN IDENTITY

As citizens, educators are members of a society and belong to different communities. However, as **educators, they are notable members of their society and their communities both at the symbolic level and in relation to their cultural capital** in light of their task, their vocation and professional qualification and their capacity to influence the present and future life of the community by training its members. In this regard, educators' citizen identity is plural, situational and dynamic by definition, since it is developed within the framework of different socio-community determinants that define their co-existence with the rest of citizens.

With respect to the Global Framework of Competence for Education in the Digital Age, **educators' citizen identity is linked to three roles: engaged citizenship, lifelong learning and fundamental technological literacy**. In this connection, educators' citizen identity is linked to a commitment to their own integral and lifelong learning and an image of their profession and their students as active citizens in the world, in the sense both of understanding the rapid changes of the modern world and their consequences for our personal life, our shared life and our relationship with our environment, and of being able to respond to the complexity of the world from a broader vision of educators' own

literacy and that of their students (linguistic, mathematical, digital, media-informational, ecological, scientific-technological, artistic and health literacy).

This same understanding of the complexity and their capacity to intervene in it leads to the responsibility of having and advocating a positive view of diversity, a clear commitment to justice and fairness, and taking a stand against exclusion and inequality. This definition of **citizen identity represents a clear alignment with educational processes of inclusion and strengthening social cohesion, democratic participation and the defence and enrichment of the commons**.

Figure 22. GFCEDA: citizen identity

Committed citizenship role

Educators in the digital age experience a citizenship that is committed to others and to their environment, understood in both the local and global senses.

In other words, the task of educators in the digital age transcends training in learning contexts to undertake the role of model and inspirer in the society in which they live, and in particular in relation with their students, for which educators engage and take an active part as citizens in social, cultural and political life with the aim of achieving a fair, responsible, open, participatory and collaborative society.

Very particularly, educators in the digital age evidence their engagement as citizens by means of efficient and valuable classroom and school practices. Consequently, educators in the digital era use methodologies and strategies that motivate students so as to contribute positively and responsibly to life in society and launch educational projects focusing on the engagement of their students as citizens.

Moreover, educators in the digital age is also aware of the potential threats and improper conducts in social communication environments, channels and media, as well as the need for adequate training in relation to this kind of threats and conducts. Consequently, it is also fundamental to know the rules of access, behaviour and communication in social media and digital channels, as well as their policies for use. Likewise, educators in the

digital age train their students to be able to apply these rules for effective communication, emphasising those aspects of netiquette applicable to various spaces and contexts of social communication.

These issues ultimately lead to a dual vision of the engaged citizenship role: on the one hand, **educators in the digital age contribute to the integral development of their students' identity,** including their digital identity, promoting the concept of digital reputation, online respect and the importance of the privacy of both one's own data and that of others; furthermore, **educators in the digital age contribute decisively to the training of their students for interaction with the environment from an ecological and sustainable perspective** and an empathetic, fair and tolerant relationship with other individuals and cultural communities.

Committed citizenship

| Active citizenship | Health and environment | Political and curricular framework |

Actively participating and playing an exemplary and inspiring role in the society where they live.
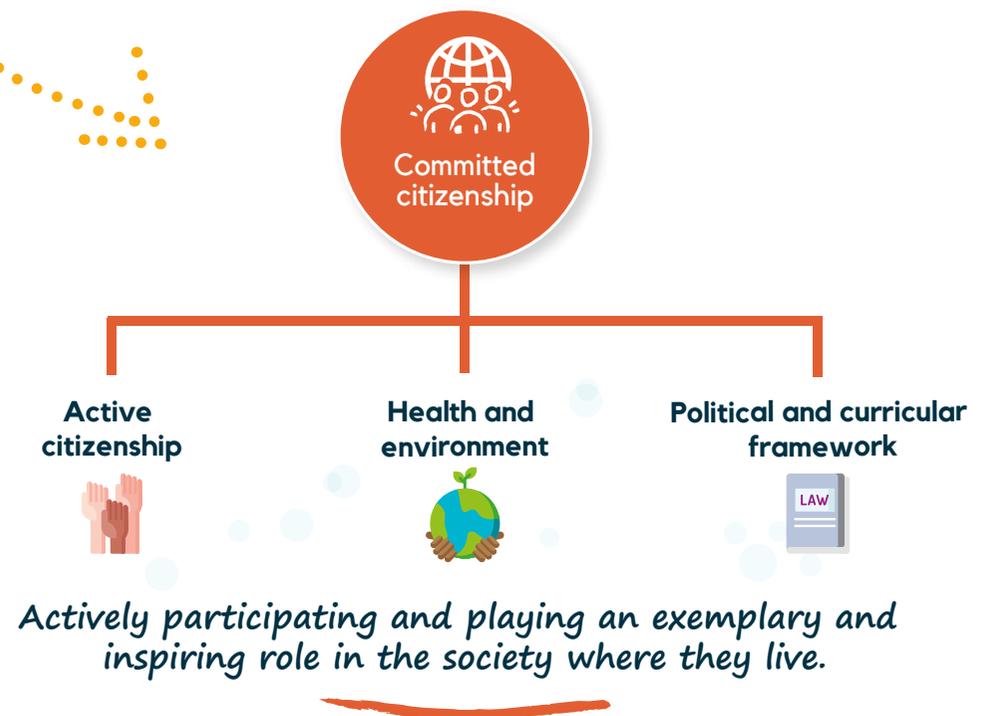
Figure 29. Citizen identity: engaged citizenship role

Lastly, and in connection with the foregoing, educators must also know, understand and stay informed about the various national and international policies, especially to the extent that they affect their activity as educators. Likewise, educators must be able to contribute to the educational debate, designing, implementing changes or reviewing programmes so that educational policies adapt to the improvement in educational processes rather than the latter being transformed to respond to political changes.

Lifelong learning role

The task of educators in the digital age is immersed in an increasing process of acceleration of knowledge and technological development. The scientific-technological advances in all areas of knowledge imply, for educators, the inexorable need to maintain a constant learning approach and activity, not just to be apprised of these advances, which is part of being an informed citizen, but also to be able to analyse the impact of these advances on the curriculum.

Educators in the digital age develop their lifelong learning within their personal learning environment, in other words, in relation to a series of people, resources, media, services, devices and technological tools that enable them to broaden their knowledge and their competences.

Lifelong learning

Learning community

Professional development

Implementation

Constantly expanding their knowledge and skills.

Figure 30. Citizen identity: lifelong learning role

In particular, their personal learning environment allows educators to remain up-to-date in connection with scientific and educational advances recognised on a national and international level, as well as being abreast of the latest developments in pedagogy and educational technology.

Consequently, educators are able to set learning goals, as well as to reflect on their effectiveness. To achieve these goals, educators take an active part in various professional learning networks (local, regional or global) and practical communities to both develop their own learning and to share and contribute effectively to the common good of their practice community.

Likewise, educators have various opportunities for professional development available to them (with varying levels and certification formats), in both formal contexts (in classroom, remote or mixed opportunities) and informal ones, and they make effective use of these opportunities. In this regard, educators in the digital age organise their own system for learning and staying up to date, share with their community of practice and motivate and support other members of their community (especially other educators and students) for which purpose they permanently learn and develop.

Similarly, educators in the digital age are aware of the need to manage and focus their learning in a context of informational abundance for which skills are needed to filter, choose and rule out items of information. Moreover, educators are aware of the need for a critical reading of information, taking into account the reliability of the sources and the interests to which they respond.

Lastly, educators in the digital age recognise the various knowledge and know-how of the different agents and communities which had traditionally been left out of the official knowledge circuits and incorporate them into their own training as another source of learning.

Basic technology literacy role

Educators for the digital age are fundamental agents of literacy, meaning the socio-educational process of building the necessary life skills.

If literacy was traditionally linked to reading and writing, literacy processes today cover various spheres of life: linguistic, mathematical, digital and media-informational, ecological, scientific, artistic, health and, in particular, technological literacy.

Basic technology literacy

Literacy

Assessment

Knowing and using technology in the personal and educational environment.
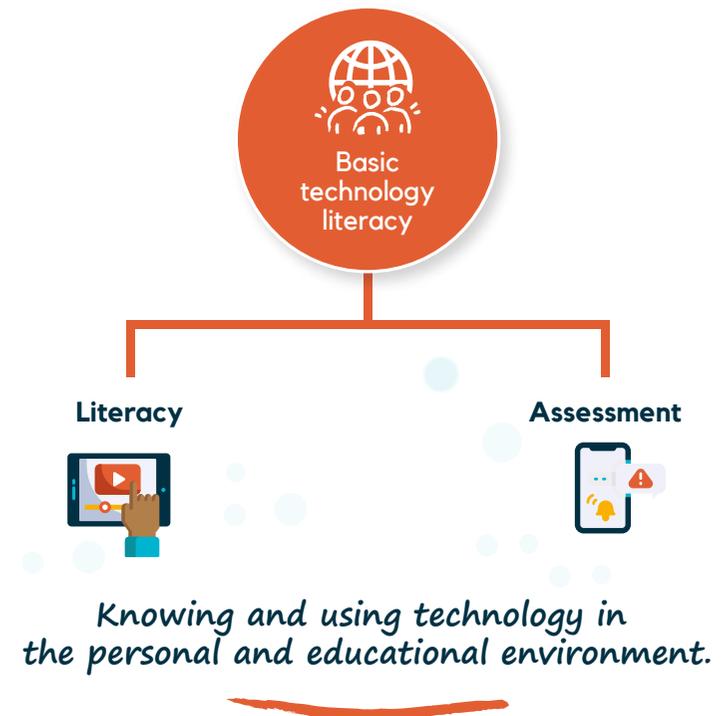
Figure 31. Citizen identity: basic technological literacy role

In relation to educational competence in the digital age, educators must possess basic literacy in all these spheres, but, specifically, basic technological literacy implies a knowledge and use of the basic elements of *hardware and software present in our personal life and in an educational environment*.

It will be precisely this basic literacy that enables informed decisions to be made regarding which resources, devices, services and tools may be used to attain a particular goal in a specific learning scenario.

Likewise, since the relationship with technology is not problem-free, three areas of importance are proposed within this basic technological literacy: conceptual and technical problem-solving; the protection of information, content and the personal data and persons under their responsibility; and, lastly, the responsible and safe use of technology.

Finally, basic technological literacy is linked to the capacity of using the *hardware* and *software* of digital devices available in a particular learning situation, especially to be able to use digital technologies in a creative manner.

Accordingly, educators' basic technological literacy may include issues like the handling, configuration and modification of devices or programmes or the understanding of the principles and fundamentals of programming.
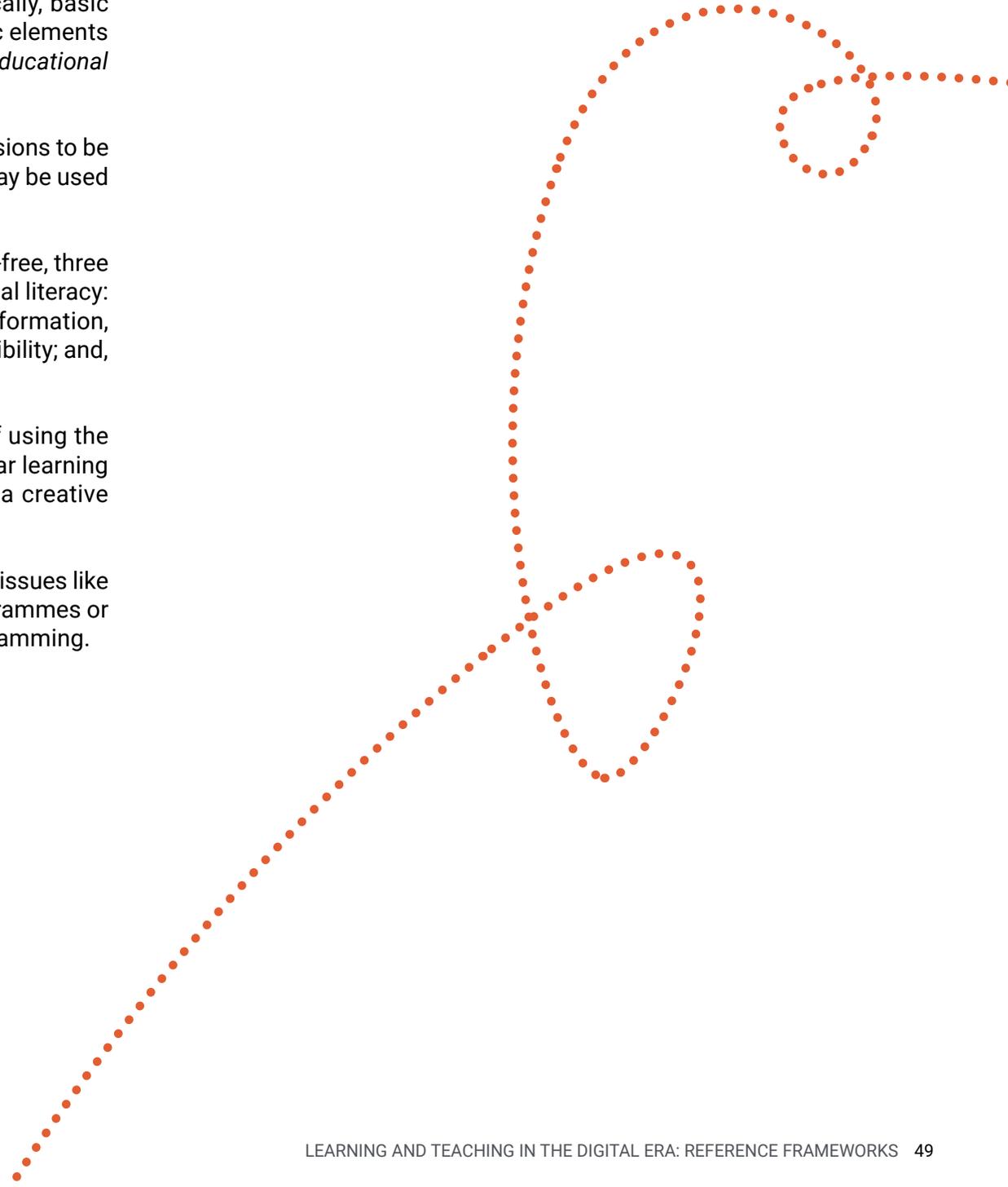
TEACHER IDENTITY

Teacher identity is developed by means of three roles very closely linked to the classroom axis: thus, teachers are designers, facilitators and evaluators.

These three roles are implemented in a process that is understood to be cyclical and that seeks to achieve improvement through reflection and a commitment to students and the institution.

Educators in the digital age understand their work from the standpoint of designing memorable learning experiences, facilitation to enable all students to learn successfully and assessment as the process which enables them to attain a continuous cycle of improvement in both teaching and learning. Technology is a way to enhance the activities which the teacher (designer, facilitator and evaluator) performs, by means of new strategies for seeking information and resources, creating digital artefacts, greater ease when it comes to designs and facilitating access to multiple sources of specialist knowledge.

Global Framework of Competence for *Education* in the Digital Age

Citizenship

Teacher

Design

Facilitation

Assessment

Connector

Figure 23. GFCEDA: teacher identity

Teacher identity includes designing, creating, modifying, adapting, publishing open educational resources and facilitating memorable learning opportunities for their educational community, in both formal classroom contexts and non-formal and informal contexts. It also includes the promotion, launch and/or participation in educational projects that customise their learning and improve it significantly.

Teacher identity, moreover, implies establishing assessment strategies, models, tools and instruments that are significant and beneficial for improving teaching and learning processes.

Design role

Educators are the persons responsible for designing learning situations and activities aligned with the content of the curriculum and with the demands of society, as well as with the elements of the Global Framework of Competence for Learning in the Digital Age discussed above. Consequently, these situations and activities are based on reasoning, reflexive learning, knowledge building, problem-solving deriving from day-to-day situations and in relation to the learners' lives, communication, collaboration and critical thought to be able to transform and modify those situations in which injustice or inequality is detected.

Particular attention is paid to the search for and management of information, the requisite skills for accomplishing that and how these can be nurtured through learning activities.

The basis for designing these situations and activities is an in-depth knowledge of the curriculum, hinging on the idea that the curriculum can be redesigned and interpreted to adapt it to the various specific needs deriving from a particular group of students or from the context in which the educational action is taking place. Likewise, it means knowing the cognitive, emotional and physical development of the students, and how and in what conditions students learn best, so as to effectively anticipate any difficulties that may arise.

In designing these learning situations and activities it is necessary to consider the diversity of learners brought together in an educational organisation, with their multiple capacities, differences and needs.

Design

Experiences   21st century learning

Creating memorable learning experiences aligned with the curriculum and society.
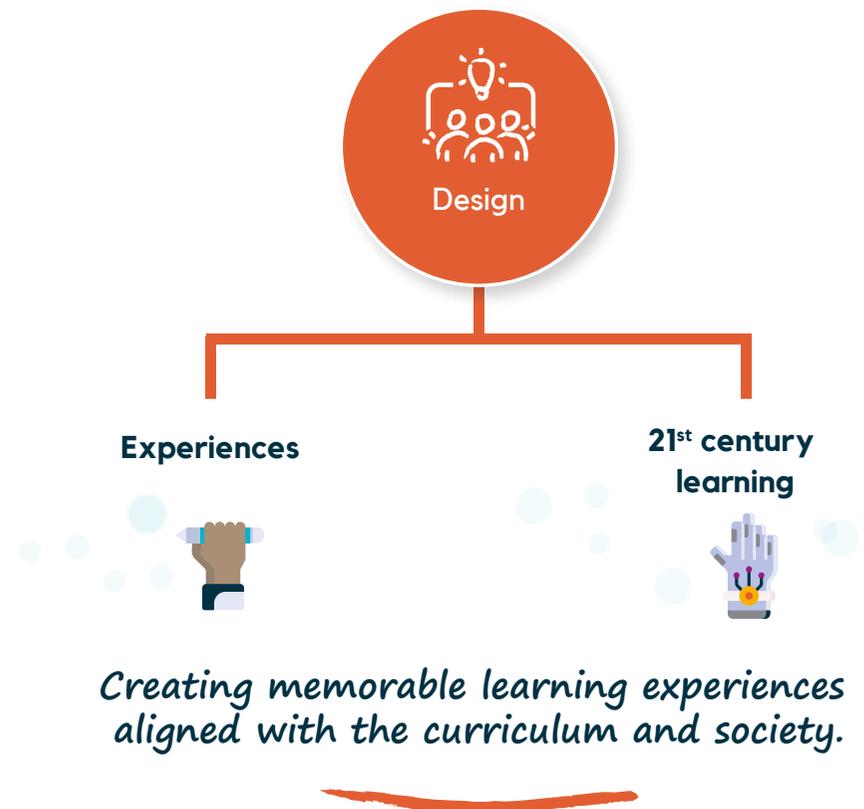
Figure 32. Teacher identity: design role

Educators rely on the contribution of learners to design the learning situations and activities, to define their own learning goals and the ways to achieve them, for self-assessment and co-assessment, and for the recurring process of reviewing the curriculum.

Consequently, educators will create genuine activities in which learners play a key role, and environments which they recognise and which respond to the heterogeneousness of students, so that the designs adapt to their various needs; in other words, personalised learning experiences that are undergirded by the students as creators and not just consumers of content (digital or otherwise), boosting their capacity for remixing this material, for disseminating their productions for knowledge about the various copyright issues, among others.

From the design perspective, **educators use technology transversally to promote active and in-depth learning by means of a wealth of technological resources**.

In this regard, educators are skilled in creating and editing digital content in various formats and for various digital media, as well as in re-casting and improving educational content, resources and materials available online while respecting the various licences for use which may apply.

Moreover, educators and the organisation in which they work have the means to select, create and use multi-modal content as well as open-source educational resources.

In this context, educators and the organisation may also contribute to improving the repositories of open-source educational resources.

Educators intervene and mediate with the organisation, within which the learning situations and activities are designed, so that it takes into account and resolves the management of timetables and spaces, as well as other matters relating to infrastructure (internet connection, use of devices, etc.) that are key to the design, thus generating the best possible conditions for learning and teaching.

Facilitation role

Educators in the digital age are aware of their role as facilitators of the learning process among their students and the commitment to their students to steer each learner towards their integral development over their lifetime, in such a way as to make them "lifelong learners", independent in their learning over the course of their lives, even when they are not part of a formal educational institution.

Facilitating educators foster the development and achievement of students in their learning process by creating learning opportunities (digital or not) which take into account the diversity of students' capacities and interests.

Facilitation

Knowing the student

Methodological diversity

Concept understanding

Fostering the development and achievement of all students.
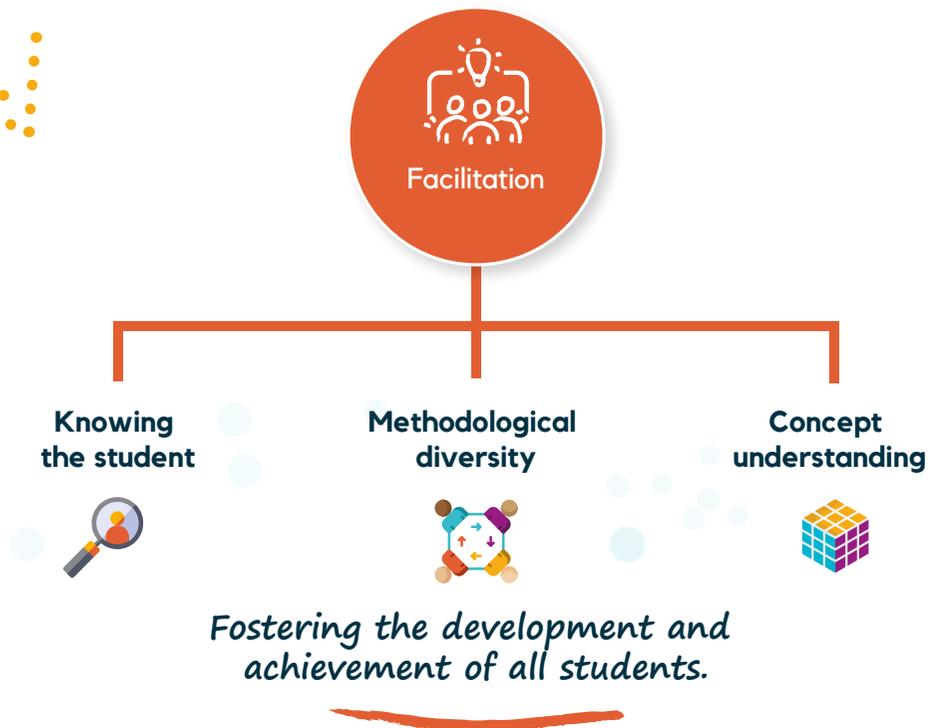
Figure 33. Teacher identity: facilitation role

Accordingly, educators nurture creativity, communication and the collaborative construction of ideas and knowledge, making use of the infrastructure and technology at their disposal (digital platforms and environments, laboratories and handling spaces, etc.).

In this regard, the performance of classroom activities, in groups and individually, with or without technology, is aimed at responding effectively to this diversity.

Educators see learning spaces as places in which a range of agents, resources and knowledge combine. As a result, learning spaces are an ecosystem in which learners must build their own knowledge and skills, both individually and collaboratively.

Moreover, educators use a variety of teaching strategies with a clear predominance of tasks and projects focused on real-world problems that require a response from learners, at all times ensuring that students acquire an in-depth understanding of the key concepts and fundamental processes of each block of content.

Consequently, the educator's role is to facilitate an educational culture in which students take on board the learning goals as their own and in which they are also responsible for the results of the learning process.

Lastly, technology is a support for all students' achievements. Educators help foster confidence and a willingness to take risk among their students, while at the same time taking into account the importance of security, awareness of potential problems and the dangers of using technology and rules for using it responsibly.

Moreover, they nurture confidence in the daily, responsible and secure use of digital educational technologies within the educational community, enabling said community to take responsibility for exploring new methodological and pedagogical approaches which contribute actively to said use and whose core are the students themselves.

Assessment role

Educators use data to assess students' achievements, detect difficulties and provide adequate support for each student to achieve their goals.

Moreover, they are aware of, and act consistently with, the need to expand the catalogue of assessment strategies from the most traditional ones (written tests in various formats) to more student-focused, authentic, integrated and significant practices, that permit an assessment of the knowledge, skills and competences developed, in both formal scenarios and non-formal and informal contexts.

Educators in the digital age recognise that it is as important to have a variety of assessment mechanisms as it is to be able to provide adequate feedback in real time or as close as possible to the assessment itself. Consequently, they use different strategies such as technological tools or self-assessment and co-assessment mechanisms.

To assess learning, educators identify key concepts and fundamental processes in relation to the content or subject and assess their application to real problems to which learners can relate. Similarly, educators use assessment strategies that take into account not only the command of the content, but the depth of understanding.

To develop assessment processes that strengthen the various educational experiences designed and ensure they effectively serve to enhance learning, educators consider the importance of:

1. Properly documenting the learning process, with students sharing in the responsibility for this task.

2. Fostering reflection by students in connection with their own learning process and their achievements.

3. Properly communicating to students, their families and the educational managers the results of the teaching and learning process.

Assessment

Regulation

Information

Assessing achievements, pinpointing difficulties and supporting each student in reaching their goals.
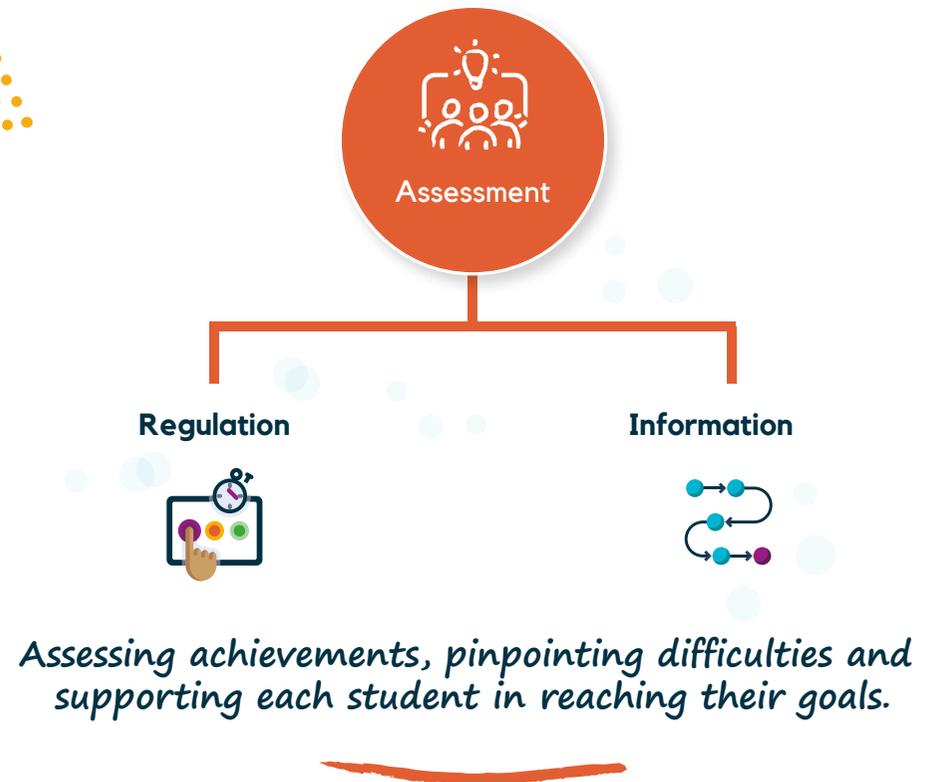
Figure 34. Teacher identity: assessment role

Educators also foster recognition and certification of prior, informal, experiential, open learning, while understanding that the assessment must continue to seek new, diversified, personalised, meaningful, attractive and motivating formats that optimise the individual and collective result of learning among their students.

Furthermore, with the support of their educational community, educators afford importance to the secure and protected processing of students' data in all phases of assessment (data compilation, storage, processing, analysis and issuance of reports), making ethical use thereof for the purpose of effective communication with students and their families, as well as educational managers who may suggest potential changes, updates, improvements and necessary adaptations in official curricula, but also in order to raise awareness and autonomy among the students themselves with regard to their own progress, where they can improve, as well as their strengths and talents.

In this connection, technology is the educators' ally for developing formative and quality assessment processes making use of a range of evaluation tools, integrated in the learning process and generating data that allow efficient feedback in real time.

CONNECTOR IDENTITY

The connector identity clearly points to the relational nature of educators in the digital age. **Educators today are a real hub connected with society, their educational colleagues and their learners, fostering improvement in all of them by means of learning and personal and professional development**.

Figure 24. GFCEDA: connector identity

This is how we can understand the three roles of this identity: **educators as leaders for society and their community; educators as collaborators within their community of practice (meaning in the local sense and also by means of the educators' personal and professional network); and, lastly, educators as mentors and guides** who accompany and empower their learners in the processes of personal development, learning and even entrepreneurship or the search for employment.

Lastly, educators' connector identity in the digital age is not confined to their relational value, but these connections are guided by specific values and actions:

- The quest for improving society and the common good.
- Empowerment of the educational community.
- Design and collective harnessing of informed, contextualised and evidence-based educational strategies.
- Proactive engagement and a positive contribution to vertical and horizontal learning networks.
- Collaborative, creative and agile communication.
- A constant will to improve expressed through innovation and the evaluation of their own actions.

Leadership role

The leadership of educators is expressed in various ways in relation to the different social spheres. Firstly, there is leadership with respect to society, because of everything educators represent as educating agents, responsible for a fundamental task for sociocultural reproduction and transformation. Education is frequently invoked to lead transformational or social improvement processes through learning; and educators are, fundamentally, the people who lead and develop these processes.

In this regard, implicit in this social leadership is the defence of the right to quality education for all, which often means advocating fair or inclusive access to education, as well as learning opportunities and the necessary resources to meet the various needs of all students.

The leadership role makes educators critical agents committed to the welfare of their students and to quality learning for all as absolute values of their work.

Secondly, exercising leadership is in relation to their own community of practice. Leadership in the community of practice is committed to finding opportunities to improve teaching and learning processes, as in the identification, assessment and adoption of resources and methods that help attain the best possible learning outcomes. For this purpose, educators in the digital age not only foster the identification, adaptation and implementation of efficient practices, but are willing to modify and assess their own practice and offer it to their community for analysis and evaluation. In this connection, educators see and exercise leadership as something constructed with the rest of the community, horizontal in nature, and distributed and negotiated with the rest of agents.

Lastly, leadership also has a component of shaping the attitudes and conducts of students by means of the actions of educators themselves. Thus, educators' way of acting and expressing themselves, both in person and on social media and in using technology, is a pivotal factor in their students' learning.

Leadership

Teaching **Empowering**

Leading processes of social transformation and improvement and acting as a reference for the community.

Figure 35. Connector identity: leadership role

Educators are their students' leaders to the extent that they are a privileged reference with transcendental importance in the present and future of those persons whom they train, guide and accompany.

Accordingly, it is vital for educators to understand the system ecology comprised by people, resources, technology and contexts, enabling them to effectively choose a variety of collaborative tools, as well as to know how to organise different collaboration structures (work in pairs, in small groups, in a large group and online) in different spaces, events and digital communication platforms to achieve real and connected learning experiences.

Collaboration role

The education complexity in the digital age in light of the vast diversity of learners, contents, formats, time frames, places, tools and processes, amid growing demand, the quest for excellence and fairness and the need for accountability makes it impossible to provide a serious professional response without approaching education from the standpoint of a real community of practice. In this regard, the complexity of education requires that educational organisations must be organisations that learn through the collaboration of all agents, but very especially via the learning and collaborative work of all the educators.

Moreover, this collaboration is not confined to the local environment but, thanks to technology, it extends to other educators and environments, thereby making an educational institution a transparent and connected entity, from which information flows and which also receives contributions to be included in their shared knowledge.

Collaboration

Studying

Other professionals

Environment

Learning through collaborative work with all agents.

Figure 36. Connector identity: collaboration role

Mentoring role

Educators in the digital age accompany and guide their students through the complexity and variety of challenges they face.

Hence, educators are able to help their students to discover and select professional goals and must even provide resources to facilitate their students' insertion into the labour market. For this purpose, it is important for them to know the specific competences related to specific professional careers, as well as having information on particular professional fields that may be aligned with the competences and aspirations of their students.

Furthermore, educators are also the people who must provide guidance on other matters that transcend considerations solely linked to the world of employment. Spheres such as training for learning and study habits, health, nutrition and sports, strategies to improve socialisation or regarding the necessary equality between men and women, civil protection or sustainable development, among other possibilities, also enter into the mentoring and guidance role when understood from the holistic perspective of the person.

Technology opens up new possibilities for communication and guidance between educators and their students. Activities ranging from content curation, critical reading of information or the collaborative construction of the digital identity of students and educators, to the co-creation of shared knowledge, are opportunities for learning and mentoring that can be mediated by technology in various ways and with a high degree of efficacy in the process.

Mentoring

Personal initiative

Connection with the environment

Accompanying and guiding their students through the challenges they must face.

Figure 37. Connector identity: mentoring role

61 References

REFERENCES
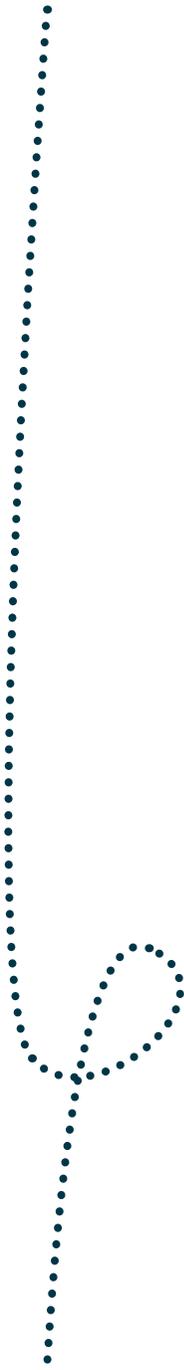
Advisory Committee on Teacher Education and Qualifications ACTEQ (2003). *Towards a Learning Profession. The Teacher Competencies Framework and The Continuing Professional Development of Teachers*. Hong Kong: ACTEQ.

Alderman, M. K. (2013). *Motivation for achievement: Possibilities for teaching and learning.* New York: Routledge.

Álvarez-Bueno, C., Pesce, C., Cavero-Redondo, I., Sánchez-López, M., Martínez-Hortelano, J. A., & Martínez-Vizcaíno, V. (2017). The effect of physical activity interventions on children's cognition and metacognition: A systematic review and meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry,* 56(9), 729-738.

ARTEMIS Transition Partners (2016). *Competency Framework for Primary School Teachers in Kenya.*

Aspin, D. N., Chapman, J., Hatton, M., & Sawano, Y. (Eds.). (2012). *International handbook of lifelong learning* (Vol. 6). Springer Science & Business Media.

Asunda, P. A. (2012). Standards for Technological Literacy and STEM Education Delivery through Career and Technical Education Programs. *Journal of Technology Education*, 23(2), 44-60.

August, D., & Shanahan, T. (2017). *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth.* Routledge.

Australian Institute for Teaching and School Leadership AITSL (2011). *Australian Professional Standards for Teachers*. Australia: Education Services Australia.

Baartman, L., Bastiaens, T., Kirschner, P., & van der Vleuten, C. (2006). The wheel of competency assessment: Presenting quality criteria for competency assessment programs. *Studies In Educational Evaluation*, 32(2), 153-170. doi: 10.1016/j.stueduc.2006.04.006.

Banks, J. A. (2014). Diversity, group identity, and citizenship education in a global age. *Journal of Education*, 194(3), 1-12.

Barley, W. C., Treem, J. W., & Kuhn, T. (2018). Valuing multiple trajectories of knowledge: A critical review and agenda for knowledge management research. *Academy of Management Annals*, 12(1), 278-317.

Barth, M., Lang, D. J., Luthardt, P., & Vilsmaier, U. (2017). Mapping a sustainable future: Community learning in dialogue at the science–society interface. *International Review of Education*, 63(6), 811-828.

Barton, G. (Ed.). (2014). Literacy in the arts: *Retheorising learning and teaching*. Springer Science & Business Media.

Berthelsen, D., & Brownlee, J. (2005). Respecting children's agency for learning and rights to participation in child care programs. *International Journal of Early Childhood,* 37(3), 49.

Bhamra, R., Dani, S., & Burnard, K. (2011). Resilience: the concept, a literature review and future directions. *International Journal of Production Research*, 49(18), 5375-5393.

Bolduc, J. (2008). The Effects of Music Instruction on Emergent Literacy Capacities among Preschool Children: A Literature Review. *Early Childhood Research & Practice*, 10(1).

Bolhuis, S. (2003). Towards process-oriented teaching for self-directed lifelong learning: a multidimensional perspective. *Learning and instruction*, 13(3), 327-347.

Bolívar, A. (2016). Educar democráticamente para una ciudadanía activa. *Revista Internacional de Educación para la Justicia Social* (RIEJS), 5, 1, 69-87.

Bratman, M. E. (2000). Reflection, planning, and temporally extended agency. *The Philosophical Review,* 109(1), 35-61.

Bratman, M. E. (2013). *Shared agency: A planning theory of acting together*. Oxford University Press.

Bresler, L. (Ed.). (2007). *International handbook of research in arts education* (Vol. 16). Springer Science & Business Media.

Burnouf, L. (2004). Global Awareness and Perspectives in Global Education. *Canadian Social Studies*, 38(3), n3.

Carretero, S., Vuorikari, R., & Punie, Y. (2017). DigComp 2.1: *The Digital Competence Framework for Citizens with eight proficiency levels and examples of use* (No. JRC106281). Joint Research Centre (Seville).

Carson, V., et al. (2016). Systematic review of physical activity and cognitive development in early childhood. *Journal of Science and Medicine in Sport*, 19(7), 573-578.

Castañeda, L., Esteve, F., & Adell, J. (2018). ¿Por qué es necesario repensar la competencia docente para el mundo digital? *Revista de Educación a Distancia*, (56). Artíc. 6, DOI: http://dx.doi.org/10.6018/red/56/6

Castañeda, L.; Dabbagh, N. & Torres-Kompen, R. (2017). Personal Learning Environments: Research-Based Practices, Frameworks and Challenges. *Journal of New Approaches in Educational Research*, 6(1), 1-2.

Cavagnetto, A. R. (2010). Argument to foster scientific literacy: A review of argument interventions in K–12 science contexts. *Review of Educational Research*, 80(3), 336-371.

Chen, K. C., & Jang, S. J. (2010). Motivation in online learning: Testing a model of self-determination theory. *Computers in Human Behavior,* 26(4), 741-752.

Comisión de las Comunidades Europeas (2007). *Mejorar la calidad de la formación del profesorado*. Brussels: Communication from the Commission to the Council and the European Parliament.

Comisión Europea (2005). *Common European Principles for Teacher Competencies and Qualifications*. Brussels: Directorate-General for Education and Culture.

Consejo Asesor para la Agenda Digital en Educación (2017). *Recomendaciones para una política digital en educación escolar*. Santiago de Chile: Ministerio de Educación.

Consejo Escolar del Estado (2015). *El profesorado del siglo XXI*. XXI Encuentro de Consejos Escolares Autonómicos y del Estado. Madrid: Ministerio de Educación, Cultura y Deporte.

Cornford, I. R. (2002) Learning-to-learn strategies as a basis for effective lifelong learning, *International Journal of Lifelong Education*, 21:4, 357-368.

Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. Journal of the Institute of Management Science, 9(3), 458–467.

Danielson, C. (2013). *The Framework for Teaching Evaluation Instrument*, 2013 Instructionally Focused Edition. Available at http://www.loccsd.ca/~div15/wp-content/uploads/2015/09/2013-framework-for-teaching-evaluation-instrument.pdf

De Haes, Steven, & Wim Van Grembergen. 2008. An Exploratory Study into the Design of an IT Governance Minimum Baseline through Delphi Research. *Communications of the Association for Information Systems*, 22, 443-458.

De Vries, M. J. (2016). *Teaching about technology: an introduction to the philosophy of technology for non-philosophers*. Dordtecht, The Netherlands: Springer.

Deakin Crick, R., Huang, S., Ahmed Shafi, A. & Goldspink, C. (2015). Developing Resilient Agency in Learning: The Internal Structure of Learning Power. *British Journal of Educational Studies*, 63:2, 121-160.

Decety, J., & Moriguchi, Y. (2007). The empathic brain and its dysfunction in psychiatric populations: Implications for intervention across different clinical conditions. *BioPsychoSocial Medicine*, 1, 22-43.

Department of Education and Training (Western Australia). (2004). *Competency framework for teachers*. Perth, Australia: Government of Western Australia.

Di Fabio, A., Bucci, O., & Gori, A. (2016). High Entrepreneurship, Leadership, and Professionalism (HELP): toward an integrated, empirically based perspective. *Frontiers in psychology*, 7, 1842.

Dobson, A. (2010). *Ciudadanía y medio ambiente*. Editorial Proteus.

Donohoe, H. M., & Needham, R. D. (2009). Moving best practice forward: Delphi characteristics, advantages, potential problems, and solutions. *International Journal of Tourism Research*, 11(5), 415-437.

Easterby-Smith, M., & Lyles, M. A. (Eds.). (2011). *Handbook of organizational learning and knowledge management* (No. 2nd ed). Chichester: Wiley.

EducAragón. Servicio de Educación Permanente (2013). Competencias docentes y formación permanente. Available at http://www.educaragon.org/Files/Files/UserFiles/File/Compentencias%20docentes%20y%20formacin%20profesoradox.pdf

Edwards, L. C., Bryant, A. S., Keegan, R. J., Morgan, K., & Jones, A. M. (2017). Definitions, foundations and associations of physical literacy: a systematic review. *Sports medicine*, 47(1), 113-126.

Elliot, J. (dir.) (2011). *Competencias y Estándares TIC para la profesión docente*. Santiago de Chile: Ministerio de Educación.

Eurydice European Unit (2002). *Key Competencies: Un concepto en expansión dentro de la educación general obligatoria*. Brussels: Eurydice.

Evans, K. (2007). Concepts of bounded agency in education, work, and the personal lives of young adults. *International Journal of Psychology*, 42(2), 85-93.

Ferrari, A. (2012). *Digital competence in practice: An analysis of frameworks*. Seville: Publications Office of the European Union.

Ferrari, A., Punie, Y., & Redecker, C. (2012, September). Understanding digital competence in the 21st century: An analysis of current frameworks. En *European Conference on Technology Enhanced Learning* (pp. 79-92). Springer, Berlin, Heidelberg.

Finnish Institute for Educational Research FIER (2010). *Education and Training 2010: Three studies to support School Policy Development.* Lot 2: Teacher Education Curricula in the EU. Final Report. Jyväskylä: University of Jyväskylä.

Folke, C., Carpenter, S., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and society*, 15(4).

Fraser, J., Atkins, L. & Hall, R. (2013). *DigiLit Leicester Supporting teachers, promoting digital literacy, transforming learning*. Leicester: Leicester City Council.

Gacel-Ávila, J. (2005). The internationalisation of higher education: A paradigm for global citizenry. *Journal of Studies in International Education*, 9(2), 121-136.

Gallego-Arrufat, M. J., & Chaves-Barboza, E. (2014). Tendencias en estudios sobre entornos personales de aprendizaje (Personal Learning Environments-PLE). EDUTEC. *Revista Electrónica de Tecnología Educativa*, 49.

Gascoine, L., Higgins, S., & Wall, K. (2017). The assessment of metacognition in children aged 4–16 years: a systematic review. *Review of Education,* 5(1), 3-57.

Garson, G. D. (2012). *The Delphi method in quantitative research*. Asheboro, NC: Statistical Associates Publishers.

Gerdes, K. E., & Segal, E. A. (2009). A social work model of empathy. *Advances in Social Work*, 10(2), 114-127.

Guichot Reina, V. (2013). Participación, ciudadanía activa y educación. *Teoría de la educación*, 25 (2), 25-47.

Gurin, P., Dey, E., Hurtado, S., & Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes. *Harvard educational review*, 72(3), 330-367.
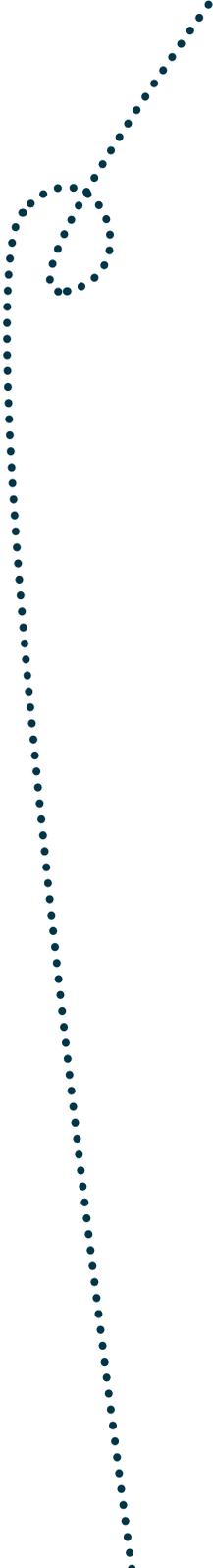
Gutiérrez, A., & Tyner, K. (2012). Educación para los medios, alfabetización mediática y competencia digital. *Comunicar*, 19(38), 31-39.

Hand, B., Yore, L. D., Jagger, S., & Prain, V. (2010). Connecting research in science literacy and classroom practice: a review of science teaching journals in Australia, the UK and the United States, 1998–2008. *Studies in Science Education*, 46(1), 45-68.

Harris, A. (2016). *Creativity, Education and the Arts*. London: Springer.

Hastrup, K. (2005). Performing the world: Agency, anticipation and creativity. *Cambridge Anthropology*, 5-19.

Hinostroza, E. (2017). *TIC, educación y desarrollo social en América Latina y el Caribe*. Montevideo: UNESCO publications.

Hoffman, M. L. (2003). Empathy and Moral Development: Implications for Caring and Justice. *Ethics*, 113:2, 417-419.

Humphrey, N., Kalambouka, A., Wigelsworth, M., Lendrum, A., Deighton, J., & Wolpert, M. (2011). Measures of social and emotional skills for children and young people: A systematic review. *Educational and Psychological Measurement*, 71(4), 617-637.

Hurtado, S. (2007). Linking diversity with the educational and civic missions of higher education. *The Review of Higher Education*, 30(2), 185-196.

International Society for Technology in Education ISTE (2008). *ISTE Standards Teachers*. ISTE publications.

Jablonka, E. (2003). Mathematical literacy. *In Second international handbook of mathematics education* (pp. 75-102). Springer, Dordrecht.

Jolls, T., & Wilson, C. (2014). The core concepts: Fundamental to media literacy yesterday, today and tomorrow. *Journal of Media Literacy Education*, 6(2), 68-78.

Kampylis, P., Punie, Y. & Devine, J. (2015). *Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organisations*. EUR 27599 EN. DOI: 10.2791/54070.

Keeney, S., Hasson, F., & McKenna, H. (2011). *The Delphi technique in nursing and health research*. Chichester, West Sussex: Wiley-Blackwell.

Kerdeman, D. (1998). Hermeneutics and education: Understanding, control, and agency. *Educational*

Theory, 48(2), 241-266.

Kirby, J. R., Knapper, C., Lamon, P., & Egnatoff, W. J. (2010). Development of a scale to measure lifelong learning. *International Journal of Lifelong Education*, 29(3), 291-302.

Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, Culture & Society*, 33(2), 211-221.

Kress, G. (2003). *Multimodal literacy*. New York, Peter Lang.

Kymes, A. (2011). Media literacy and information literacy: A need for collaboration and communication. *Action in Teacher Educatio*n, 33(2), 184-193.

Landeta, J. (1999). *El método Delphi*. Barcelona: Ariel.

Landeta, J. (2006). Current validity of the Delphi method in social sciences. *Technological Forecasting And Social Change*, 73(5), 467-482.

Langer, E., Hatem, M., Joss, J., & Howell, M. (1989). Conditional teaching and mindful learning: The role of uncertainty in education. *Creativity Research Journal*, 2(3), 139-150.

Lankshear, C., & Knobel, M. (2006). *New literacies: Changing knowledge and classroom learning* (2nd ed.). Philadelphia, Open University Press.

Law, N., Woo, D., Torre, J., Wong, G. (2018). *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2.* Montreal: UNESCO Institute for Statistics.

Lázaro-Cantabrana, J. L., Gisbert-Cervera, M., & Silva-Quiroz, J. E. (2018). A rubric to evaluate the digital competence of the university teacher in the Latin American context. *Edutec. Revista Electrónica de Tecnología Educativa*, (63), 1-14.

Lázaro, J. L. y Gisbert, M. (2015). Drafting of a rubric to assess the digital competence of teachers. UT. *Revista de Ciències de l'Educació*, 1. pp. 30-47.

Lee, A. Y., & So, C. Y. (2014). Media literacy and information literacy: Similarities and differences. *Comunicar: Revista Científica de Comunicación y Educación*, 21(42).

Li, J. (2006). Self in learning: Chinese adolescents' goals and sense of agency. *Child Development*, 77(2), 482-501.

Liebowitz, J., & Frank, M. (Eds.). (2016). *Knowledge management and e-learning*. CRC press.

Livingstone, S. (2004). Media literacy and the challenge of new information and communication technologies. *States of Review*, 7 (1), 3-14.

Luo, H., Yang, T., Xue, J., & Zuo, M. (2019). Impact of student agency on learning performance and learning experience in a flipped classroom. *British Journal of Educational Technology*, 50(2), 819-831.

Martindale, T., & Dowdy, M. (2016). Issues in research, design, and development of personal learning environments. Emergence and innovation in digital learning: Foundations and applications, 119-143.

Martínez Bonafé, J., Gimeno Sacristán, J., Gutiérrez Pérez, F., Simón Rodríguez, M. E., & Torres Santomé, J. (2003). *Ciudadanía, poder y educación.* Barcelona: Graó.

Massachusetts Department of Elementary and Secondary Education DOE-Mass (2014). *Quick reference guide: The 5-Step Cycle*. Massachusetts: DOE-Mass.

Massachusetts Department of Elementary and Secondary Education DOE-Mass (2015a). *The Massachusetts Model System for Educator Evaluation*. Massachusetts: DOE-Mass.

Massachusetts Department of Elementary and Secondary Education DOE-Mass (2015b). *Guidelines for the Professional Standards for Teachers*. Massachusetts: DOE-Mass.

McCloskey, E. M. (2012). Docentes globales: un modelo para el desarrollo de la competencia intercultural on-line. *Comunicar,* 19(38), 41-49.

Mishra, P., & Koehler, M. J. (2006). *Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record*, 108(6), pp. 1017-1054.

Moreno-Fernández, F. (dir.) (2018). *Las competencias clave del profesorado de lenguas segundas y extranjeras*. Madrid: Instituto Cervantes.

Mujis, D., Quigley, A., Stringer, E. (2018). *Metacognition and self-regulated learning. Guidance Report*. London: Education Endowment Foundation.

New London Group. (1996). *A pedagogy of multiliteracies: Designing social futures. Harvard Educational Review*, 66 (1), 60-92.

Niiya, Y., Crocker, J., & Bartmess, E. N. (2004). From vulnerability to resilience: Learning orientations buffer contingent self-esteem from failure. *Psychological Science*, 15(12), 801-805.
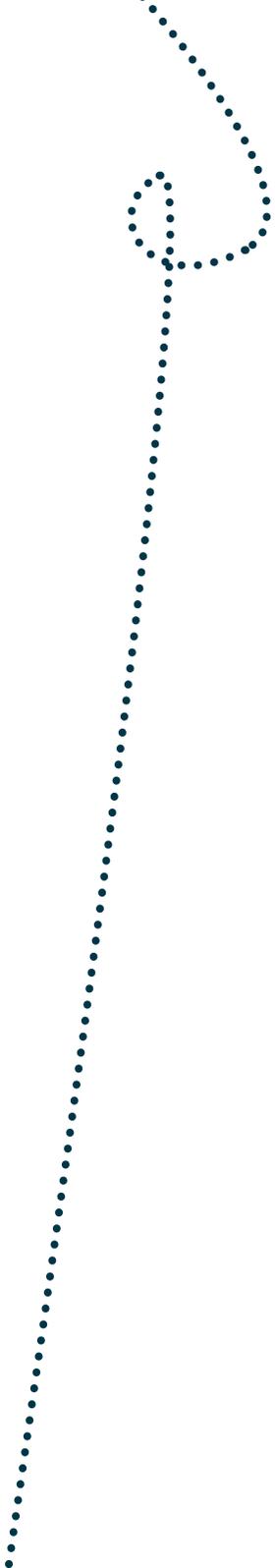
OECD (2018). *Future of Education and Skills: Conceptual Learning Framework. Draft concept note on construct analysis*. Working Document for 8th Informal Working Group meeting, Paris, 29-31 October 2018.

Ojose, B. (2011). Mathematics literacy: Are we able to put the mathematics we learn into everyday use. *Journal of Mathematics Education*, 4(1), 89-100.

Osuna Nevado, C. (2012) En torno a la educación intercultural: una revisión crítica. *Revista de Educación* (358), p.38-58.

Otero, A. (2001). *Medio ambiente y educación: capacitación ambiental para docentes*. Noveduc Libros.

Ozcelik, E., Cagiltay, N. E., & Ozcelik, N. S. (2013). The effect of uncertainty on learning in game-like environments. *Computers & Education*, 67, 12-20.

Özsoy, G., Memiş, A., & Temur, T. (2017). Metacognition, study habits and attitudes. *International Electronic Journal of Elementary Education*, 2(1), 154-166.

Perrenoud, P. (2007). *Diez nuevas competencias para enseñar. Invitación al viaje*. México D. F.: Graó.

Perrenoud, P. (2010). *Métier d'élève et sens du travail scolaire*. París: ESF Sciences Humaines.

Perrenoud, P. (2012). *Cuando la escuela pretende preparar para la vida: ¿desarrollar competencias o enseñar otros saberes?* Barcelona: Graó.

Pillai, S. P. M., Galloway, G., & Adu, E. O. (2017). Comparative studies of mathematical literacy/education: A literature review. *International Journal of Educational Sciences,* 16(1-3), 67-72.

Potter, W. J. (2018). *Media literacy. Sage Publications*.

Pozo, M. T., Gutiérrez, J., & Rodríguez, C. (2007). El uso del método Delphi en la definición de los criterios para una formación de calidad en Animación sociocultural y tiempo libre. *Revista de Investigación Educativa*, 25(2), 351-366.

Puccio, G.J., Mance, M., Barbero Switalski, B., & Reali, P. (2012). *Creativity Rising. Creative Thinking and Creative Problem Solving in the 21st Century.* Buffalo US/State University of New York: ICSC Press.

Reyes, J. E., & Ballesteros, E. R. (2011). Resiliencia Socioecológica: aportaciones y retos desde la Antropología. *Revista de Antropología Social*, 20, 109-135.

Reysen, S. & Katzarska-Miller, I. (2013). A model of global citizenship: Antecedents and outcomes, *International Journal of Psychology*, 48:5, 858-870, DOI:10.1080/00207594.2012.701749.

Roberts, D. A. (2013). Scientific literacy/science literacy. In *Handbook of research on science education* (pp. 743-794). Routledge.

Robertson, R. (2011). Global connectivity and global consciousness. *American Behavioral Scientist*, 55(10), 1336-1345.

Roelofs, E. & Sanders, P. (2007). *Towards a framework for assessing teacher competence. European Journal of Vocational Training*, 40 (1), pp. 123-139.

Ryff, C. (2014). Psychological Well-Being Revisited: Advances in the Science and Practice of Eudaimonia, *Psychotherapy and Psychosomatics,* 83, 10-28.

Salovey, P. E., & Sluyter, D. J. (1997). *Emotional development and emotional intelligence: Educational implications*. Basic Books.

Sánchez-Tarazaga, L. (2016). Los marcos de competencias docentes: contribución a su estudio desde la política educativa europea. *Journal of Supranational Policies of Education*, 5. pp. 44-67.

Schulmeyer, A. (2002). Estado actual de la evaluación docente en trece países de América Latina. Brazil: Conferencia Regional El desempeño de los maestros en América Latina y el Caribe: Nuevas Prioridades 10 – 12 July. Available at http://repositorio.minedu.gob.pe/bitstream/handle/123456789/3092/30.%20Estado%20actual%20de%20la%20evaluaci%C3%B3n%20docente%20EN%2013%20PA%C3%8DSES%20DE%20AM%C3%89RICA%20LATINA.pdf?sequence=1&isAllowed=y

Schunk, D. H., & Zimmerman, B. J. (Eds.). (2012). *Motivation and self-regulated learning: Theory, research, and applications*. Nueva York: Routledge.

Seligman, M. E. P. (2011). F*lourish: A Visionary New Understanding of Happiness and Well-Being.* New York: Free Press.

Severin, E. (2013). *Enfoques estratégicos sobre las TICs en educación en América Latina y el Caribe*. Santiago de Chile: UNESCO.

Sierra, M. T. C. (2016). Resiliencia, bienestar y aprendizaje a lo largo de la vida. *International Journal of Developmental and Educational Psychology*, 1(2), 161-170.

Silva, J., Cervera, M. G., Morales, M., & Onetto, A. (2016). Evaluación de la competencia digital en la formación inicial docente: *Una propuesta en el contexto Chileno-Uruguayo. En Tecnología, innovación e investigación en los procesos de enseñanza-aprendizaje* (pages 2265-2274). Octaedro Editorial.

Sopo, G. R., Salazar, M. B., Guzmán, E. A., & Vera, l. G. (2017). Liderazgo como competencia emprendedora. *Revista ESPACIOS*, 38(24).

Southeast Asian Ministers of Education Organization SEAMEO (2009). *Competency Framework for Southeast Asian Educators.* Quezon City, Philippines: Regional Center for Educational Innovation and Technology.

Southeast Asian Ministers of Education Organization SEAMEO (2010). *Teaching Competency Standards in Southeast Asian Countries: Eleven Country Audit*. Philippines: SEAMEO Innotech.

Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C. & Yehuda, R. (2014). Resilience definitions, theory, and challenges: interdisciplinary perspectives, *European Journal of Psychotraumatology*, 5:1, DOI: 10.3402/ejpt.v5.25338.

Steen, L. A., Turner, R., & Burkhardt, H. (2007). Developing mathematical literacy. In *Modelling and applications in mathematics education* (pp. 285-294). Springer, Boston, MA.

Sterling, S. (2010). Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. *Environmental Education Research*, 16(5-6), 511-528.

Stone, C. A., Silliman, E. R., Ehren, B. J., & Wallach, G. P. (Eds.). (2016). *Handbook of language and literacy: Development and disorders*. Guilford Publications.

Suárez-Rodríguez, J. M., Almerich, G., Díaz-García, I., & Fernández-Piqueras, R. (2012). *Competencias del profesorado en las TIC. Influencia de factores personales y contextuales. Universitas Psychologica*, 11(1).

TCSF Working Group (2017). *Teacher Competency Standards Framework. Beginning Educators. Draft Version 2.0*. Yangon, Myanmar: Universidad de Educación de Yangon.

Trujillo Sáez, F. (2018). *Activos de aprendizaje. Utopías educativas en construcción*. Madrid: SM.

Tu, C. H., & Corry, M. (2002). Research in online learning community. *E-journal of Instructional Science and Technology*, 5(1).

UNESCO. (2011). *UNESCO ICT competency framework for teachers*. France: UNESCO and Microsoft.

UNESCO. (2013). *Global Media and Information Literacy Assessment Framework: Country Readiness and Competencies*. Paris: UNESCO.

Urzúa, L., & Alberto, J. (2013). La ética medio ambiental: principios y valores para una ciudadanía responsable en la sociedad global. *Acta bioethica*, 19(2), 177-188.

Valero, M. J., Vázquez, B., & Cassany, D. (2015). *Desenredando la web: la lectura crítica de los aprendices de lenguas extranjeras en entornos digitales. Ocnos. Revista de Estudios sobre Lectura*, 13, 7-23. DOI: 10.18239/ocnos_2015.13.01.

Vecchio, R. P. (2003). Entrepreneurship and leadership: common trends and common threads. *Human resource management review*, 13(2), 303-327.

Von der Gracht, H. A. (2012). Consensus measurement in Delphi studies. *Technological Forecasting and Social Change,* 79(8), 1525-1536.

Wilson, C. (2012). Media and information literacy: Pedagogy and possibilities. Comunicar: *Revista Científica de Comunicación y Educación*, 20(39), 15-24.

Winne, P. H. (2017). Cognition and metacognition within self-regulated learning. In *Handbook of self-regulation of learning and performance* (pp. 52-64). Routledge.

Wyness, M. G. (1999). Childhood, agency and education reform. *Childhood*, 6(3), 353-368.

Yore, L. D., Pimm, D., & Tuan, H. L. (2007). The literacy component of mathematical and scientific literacy. *International Journal of Science and Mathematics Education*, 5(4), 559-589.

Zollman, A. (2012). Learning for STEM literacy: STEM literacy for learning. *School Science and Mathematics*, 112(1), 12-19.

Annexes

CONTENTS

ANNEX I:

GLOBAL FRAMEWORK OF COMPETENCE FOR *LEARNING* IN THE DIGITAL AGE

The details, roles and functions that characterise learning competence in the digital age are itemised below along with a key descriptor for each function.

Figure 10A. GFCLDA: Citizen identity: roles, functions and practices

Active citizenship	Learners intervene, act and participate in their natural, social and digital environment as part of their own learning process.
Health, surroundings and environment	Learners foster their personal well-being, their health and a harmonious relationship with the surroundings and the environment within their own learning process.
Global and cross-cultural awareness	Learners are aware of the impact on their own learning of their position in a globalised world and the need to provide a cross-cultural response to diversity.
Planning the learning process	Learners establish their own learning plans.
Control of the learning process	Learners manage the learning process effectively.
Motivation for learning	Learners are motivated to learn and invest adequate time and effort to achieve learning.
Overcoming adversity	Learners are able to recover from adverse situations that occur during the course of their learning.
Tolerance to uncertainty	Learners effectively cope with dilemmas, problems and situations of uncertainty throughout their learning.

Committed citizenship

Agency

Resilience

Citizenship

Knowledge building

Connection

Information management	Learners use the information at hand to foster their own learning and create new knowledge.
Critical and creative learning	Learners apply critical and creative thinking to the information they receive.

Linguistic literacy	Learners use their literacy in one or more languages to foster their own learning.
Mathematical literacy	Learners make use of their mathematical literacy to advance their own learning.
Scientific and technological literacy	Learners use their scientific and technological literacy to promote their own learning.
Digital, media and data literacy	Learners makes use of their digital, media and data literacy to advance their learning.
Artistic literacy	Learners use their artistic literacy to advance their learning.

Managing physical skills	Learners deploy physical skills to ensure effective learning on a lifelong basis.
Managing socio-emotional skills	Learners deploy socio-emotional skills to ensure effective learning on a lifelong basis.
Management of cognitive and meta-cognitive skills	Learners deploy cognitive and metacognitive skills to ensure effective learning on a lifelong basis.

Figure 10B. GFCLDA: Knowledge-building identity: roles, functions and practices

| Citizenship | | |
| Knowledge building | | |

Connection	Belonging and collaboration	**Link with the learning community**	Learners have emotional ties with their learning community.
		Participation in the learning community	Learners participate in collective projects within a learning community.
		Leadership for learning	Learners lead their community to foster personal and collective learning.
	Interaction with diversity	**Interaction in contexts of diversity**	Learners interact with heterogeneous people and groups to foster their learning.
		Empathy	Learners show empathy in relation to other learners and their learning processes.

Figure 10C. GFCLDA: Connector identity: roles, functions and practices

The complete descriptors are itemised below for each function in the form of practices implemented by learners in the digital age.

DETAILED DESCRIPTION

A1. Identity for citizenship

A1.1. Role: Committed citizenship

A1.1.1. Function: Active citizenship

Practices:

A1.1.1.1.   Learners have an appropriate attitude, knowledge and abilities to participate in society as an active citizen.

A1.1.1.2.   Learners contribute actively to the well-being and the improvement of their natural, social and digital environment.

A1.1.1.3.   Learners are familiar with the United Nations Sustainable Development Goals and promote their attainment in their environment.

A1.1.1.4.   Learners are committed to defending human rights.

A1.1.1.5.   Learners defend real equality between women and men in all areas of their lives.

A1.1.1.6.   Learners use technology to take an active and critical part in the life of their community and their environment based on the principles of democracy and human rights.

A1.1.2. Function: Health, surroundings and environment

Practices:

A1.1.2.1.   Learners practice healthy living habits and foster them in their community and environment.

A1.1.2.2.   Learners promote the transformation of learning spaces into ecological and environment-friendly spaces.

A1.1.2.3.   Learners use technology to promote their well-being and health, as well as the well-being and health of the people around them.

A1.1.2.4.   Learners know the environmental impact of technology and try to minimise its negative effects actively, especially by reducing unnecessary and polluting consumption.

A1.1.3. Global and cross-cultural awareness

Practices:

A1.1.3.1. Learners know and value the different visions of the world held by the people and communities in their learning context.

A1.1.3.2. Learners become aware, as a result of their learning, of the state of the planet and the impact of human decisions on the ecosystem.

A1.1.3.3. Learners are aware of the cultural differences between the people to whom they relate and from whom they learn.

A1.1.3.4. Learners become aware, as a result of their learning, of the importance of their own ethical stance with respect to situations of injustice or suffering.

A1.1.3.5. Learners use technology to learn about and come into contact with diversity from a critical and democratic standpoint, and from the perspective of safeguarding human rights.

A1. Citizen identity

A1.2. Role: Agency

A1.2.1. Function: Planning the learning process

GFCLDA · Citizenship · Agency

Practices:

A1.2.1.1. Learners set their own learning goals in relation to the resources available to them.

A1.2.1.2. Learners plan their learning in relation to the resources available to them.

A1.2.1.3. Learners assess their learning progress.

A1.2.1.4. Learners use technology to plan their learning.

A1.2.2. Function: Control of the learning process

Practices:

A1.2.2.1.   Learners establish the most suitable learning strategies at each stage of the process.

A1.2.2.2.   Learners undertake responsibilities in connection with their goals and their learning process.

A1.2.2.3.   Learners are aware of the influence of different people and of their surroundings on their learning process.

A1.2.3. Motivation for learning

Practices:

A1.2.3.1.   Learners gauge their own motivation for learning and know their main sources of motivation.

A1.2.3.2.   Learners invest in learning the time and effort required to achieve satisfactory results.

A1.2.3.3.   Learners implement strategies to strengthen their motivation to learn and the motivation of people around them.

A1.2.3.4.   Learners have a surrounding environment that motivate them to learn.

A1.2.3.5.   Learners have the necessary resources to learn, including material, time, space and technological resources.

A1. Citizen identity

A1.3. Role: Resilience

A1.3.1. Function: Overcoming adversity

Practices:

A1.3.1.1.   Learners are aware of the problems or difficulties they face in their learning.

A1.3.1.2.   Learners alter their learning plans and strategies to overcome problems or difficulties in relation to their learning.

A1.3.1.3.   Learners overcome stress derived from adversity inherent to the learning process.

A1.3.2. Function: Tolerance to uncertainty

Practices:

A1.3.2.1.   Learners accept doubt as part of the learning process.

A1.3.2.2.   Learners accept change as part of the learning process.

A1.3.2.3.   Learners accept error as part of the learning process.

A1.3.2.4.   Learners learn from their own mistakes.

A2. Knowledge-building identity

A2.1. Role: Knowledge creation

A2.1.1. Function: Information management

Practices:

A2.1.1.1.   Learners seek and use multiple sources of information in different formats, whether analogue or digital, to build new knowledge.

A2.1.1.2.   Learners are aware of the theoretical and practical links between the different kinds of learning.

A2.1.1.3.   Learners use the necessary information in a cross-disciplinary way to enhance their learning.

A2.1.1.4.   Learners use information, knowledge and competences to resolve practical cases or problematic situations.

A2.1.1.5.   Learners use technology to obtain information, process it and build knowledge.

A2.1.2. Function: Critical and creative learning

Practices:

A2.1.2.1. Learners apply critical thinking to their own learning (information sources, learning activities and interaction with other learners, teachers and their surroundings).

A2.1.2.2. Learners apply creative thinking to their own learning.

A2.1.2.3. Learners create new knowledge on the basis of their know-how and competences.

A2.1.2.4. Learners transform reality through their knowledge and competences.

A2.1.2.5. Learners use technology to develop a critical reading of the environment or the information sources available to them.

A2.1.2.6. Learners use technology to foster their creativity during the learning process.

A2. Knowledge-building identity

A2.2. Role: Multiple literacies

A2.2.1. Function: Linguistic literacy

GFC*L*DA

Knowledge building

Multiple literacies

Practices:

A2.2.1.1. Learners use their command of one or more languages to advance their learning.

A2.2.1.2. Learners use their oral communication skills (listening, speaking and interaction) to advance their learning.

A2.2.1.3. Learners use their written communication skills (reading and writing) to advance their learning.

A2.2.1.4. Learners use their mediation skills to advance their learning.

A2.2.1.5. Learners use their linguistic competence to maintain interaction that facilitates learning with other learners, teachers or other agents.

A2.2.1.6. Learners use technology to apply their linguistic literacy in a learning situation and to advance their linguistic literacy.

A2.2.2. Function: Mathematical literacy

Practices:

A2.2.2.1. Learners recognise mathematical elements in a variety of learning situations.

A2.2.2.2. Learners use their mathematical literacy to make estimates and interpret data linked to their learning.

A2.2.2.3. Learners advance their learning by means of numerical, graphical and geometrical reasoning.

A2.2.2.4. Learners use mathematics to communicate in learning situations, especially through expression in mathematical language, or the transcription into mathematical language, of data in a learning situation.

A2.2.2.5. Learners use their mathematical literacy to resolve problems emerging during the learning process.

A2.2.2.6. Learners use technology to apply their mathematical literacy in a learning situation and to advance their own mathematical literacy.

A2.2.3. Function: Scientific and technological literacy

Practices:

A2.2.3.1. Learners use their scientific literacy to advance their learning.

A2.2.3.2. Learners use their technological literacy to advance their learning.

A2.2.3.3. Learners use representations and languages typical of science and technology to communicate in learning situations.

A2.2.3.4. Learners use tools and equipment typical of scientific and technological work to advance their own learning.

A2.2.3.5. Learners use their scientific and technological literacy to resolve problems emerging in learning situations.

A2.2.3.6. Learner recognise and avoid the risk of pseudo-scientific assertions for learning.

A2.2.4. Function: Digital, media and data literacy

Practices:

A2.2.4.1.   Learner use their digital literacy to advance their learning.

A2.2.4.2.   Learners use their media and data literacy to advance their learning.

A2.2.4.3.   Learners use their digital and media-data literacy to obtain and manage information that is relevant to their learning.

A2.2.4.4.   Learners use their digital and media and data literacy to communicate and collaborate with other people during their learning process.

A2.2.4.5.   Learners use their digital and media and data literacy to create digital artefacts that facilitate their learning.

A2.2.4.6.   Learners efficiently use learning platforms and collaborative work.

A2.2.4.7.   Learners subject the information sources and digital resources and services that they use for their learning to critical judgement.

A2.2.5. Function: Artistic literacy

Practices:

A2.2.5.1.   Learners use their artistic literacy to advance their learning.

A2.2.5.2.   Learners recognise the presence of art in various learning situations.

A2.2.5.3.   Learners use representations and languages typical of art to communicate in learning situations.

A2.2.5.4.   Learners use tools and equipment typical of artistic work to advance their learning.

A2.2.5.5.   Learners use technology to apply their artistic literacy in a learning situation and to advance their artistic literacy.

A2. Knowledge-building identity

A2.3. Role: Managing learning skills

A2.3.1. Function: Managing physical skills

Practices:

A2.3.1.1.   Learners are aware of the importance, capacities and limitations of their body throughout the learning process.

A2.3.1.2.   Learners use their bodily and physical skills to respond to day-to-day demands in learning situations.

A2.3.1.3.   Learners efficiently use the adequate tools and techniques in each learning situation.

A2.3.1.4.   Learners use technology and other resources to enhance their physical skills over the course of their learning.

A2.3.2. Function: Managing socio-emotional skills

Practices:

A2.3.2.1.   Learners know their emotions in relation to their learning process.

A2.3.2.2.   Learners manage their emotions to facilitate learning.

A2.3.2.3.   Learners are aware of the importance of other people in their own learning.

A2.3.2.4.   Learners relate adequately with other learners to facilitate their learning and that of others.

A2.3.2.5.   Learners relate adequately with teachers and other people with more knowledge or competence than learners themselves so as to facilitate learning.

A2.3.2.6.   Learners use technology and other resources to enhance their socio-emotional skills over the course of their learning.

A2.3.3. Function: Management of cognitive and meta-cognitive skills

Practices:

A2.3.3.1.   Learners remain attentive during the learning process.

A2.3.3.2.   Learners use their memory to facilitate the learning process.

A2.3.3.3.   Learners reason and make reasonable decisions during their learning process.

A2.3.3.4.   Learners evaluate and adjust their cognitive processes to facilitate learning.

A2.3.3.5.   Learners use technology and other resources to advance their cognitive and meta-cognitive skills over the course of their learning.

A3. Connector identity

A3.1. Role: Belonging and collaboration

A3.1.1. Function: Link with the learning community

Practices:

A3.1.1.1.   Learners belong to a community that effectively advances their learning.

A3.1.1.2.   Learners identify with their learning community.

A3.1.1.3.   Learners maintain positive social relations within their learning community.

A3.1.1.4.   Learners use technology to be linked to their learning community and to learn with it.

A3.1.2. Function: Participation in the learning community

Practices:

A3.1.2.1.   Learners participate in setting learning goals within their community.

A3.1.2.2.   Learner actively collaborate with their learning community.

A3.1.2.3.   Learner actively contribute to creating a share repertoire of learning materials.

A3.1.2.4.   Learners use technology to participate in collective projects within their learning community.

A3.1.3. Function: Leadership for learning

Practices:

A3.1.3.1.   Learners lead a community that shares a learning project.

A3.1.3.2.   Learners are able to share their view of the learning process with their community.

A3.1.3.3.   Learners are able to tutor or mentor other learners within their learning community.

A3.1.3.4.   Learners use technology to lead a collective learning project within their community.

A3. Connector identity

A3.2. Role: Interaction with diversity

A3.2.1. Function: Interaction in contexts of diversity

Practices:

A3.2.1.1.   Learners respect and value diversity as a source of enrichment in a learning situation.

A3.2.1.2.   Learners interact satisfactorily with diverse people in learning contexts.

A3.2.1.3.   Learners use technology to enter into contact with and learn with diverse people.

A3.2.2. Function: Empathy

Practices:

A3.2.2.1.   Learners are able to share other people's emotions in relation to the learning process.

A3.2.2.2.   Learners are able to adopt the subjective standpoint of other learners in relation to a learning situation.

A3.2.2.3.   Learners are able to make decisions and act with empathy towards other learners to advance their own learning process and that of others.

ANNEX II:

GLOBAL FRAMEWORK OF COMPETENCE FOR *EDUCATION* IN THE DIGITAL AGE

The details, roles and functions that characterise educational competence in the digital age are itemised below along with a key descriptor for each function.

Committed citizenship	**Active citizenship**	Educators foster active citizenship in their social and digital environment.
	Promoting health and the environment	Educators promote health and environmental awareness, both their own and that of their milieu.
Lifelong learning	**Knowledge of the political and curricular framework**	Educators are familiar with their political and curricular framework in which they immerse themselves and work to improve.
	Learning community	Educators form an active part of a learning community.
Basic technology literacy	**Professional development**	Educators pursue both their own professional development and that of those around them.
	Implementation of lifelong learning	Educators introduce what they have learned through their own professional development into their teaching practices.
	Basic technology literacy	Educators possess sufficient technology literacy to use technology resources.
	Guarantee of privacy and secure use of technology	Educators promote the secure use of technology and use it securely.

Citizenship

Teacher

Connector

Figure 28A. GFECD: Citizen identity: roles, functions and practices

Citizenship		
	Designing experiences	Educators design memorable learning experiences.
Design	**21st century learning**	Educators design memorable learning experiences.
	Knowing the student	Educators have an integrated knowledge of the student.
Facilitation	**Methodological and resource diversity**	Educators use different methods and resources in teaching practice.
	Concept understanding	Educators promote students' understanding of the educational content.
	Regulated learning	Educators conduct assessment activities to ensure learning and solve difficulties.
Assessment	**Information about the learning process**	Educators provide students or their legal guardians with information.
Connector		

[1] The term "students" was used instead of "pupils" or "learners" as it best represents the active learning task performed by the person who learns in the context of both formal and non-formal education.

Figure 28B. GFECD: Teacher identity: roles, functions and practices

Citizenship

Teacher

Connector

Collaboration	**Student collaboration**	Educators promote safe and equality-based collaboration among and with their students.
	Collaboration with other professionals	Educators collaborate with other professionals in their lifelong learning and their teaching practices.
	Personal learning environment	Educators are aware of their personal learning environment and endeavour to enrich it.
Leadership	**Pedagogical leadership**	Educators exercise pedagogical leadership in their environment.
	Empowering leadership	Educators use their pedagogical leadership to empower the whole education community.
Mentoring	**Personal initiative**	Educators promote personal initiative in their students.
	Connection with the environment	Educators link their students up with social agents, institutions, organisations and companies in their environment.

Figure 28C. GFECD: Connector identity: roles, functions and practices

The complete descriptors are itemised below for each function in the form of practices implemented by educators in the digital age.

DETAILED DESCRIPTION

E1. Citizen identity

E.1.1. Committed citizenship role

E1.1.1. Function: Active citizenship

Practices:

E1.1.1.1.   Educators have an appropriate attitude, knowledge and abilities to participate in society as an active citizen.

E1.1.1.2.   Educators promote the achievement of Sustainable Development Goals in their environment, and contribute to arousing student awareness of their importance.

E1.1.1.3.   Educators are committed to defending human rights.

E1.1.1.4.   Educators defend real equality between women and men in all areas of their lives.

E1.1.1.5.   Educators use the resources at their disposal to contribute to the inclusion and socio-emotional well-being of their students.

E1.1.2. Function: Health and environment

Practices:

E1.1.2.1.   Educators foster healthy living habits among their students and their education community, particularly as regards the use of technology.

E1.1.2.2.   Educators use tools with low ecological impact.

E1.1.2.3.   Educators promote the transformation of learning spaces into ecological and environment-friendly spaces.

E1.1.2.4.   Educators know the environmental impact technology has and actively try to minimise its negative effects.

E1.1.3. Function: Political and curricular framework

Practices:

E1.1.3.1.   Educators are familiar with the regulatory framework and the specific curriculum that define their teaching activity.

E1.1.3.2.   Educators interpret and give concrete form to the curriculum to adapt it to their context.

E1. Citizen identity

E1.2. Lifelong learning role

E.1.2.1. Function: Learning community

Practices:

E1.2.1.1.   Educators interact with their students and their education community through different face-to-face and virtual collaboration initiatives.

E1.2.1.2.   Educators are capable of using technology to create, motivate and actively participate in learning communities.

E1.2.1.3.   Educators adopt communication and collaboration strategies for their professional development and for the development of their organisation and their education community.

E1.2.1.4.   Educators collaborate in publishing teaching resources and materials that they develop in collaboration with other educators.

E.1.2.2. Function: Professional development

Practices:

E1.2.2.1.   Educators understand their own professional development as a continuing process of change and improvement through practice, reflection and assessment.

E1.2.2.2.   Educators identify and make the most of development and lifelong learning opportunities in their environment.

E1.2.2.3.   Educators have an efficient professional development strategy for the teaching activity in which they are involved.

E1.2.2.4.   Educators specifically develop an efficient strategy to improve their digital competence.

E1.2.2.5.   Educators know and select those training experiences that best fit in with their personal development needs, their lifestyle and their timetable.

E1.2.2.6.   Educators are involved in innovative teaching activities.

E1.2.3. Function: Implementation of lifelong learning

Practices:

E1.2.3.1.   Educators implement what they have learned in professional development initiatives, assessing their transformative impact on their working environment.

E1. Citizen identity

E1.3. Basic technology literacy role

E1.3.1. Function: Basic technology literacy

Practices:

E1.3.1.1.   Educators use a variety of technological tools appropriately in different teaching and learning situations.

E1.3.1.2.   Educators have a basic knowledge of hardware and software operations.

E1.3.1.3.   Educators are familiar with basic applications related to productivity, internet browsing, communications and management.

E1.3.1.4.   Educators identify and solve technical and security problems when working with digital devices and in digital environments.

E1.3.2. Function: Guarantee of privacy and secure use of technology

Practices:

E1.3.2.1. Educators make sure to guarantee the privacy and secure and responsible use of student data.

E1.3.2.2. Educators recognise and prevent hazards and threats in digital environments and promote the secure, critical and appropriate use of the technology.

E1.3.2.3. Educators know how to protect devices, information, content and their own and students' personal data.

E1.3.2.4. Educators use educational digital technologies effectively, sustainably and securely.

E1.3.2.5. Educators do everything in their power to overcome the possible gaps that may exist in the access to and use of technologies.

E2. Teacher identity

E2.1. Design role

E2.1.1. Function: Designing experiences

Practices:

E2.1.1.1. Educators design learning experiences that enable their students to acquire knowledge and develop skills required by present-day society.

E2.1.1.2. Educators take into account learning goals and the target students when designing and selecting content and educational resources and when planning how to use them.

E2.1.1.3. Educators motivate and stimulate the students to actively engage in the learning experience.

E2.1.1.4. Educators involve their students in inquiry and research projects and in creative problem-solving.

E2.1.1.5. Educators facilitate their students' connections with social agents, institutions, organisations and companies by designing learning experiences based on real situations.

E2.1.1.6. Educators help students to use technology to acquire skills to search, manage, analyse and evaluate information and to create content, communicate and collaborate.

E2.1.1.7. Educators promote an integrated and harmonious development of digital identity and competence.

E2.1.2. Function: 21ˢᵗ century learning

Practices:

E2.1.2.1.   Educators promote reflective and creative learning as, well as the active and critical building of knowledge in their students.

E2.1.2.2.   Educators foster independence, self-management abilities, self-regulation and lifelong learning in their students.

E2.1.2.3.   Educators encourage their students to actively participate as citizens in the social life of their environment.

E2.1.2.4.   Educators encourage their students to express themselves and behave responsibly on social networks, platforms and digital spaces.

E2.1.2.5.   ¡Educators promote co-education and full equality between men and women!

E2.1.2.6.   Educators advocate and organise teaching activities and projects to develop intercultural awareness and respect in their education community.

E2.1.2.7.   Educators stimulate creativity, teamwork, collaboration among their students and independence in their approach to learning.

E2. Teacher identity

E2.2. Facilitation role

E2.2.1. Function: Knowing the student

Practices:

E2.2.1.1.   Educators are familiar with the physical, cognitive, emotional and social development characteristics of their students.

E2.2.1.2.   Educators design teaching activities that effectively adapt and respond to diversity.

E2.2.1.3.   Educators personalise the learning opportunities for their students.

E2.2.2. Function: Methodological and resource diversity

Practices:

E2.2.2.1.   Educators use different methodological strategies to facilitate learning by students.

E2.2.2.2.   Educators design, adapt and promote the use of open source educational resources and are aware of the appropriate use of the different types of possible licences.

E2.2.2.3.   Educators boost the meaningful learning of their students.

E2.2.2.4.   Educators use technology to search, manage and properly use information, content, materials and resources for learning.

E2.2.2.5.   Educators use different (textual, audiovisual, theatrical, musical, transmedia) communication and language strategies to design learning experiences.

E2.2.2.6.   Educators have various resources to respond effectively to the problems their students have in the learning process.

E2.2.3. Function: Concept understanding

Practices:

E2.2.3.1.   Educators facilitate the understanding of their students with respect to key curricular concepts.

E2.2.3.2.   Educators promote the acquisition of skills and competencies that will help them to solve problems adapted to their level of development.

E2. Teacher identity

E2.3. Assessment role

E2.3.1. Function: Regulated learning

Practices:

E2.3.1.1.   Educators monitor their students' progress to ensure they learn successfully and overcome any difficulties.

E2.3.1.2.   Educators use different assessment, self-assessment and peer assessment instruments and strategies.

E2.3.1.3.   Educators use continuous, formative and cumulative assessment strategies throughout the learning process.

E2.3.1.4.   Educators use digital technologies to optimise assessment processes.

E2.3.1.5.   Educators evaluate skills, knowledge and competencies in a coordinated manner with their educational organisation.

E2.3.1.6.   Educators analyse, interpret and critically evaluate the results of the student learning to propose improvements in the teaching process and in how the educational organisation itself works.

E2.3.1.7.   Educators guide students in the self-assessment of their learning.

E2.3.2. Function: Information about the learning process

Practices:

E2.3.2.1.   Educators regularly provide personalised and significant information on the student learning process.

E2.3.2.2.   Educators help students and their legal guardians to make the most appropriate decisions for their integrated development based on informed data.

E2.3.2.3.   Educators use suitable technology resources to provide information about the learning process, always guaranteeing the privacy and security of student data.

E3. Connector identity

E3.1. Collaboration role

E.3.1.1. Function: Student collaboration

Practices:

E3.1.1.1.   Educators create and promote spaces where students learn collaboratively with other learners and other agents present in their context or virtually.

E3.1.1.2.   Educators provide safe learning spaces where student confidence is fostered and where acts of discrimination and humiliation, or those fomenting inequality, are rejected and combated.

E3.1.1.3.   Educators facilitate inclusion and accessibility to learning experiences, resources and materials for all students, especially those with special educational needs.

E3.1.1.4.   Educators encourage students to use educational digital technologies creatively, strategically, securely and critically in their learning experiences.

E3.1.1.5.   Educators are capable of preventing, detecting and intervening in unjust situations and where there is social inequality.

E3.1.1.6.   Educators are capable of detecting and intervening in cases of bullying and violence in the education environment.

E3.1.1.7.   Educators guide their students in the handling and management of social and emotional skills for these to positively impact on their learning.

E3.1.2. Function: Collaboration with other professionals

Practices:

E3.1.2.1.   Educators interchange resources, knowledge and opinions about teaching practice with other professionals and groups.

E3.1.2.2.   Educators collaborate with other members of the educational community to create shared learning situations between groups, levels or subjects.

E3.1.2.3.   Educators collaborate with other colleagues to improve their teaching practices.

E3.1.2.4.   Educators promote and actively participate in team meetings to improve the collective and personal educational project.
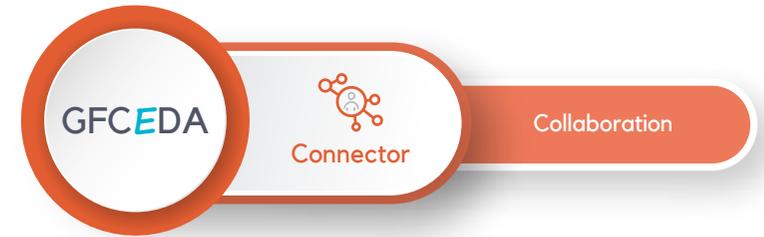
E3.1.3. Function: Personal learning environment

Practices:

E3.1.3.1.   Educators have a personal learning environment (people, services and resources) for lifelong professional development.

E3.1.3.2.   Educators have a critical attitude to materials and sources of information they consult for their professional development.

E3.1.3.3.   Educators collaborate with other educators in creating and managing libraries or shared resource repositories, preferably open source ones.

E3.1.3.4.   Educators select quality information for their students, their colleagues and their education community.

E3.1.3.5.   Educators actively participate in digital learning networks with other colleagues.

E3. Connector identity

E3.2. Leadership role

E3.2.1. Function: Pedagogical leadership

Practices:

E3.2.1.1.   Educators contribute their vision when defining the educational project and the learning space.

E3.2.1.2.   Educators lead reflection and methodological innovation in their milieu.

E3.2.1.3.   Educators share educational responsibility with the management team of their institution.

E3.2.1.4.   Educators are a model for their colleagues as regards identifying, exploring, evaluating, creating and adopting new resources (whether digital or not) and learning tools.

E3.2.2. Function: Empowering leadership

Practices:

E3.2.2.1.   Educators assume the pedagogical leadership to improve teaching and learning processes.

E3.2.2.2.   Educators facilitate collaboration and the active participation of all members of their education community.

E3. Connector identity

E3.3. Mentoring role

E3.3.1. Function: Personal initiative

Practices:

E3.3.1.1.   Educators foster a sense of initiative and enterprise in their students.

E3.3.2. Function: Connection with the environment

Practices:

E3.3.2.1.   Educators facilitate their students' connections with institutions, social agents, organisations and companies by designing learning experiences based on real situations.
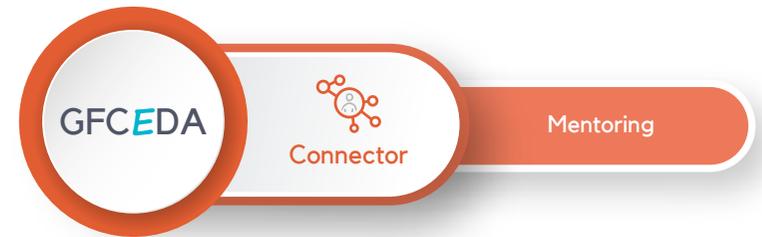
ANNEX III:

MAPPING SOURCES FOR COMPETENCE FOR *LEARNING* IN THE DIGITAL AGE

Active citizenship	- Bolívar (2016) - Guichot Reina (2013) - Martínez et al. (2003)	UNESCO, 2015 EU, 2018 SINGAPUR, 2018
Health, surroundings and environment	- Dobson (2010) - Otero (2001) - Urzúa and Alberto (2003)	LCOMPASS, 2018 OECD PISA, 2018
Global and cross-cultural awareness	- Gazel-Ávila (2005) - McCloskey (2012) - Osuna Nevado (2012) - Robertson (2011)	UNESCO, 2013 UNESCO, 2015 WEF, 2015 SALTO, 2016 SINGAPUR, 2018 OECD PISA, 2018
Planning the learning process	- Bratman (2000, 2013) - Evans (2007) - Hastrup (2005)	WEF, 2015 LCOMPASS, 2018
Control of the learning process	- Kerderman (1998) - Evans (2007) - Wyness (1999)	WEF, 2015 CASEL, 2017 LCOMPASS, 2018
Motivation for learning	- Alderman (2013) - Chen and Jang (2010) - Schunk and Zimmerman (2012)	CASEL, 2017
Overcoming adversity	- Langer et al. (1989) - Ozcelik et al. (2013) - Reyes and Ballesteros (2011)	UNESCO, 2013
Tolerance to uncertainty	- Barley et al. (2018) - Easterby-Smith and Lyles (2011) - Liebowitz and Frank (2016) - Mujis et al. (2018)	UNESCO, 2013

Citizenship

Committed citizenship

Agency

Resilience

Knowledge building

Connection

Figure 38A. Mapping of sources for Competence for Learning in the Digital Age

Knowledge building

- Citizenship
- Knowledge creation
- Multiple literacies
- Managing learning skills
- Connection

Learning Framework	References	Frameworks
Information management	- Barley et al. (2018) - Easterby-Smith and Lyles (2011) - Liebowitz and Frank (2016) - Mujis et al. (2018)	NESCO, 2015 SALTO, 2017 CAMBRIDGE, 2019
Critical and creative learning	- Deakin Crick et al. (2015) - Harris (2016) - OECD (2018) (critical thinking and problem-solving) - Puccio et al. (2012)	UNESCO, 2013 UNESCO, 2015 WEF, 2015
Linguistic literacy	- August and Shanahan (2017) - Stone et al. (2016)	UNESCO, 2013 WEF, 2015 COE, 2018 EU, 2018 CAMBRIDGE, 2019
Mathematical literacy	- Jablonka (2013) - Pillai et al. (2017) - Yore et al. (2007)	WEF, 2015 EU, 2018 LCOMPASS, 2018
Scientific and technological literacy	- Cavagnetto (2010) - Hand et al. (2010) - Roberts (2013) - Yore et al. (2007)	WEF, 2015 EU, 2018
Digital, media and data literacy	- Gutiérrez and Tyner (2012) - Koltay (2011) - Livingstone (2004) - Potter (2018)	UNESCO, 2015 OECD PISA, 2018 SINGAPUR, 2018
Artistic literacy	- Barton (2014) - Bolduc (2008) - Bresler (2007)	
Managing physical skills	- Álvarez-Bueno et al. (2017) - Carson et al. (2016) - Edwards et al. (2017)	LCOMPASS, 2018
Managing socio-emotional skills	- Durlak (2015) - Humphrey et al. (2011) - Salovey and Sluyter (1997)	UNESCO, 2013 UNESCO, 2015 CASEL, 2017 OECD PISA, 2018 CAMBRIDGE, 2019
Management of cognitive and meta-cognitive skills	- Gascoine et al. (2017) - OECD (2018) (self-monitoring and meta-learning) - Özsoy et al. (2017) - Winne (2017)	UNESCO, 2015 WEF, 2015 LCOMPASS, 2018 OECD PISA, 2018

Figure 38B. Mapping of sources for Competence for Learning in the Digital Age

Citizenship

Knowledge building

Connection

Belonging and collaboration

Interaction with diversity

Link with the learning community	- Aspin et al. (2012) - Castañeda et al. (2017) - Gallego-Arrufat and Chaves-Barboza (2014) - Martindale y Dowdy (2016)	EU, 2018 LCOMPASS, 2018 JRC, 2019
Participation in the learning community	- Barth et al. (2017) - Tu y Corry (2002)	UNESCO, 2013 UNESCO, 2015 WEF, 2015 SALTO, 2017 LCOMPASS, 2018
Leadership for learning	- Di Fabio et al. (2016) - Sopo et al. (2017) - Vecchio (2003)	WEF, 2015
Interaction in contexts of diversity	- Banks (2014) - Gurin et al. (2002) - Hurtado (2007)	UNESCO, 2013 UNESCO, 2015 COE, 2018 OECD PISA, 2018
Empathy	- Hoffman (2003) - OECD (2018) (empathy and compassion) - Seligman (2011) - Ryff (2014)	UNESCO, 2015 CASEL, 2017 COE, 2018 JRC, 2019

Figure 38C. Mapping of sources for Competence for Learning in the Digital Age

ANNEX IV:

SUMMARY REVIEW OF THE LITERATURE FOR THE GLOBAL FRAMEWORK OF COMPETENCE FOR *EDUCATION* IN THE DIGITAL AGE

Since the end of the 20th century in the international sphere there has been an increasing need to define a framework of competences that includes, on the one hand, the main demands and activities implemented by teachers today and, on the other hand, the fundamental elements of digital competence.

In this regard, to define the Global Framework of Competence for Education in the Digital Age (GFCEDA) it is vital to review the contributions of works linked to the "frameworks of competences" in both spheres.

Accordingly, we provide a summary review of literature concerning the two core concepts leading to teaching competence in the digital age: teaching competence and digital competence.

With regard to the selection of key frameworks, the table below summarises the main contributions with regard to three issues: the fields or dimensions used, how the competences are presented and the levels of achievement used to define them.

FRAMEWORK OF TEACHING COMPETENCES	Main fields/dimensions	Competences/Standards	Indicators/Levels of achievement
ACTEQ Framework (HK)	- Teaching and learning. - Student development. - School development. Professional relations and community service relations.	- 4 competences per field, broken down into specific competences.	*- Threshold* *- Competent* *- Accomplished*
Western Australia Framework	- Enable students' learning. - Evaluate and report the learning outcomes. - Commit to professional learning. - Participate in curricular policies and other initiatives or programmes focused on the outcome of the surrounding environment. - Forge relationships and alliances in the school community	- Provide thorough details of key teaching competences within each of the dimensions. - In addition, these competences will change depending on the indicator or the level of achievement. Each phase has its own standards.	*- Phase 1* *- Phase 2* *- Phase 3*
SEAMEO Framework (Philippines)		11 competences are presented with generic specifications, but without dimensions or fields.	
FIER Framework (Finland)	- Discipline. - Pedagogy. - Integration of theory and practice. - Comprehension and collaboration. - Quality. - Mobility. - Leadership. - Continuous and lifelong learning.	Each of the clusters is defined with a series of 3-7 specific competences.	
AITSL Framework (Australia)	- Professional knowledge. - Professional practice. - Personal commitment.	7 competences or standards divided between the three spheres.	*- Graduate* *- Proficient* *- Highly accomplished* *- Lead*
MASS Framework (USA)	*5-step cycle* of continuous improvement: - Self-assessment. - Proposal of goals and development of a plan. - Implementation of plans. - Formative assessment. - Summative assessment. Standards: - Curriculum, planning and evaluation. - Teaching of all students. - Commitment to family and community. - Professional culture.	Multiple sub-indicators for each standard.	- Introduction - Practice - Demonstration

FRAMEWORK OF TEACHING COMPETENCES	Main fields/dimensions	Competences/Standards	Indicators/Levels of achievement
KENYA Framework	- Knowledge. - Teaching abilities. - Assessment. - Professional and behavioural values.	Each field contains ten points that teachers should fulfil or have a command of.	
TCSF Framework (Burma/Myanmar)	- Professional knowledge. - Professional abilities and practices. - Professional values and trends. - Professional growth and development.	3-5 standards for each of these fields, which in turn add a series of minimum requirements and indicators that establish the level of acquisition.	These indicators set the level, which is not shown quantified.
Cervantes Framework		8 key competences: - ICT. - Inter-cultural communication. - Feelings and emotions. - Professional development - Active engagement. - Involve students in their learning. - Organise learning situations. - Evaluate learning and the students' performance.	Full and detailed descriptions of each one, but with no numerical markers of achievement or level.

Table 2. Summary of frameworks of reference.
Frameworks of teaching competences

FRAMEWORKS OF DIGITAL COMPETENCES	Main fields/dimensions	Competences/Standards	Indicators/Levels of achievement
NETS-T Framework		5 global standards: - Enable and inspire students' learning and creativity. - Design and Develop Digital-Age Learning Experiences and Assessments. - Model Digital-Age Work and Learning. - Promote and Model Digital Citizenship and Responsibility. - Engage in professional growth and leadership.	
UNESCO Framework	3 spheres: - Technological literacy. - Knowledge advancement. - Knowledge creation. 6 modules/aspects of the teaching work: - Understanding ICT in education. - Curriculum and assessment. - Pedagogy. - ICT per se. - Organisation and administration. - Professional learning of teachers.	Inter-relation between spheres and modules, and within each of these relations: curricular goals, teaching competences to be achieved, goals to be achieved and methodological examples.	
Ferrari Document (2012)	Areas of digital competence: - Information management. - Collaboration. - Communication and sharing. - Creation of content and knowledge. - Ethics and responsibility. - Evaluation and problem-solving. - Technical operations.		
ENLACES Framework (Chile)	- Pedagogical dimension. - Technical dimension. - Management dimension. - Social, ethical and legal dimension. - Professional development and responsibility dimension	Dimensions specified in competences, competences specified in criteria.	Each of the criteria is defined through standards. Standards (which account for the achievement) also contain specific proposals for evaluation and for use as evidence.

FRAMEWORKS OF DIGITAL COMPETENCES	Main fields/dimensions	Competences/Standards	Indicators/Levels of achievement
DigiLit Framework (UK)	- Finding, evaluating and organising. - Creating and Sharing. - Assessing and Giving Feedback. - Communication, Collaboration and Participation. - E-Safety and Online Identity. - Technology to support professional development.	Standards within each of these areas.	- *Entry* - *Core* - *Developer* - *Pioneer*
The Lázaro and Gisbert Rubric	4 dimensions: - Didactics, curricular and methodology. - Planning, organising and managing ICT spaces and resources. - Ethical, legal and security. - Personal and professional development. 4 spheres: - Classroom. - School. - Community. - Professional development.	Various indicators for each intersection of dimensions and spheres.	- *Beginner* - *Intermediate* - *Expert* - *Transformer*
DIGCOMP 2.1	Parts of the framework: - Definition of the competence areas. - Descriptors of competences. - Levels of achievement. - Knowledge, skills and attitudes applicable to the competence. - Examples of use.	5 competences: - Information and data literacy. - Communication and collaboration. - Creation of digital content. - Security. - Problem-solving.	- *Foundation (1,2)* - *Intermediate (3,4)* - *Advanced (5,6)* - *Highly specialised (7,8)*
INTEF	- Definition of competence scopes. - Definition of competences by scope. - Definition of levels of competence and indicators of competence by level and scope.	5 scopes of competence and sub-competences: - Scope 1: Information and data literacy. - Scope 2: Communication and collaboration. - Scope 3: Creation of digital content. - Scope 4: Security - Scope 5: Problem-solving.	- Basic (A1-A2) - Intermediate (B1-B2) - Advanced (C1-C2)

FRAMEWORKS OF DIGITAL COMPETENCES	Main fields/dimensions	Competences/Standards	Indicators/Levels of achievement
Castañeda et al. (2018)	Integral teaching competence for the digital world	- Expert in digital pedagogical content. - Augmented reflexive practice. - Expert in enriched learning environments. - Sensitive to the use of technology from the standpoint of social. - Able to use ICT to expend their relationship with the students' families and surrounding people. - Generator and manager of emerging pedagogical practices.	
UNESCO 2018	Takes on board the structure of DigComp 2.1.	6 competences: - Devices and software operations. - Information and data literacy. - Communication and collaboration. - Creation of digital content. - Security. - Problem-solving.	

Table 3. Summary of frameworks of reference.
Frameworks of digital competences

ANNEX V:

ANALYSIS OF THE LITERATURE FOR THE GLOBAL FRAMEWORK OF COMPETENCE FOR *LEARNING* IN THE DIGITAL AGE

UNESCO (2013) Intercultural competences. Conceptual and operating framework[2]

This document focuses on the concept of cross-cultural competence, based on the idea that, at present, traditional learning, or what is understood to be traditional learning, is not sufficient when we are talking about socialisation processes (primary and secondary), and neither would it be sufficient to define learning that occurs in learning processes in virtual environments.

Figure 39. UNESCO: Intercultural competences

Shown graphically as a tree, this attempt at a framework of competence is divided into:

- **Roots:** culture and communication.
- **Trunk:** cultural diversity, human rights, cross-cultural dialogue.
- **Branches:** operating phases (clarify, teach, promote, advance, support cross-cultural competences).
- **Leaves:** cross-cultural responsibility, cross-cultural literacy, resilience, cultural change, cross-cultural citizenship, co-existence, reflexivity, creativity, liquidity, keys to contextualisation, trans-valuation, Ubuntu, semantic availability, incomplete ideas (warm ideas), abilities, *uchi-soto*, multilingualism, willingness, emotions, knowledge, translation, cross-cultural communicative competence.

The text highlights the urgent need for these cross-cultural competences, develops a broad range of concepts and theoretical definitions that recognise the multiple cultural comprehensions and that also consider the existence of a large plurality of languages, religions, histories and identities. Following this, the cross-cultural competences defined are divided into:

- **Learning to know:** continuous learning process regarding other cultures.
- **Learning to do:** process of interacting with other cultures.
- **Learning to be:** process of reflection on oneself and one's (self)awareness in a global and globalised world.

The framework does not provide any sub-division by level or standard, but establishes a series of minimum requirements for someone learning or socialising in connection with "cross-cultural matters", namely: respect, self-awareness, looking from other standpoints, learning to listen and adapting, building relationships and having cultural humility. It lays great emphasis on cross-cultural dialogue as a process to maintain conversations between different cultural groups and through which individuals listen and learn from each other. This would be the basic starting point for constructing a person with cross-cultural competences.

UNESCO (2015) Education for global citizenship: topics and learning objectives[3]

More than a framework in itself, this text is aimed at being a document for use as a pedagogical guide in connection with providing education in, to and for a global citizenship. Consequently, various topics and learning goals are established, but they are not proposed in terms of competences, but rather a series of spheres, results, attributes and topics which define the path to global learning. The starting point is the idea that education and, by extension, learning processes, help us to be profoundly aware of everything that binds us together as citizens of the global community, as well as the fact that our challenges, because we live in a global and interdependent world, are interlinked.

The text establishes a series of core conceptual dimensions, which include aspects from three spheres of learning on which they are based: cognitive, socio-emotional and behavioural, and each one of these domains materialises in a series of key learning outcomes.

- **Cognitive domain:** to acquire knowledge, understanding and critical thinking about global, regional, national and local issues and the interconnectedness and interdependency of different countries and populations.

- **Socio-emotional domain:** to have a sense of belonging to a common humanity, sharing values and responsibilities, empathy, solidarity and respect for differences and diversity.

- **Behavioural domain:** to act effectively and responsibly at local, national and global levels for a more peaceful and sustainable world.

Based on these domains, it is established that education for global citizenship aims to be transformative, building the knowledge, skills, values and attitudes to enable learners to contribute to a more inclusive, just and peaceful world. All this taking "a multifaceted approach, employing concepts and methodologies already applied in other areas, including human rights education, peace education, education for sustainable development and education for international understanding"[4].

[3] https://unesdoc.unesco.org/ark:/48223/pf0000233876

[4] UNESCO (2014). Education Strategy 2014 – 2021, page 46.

Within each learning domain, the text establishes a series of attributes and a series of topics, also each divided into each of the domains previously outlined.

Attribute one. Informed and critically literate:

1. Local, national and global systems and structures.
2. Issues affecting interaction and connectedness of communities at local, national and global levels.
3. Underlying assumptions and power dynamics.

Attribute two. Socially connected and respectful of diversity:

4. Different levels of identity.
5. Different communities people belong to and how these are connected.
6. Difference and respect for diversity.

Attribute three. Ethically responsible and engaged:

7. Actions that can be taken individually and collectively.
8. Ethically responsible behaviour.
9. Getting engaged and taking action.

This document does define a series of learning objective for each educational level or by age. For each of the following levels, a series of specific objectives are accurately detailed: a) Pre-Primary/Lower Primary (5-9 years); b) Upper Primary (9-12 years); c) Lower Secondary (12-15 years); and d) Upper Secondary (15-18+ years).

WEF: World Economic Forum (2015) New Vision for Education: Unlocking the Potential of Technology

This text, which takes a clearly economic-biased and pragmatic-productive view of education, claims to be based on a meta-analytical analysis of a range of research literature, so as to define a series of 21st-century skills. Its main sources for this analysis are previous documents from supranational bodies like the OECD, UNESCO, IEA, the World Economic Forum itself, author of the document, EUROSTAT and the World Bank, among others.

These sixteen 21st-century skills as defined in the text are, in turn, distilled into three broad categories, which would be fundamental literacies, competences and character qualities:

- **Foundational literacies:** numeracy; and scientific literacy, ICT literacy, financial literacy and cultural and civic literacy.

- **Competences:** critical thinking/problem-solving, creativity, communication, collaboration.

- **Character qualities:** curiosity, initiative, persistence and grit, adaptability, leadership, social and cultural awareness.

The document, which claims to be committed to improving the general state of the world, states that context matters more than is usually explained, and that various fundamental economic and social problems, such as poverty, conflict, poor health and gender discrimination, impede learning and the acquisition of basic skills, and that progress in addressing the 21st-century skills gap cannot be made without tackling these basic elements.

For this purpose, four key country-level educational areas are identified in which many countries outperform or underperform:

- **Policy enablers:** a series of standards governing "K-12 education" (i.e. kindergarten to primary school).

- **Human capital:** teacher quality, training and expertise.

- **Financial resources:** the importance of education in public budgets.

- **Technological infrastructure:** access to new digital tools and content via the internet.

The text tells us that developing or poorer countries show the largest deficiencies in these areas and, therefore, to be able to develop the aforementioned learning and skills, these global inequalities must first be addressed.

The text also shows a clear emphasis on technology in all its proposals for improving education, including proposals that add various technologies to the classroom routine or describing successful international practices that have previously done so, as examples.

SALTO-YOUTH Network (2016) ETS Competence Model for Youth Workers to Work Internationally[5]

In order to build a successful network and cooperate internationally in mobility projects to learn at European level, SALTO aims to define a series of competences required for a youth worker, based on one of the objectives established by the European Training Strategy in the Field of Youth[6], which would be to develop a competence model targeting youth workers, a model that serves as a network for orientation and guidance for the various stakeholders.

This model divides what are considered competences into four different areas: knowledge, skills, attitudes and behaviours. In turn, it also defines eight different competences for these youth workers who are or may become involved in international projects or that require or may require mobility:

1. Enable individual and group learning.
2. Design of programmes.
3. Resources organisation and management.
4. Collaboration.
5. Meaningful communication.
6. Cross-cultural competence.
7. Networks and defence thereof.
8. Developing assessment practices to evaluate and implement change.

[5] https://www.salto-youth.net/downloads/4-17-3460/CompetencemodelForYoutworker_Online-web.pdf.pdf

[6] https://www.salto-youth.net/rc/training-and-cooperation/trainingstrategy/

Although this framework does not have specific levels for each competence either, they do present a series of standards divided into the four competence areas we previously pinpointed: knowledge, skills, attitudes and behaviours.
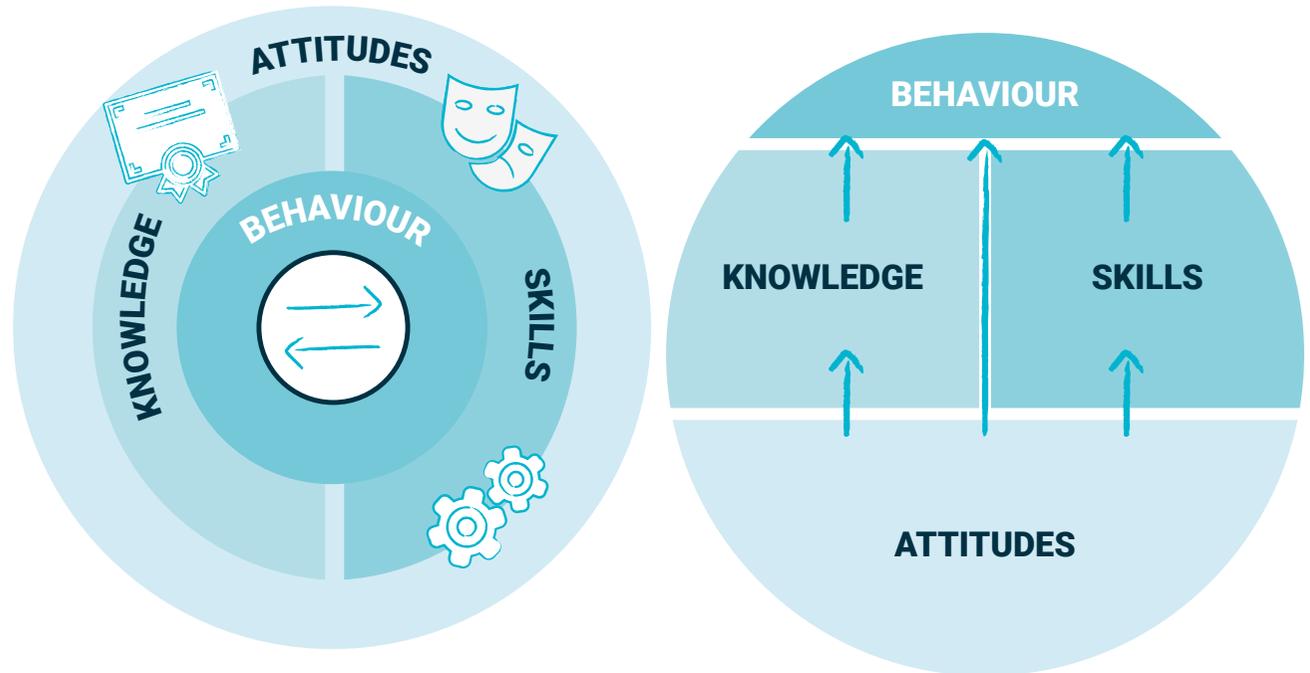
Figure 40. Model of SALTO-YOUTH Network competences

The document, in line with the entire programme and the ERASMUS+ strategy, is aimed not only at helping young workers to (self-)assess their own competences, but also establishes the goal of helping the various institutional stakeholders to determine specific profiles and recognise potential new professions in society. The framework defines its model as a tool "with which to play" and on which to reflect. It frequently invites readers to adapt the framework to their specific needs, contexts and target groups, in the understanding that the realities of European workers vary broadly.

CASEL: Collaborative for Academic, Social, and Emotional Learning (SEL) (2017)[7]

More than two decades ago, based on the work of Daniel Goleman[8], this US entity located in Chicago defined SEL (social and emotional learning) as the process whereby children and adults understand and manage (their) emotions, set and attain positive goals, feel and show empathy for others, establish and maintain positive relations and make responsible decisions.

The text we discuss here includes a definition of the fundamental competences for this social and emotional learning system (SEL) which the entity fosters, divided as follows:

- Self-awareness: knowing one's strengths and limitations, with a well-grounded sense of confidence, optimism and a "growth mindset".
- Self-management: efficiently managing stress, delaying impulses and feeling motivation to establish and accomplish goals.
- Social awareness: understand the perspectives of and empathise with others, including those from diverse backgrounds and cultures.
- Relationship skills: communicate clearly, listen actively, cooperate, negotiate conflict constructively, resist negative social pressure, resolve conflicts constructively and seek or offer help when needed.
- Responsible decision-making: consider ethical standards, safety concerns and social norms to make constructive decisions on personal behaviour and social interactions.

The framework justifies the benefits and advantages of SEL by means of two decades of research, which indicates that this systemic approach:

- Improves academic performance: through a meta-analysis involving more than 270,000 students, the findings of which indicated that those who took part in SEL programmes presented an 11 % increase in academic performance.
- Improved behaviour: by means of studies that show that the drop-out rate decreased, as did behavioural problems, drug abuse, mental issues, under-age pregnancies and criminal behaviour.
- It presents a sizeable return on the investment: by means of a review of six SEL interventions that show that for every dollar invested a return of 11 dollars was obtained.

---

[7] https://casel.org/wp-content/uploads/2019/12/CASEL-wheel-competencies-Spanish.pdf

[8] http://www.danielgoleman.info/topics/social-emotional-learning/

Council of Europe (2018) Key competences for lifelong learning[9]

The framework analysed is a text put forward in 2018, and last modified in July 2019, which is, in turn, a modification of a similar text from 2006 establishing key competences, but which have been amended to adapt the framework, in particular, to the changes that have ensued in work contexts.

The text defines key competences as a combination of knowledge, skills and attitudes, in which:

a. Knowledge comprises the concepts, facts and figures, ideas and theories which are already established, and support the understanding of a certain area or subject.

b. Skills are defined as the ability to carry out processes and use the existing knowledge to achieve results.

c. Attitudes describe the disposition and mindset to act or react to ideas, persons or situations.

The document presents fostering the development of competences as one of the shared objectives of the European Union, under the vision of moving towards a European education area that would be able to harness all the educational and cultural potential as a vehicle for work, social justice, active citizenship, and other measures to experience the European identity in all its diversity.

Accordingly, the core view is that people need a proper set of skills and competences to maintain current living standards, underpin high employment rates and foster social cohesion with a view to tomorrow's society and world of employment. It also asserts that it is necessary to support people across Europe to obtain the skills and competences necessary to their personal realisation, health, employability and social inclusion, which contributes to boost Europe's resilience in an era of swift and deep-seated change.

Additionally, it refers to the recommendation made by the European Parliament and the Council in 2006 regarding key competences for lifelong learning. This 2006 document recommends that:

[9] https://op.europa.eu/es/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en/format-PDF

Member States develop the provision of key competences for all as part of their lifelong learning strategies, including their strategies for achieving universal literacy, and use the 'Key Competences for Lifelong Learning — A European Reference Framework' (hereinafter referred to as 'the Reference Framework') in the Annex hereto as a reference tool, with a view to ensuring that:

1. *initial education and training offers all young people the means to develop the key competences to a level that equips them for adult life, and which forms a basis for further learning and working life;*

2. *appropriate provision is made for those young people who, due to educational disadvantages caused by personal, social, cultural or economic circumstances, need particular support to fulfil their educational potential;*

3. *adults are able to develop and update their key competences throughout their lives, and that there is a particular focus on target groups identified as priorities in the national, regional and/or local contexts, such as individuals needing to update their skills;*

4. *appropriate infrastructure for continuing education and training of adults including teachers and trainers, validation and evaluation procedures, measures aimed at ensuring equal access to both lifelong learning and the labour market, and support for learners that recognises the differing needs and competences of adults, is in place;*

5. *coherence of adult education and training provision for individual citizens is achieved through close links with employment policy and social policy, cultural policy, innovation policy and other policies affecting young people and through collaboration with social partners and other stakeholders.*

The key competences established in 2006 were as follows:

1. Communication in the mother tongue.

2. Communication in foreign languages.

3. Mathematical competence and basic competences in science and technology.

4. Digital competence.

5. Learning to learn.

6. Social and civic competences.

7. Sense of initiative and entrepreneurship; and

8. Cultural awareness and expression.

However, the 2018 text asserts that the competence requirements have changed, since there are more jobs currently in the process of automation, with technologies playing an increasingly central role in all areas of our personal and professional lives. Accordingly, social, civic and entrepreneurial competences are becoming somewhat more relevant with a view to guaranteeing resilience and the ability to adapt to change among citizens.

The EU refers to data from supranational organisations like the OECD and its PISA programme to indicate that in 2015 one out of every five European students consulted had serious difficulties to develop sufficient skills in reading, mathematical or scientific tasks and that, in some countries, up to one third of the adult population are at lower literacy and numeracy rates, with 44 % having few or no digital skills.

To link education with the market from a pragmatic and productive standpoint of learning, the text asserts that key competences must be reviewed and updated to respond to the social and economic changes that are taking place. It states that it is very important to invest in training for basic skills, which is more important than ever, especially in an economy in which skills like problem-solving, critical thinking, the ability to cooperate, creativity, computational thinking and self-regulation are more essential than ever in a fast-changing society, which requires constantly generating new ideas, new theories, new products and knowledge.

Accordingly, the EU established a new set of key competences with a view to adapting to modern times, changing times in an interconnected world in which each person needs (or will need) a broad range of skills and competences that they must continuously develop throughout their lives. All with the aim of achieving more equal and democratic societies, always responding to the need for sustainable and inclusive growth, social cohesion and the development of democratic culture.

The aims of this reference framework are, therefore, to:

a. identify and define the key competences necessary for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion;

b. Generate a tool for reference in Europe for policy makers, education and training providers and other educational personnel, for advisers, employers, public employment services and also for the learners themselves.

c. Support efforts at European, national, regional and local level to foster the development of competences in a context of lifelong learning.

The text, as we have previously stated, defines key competences as a combination of knowledge, skills and attitudes. Key competences would be those competences that all persons need for their personal development and realisation, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, life management comprising health awareness and active citizenship. They are developed from a standpoint of lifelong learning, from early infancy to adult life, by means of formal, non-formal and informal learning in all contexts, including family, school, workplace, neighbourhood and other communities.

All the key competences are considered to be equally important; each of them contributes to the success of life in society. Competences may apply to many different contexts and to a variety of combinations. They overlap and interweave aspects essential for one domain and will support competence development in another. Skills such as critical thinking, problem-solving, team work, communication, creativity, negotiation, analytical and cross-cultural skills are embedded throughout the key competences. They might be seen as "transversal competences", even though they do not appear as such.

The eight competences established by this framework are:

1. Literacy competence.
2. Multilingual competence.
3. Mathematical competence and competence in science, technology and engineering.
4. Digital competence.
5. Personal, social and learning to learn competence.
6. Citizenship competence.
7. Entrepreneurship competence.
8. Cultural awareness and expression competence.

The text defines each of the competences and provides for each of them the related knowledge, skills and attitudes.
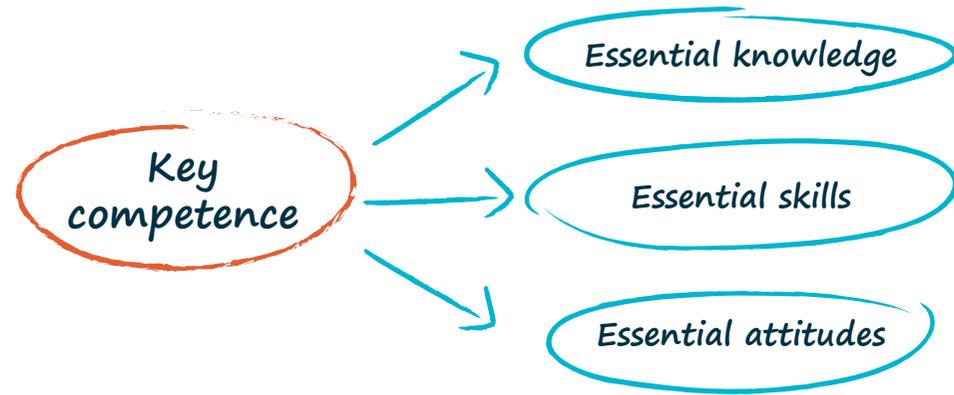
Figure 41. Council of Europe key competences

The EU text concludes with recommendations to ensure that these key competences are developed through educational systems, which must be increasingly focused on competence-based education in lifelong learning contexts, based on pinpointing three challenges:

1. The variety of learning environments and approaches to learning.

2. Support to educational staff.

3. Assessment and validation of competences.

With regard to these challenges, the EU text also provides examples of best practices identified:

1. Cross-discipline learning; fostering and strengthening social, personal and artistic learning from an early age; learning methodologies such as those based on projects, inquiry-based, blended, art-based, gamification, experiential learning, STEM; involvement in European projects for the development of digital competences; connecting learning with entrepreneurial or traineeships in companies; mobility of educational staff (also the use of eTwinning, EPALE and other initiatives); academic, socio-emotional and linguistic support to students with special needs, peer coaching, extracurricular activities, guidance and material support; collaboration between the systems of the various levels of education; and cooperation among formal, informal and non-formal institutions to enable the transition from education to work and from work to education.

2. Incorporating educational, skill-building and learning approaches aimed at developing competences; teachers receive support through personal exchanges, peer learning and advice; flexibility and autonomy in learning organisation, through cooperation networks and practice communities; help in creating innovative practices and in making appropriate use of new technologies, as well as participation in research; guidance for educational staff and access to centres for specialisation, tools and quality materials.

3. Frameworks are needed for learning outcomes, assessment, validation and diagnostic tools; digital technologies could help to capture the dimensions of learners' progress; development of various approaches to assess key competences; render the validation of learning outcomes more solid (use of tools like Europass and Youthpass for documentation and self-assessment).

If we compare this new framework of competences with the one proposed by the EU in 2006, we observe that:

- The previous competence of communication in the mother tongue has been replaced by la "literacy competence". In this regard, it does not focus as much on the mother tongue, but on the broader skills of reading and writing in the main languages a person uses.

- Communication in foreign languages is replaced by "multilingual competence", in the understanding that "foreign language" does not always reflect the diversity of an individual's linguistic situations and circumstances.

- Mathematical competence and basic competence in science and technology are now called "mathematical competence and competence in science, technology and engineering", to emphasise applied sciences and with the aim of fostering science, technology and engineering more broadly.

- Digital competence remains unchanged, in terms of both its definition and its implications.

- Learning to learn has been included in "personal, social and learning to learn competence", since it is understood that these areas have many more overlapping aspects and, at the same time, it is considered one of the basic areas of competence for better learning and development of competences.

- Social and civic competences have been amended to "citizenship competence". This allows a broad reflection on active citizenship, engagement and civic learning processes.

- Initiative and entrepreneurship has been modified to "entrepreneurship competence". Entrepreneurship competence includes the aspect of initiative, the capacity to act on opportunities and to turn ideas into actions that have cultural, social or financial value for others.

- Cultural awareness and expression competence remains basically unchanged.

Council of Europe (2018) Democratic Citizenship: Framework of Competences for Democratic Culture[10]

The text proposes a series of competence descriptors which serve as tools for future planning and curricular design, for teaching, learning and assessment processes.

The concept of "democracy" is a core element, linked to the learning process, so that learning takes place "through" democracy, "for" democracy and "on" democracy.

As in the previous document by the CoE, competences are divided into various areas: knowledge, skills, attitudes and values; and each one of these areas is, in turn, subdivided as follows:

- Knowledge: critical knowledge of communication, of the self and of the world.
- Skills: autonomous learning, analysis and critical thinking, observation and listening, empathy, adaptability, linguistic, communicative and plurilingual skills, cooperation and conflict-resolution skills.
- Attitudes: respect, openness, civic-mindedness, responsibility, (self-)efficacy and tolerance of ambiguity.
- Values: dignity, cultural diversity and democracy.

Here there are three levels of proficiency: basic, intermediate and advanced.

The model proposes a detailed description of the competences students need to acquire if they want to become engaged citizens with the capacity to live peacefully and equally together with others.

The descriptors of the competences can be used both by educators and by policy makers to design curricula.

The framework is aimed at being a useful tool to enable education systems to be designed as environments in which learners are empowered as autonomous social agents able to choose and pursue their own life goals within a democratic institutional framework of respect for human rights.

In short, the framework is aimed at guaranteeing the future health of our culturally diverse democratic societies through the empowerment and citizenship building of the young people living in them today.

[10] https://rm.coe.int/prems-008318-gbr-2508-reference-framework-of-competences-%20vol-1-8573-co/16807bc66c

The OECD PISA (2018) Global Competence Framework: Preparing our youth for an inclusive and sustainable world[11]

This document, as its title suggests, focuses on issues of inclusion, employability and a responsible use of resources to prepare young people for a more inclusive and sustainable world. A world which, the document says, is interconnected, diverse and rapidly changing and a complex context that presents both challenges and opportunities, and in which young people not only must learn to take part in this interconnection, but must also appreciate and benefit from cultural differences. And this text pinpoints education as the key for shaping this learning process – a lifelong process.

The text outlines the concept of global competence, which is then divided into four areas:

- Knowledge: of cross-cultural topics, socio-economic interdependence and environmental sustainability.
- Cognitive and socio-emotional skills: reasoning with information, cross-cultural communication, perspective taking, conflict resolution and adaptability.
- Attitudes: openness, respect and global thinking.
- Values: human dignity and diversity.

In turn, this global competence may be sub-divided into four dimensions:

- Awareness of local, global and cross-cultural significance issues.
- The capacity to understand and appreciate different perspectives and world views.
- Respectful, open, appropriate and effective interactions.
- Constructive action toward sustainable development and collective well-being.

[11] https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf

Figure 42. OECD framework of global competence

The framework presented in this document is devised for the context of PISA assessment tests and it is clearly stated that the section of knowledge and cognitive skills will be present and will be assessed in the PISA cognitive test, while social skills and attitudes will be assessed by means of an external survey among students and cannot be measured by means of the cognitive test. The values section is outside the assessment sphere of either the PISA tests and the other survey of students.

The framework sees global competence as the sum of what it defines as "global understanding", in other words, the sum of knowledge processes (global and cross-cultural) and cognitive processes or skills (evaluating information, formulating arguments, explaining complex situations, identifying and analysing multiple perspectives, understanding communication differences, evaluating the role of agents and consequences, and so on). The sum of these two parts results in the four aforementioned target dimensions of competence.

With regard to the description of skill levels, this framework also defines three levels: basic, intermediate and advanced.

Singapore Government (2018) Framework for 21st Century Competencies[12]

Singapore propose a framework for its national context with the aim of responding to the same challenges as are outlined in the European frameworks: a more globalised world, changing demographics, and technological advances as key for future development. To prepare its students to tackle these challenges and harness the opportunities, the framework presents a similar division of competences as in previous frameworks: knowledge, skills and values; although this document states that knowledge and skills must be underpinned by values, which are defined as the elements that shape the beliefs, attitudes and actions of a person and define their character. They are seen as the core of the framework of competences for the 21st century.

In a circular manner, the framework is depicted as follows:

- Socio-emotional competences (core competences): skills needed for children to recognise and manage their emotions, develop care and concern for others, make responsible decisions, establish positive relationships and effectively handle challenges:

    o (Self-)management.

    o Social awareness.

    o Self-awareness.

    o Relationship management.

    o Responsible decision-making.

- Emerging 21st-century competences (external competences):

    o Civic literacy, global awareness and cross-cultural skills.

    o Critical and inventive thinking.

    o Communication skills, collaboration and information.

[12] https://www.moe.gov.sg/education/education-system/21st-century-competencies

The development of these competences, according to this framework, defines with a series of attributes Singaporeans who complete their formal education, making them:

- Confident persons who have a zest for life, have a strong sense of right and wrong, are adaptable and resilient, know themselves, are discerning in judgement, think independently and critically, and communicate effectively.

- Self-directed learners who take responsibility for their own learning and question, reflect and persevere in the lifelong pursuit of learning.

- Active contributors who are able to work effectively in teams, exercise initiative, take calculated risks, are innovative and strive for excellence.

- Concerned citizens who are rooted to Singapore, have a strong civic consciousness, are responsible to their family, community and nation and take active roles in improving the lives of others.

As you can see, this framework takes a clearly local/national approach within the globality it seeks.

OECD (2018-2019) Learning Compass[13]

This document is based on a similar idea to the others: namely that, to tackle the challenges of the 21st century, students need to be empowered and to feel that they can aspire to or contribute to building a sustainable world of well-being.

The OECD's "Learning Compass" identifies three transformative competences which students need to help create/shape the "future we want":

- Creating new value: students should be able to ask questions, cooperate with others and think "outside the box" so as to find innovative solutions. Critical thinking and creativity are also important aspects of this competence.

- Reconciling tensions and dilemmas: in an interdependent world, students must become adept at handling contradictions or apparently incompatible logics and demands, and must be comfortable with complexity and ambiguity. This requires empathy and respect.

- Taking responsibility for actions: students with this competence have a stronger moral compass that enables deeper processes of reflection to work with others and respect the planet.

[13] http://www.oecd.org/education/2030-project/teaching-and-learning/learning/

Figure 43. OECD Learning Compass

Like the EU, the OECD defines the term 'competence' in relation to learning as the sum of knowledge, skills and attitudes, but it adds a fourth component, namely values. All this in a circular process in which these competences would be developed in three sequenced stages:

1. Anticipation.
2. Action.
3. Reflection.

To evaluate and maintain this learning compass, the OECD designs what it calls process of Anticipation-Action-Reflection (AAR), a sequential learning process in which students continuously improve their thinking and act intentionally and responsibly, advancing over time towards long-term objectives that contribute to the collective well-being.

- Anticipation requires more than just asking questions; it implies projecting the consequences and potential impact of doing one thing or another, or not doing anything at all.

- Action is a bridge between what students know and what they want to achieve.

- Through reflection, students acquire a sense of perspective and power over their future actions, leading to the development of agency.

The related documents also refer explicitly to the importance in the 21st century of being able to handle uncertainty, as a uniquely human quality, in which connection artificial intelligence systems cannot currently compete with us, as such systems would find it more difficult to develop these three competences: the capacity for creating new value, reconciling tensions and taking responsibility for our actions.

If we present a table with the concepts/constructs associated with each transformative competence, we can see:

Comp. Trans 1 (CT1) Crear nuevo valor	Curiosidad, propósito, mentalidad abierta hacia nuevas ideas, pensamiento crítico, creatividad, colaboración, agilidad a la hora de (intentar) poner en marcha nuevas ideas, gestionar riesgos asociados, adaptarse a nuevos entornos y posicionamientos…
CT2 - Reconciliar tensiones y dilemas	Flexibilidad cognitiva, habilidades de toma de perspectiva, empatía, respeto, creatividad, habilidades de resolución de problemas y resolución de conflictos, resiliencia, tolerancia ante la complejidad y la ambigüedad, sentido de la responsabilidad…
CT3 - Tomar responsabilidades (ser responsable)	Tener "lugar de control" (locus), sentido de la integridad, compasión, respeto hacia los demás, pensamiento crítico, sentido de autoconciencia, autorregulación y pensamiento reflexivo, generar confianza…

The documents of which this 2030 compass is comprised also provide some clues as to how to incorporate these competences in education systems and regarding the importance of their featuring in future curricula. With regard to methodology, they advocate what they call "experimental learning", which enables students to reflect on their interests and expectations in a more connected and relevant way, while at the same time enabling them to transfer their knowledge and skills to real-life contexts. The "service learning" model, for example, is one of the measures outlined in the documents as a means of implementing experimental or experiential learning.

For our GFCLDA, the development of the concept of "agency" is interesting, as it can be exercised in almost all the contexts: moral, social, economic, creative.

- Agency means having the capacity and willingness to impact positively on one's own life and that of others.

- To exercise agency at the highest potential, students need to develop some basic skills.

- The concept of student agency varies by culture and is developed over a person's lifetime.

- Co-agency is defined as interactive and mutually supportive relationships, with parents, teachers, the community and with each other, which help students to progress towards their shared goals.

Another differentiating concept in this framework is that of "well-being". The text states that the OECD asked students from around the world to describe the future they want, to express their hopes, dreams and the actions necessary to attain well-being. This, along with the OECD's Well-Being Compendium, allows a comparison between well-being in different countries as a function of 11 dimensions which the OECD has identified as being essential: housing, income and wealth, jobs and earnings, community (social connections), education, environment, civic engagement, health, subjective well-being, security and work-life balance.

Cambridge Research (2019) International framework of life competences[14]

This text is written by researchers focused on learning English as a foreign language and, accordingly, although it proposes a transversal logic, the competences and vision put forward in the document are shaped by this particular field of knowledge. It presents a division into three dimensions and six competences or areas of competence:

- Creative thinking.
- Critical thinking.
- Learning to learn.
- Communication.
- Collaboration.
- Social Responsibilities

All of them are defined and supported by three core elements: knowledge of the discipline, emotional development and digital literacy. The most important/useful aspect of this framework is that it defines a kind of standards (Can Do statements) for each of the levels of competence it establishes, namely: pre-primary, primary, secondary, higher education and in the workplace.

Joint Research Centre (2019) Technical Report by the European Commission: Developing a European framework for key competence number five: Personal, social and learning to learn competence[15]

The report reviews the literature and examines a series of frameworks. It starts by identifying the key components of this competence from a lifelong learning perspective. It goes on to develop a proposed conceptual framework, considering the viability of linking "learning to learn" and personal and social development with the same reference model. Lastly, it concludes with a model framework, broken down into areas, dimensions and clear descriptors, with the support of stakeholders who have been consulted.

The report focuses solely on developing one of the competences of the new competence framework proposed in 2018. This competence was one of the ones that changed the most as compared with the previous competences of 2006.

---

[14] http://languageresearch.cambridge.org/clc

[15] https://ec.europa.eu/jrc/en/publication/developing-european-framework-personal-social-learning-learn-key-competence-lifecomp

The text contributes clear definitions regarding this competence, and a deeper understanding of the concepts relating to it. It also provides theoretical pillars that support its conceptualisation within the framework and gauge the degree of competence in a broad range of knowledge, always filtered by perceptions on competences oriented towards the future.
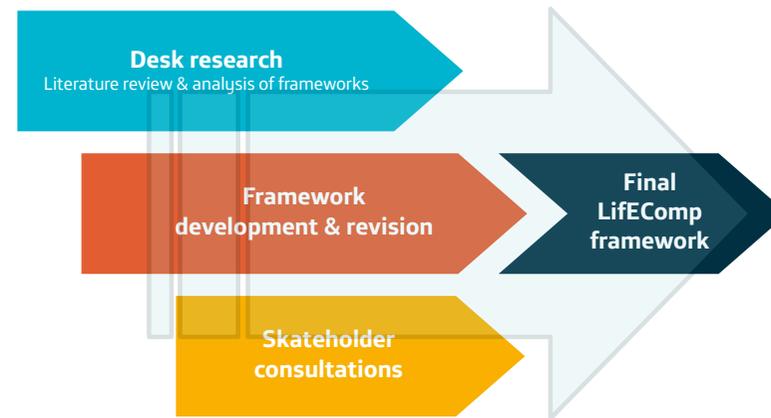
Figure 44. Design sequence of LifeComp

The graph shows the three stages followed to arrive at a final framework that defines and contributes a common language concerning this key competence:

1. Analysis of frameworks and the existing literature.

2. Development of a framework.

3. Consultation of stakeholders.

The competence that this document aims to define is linked to life in complex, uncertain and changing environments in global contexts, and this text seeks to generate a common conceptual framework combining a series of concepts that have been used to define that personal, social and learning to learn competence: life skills, soft skills, socio-emotional competences, non-cognitive skills, transversal competences, 21st-century competences and 2030 competences.

The text uses research in various fields like positive psychology, theory of self-determination, the growth mindset, the power of learning and socio-emotional skills to define the elements of the framework or for searching in existing frameworks. These are, grouped into 4 blocks:

a. Self-regulation, growth mindset, empathy.

b. Adaptability, well-being.

c. Communication, collaboration.

d. Handling learning, critical thinking.

When it comes to analysing the existing frameworks for defining the LifeComp, it groups them into: a) international frameworks; b) national frameworks and tools; c) national curricula; d) international projects.

Most international frameworks underpin framework structure and makeup, helping identify elements for each framework area (e.g. Council of Europe, OECD 2030, WEF New Vision for Education, Cambridge Life Competences Framework, SALTO Framework for Youth Workers).

- The SALTO Framework supports LifeComp conceptualisation of core elements as pre-requisites for competences development, with a focus on attitudes and dispositions. It also offers detailed input on communication, collaboration and cross-cultural understanding.

- The WEF framework sustains conceptualisation of core resources in LifeComp - stressing the importance of malleable character qualities, in line with positive psychology. It also foregrounds the role of social and learning to learn elements (collaboration, communication, critical thinking and problem-solving).

- The Cambridge Framework gives substantial input for LifeComp framework structure and content – in particular, on social and learning to learn elements. It also offers clear examples of descriptors for progression levels and development stages.

- The OECD 2030 Framework provides clear, useful input for conceptualisations of several framework constructs, supporting the role of agency and co-agency as aspirational outcomes of LifeComp development.

- Both the Council of Europe Framework and the UNESCO Intercultural Framework contribute input about intercultural awareness and understanding, underlining the transversal importance of critical thinking, reflection and continuous learning for effective interactions. The Council of Europe framework also offers precious guidance for wording of descriptors.

- The Health Literacy Framework provides specific input for the well-being competence, foregrounding the ability to retrieve and understand health information in complex digital health environments.

The document asserts that National frameworks and tools help support LifeComp makeup, and provide specific input in some framework areas.

-   The CASEL framework on socio-emotional learning gives key insights for the personal and social areas as intertwined.

-   The P21 framework stresses the relevance of 21st-century transversal competences - problem-solving, communication, collaboration and adaptability.

-   The Y-PEER Toolkit on peer teaching in informal and non-formal contexts helps identify personal and social competences to support learning to learn and coaching.

National curricula give input on detailed learning outcomes and competences descriptions, to describe several elements in the LifeComp framework – in particular, in the personal area.

-   Insights on well-being come from the Estonian, Finnish, Irish, Scottish and Slovakian curricula. The Irish Well-being guidelines give indicators and statements of learning for each school level; they describe well-being as transversal, spanning self- regulation, communication and collaboration. A wider focus on self-regulation is present in all five curricula, and in the curriculum of Northern Ireland as well.

-   Input on career management competences (shaping conceptualisation of adaptability in LifeComp) is provided by the Estonian, Finnish and Scottish curricula, as well as by the curriculum of Northern Ireland: on career planning and lifelong learning (EE); on working life competence, including teamwork (FI); on education for employability and career management, in core area Learning for Life and Work (UKNie); and on planning for choices and changes (UKSc).

-   The Finnish framework views thinking and learning to learn competences as intertwined (Transversal competence T1 – Thinking and learning to learn), supporting conceptualisation of the learning to learn area in LifeComp. The French curriculum highlights the links between empathy, self-regulation and collaboration in citizenship education - a transversal domain of the "socle commun", the common core of competences.

And, with regard to international projects:

-   ATC21S helps map relevant 21st-century competences across LifeComp framework areas, with insights about collaborative problem solving embedded in digital environments. Also European project ATS2020 supports LifeComp descriptions of collaboration, communication, self regulation and metacognition, linking them to digital competences.

-   The Life Skills for Europe project describes cross-cutting aspects ("capabilities") for personal empowerment, relationships and citizenship that cut across LifeComp areas, with a focus on adult and disadvantaged learners, and useful criteria for progression levels and self-assessment.

- European projects Learning to Be, HOPEs, COLAB, RESCUR and NESET II provide content on core elements and the social area in LifeComp (empathy, self-regulation, collaboration). In particular, HOPEs offers input on character development and how to support well-being in education, as regards LifeComp core elements. RESCUR outlines transversal competences for resilience (and well-being) starting with early education. COLAB sustains the description of collaboration in LifeComp. NESET II and Learning to Be focus on learning and assessment for socio-emotional and health competences.

The text performs quite a comprehensive analysis of international frameworks and documents, provided in its annexes. The text also warns that it is devised only for only of the competences among from the 2018 recommendations, and that said framework establishes that key competences are intertwined. This document also establishes linked between other frameworks of competence developed by the Joint Research Centre: DigComp and EntreComp.

The final proposal of structure and content for this LifeComp framework is summarised in the table below, based on three core elements and a series of composite competences divided between personal, social and the act of learning to learn.

	PERSONAL	SOCIAL	LEARNING TO LEARN
COMPOUND COMPETENCES	Wellbeing	Collaboration	Managing learning
	Adaptability	Communication	Critical thinking
CORE ELEMENTS	Self regulation	Empathy	Growth mindset

Figure 45. LifeComp framework

ANNEX VI:

ANALYSIS OF THE LITERATURE FOR THE GLOBAL FRAMEWORK OF COMPETENCE FOR EDUCATION IN THE DIGITAL AGE

Frameworks of Teaching Competences

1998 - *Ten New Competencies to Teach*, by Philippe Perrenoud

Perrenoud's vision (1998) in this text is especially interesting for various reasons: due to its seminal nature and the fact that it pre-dates many of the approaches we will discuss below; its dissemination among teachers and academics; because it bases its definition of competencies on a global interpretation of school life; and, lastly, because it differs broadly from what is meant by "competence" in most institutional frameworks, more closely linked to the world of business and understanding knowledge as being at the service of productive pragmatism.

Perrenoud, both in this work and, in particular, in *Cuando la escuela pretende preparar para la vida*, discusses competence insights and teaching competences linked to the concept of social knowledge, common knowledge or general knowledge, separate from this more production-oriented view that, often, as we see in texts like *Educar por competencias, ¿qué hay de nuevo?* coordinated by Gimeno Sacristán (2008), has made the content or the practice of this content a competence without having performed a profound and critical deconstruction of the real difference between the two terms.

These are the ten rules proposed by Philippe Perrenoud (1998):

1. Organise and encourage learning situations.
2. Manage learning progress.
3. Prepare and evolve differentiation devices.
4. Engage students in their learning and in their work.
5. Teamwork.
6. Participate in the management of the school.
7. Inform and engage parents.
8. Use new technologies.
9. Tackle the duties and ethical dilemmas of the profession.
10. Organise one's own continuous training.

2002 – *Estado actual de la evaluación docente en trece países* de América Latina, by Alejandra Schulmeyer

In this work, Schulmeyer (2002) conducts a conceptual journey through various concepts such as the professionalisation of teaching (through Skopp, Fernández Enguita, Gimeno, Añorga…) to perform a diagnosis of the current state of teaching assessment in thirteen Latin American countries: she reviews their legal systems, union involvement, institutional structure of teaching assessment, the cost of teaching assessment, the assessment of candidates for teaching careers, the assessment of initial training and the assessment of professional performance.

In the wake of this study, a fundamental conclusion is that, at that time, there was not yet sufficient cumulative theoretical and practical experience to assert that any country in the region that decides to launch and encourage this kind of assessment policy might be based solely on studying and applying the knowledge accumulated in each country.

This report also shows, and here is where it's interest lies, specific technical assistance requirements for the design and practical application of teaching assessment.

In the wake of this analysis, it is explicitly stated that "greater effort is required in the region to achieve a process of increasing and sustained professionalism of teachers, and accordingly the assessment of their performance can contribute decisively, especially if it focuses on their career development" (Schulmeyer, 2002, p. 40).

2002 – *Teaching "competence"* within the framework of Eurydice

In the general framework of Eurydice (2002), the main objective is to define a series of key competences for students, but it also identifies a series of spheres/aspects that we can understand to refer to the task of teaching:

1. Training in information and communication technologies (ICT).
2. Training for the management and administration of educational centres.
3. Training for the integration of students with special educational needs (SEN).
4. Training for work with multicultural groups.
5. Training in behaviour management and school discipline.

Sánchez-Tarazaga (2016, p. 53) states in this connection that "it is a very thorough document that offers, for each of the five skills areas, a comparative analysis of 30 European countries"; in addition, "it shows the extent to which national policies guarantee skills training in initial education: on the one hand, their being optional or compulsory in the curriculum; on the other hand, the existence or not of guidelines regarding their regulation (such as content and duration within the training programme)".

Also significant in this analysis is that this report does not yet use the concept of competence, but that of *skill*.

2003 − *Teacher Competencies Framework and the Continuing Professional Development of Teachers,* by ACTEQ (Hong Kong)

ACTEQ (2003), the Advisory Committee on Teacher Education and Qualifications of Hong Kong, shares in this document a series of recommendations to improve teacher training. Among these, it highlights that teacher training institutions should be constructed as learning communities that foster and develop teachers' capacity for lifelong learning.

In a long and detailed document, it explains its model for teaching competencies, in which it highlights a basic premise, namely the personal growth and development of teachers, and six core values that are common to the rest of the framework:

1. The belief that all students can learn.
2. Love and care for all students.
3. Respect for diversity.
4. Commitment and dedication to the profession.
5. Collaboration, sharing and team spirit.
6. Passion for continuous learning and excellence.

In turn, aside from those values and the starting premise, this framework is divided into four central domains for teachers:

1. Teaching and learning.
2. Student development.
3. School development.
4. Professional and community service relations.

At the same time, each of these areas is divided into four competences. And each of these competences, in turn, is defined by a series of "competence descriptors", ranging from threshold, to competent and to accomplished.

2004 – *Western Australia Competency Framework for Teachers*

This framework (from Australia's Department of Education and Training, 2004) is based on an analysis of teaching competences at national and international level and consultations with members of the teaching profession, and describes a series of professional standards for education, as well as outlining the knowledge and capacities of teachers for those outside the profession.

In this regard, an explicit objective of this framework is to provide the means to identify best teaching practices, so as to celebrate their success and reward them.

This framework also claims to articulate the complex nature of the teaching process by means of the description of three professional elements of teaching work (professional properties or attributes, professional practice and knowledge), elements which work in an interlinked manner when put into practice.

Within each of these areas, the framework pinpoints three achievement or performance phases which describe the work of teachers through continuous practice, although they are dynamic and are not related to the stage of the professional's career: a teacher can be in any phase or at any stage of their professional career.

	PHASE 1 Teachers operating within the first phase should:	PHASE 2 Teachers operating within the second phase should:	PHASE 3 Teachers operating within the third phase should:
DIMENSION 1 Facilitating Student Learning	Engage students in purposeful and appropriate learning experiences	Cater for diverse student learning styles and needs through consistent application of a wide range of teaching strategies	Use exemplary teaching strategies and techniques that meet the needs of individual students, groups and/or classes of students in a highly responsive and inclusive manner
DIMENSION 2 Assessing and Reporting Student Learning Outcomes	Monitor, assess, record and report student learning outcomes	Apply comprehensive systems of assessment and reporting in relation to student attainment of learning outcomes	Consistently use exemplary assessment and reporting strategies that are highly responsive and inclusive
DIMENSION 3 Engaging in Professional Learnings	Reflect critically on professional experiences in order to enhance professional effectiveness	Contribute to the development of a learning community	Engage in a variety of learning activities that promote critical self reflection and the development of a learning community
DIMENSION 4 Participating in Curriculum Policy and Other Program Initiatives in an Outcomes-focused Environment	Participate in curriculum policy and program teamwork	Provide support for curriculum policy or other program teams	Provide leadership in the school by assuming a key role in school development processes including curriculum planning and policy formulation
DIMENSION 5 Forming Partnerships within the School Community	Establish partnerships with students, colleagues, parents and other caregivers	Support student learning through partnerships and teamwork with members of the school community	Facilitate teamwork within the school community

Likewise, as the picture that summarises the framework shows, five dimensions are developed to describe the main professional responsibilities and teaching actions that teachers must discharge during their careers. These dimensions are interconnected and contribute collectively to the "teaching effectiveness/efficacy". Professional excellence is achieved through teachers who are engaged in all five dimensions.

The framework (op. cit., pp. 17-45) provides minute detail of each of these dimensions, with teaching competences for each "achievement phase".

Each dimension is detailed and outlined in each phase, on the basis of the breakdown of a series of competencies which they call "critical elements", and which change over the course of the phases.

Similarly, we may also find (ibid., p. 6) a summary of what the authors call descriptors of attributes, in other words, easily identifiable characteristics in teachers for what they call effective teaching.

These attributes, shown in the table (being a professionally collaborative person, committed, an effective communicator, ethical, innovative, inclusive, positive and reflective), would ensure that teachers are prepared for the challenges, demands and obligations of teaching.

Figure 46. Western Australia Competency Framework for Teachers

2005 – *The European Commission's Lisbon Strategy and the Education and Training 2010 programme*

This text (European Commission, 2005) defines teaching competences in terms of three broad spheres:

1. Working with others.
2. Working with knowledge, technology and information.
3. Working with and in society.

Today this framework has been replaced by more recent and comprehensive proposals within the European sphere.

2007 – *Academic model* of Erik Roelofs and Piet Sanders in *"Towards a framework for assessing teacher competence"*

This work (Roelofs and Sanders, 2007) is a comprehensive model interpretative framework for assessing teaching competence, in which three basic questions are posed: What is the crucial content of competence? How are performance criteria defined? In what ways can levels of competence be assessed?

On this basis, the following domains were developed:

- Interpersonal competence.
- Pedagogic competence.
- Subject matter and didactic competence.
- Organisational competence.
- Competence in cooperating with colleagues.
- Competence in cooperating with the school environment.
- Competence in reflection and development.

2009 – *21st-century Teaching Competency Standards in* Southeast Asian Countries (Philippines)

This document (SEAMEO, 2009) is a summary of eleven teaching competencies (listed almost in the form of objectives or goals), with a series of detailed specificities or sub-competencies:

    a. Facilitating the development of learner's life and career skills.

    b. Facilitating learning.

    c. Preparing appropriate lesson plans in line with the school vision and mission.

    d. Creating a conducive learning environment.

    e. Developing and utilizing teaching and learning resources.

    f. Developing higher order thinking skills (HOTS).

    g. Enhancing ethical and moral values.

    h. Assessing and evaluating learner performance.

    i. Engaging in professional development.

    j. Networking with stakeholders, especially with parents.

    k. Managing students' welfare and other tasks.

Although the document seemed to us to be confusing with regard to the theoretical definition of the competencies, it is important to recognise that this framework is also accompanied by a kind of audit (SEAMEO, 2010) which analyses the standards of teaching competencies in eleven Southeast Asian countries.

2010 – The FIER Initiative *(Finnish Institute for Educational Research)*

This document (FIER, 2010), aimed at evaluating the extent to which the teacher training curriculum in member States provides the knowledge, skills and competencies to which the report "Improving the Quality of Teacher Education" (Commission of the European Communities , 2007) refers, defines eight clusters of competencies and a series of items that help describe them:

    1. Competencies linked to discipline.

    2. Pedagogical competencies.

    3. Integration of theory and practice.

    4. Cooperation and collaboration.

    5. Quality guarantee.

    6. Mobility.

    7. Leadership.

    8. Continuous and lifelong learning.

With regard to pedagogical competencies, the participants highlight those relating to teaching in heterogeneous classes, with students coming from other languages, cultures and social customs.

2011 – AITSL Australian Professional Standards for Teachers

This framework of standards (AITSL, 2011), financed by the Australian government, describes seven standards grouped into three domains:

PROFESSIONAL KNOWLEDGE:

1. Know students and how they learn.

2. Know the content and how to teach it.

PROFESSIONAL PRACTICE:

3. Plan for and implement effective teaching and learning.

4. Create and maintain supportive and safe learning environments.

5. Assess, provide feedback and report on student learning.

PROFESSIONAL ENGAGEMENT:

6. Commit to professional learning.

7. Commit professionally to colleagues, parents/carers and the community.

Each of these standards is divided into different focus areas and, in turn, involves four career stage descriptors *(Graduate, Proficient, Highly accomplished and Lead),* which introduces the concept of leadership (or something close to it conceptually) as the most advanced stage of development or accomplishment of each standard.

2013 – *The Framework for Teaching. Evaluation Instrument* (Charlotte Danielson)

Various editions of this framework (Danielson, 2013) have been published and, from the 2011 version onwards, it is supported by the ambitious Measures of Effective Teaching (MET) research project, funded by the Bill and Melinda Gates Foundation, and the Framework for Teaching was one of the selected models.

The Framework is divided into 4 domains, each with different competencies:

1. Planning and preparation:
   1. Demonstrating knowledge of content and pedagogy.
   2. Demonstrating knowledge of students.
   3. Setting instructional outcomes.
   4. Demonstrating knowledge of resources.
   5. Designing coherent instruction.
   6. Designing student assessments.
2. The classroom environment:
   1. Creating an environment of respect and rapport.
   2. Establishing a culture for learning.
   3. Managing classroom procedures.
   4. Managing student behaviour.
   5. Organising physical space.
3. Instruction:
   1. Communicating with students.
   2. Using questioning and discussion techniques.
   3. Engaging students in learning.
   4. Using assessment in instruction.
   5. Demonstrating flexibility and responsiveness.
4. Professional responsibilities:
   1. Reflecting on teaching.
   2. Maintaining accurate records.
   3. Communicating with families.
   4. Participating in the professional community.
   5. Growing and developing professionally.
   6. Showing professionalism.

Each of these components has a series of quite detailed indicators attached, with four levels of proficiency: unsatisfactory, basic, proficient and distinguished.

2014 – *The 5-Step Cycle of Evaluation (Massachusetts Department of Elementary and Secondary Education)*

This group of documents (DOE-Mass, 2014, 2015a, 2015b) are aimed at providing educators with an opportunity for lifelong professional growth and development through self-assessment, reflection, planning, action and collaboration. It describes a cycle of continuing improvement through five steps, each involving a number of items which are also interconnected with other Massachusetts Department of Elementary and Secondary Education (ESE) materials.

Each of these steps is accompanied by a detailed description of how and when to carry them out.

2015 – *Document entitled "21st-Century Teachers" ("El profesorado del siglo XXI"),* from the 21st meeting of regional school councils (XXI Encuentro de Consejos Escolares Autonómicos) and the Spanish State

This text (Spanish Schools Council – Consejo Escolar del Estado, 2015), when discussing competences, states that, to achieve good results, a teacher must possess a set of qualities and competences focusing, at least, on the following areas: general knowledge, knowledge of their subject and pedagogical and methodological knowledge of the teaching and learning processes (pp. 7-10). It also specifies that, to avoid teachers' competences being merely rhetorical formulations with no real impact on improving education, they must be structured upon teaching tasks and, more specifically, on their measurable aspects.

2015 – *The Massachusetts system for teacher assessment*

The Massachusetts model is a comprehensive system for assessing teachers also designed by the ESE (DOE-Mass, 2015a), which seeks to regulate teacher assessment models. In its second part it specifies assessments in terms of school planning; it also adds an implementation guide. It details and provides further depth regarding the launch of the aforementioned 5 step-cycle (DOE-Mass, 2014):

1. Self-assessment and proposal of objectives.
2. Goal-setting and educator plan development.
3. Plan implementation.
4. Formative assessment or formative evaluation.
5. Summative evaluation.

This is a lengthy and broad-reaching document that includes various forms and worksheets to complete the self-assessment, provide training evidence, etc.

2015 – *Guidelines to define professional standards for teachers* (Massachusetts) (PSTs)

These guidelines define the pedagogical and professional knowledge and skills required by teachers, based on the definition of four standards:

1. Curriculum, planning and assessment standard.
2. Teaching all students standard.
3. Family and community engagement standard.
4. Professional culture standard.

As in the rest of frameworks, each of these standards entails several indicators and levels of practice, in this case three (introduction, practice and demonstration).

2016 – *Competency Framework for Primary School Teachers in Kenya*

Developed by a team of 14 teachers, the Kenyan framework (ARTEMIS, 2016) is structured into four domains: knowledge, teaching skills, assessment and evaluation and professional values and behaviour. The domain of teaching skills, the one most closely linked to our topic, refers to the training processes, strategies and class management techniques used by teachers to enhance learning.

Each of these domains contains a set of ten or more desirable attributes for teachers to attain a certain standard in that domain, although these are not detailed in depth. For example, these teaching skills include: the use of technology to improve learning, being able to handle, large multi-level classes, promoting learning through team teaching and group learning, interpreting syllabus content and preparing lesson plans with clear achievable objectives, etc.

2017 – *Teacher Competency Standards Framework for Beginning Teachers (TCSF) – Myanmar (Birmania)*

For the purposes of this report, the context of Myanmar may be useful, since it is one of the countries with the widest gap between the rich and poor, the greatest inequalities and the lowest levels of human development.

In this regard, knowing the framework for new teachers can help us to understand the training and employment insertion process in Myanmar, as well as what is expected of these teachers.

The framework of competencies (TCSF Working Group, 2017) is divided into four domains which, in turn, are structured into standards and minimum requirements:

A. PROFESSIONAL KNOWLEDGE AND UNDERSTANDING:
   a. Know how students learn.
   b. Know available instructional technology.
   c. Know how to communicate well with students and their families.
   d. Know the syllabus.
   e. Know the subject content.

B. PROFESSIONAL SKILLS AND PRACTICES:

    a. Teach syllabus content using various teaching strategies.

    b. Assess, monitor, and report on students' learning.

    c. Create a supportive and safe learning environment for students.

    d. Work together with other teachers, parents, and community.

C. PROFESSIONAL VALUES AND DISPOSITIONS:

    a. Service to profession.

    b. Service to community leadership.

    c. Promote quality and equity in education for all students.

D. PROFESSIONAL GROWTH AND DEVELOPMENT:

    a. Reflect on own teaching practice.

    b. Engage with colleagues in improving teaching practice.

    c. Participate in professional learning to improve teaching practice.

Each of the competencies is defined by certain minimum requirements and by a series of indicators that establish the standard of proficiency depending on their education level.

2012 and 2018 – *Key competences for teachers* – Instituto Cervantes

Focusing on learning second and foreign languages, but with a model based on the aforementioned concept of "competence" by Perrenoud, the Framework of Instituto Cervantes (Moreno-Fernández, 2018) establishes a series of key competences encompassing four specific domains focused on aspects that are considered relevant in the context of Instituto Cervantes. It identifies eight key competences for teachers with their related specific skills that are validated through the teachers and academic managers of the centres, staff from Academic Management and Human Resources, and external experts. These competences are described in full, but without numerical indicators or indicators linked to a quantification process.

Figure 47. Framework of key competences for teachers of second and foreign languages

Frameworks of Digital Competence

2006. *TPCK document. Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge*

The TPCK framework (Mishra and Koehler, 2006) aims to establish a link between technologies, pedagogical knowledge and subject matter knowledge, and thereby to establish a new framework with strategies to ensure that these three domains are in constant dialogue and not seen as mere instruments at the service of the others. The framework is useful to evaluate teachers' knowledge and also to conduct research, as a lens to see the reality of education from other perspectives which have not hitherto been envisaged.

2008 – *National Educational Technology Standards for Teachers* (NETS-T)

Based broadly on the TPACK model, the ISTE (International Society for Technology in Education) has drawn up a framework of technology standards for teachers (ISTE, 2008), structured into five global standards that are subdivided into various smaller items:

1. Facilitate and Inspire Student Learning and Creativity.
2. Design and Develop Digital-Age Learning Experiences and Assessments.
3. Model Digital-Age Work and Learning.
4. Promote and Model Digital Citizenship and Responsibility.
5. Engage in Professional Growth and Leadership.

Each of these standards is accompanied by various reflections, artefacts and rationales.

2008-2011 – UNESCO – ICT Competency Framework for Teachers

This extensive and detailed framework (UNESCO, 2011) approaches education from three different levels (technological literacy, knowledge deepening and knowledge creation) and their inter-connection with six aspects/modules of teachers' work: understanding ICT in education; syllabus and assessment; pedagogy; application of digital skills; organisation and administration; and teacher professional learning.

	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANISATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER ROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

Table 4. UNESCO – ICT Competency Framework for Teachers

The framework is aimed at informing policy makers, teachers and other educators, as well as the various stakeholders in the world of education. Furthermore, its annexes detail for each of these areas the curricular objectives, teaching competences to be attained, the goals teachers should be able to achieve, and sample methods for teaching or learning.

2012 – PROFORTIC project. *Competencias del profesorado en las TIC. Influencia de factores personales y contextuales*, (Impact of personal and contextual factors) by Suárez, Almeric, Díaz and Fernández

Based on a survey in the region of Valencia, new research has emerged (Suárez-Rodríguez et al., 2012) which specifically focuses on the relationship between technology and pedagogy. The findings show that the development of competence models and frameworks must consider both kinds of competence, both pedagogical and digital or technological, this being a solid basis on which to specify the minimum competences which both current and future teachers need to develop, as well as initial training with a greater focus on technological competence, emphasising integration with learning and education situations in general.

2012 – Document "Understanding Digital Competence in the 21st Century: An Analysis of Current Frameworks" (by Ferrari, Punie and Redecker)

This work (Ferrari et al., 2012) examines 15 digital competence frameworks generally; among those analysed, the only ones targeting teachers and their digital competences are the UNESCO ICT-CFT (UNESCO, 2011) and Denmark's Pedagogical ICT License.

In its conclusion, after analysing the 15 frameworks selected, the document establishes seven areas of digital competence and a description thereof. These areas are:

1. Information management.
2. Collaboration.
3. Communication and sharing.
4. Creation of content and knowledge.
5. Ethics and responsibility.
6. Evaluation and problem-solving.
7. Technical operations.

One of the authors compiled a paper in the same year (Ferrari, 2012) for the European Commission detailing the above in depth and adding a number of case studies.

2012 − *ENLACES* project. Ministry of Education of Chile

The ENLACES project, launched in 2007 and updated in 2012, is a very important effort for Chile in tackling the incorporation of ICT into education, consisting of various works, including, "ICT Competences and Standards in the Teaching Profession" (*Competencias y Estándares TIC en la profesión docente*), focused on teachers currently in service and initial teacher training (Elliot, 2011).

Its map of ICT competences for the teaching profession is divided into various dimensions:

1. Pedagogical dimension.

2. Technical or instrumental dimension.

3. Management dimension.

4. Social, ethical and legal dimension.

5. Professional development and responsibility dimension.

All these dimensions are detailed in a series of competences structured around criteria, which in turn are set forth in the standards: items that facilitate teachers' assessment or self-assessment and account for their achievement. All of this is provided in great detail, including which proposals might be evidence and guidance for evaluating these standards: oral and written reports, case studies, simulation of the real working process, videos that show the function's development, direct performance, etc.

The document also discusses a series of generic competences common to a diverse group of specific functions which are expected to always operate in all dimensions: communication, planning and organisation, innovation and engagement with continuous learning.

Figure 48. ICT Competency Framework for Teachers, Ministry of Education of Chile

2013 – *DigiLit* (UK)

This (Fraser, Atkins and Hall, 2013) was launched in Leicester with the aim of helping secondary school teachers and support staff to develop their knowledge and digital literacy, to implement skills and practices for the effective use of ICT tools and improve the contexts through digital aspects of their work with students. As a result of a quite extensive research project, a digital literacy framework emerged that identifies six key areas:

1. Finding, Evaluating and Organising.
2. Creating and Sharing.
3. Assessing and Giving Feedback.
4. Communication, Collaboration and Participation.
5. E-Safety and Online Identity.
6. Technology to support professional development.

The framework establishes four levels of achievement for each of these lines or areas: Entry, Core, Developer and Pioneer. These are defined by a series of standards that gauge the teacher's technological capacity, either externally or through self-assessment. Likewise, a wealth of additional online resources are provided for more in-depth examination of each of these areas.

2013 – *Strategic approaches on the use of ICT in Latin American and the Caribbean* (UNESCO)

This document (Severin, 2013) is not a framework as such, but contributes a good deal of information on the Latin American context in connection with ICT. The paper is based on the idea that the development of ICT in recent years requires the educational system to update their practices and content in accordance with the new information society. Two dimensions are especially relevant for the development of a new educational paradigm in Latin American and Caribbean schools: the renewal of teaching practices and strategies associated with measuring learning. In both dimensions, the work asserts, ICT poses challenges while at the same time offering opportunities of support for implementing these changes.

2015 – *Rubric for evaluating teachers' digital competence* (Lázaro and Gisbert)

In this work, Lázaro and Gisbert (2015) present, based on the aforementioned frameworks (ISTE, UNESCO, ENLACES, European Commission, etc.) and through a research and validation process, a rubric for to evaluate the digital competence of teachers, which divides into four dimensions and four spheres. These dimensions are:

1. Didactics, curricular and methodology.
2. Planning, organisation and management of spaces and digital technological resources.
3. Relationships, ethical and security dimension.
4. Personal and professional dimension.

The four spheres are:

1. Classroom.
2. School.
3. Educational community and environment.
4. Professional development.

In turn, four levels of development are proposed: beginner, intermediate, expert and transformer.

2016 – *Evaluation of digital competence in initial teacher training in the context of Chile and Uruguay* (Silva, Gisbert, Morales and Onetto)

This text (Silva et al., 2016) also analyses different frameworks worldwide. Based on the analysis, a matrix of indicators is developed to assess digital competences in initial teacher training in each of these frameworks. Among other matters, they conclude by saying that the standards and indicators which each institution or country generate require plans to implement the training of future teachers, and that this must incorporate the curricular fabric of their training, through the transversal use of technologies in the different dimensions of the profile of the teacher in training (op. cit., p. 2272).

2017 – *European Framework for the Digital Competence of Educators* (DigCompEdu and DIGCOMP 2.1)

The latest version of the DIGCOMP framework, version 2.1. (Carretero et al., 2017) provides five working dimensions:

1. Definition of identified competence scopes.
2. Descriptors of these competences.
3. Levels of attainment or proficiency.
4. Knowledge, skills and attitudes applicable to each competence.
5. Examples of use.

The five scopes of competence discussed are:

1. Information and data literacy: identify, locating, recovering, storing, organising and analysing digital information, evaluating their purpose and relevance.
2. Communication and collaboration: communicating in digital environments, sharing resources through online tools, using digital tools to connect and collaborate with others, interacting and participating in communities and networks; cross-cultural awareness.
3. Creation of digital content: creating and editing new content (texts, images, videos, etc.), integrating and re-elaborating prior knowledge and content, staging artistic productions, multimedia content and IT programming, knowing how to apply intellectual property rights and licences.
4. Security: personal protection, data protection, digital identity protection, use of security, secure and sustainable use.
5. Problem-solving: identifying digital needs and resources, making decisions about choosing the right digital tool, suited to the purpose or need, resolving conceptual problems through digital media, resolving technical problems, creative use of technology, updating one's own competence and that of others.

Since the latest version, these competences, in turn, have eight levels of proficiency: Foundation (1,2), Intermediate (3,4), Advanced (5,6) and Highly specialised (7,8).

2017 – *Digital policy recommendations for Chile*, by the Advisory Council for the Digital Agenda in Education

This report (Advisory Council for the Digital Agenda in Education, 2017) makes a number of recommendations in connection with digital policy for five areas of priority action: teaching capacities, educational leadership, curriculum and assessment, internet and digital resources and institutional coordination. With regard to teaching capacities, the report states that "there have been considerable efforts in teacher training in recent decades in Chile, but they have been insufficient" (pp. 16-17).

It proposes preparing and accompanying teachers to help them to understand the changes in the aforementioned areas and to train them to use innovative methodologies and tools. For this purpose, it proposes devising several professional development plans for teachers, to incorporate digital competences in initial training and to support teachers in their task of promoting new competences which their students need in the disciplines they are responsible for teaching.

2017 – UNESCO Policy Papers – *ICT, education and social development in Latin America and the Caribbean*

This report (Hinostroza, 2017) analyses the general situation with respect to ICT in this geographical context and concludes with a series of recommendations in connection with teacher training and the evaluation of teacher training.

With regard to teachers, the recommendations are (p. 15):

- To define standards for using ICT in the teaching profession that are integrated, or at least aligned, with the country's pedagogical standards.
- To incorporate the use of ICT (standards) in teacher evaluation systems, so as to integrate the use of ICT in teachers' career development.
- To incorporate the standards of use of ICT for teachers in the training curriculum of new teachers, so as to ensure that future generations of teachers have the necessary competences to harness these technologies in their professional duties.
- To develop professional development support systems that include both the necessary courses to strengthen the competences defined as support networks that guarantee continuous support throughout the process of adopting these technologies.

In relation to the evaluation processes, the work also recommends: "Standardising data collection instruments and methods for the variables associated with basic ICT indicators", "Exploring the application of sample-based surveys that enrich the perspective on access, use and benefit of ICT in education", "Engage in the production of comparable data and statistic on ICT in education, which serve as input for evidence-based policy-making" (p. 20).

2018 – Article *"Por qué es necesario repensar la competencia digital docente"* (Why is it necessary to rethink teachers' digital competence?) Castañeda, Esteve and Adell

This work (Castañeda, Esteve and Adell, 2018) analyses various institutional models of teachers' digital competence and tackles them from a critical standpoint, examining the deficiencies in their proposals: not using a teaching action model as the starting point, avoiding aspects such as social and political engagement or overlooking the role of schools in community development. Likewise, it is critical of the use of taxonomic views of the competence concept, simplistic views that ignore the complexity and miss out on a more holistic approach. Lastly, the authors highlight the instrumentalist view with which technology is treated as a neutral tool in all these frameworks.
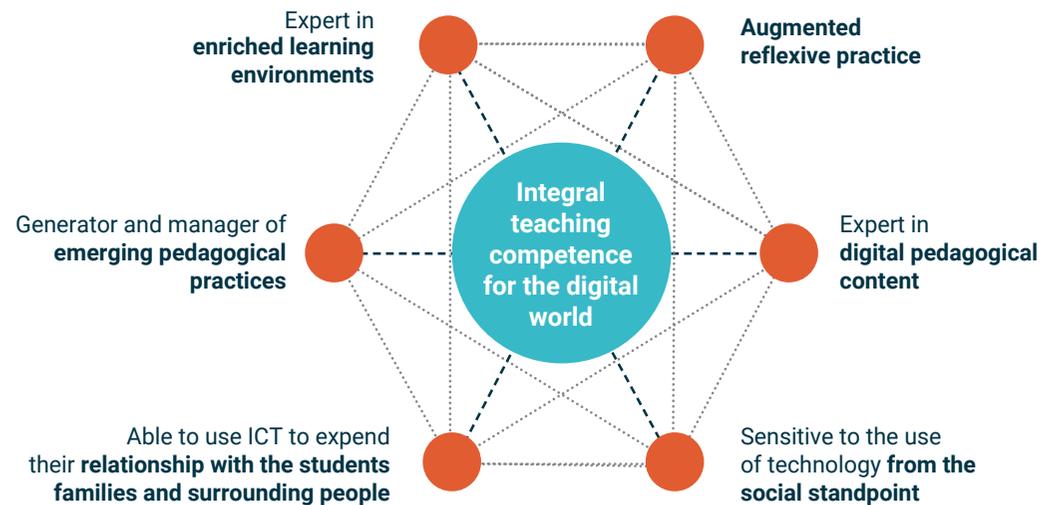
Figure 49. Integral teaching competence for the digital world

After the analysis, the authors propose a model they call "Integral Teaching Competence in the Digital World". A teaching competence for the digital world that is holistic, situated, oriented towards roles of performance, function and relation, systemic, trainable and in constant development. A model that takes into account that technology is an instrument at the service of educational purposes, but it is also a kind of knowledge and relationship with the world, a human activity and a source of values (Vries, 2016).

The text concludes by asserting that the institutional frameworks analysed are performative models of assessment, control and training in basic technical skills, almost always in that order and with a particular emphasis on the individual nature of the teacher as a professional.

2018 – Article *"Rubric to evaluate the digital competence of the university teacher in the Latin American context"* (Lázaro, Gisbert and Silva, 2018)

This document is very similar (and follows the same lines) to that of Lázaro and Gisbert (2015). Here, a focus group methodology is used to adapt an instrument devised in Spain to the Latin American context. The result is an evaluation rubric comprising 22 descriptors grouped into four dimensions and with indicators specifying four levels of achievement or development per descriptor. It does not target school teachers, but rather university professors, but can offer us some clues that may be extrapolated to other professional contexts and geographical areas.

The four areas or dimensions analysed are as follows: 1) Didactic, curricular and methodological; 2) Planning, organisation and management of spaces and digital technological resources; 3) Relationships, ethical and security; 4) Personal and professional dimension. Each of these areas is detailed and defined in the document by a series of descriptors which, in turn, are established in four levels of accomplishment of the competence: beginner, intermediate, expert and transformer.

The authors indicate that their rubric may be used in teacher self-assessments, to ascertain the teachers' perception of their own development and to regulate their learning process. Likewise, they also indicate that it may be useful for teacher accreditation processes or institutional evaluation.

UNESCO Framework (2018) – *Global reference for digital literacy skills for indicator 4.4.2*

The main objective of this framework (Law, Woo, Torre and Wong, 2018) is to develop a methodology which may serve to attain one of the thematic indicators of the UN Sustainable Development Goals. Specifically, objective 4.4.2 envisages improving the "percentage of young people/adults who have attained at least a minimum command of digital literacy skills".

For this purpose, the authors of the framework used DigComp 2.0 as a starting point and conducted four empirical trials to strengthen the framework they propose, summarising the existing frameworks at regional, national and supranational level, performing an analysis of digital literacy competences in ICT, a profound consultation with experts about the suitability of using a global framework, and an online consultation to obtain expert feedback regarding the proposed framework.

After these studies, the report concludes that there is a broad consensus regarding the value of a global framework to guide the development of digital literacy.

The competence domains and competences proposed (with their detailed descriptions) are:

0. Devices and software operations:
   a. Physical operations of digital devices.
   b. Software operations in digital devices.

1. Information and data literacy:
   a. Browsing, searching and filtering data, information and digital content.
   b. Evaluating data, information and digital content.
   c. Handling data, information and digital content.

2. Communication and collaboration:
   a. Interacting through digital technologies.
   b. Sharing through digital technologies.
   c. Engaging/participating in citizenship through digital technologies.
   d. Collaborating through digital technologies.
   e. Netiquette.
   f. Managing digital identity.

3. Creating digital content:
   a. Developing digital content.
   b. Integrating and re-elaborating digital content.
   c. Copyright and licences.
   d. Programming.

4. Insurance
   a. Protecting devices.
   b. Protecting personal data and privacy.
   c. Protecting health and well-being.
   d. Protecting the environment.

5. Problem-solving:
   a. Resolving technical problems.
   b. Identifying technological needs and responses.
   c. Creatively using digital technologies.
   d. Identifying digital competence gaps.
   e. Computational thought

6. Competences linked to teachers' professional career:
   a. Operating specialist technologies for a particular field.
   b. Interpreting and handling data, information and digital content for a specific field.

Moreover, the authors state that the findings (after all four research phases) show that the DigComp2.0 framework is an adaptable and valuable basis on which to develop a global framework for digital literacy. However, the DigComp framework is closely aligned with the European reality, so that, to transfer it to less technologically developed contexts, this new framework has added new competences like numbers 0 (Operations with devices and software), 6 (competences linked to teachers' professional career/specific field) or 5e (Computational thinking).

The proposed framework and its research methodology, which are explained in an extensive text whose appendices contain all the data compiled from the four research processes to analyse the present frameworks and promote the idea of a global framework, may be useful for the development of frameworks of digital literacy, curricular development and assessment processes through different countries and regions, with a view to attaining indicator 4.4 of the relevant Sustainable Development Goal.
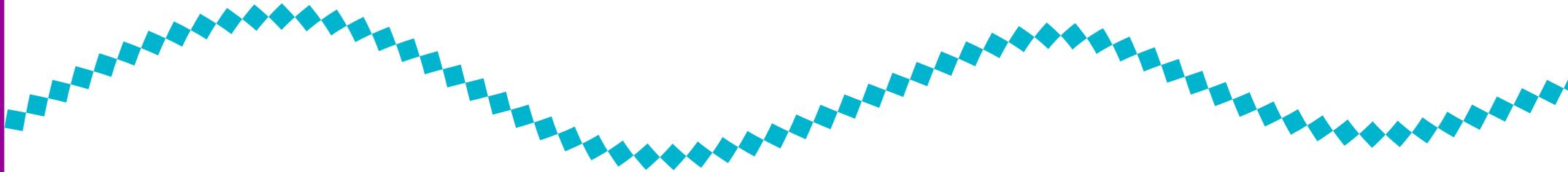
Reference frameworks:
The European view

If any geopolitical region has been especially active in the last twenty years when it comes to researching and designing competence frameworks, that region has been Europe. Through various European institutions (Council of Europe, European Commission, European Parliament, etc.), a number of reference frameworks have been designed since 2001, when the Common European Framework of Reference for Languages emerged. Since then, and broadly taking this framework as a model, various publications have been issued, which we analyse below.

The Digital Competence Framework for Citizens. DigComp 2.1

The European Digital Competence Framework for Citizens, the latest version of which was issued in May 2017, focuses on citizens, but only for digital competence, not for any other competence. In Spain, it has been adapted for teachers' digital competence through the INTEF.

The framework has eight proficiency levels, which might seem excessive, and does not include a means of self-assessing/evaluating them, although it does include a guide for use, examples of use in education in Europe and five dimensions clearly classified into 21 competences with their related descriptors. Since there is no European evaluation and/or self-assessment tool, it is confined to being a conceptual reading tool for citizens.

This framework was first published in 2013 and has been developed until the current version, examined here, having been used as a model by various European member States, including Spain, for adaptation to various contexts. The original purpose of the framework was to harness the potential of digital technologies to innovate practice in education and training, improve access to lifelong learning and tackle the increase in new (digital) skills and competences needed for employment, personal development and social inclusion.

* Note: Several of these frameworks are currently being developed, so there might be updates in the information we are using for this analysis.

It currently comprises five competences areas:

- Competence area 1: information and data literacy.
- Competence area 2: communication and collaboration.
- Competence area 3: creation of digital content.
- Competence area 4: safety.
- Competence area 5: problem-solving.

In turn, each of these competence areas has its own competences, giving a total of 21, identified as follows:

Competence area 1: information and data literacy

- Browsing, searching, filtering data, information and digital content: articulating information requirements, searching for data, information and content in digital environments, accessing and browsing them. Creating and updating personal search strategies.
- Evaluating data, information and digital content: analysing, comparing and critically assessing the credibility and reliability of the sources of data, information and digital content. Analysing, interpreting and critically assessing data, information and digital content.
- Managing data, information and digital content: organising, storing and recovering data, information and content in digital environments. Organising and processing them in a structured environment.

Competence area 2: communication and collaboration

- Interacting through digital technologies: interacting through a variety of digital technologies and understanding appropriate digital communication media for a particular context.
- Sharing through digital technologies: sharing data, information and digital content with others through appropriate digital technologies. Acting as an intermediary, knowing practice for references and attribution.
- Engaging in citizenship through digital technologies: engaging in society through the use of public and private digital services. Seeking opportunities for self-empowerment and for engaged citizenship through appropriate digital technologies.
- Collaborating through digital technologies: using digital tools and technologies for collaboration processes and for building and jointly creating data, resources and knowledge.
- Netiquette: knowing the standards of behaviour and practical know-how when using digital technologies and interacting in digital environments. Adapting communication strategies to the specific target audience and be aware of cultural and generational diversity in digital environments.

- Managing digital identity: creating and managing one or several digital identities, being able to protect one's own reputation, process the data one generates using various digital tools, environments and services.

Competence area 3: digital content creation

- Developing digital content: creating and editing digital content in various formats, for expression through digital media.

- Integrating and re-elaborating digital content: modifying, refining, improving and integrating information and content in an existing body of knowledge to create new, original and relevant content and knowledge.

- Copyright and licences: understanding how copyright and licences apply to data, digital information and content.

- Programming: planning and developing a comprehensible sequence of instructions for a computer system with a view to resolving a specific problem or performing a particular task.

Competence area 4: security

- Protecting devices: protecting devices and digital content, and understanding risks and threats in digital environments. Knowing safety and protection measures and taking reliability and privacy properly into account.

- Protecting personal data and privacy: protecting personal data and privacy in digital environments. Understanding how to use and share personal identification information and, at the same time, be able to protect oneself and others from harm. Understanding how digital services use a "privacy policy" to provide information on how they use personal data.

- Protecting health and well-being: being able to avoid health risks and threats to physical and psychological well-being when using digital technologies. Being able to protect oneself and others from potential dangers in digital environments (for example, from cyberbullying). knowing digital technologies for well-being and social inclusion.

- Protecting the environment: knowing the environmental impact of digital technologies and their use.

Competence area 5: problem-solving

- Solving technical problems: identifying technical problems when using devices and digital environments, and resolving them (from basic to more complex problem-solving).

- Identifying needs and technological responses: evaluating the needs and identifying, choosing and using digital tools and providing potential technological responses. Adjusting and customising digital environments to personal needs (for example, accessibility).

- Creatively using digital technologies: using digital tools and technologies to create knowledge and innovate processes and products. Taking part, individually and collectively, in cognitive processing to understand and resolve conceptual problems and problematic situations in digital environments.
- Identifying gaps in digital competence: understanding where one needs to improve or updating one's own digital competence. Being able to support others in their development of said competence. Seeking opportunities for personal development and to keep abreast of digital evolution.

These of these competences are described through a range of indicators, divided into levels of proficiency: from foundation level, which is subdivided into foundation levels 1 and 2, to intermediate levels 3 and 4, advanced levels 5 and 6, and finally to highly specialised levels 7 and 8. Each level represents a step forward in acquiring competence for citizens in accordance with their cognitive challenge, the complexity of the tasks they can manage and their autonomy to complete the task.

Examples of use in this version 2.1. of the framework include examples of proficiency levels consistent with two types of use: for learning and for employability, thereby serving as a model nexus between education and employment.

The examples are aimed at contextualising each competence area and each sphere of use, through learning and/or employability scenarios, for which purpose a "cascade" strategy was used: instead of presenting examples for all levels, for one area of competence examples are given for one level, and for the next area of competence the next level, and so on.

European Framework for the Digital Competence of Educators. DigCompEdu

This framework, published in 2017, is for the development of digital competence among educators in Europe. It is aimed at helping member States in their efforts to promote digital competence among their citizens and to foster innovation in education. The framework is devised to support regional and local efforts to foster educators' digital competence, offering a reference document with a shared language and rationale.

Although it focuses on educators' digital teaching competence, the dimensions it proposes are transferable to professional teaching competences and to students' digital competence. It is based on the European Digital Competence Framework for Citizens, DigComp 2.1, and the European Framework for Digitally Competent Educational Organisations, DigCompOrg.
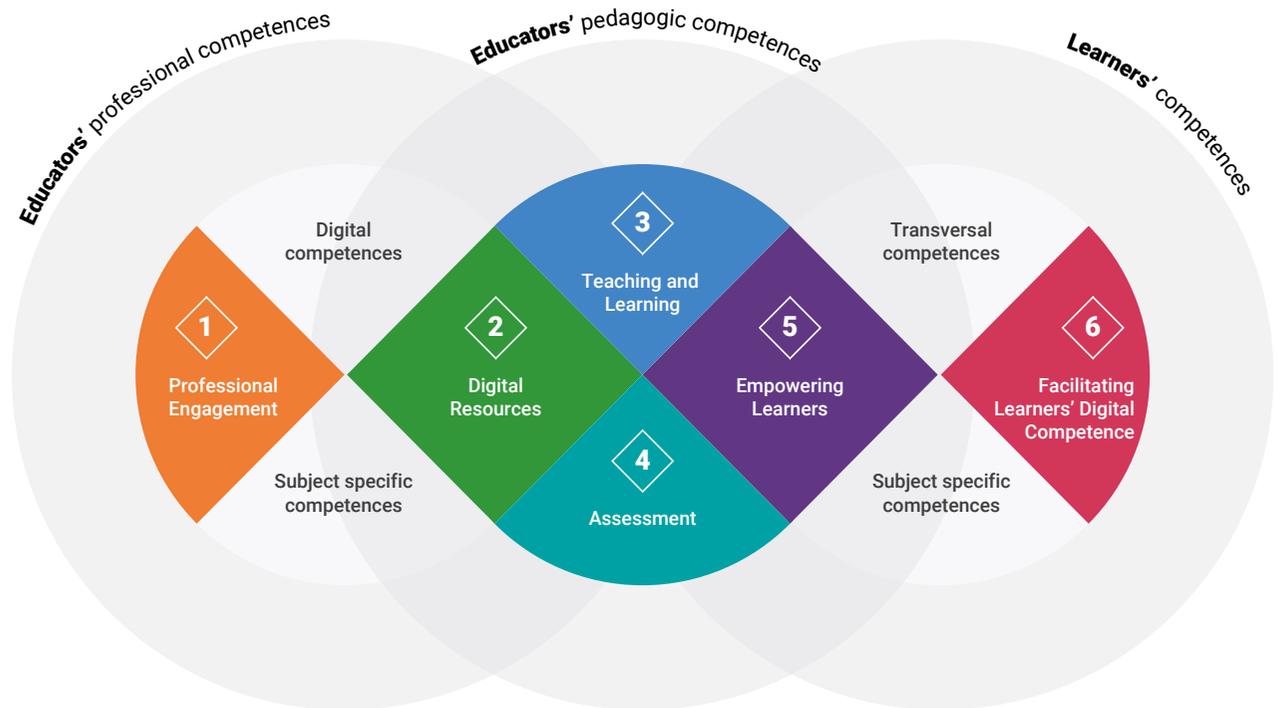
Figure 50. Areas and scope of DigCompEdu

The framework responds to the increasing awareness among many European member States that educators need a set of specific digital competences within their profession so as to harness the potential of digital technologies with a view to innovating in education.

It offers the added value of being the result of dialogue and debate with experts and professionals, based on an initial bibliographic review and a summary of instruments in place at local, national, European and international level. The goal of these debates held at various workshops was to achieve a consensus regarding the main areas and elements of digital competence of educators, to decide on the core and marginal elements, and on the rationale of progression in digital competence in each area.
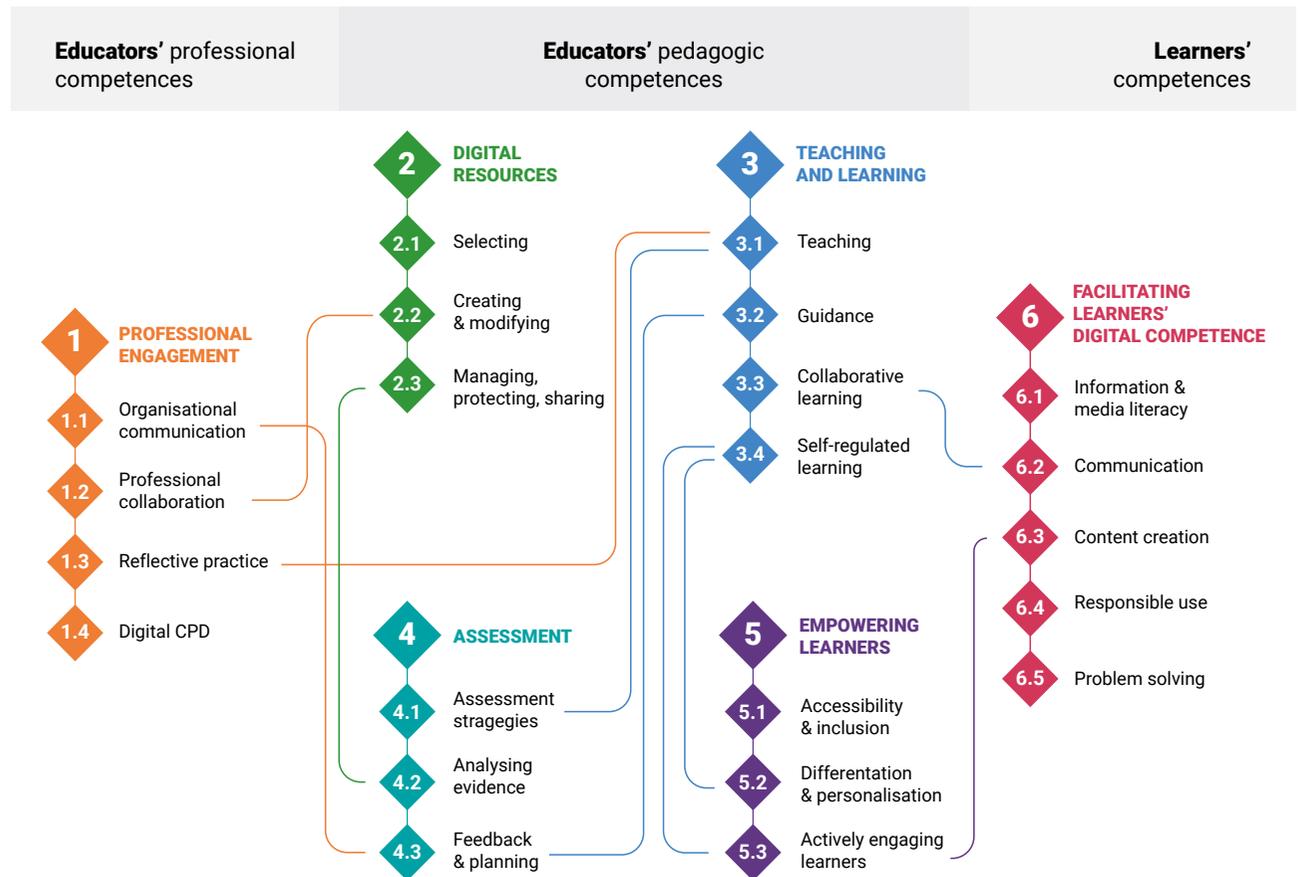
Figure 51. European Framework for the Digital Competence of Educators. DigCompEdu

DigCompEdu is divided into three broad sections which in turn encompass six interconnected areas of competence, comprising 22 competences:

- Educators' professional competences, encompassing the area called "Professional engagement".

- Educators' pedagogic competences, encompassing the areas called "Digital resources", "Teaching and learning", "Assessment" and "Empowering learners".

- Learners' competences, encompassing the area called "Facilitating learners' digital competence".

The six areas are defined as follows:

- **Area 1.** Professional engagement: using digital technologies for communication, collaboration and professional development.

- **Area 2.** Digital resources: sourcing, creating and sharing digital resources.

- **Area 3.** Teaching and learning: managing and orchestrating the use of digital technologies in teaching and learning.

- **Area 4.** Assessment: using digital technologies and strategies to enhance assessment.

- **Area 5.** Empowering learners: using digital technologies to enhance inclusion, personalisation and learners' active engagement.

- **Area 6.** Facilitating Learners' Digital Competence: enabling learners to creatively and responsibly use digital technologies for information, communication, content creation, well-being and problem-solving.

The core of this framework comprises areas 2-4. Together these areas explain educators' digital pedagogic competence, i.e. the digital competences educators need to foster efficient, inclusive and innovative teaching and learning strategies.

The competences listed in these areas detail how to make efficient and innovative use of digital technologies when planning (Area 2), implementing (Area 3) and assessing (Area 4) teaching and learning.

Area 5 acknowledges the potential of digital technologies for learner-centred teaching and learning strategies. This area is transversal to Areas 2, 3 and 4 in the sense that it contains a set of guiding principles relevant for and complementary to the competences specified in these areas.

Area 1 is anchored in the stages characteristic of any teaching process, whether supported by technologies or not. Area 6 is aligned with students' digital competence and focuses on this.

The competences described for each area are concise, brief, transversal and transferable, and are identified as shown below, by Area:

Area 1 competences:

- Organisational communication: To use digital technologies to enhance organisational communication with learners, parents and third parties. To contribute to collaboratively developing and improving organisational communication strategies.

- Professional collaboration: to use digital technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience, and collaboratively innovating pedagogic practices.

- Reflective practice: to individually and collectively reflect on, critically assess and actively develop one's own digital pedagogical practice and that of one's educational community.

- Digital Continuous Professional Development (CPD): to use digital sources and resources for continuous professional development.

Area 2 competences:

- Selecting digital resources: to identify, assess and select digital resources for teaching and learning. To consider the specific learning objective, context, pedagogical approach, and learner group, when selecting digital resources and planning their use.

- Creating and modifying digital resources: to modify and build on existing openly-licensed resources and other resources where this is permitted. To create or co-create new digital educational resources. To consider the specific learning objective, context, pedagogical approach, and learner group, when designing digital resources and planning their use.

- Managing, protecting and sharing digital resources: to organise digital content and make it available to learners, parents and other educators. To effectively protect sensitive digital content. To respect and correctly apply privacy and copyright rules. To understand the use and creation of open licenses and open educational resources, including their proper attribution.

Area 3 competences:

- Teaching: to plan for and implement digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions. To appropriately manage and orchestrate digital teaching strategies. To experiment with and develop new formats and pedagogical methods for instruction.

- Guidance: to use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session. To use digital technologies to offer timely and targeted guidance and assistance. To experiment with and develop new forms and formats for offering guidance and support.

- Collaborative learning: to use digital technologies to foster and enhance learner collaboration. To enable learners to use digital technologies as part of collaborative assignments, as a means of enhancing communication, collaboration and collaborative knowledge creation.

- Self-regulated learning: to use digital technologies to support learners' self- regulated learning, i.e. to enable learners to plan, monitor and reflect on their own learning, provide evidence of progress, share insights and come up with creative solutions.

Area 4 competences:

- Assessment strategies: to use digital technologies for formative and summative assessment. To enhance the diversity and suitability of assessment formats and approaches.

- Analysing evidence: to generate, select, critically analyse and interpret digital evidence on learner activity, performance and progress, in order to inform teaching and learning.

- Feedback and planning: to use digital technologies to provide targeted and timely feedback to learners. To adapt teaching strategies and to provide targeted support, based on the evidence generated by the digital technologies used. To enable learners and parents to understand the evidence provided by digital technologies and use it for decision-making.

Area 5 competences:

- Accessibility and inclusion: to ensure accessibility to learning resources and activities, for all learners, including those with special needs. To consider and respond to learners' (digital) expectations, abilities, uses and misconceptions, as well as contextual, physical or cognitive constraints to their use of digital technologies.

- Differentiation and personalisation: to use digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objective.

- Actively engaging learners: to use digital technologies to foster learners' active and creative engagement with a subject matter, and to use digital technologies within pedagogic strategies that foster learners' transversal skills, deep thinking and creative expression. To open up learning to new, real-world contexts, which involve learners themselves in hands-on activities, scientific investigation or complex problem-solving, or in other ways increase learners' active involvement in complex subject matters.

Area 6 competences:

- Information and media literacy: to incorporate learning activities, assignments and assessments which require learners to articulate information needs; to find information and resources in digital environments; to organise, process, analyse and interpret information; and to compare and critically evaluate the credibility and reliability of information and its sources.

- Digital communication and collaboration: to incorporate learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies for communication, collaboration and civic participation.

- Digital content creation: to incorporate learning activities, assignments and assessments which require learners to express themselves through digital means, and to modify and create digital content in different formats. To teach learners how copyright and licenses apply to digital content, how to reference sources and attribute licenses.

- Responsible use: to take measures to ensure learners' physical, psychological and social well-being while using digital technologies. To empower learners to manage risks and use digital technologies safely and responsibly.

- Digital problem solving: to incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems, or to transfer technological knowledge creatively to new situations.

The framework is divided into six levels of proficiency, like Spain's Common Framework of Reference for Digital Teaching Competence (A1-C2), and this division is based on the European Framework of Reference for Languages, but has been afforded the added value of a naming system that could equally serve to denominate teaching professional profiles:

- **A1.** Newcomers are aware of the existence of digital technologies and are curious about digital learning wish to learn. They assimilate the new information.

- **A2:** Explorers are teachers with an interest in exploring digital potential. They understand that educational technologies and digital competence exist and that, if they explore, they may make significant use of them in the teaching/learning process. They can identify the problems and develop basic digital strategies.

- **B1:** Integrators are teachers who are already in a position to source new tools and ideas and are starting to apply them strategically and are able to integrate them into their teaching processes.

- **B2:** Experts have a range of skills that already include strategy, application, integration and reflection. The teachers are equipped to make decisions about implementing new tools and ideas in the teaching/learning process.

- **C1:** Leaders share and transfer their knowledge, are able to shape educational projects, reflect on their profession and have leadership skills.

- **C2:** Pioneers are the most advanced and encompass all the previous skills. These are critical and reflective thinkers who foster renovation and innovation, develop new practices, seek to harness the innovation potential of digital technologies in education, evaluate processes and empower their learners.

However, the framework provides rather simple proficiency indicators, one per level and area, and a set of educational activities, for example, to define each area and the competences of each profile, but they are concise and easily transferable, despite lacking a self-assessment and/or evaluation tool.

European Framework for Digitally-Competent Educational Organisations. DigCompOrg

This framework, published in 2015 (Kampylis, Punie and Devine, 2015), focuses on making European educational centres digitally competent. Conceptually speaking, this framework could guide various paths for the integration and effective use of digital learning technologies and stimulate further research in this field, helping to modernise education and training systems throughout Europe: a European reference framework like this, which adopts a systemic approach, can add value when it comes to fostering transparency, comparability and learning among peers.

Moreover, the framework is valuable in its own right, since it can be used by educational organisations of all levels to guide a process of self-reflection on one's own progress towards global integration and effective deployment of digital learning technologies. DigCompOrg can also be used as a strategic planning tool for policy makers to promote integrated policies for the effective adoption of digital learning technologies in educational organisations at the regional, national and international levels.

Digital learning technologies, in the context of this DigCompOrg framework, are a key facilitator for educational organisations which can shore up their efforts to achieve their specific mission and vision for quality education. Profound integration of digital technologies, unlike superficial integration, requires a significant educational innovation and implies a planning process for change in three basic dimensions: pedagogical, technological and organisational.

As is the case of DigCompEdu, its wording is the result of debate and joint creation with experts in the field from various member States, and it can therefore be considered to be the result of consensus and reflection.

It encompasses seven key thematic elements which should be able to be identified in any educational centre at any educational level, and these are defined by 15 sub-elements, with their related descriptors, a total of 74:

Thematic element 1. Leadership and governance practices

Sub-elements and descriptors of thematic element 1:

a. Integration of Digital-age Learning is part of the overall mission, vision and strategy.

   a. Descriptor 1: the potential of digital learning technologies is clearly flagged.

   b. Descriptor 2: the benefits of digital learning technologies are communicated.

   c. Descriptor 3: the strategic plan encompasses digital-age learning.

   d. Descriptor 4: open education is an aspect of public engagement.

b. Strategy for digital-age learning is supported by an implementation plan.

   a. Descriptor 1: planning builds on enablers while addressing barriers.

   b. Descriptor 2: internal stakeholders have a degree of autonomy.

   c. Descriptor 3: opportunities, incentives and rewards for staff are identified.

   d. Descriptor 4: digital-age learning is aligned with broader priorities.

   e. Descriptor 5: there are twin goals of modernising existing educational provision and offering new opportunities.

c. A management and Governance Model is in place.

   a. Descriptor 1: there is a shared understanding of and commitment to the implementation plan.

   b. Descriptor 2: management responsibility is clearly assigned.

   c. Descriptor 3: resources are aligned with budgets and staffing.

   d. Descriptor 4: the outcomes, quality and impact of the implementation plan are reviewed.

   e. Descriptor 5: specific initiatives or pilots are evaluated.

   f. Descriptor 6: implementation status is benchmarked.

   g. Descriptor 7: oversight of policy and direction is evident.

Thematic element 2. Teaching and learning practices

Sub-elements and descriptors of thematic element 2:

a. Digital Competence is promoted, benchmarked and assessed.

    a. Descriptor 1: staff and students are Digitally-Competent

    b. Descriptor 2: safety, risks and responsible behaviour in online environments are foregrounded.

    c. Descriptor 3: the digital competence of staff and students is benchmarked.

    d. Descriptor 4: digital competence is included in staff appraisal.

b. A rethinking of roles and pedagogical approaches takes place.

    a. Descriptor 1: staff are partners in change.

    b. Descriptor 2: new roles are envisaged for staff.

    c. Descriptor 3: new roles are envisaged for students.

    d. Descriptor 4: pedagogical approaches are expanded.

    e. Descriptor 5: personalised learning is developed.

    f. Descriptor 6: creativity is promoted.

    g. Descriptor 7: collaboration and group work is expected.

    h. Descriptor 8: social and emotional skills are developed.

Thematic element 3. Professional development

Descriptors of thematic element 3 (there are no sub-elements):

a. Descriptor 1: A commitment to continuous, comprehensive and customised professional development (CPD) is evident.

b. Descriptor 2: CPD is provided for staff at all levels.

c. Descriptor 3: CPD is aligned with individual and organisational needs.

d. Descriptor 4: A wide range of CPD approaches is evident.

e. Descriptor 5: accredited/certified CPD opportunities are promoted.

Thematic element 4. Assessment practices

Sub-elements and descriptors of thematic element 4:

a. Assessment Formats are engaging and motivating.

   a. Descriptor 1: the scope of formative assessment is extended.

   b. Descriptor 2: summative assessment is diversified.

   c. Descriptor 3: self- and peer- assessment are promoted.

   d. Descriptor 4: rich, personalised and meaningful feedback is encouraged and expected.

b. Informal and Non-Formal Learning are recognised.

   a. Descriptor 1: prior, experiential and open learning are recognised and accredited.

c. Learning Design is Informed by Analytics.

   a. Descriptor 1: learning analytics is given strategic consideration.

   b. Descriptor 2: a code of practice for learning analytics is in place.

   c. Descriptor 3: learning is supported through learning analytics.

   d. Descriptor 4: quality management and curriculum/programme design are supported through learning analytics.

Thematic element 5. Content and Curricula

Sub-elements and descriptors of thematic element 5:

a. Digital Content and OER are widely promoted and used.

   a. Descriptor 1: staff and students are creators of content.

   b. Descriptor 2: content repositories are widely and effectively used.

   c. Descriptor 3: intellectual property and copyright are respected.

   d. Descriptor 4: digital tools and content are licensed as required.

   e. Descriptor 5: Open Educational Resources are promoted and used.

b. Curricula are redesigned or re-interpreted to reflect the pedagogical possibilities afforded by digital technologies:

   a. Descriptor 1: subject-based learning is re-imagined to create more integrated approaches.

   b. Descriptor 2: the time and place of learning is rescheduled.

   c. Descriptor 3: online provision is a reality.

   d. Descriptor 4: learning in authentic contexts is promoted.

e. Descriptor 5: digital learning provision is evident across curriculum areas.

f. Descriptor 6: students' digital competence is developed across the curriculum.

Thematic element 6. Collaboration and Networking
Sub-elements and descriptors of thematic element 6:

a. Networking, Sharing and Collaboration is promoted.

  a. Descriptor 1: networked collaboration for staff to pool expertise and share content is the norm.

  b. Descriptor 2: knowledge exchange efforts are recognised.

  c. Descriptor 3: students engage in effective networking.

  d. Descriptor 4: participation in knowledge-exchange activities and events is promoted.

  e. Descriptor 5: internal collaboration and knowledge exchange is expected.

b. A strategic approach is taken to communication.

  a. Descriptor 1: an explicit communication strategy is in place.

  b. Descriptor 2: a dynamic online presence is evident.

c. Partnerships are developed.

  a. Descriptor 1: a commitment to knowledge exchange through partnerships is evident.

  b. Descriptor 2: staff and students are incentivised to be actively involved in partnerships.

Thematic element 7. Infrastructure
Sub-elements and descriptors of thematic element 7:

a. Physical and Virtual Learning Spaces are designed for digital-age learning.

  a. Descriptor 1: physical learning spaces optimise the affordances of digital-age learning.

  b. Descriptor 2: virtual Learning Spaces are optimised.

b. The digital infrastructure is planned and managed.

  a. Descriptor 1: an Acceptable Usage Policy is in place.

  b. Descriptor 2: pedagogical and technical expertise informs investments in digital technologies.

  c. Descriptor 3: a range of digital learning technologies supports anytime/anyplace learning.

  d. Descriptor 4: Bring Your Own Device (BYOD) approaches are supported.

e. Descriptor 5: risks relating to inequality and digital inclusion are addressed.

f. Descriptor 6: technical and user support is evident.

g. Descriptor 7: assistive technologies address special needs.

h. Descriptor 8: measures to protect privacy, confidentiality and safety are clear.

i. Descriptor 9: effective procurement planning is evident.

j. Descriptor 10: an operational plan for core ICT backbone and services is in place.

There is also an open thematic area for each educational centre or administration to adapt it to its own needs and contexts.

In our view, the added value of this framework is its self-assessment tool, SELFIE. Open since 25/10/2018, centres can use this tool to diagnose the organisation's current phase of digital competence. It was piloted by various centres throughout Europe in 2017/2018 and, since then, it is openly available, enriched by the feedback of teachers and centres that use the tool.

Moreover, Spain's National Institute of Technology and Professional Development (INTEF) has prepared, under the auspices of the Educational Digital Competence Report it coordinated between 2013 and 2018, a handbook in Spanish concerning the direction a digitally competent centre should take. This manual is based on SELFIE and the contributions of 15 representatives of Spanish regions, external expert consultants and teachers from all stages of education. It has not yet been published.

Common Framework of Reference for Digital Teaching Competence. INTEF

This is a framework published by Spain's Education Ministry by means of the INTEF, the latest version of which is from October 2017. It is supported by 15 regions, teachers from all educational stages and external expert consultants who worked in partnership between 2013 and 2018, coordinated by the Online Training Area of INTEF.

The Framework of Reference for Digital Teaching Competence published by INTEF is a framework of reference based on the European frameworks DigComp V2.1 and DigCompEdu, to diagnose and improve teachers' digital competences. These digital competences are defined as competences that teachers in the 21st century need to develop to improve their educational practice and for their continuous professional development.

The framework comprises five areas of competence and 21 competences structured into six levels of proficiency. Each of these competences offers a detailed description, as well as descriptors based on terms of knowledge, capacities and attitudes. This framework is the basis for the Portfolio of Digital Teaching Competence, INTEF's digital instrument for the accreditation of said competence.

The Common Framework for Digital Teaching Competence establishes three dimensions in each of the competences of the five areas it comprises. The first dimension is basic, and includes levels A1 and A2. The second dimension is intermediate, and includes levels B1 and B2. Lastly, the third dimension is advanced, and includes levels C1 and C2. This structure is designed to identify a teacher's level of digital competence, thereby establishing a progressive level of development and autonomy starting with level A1 and continuing to the highest level, C2.
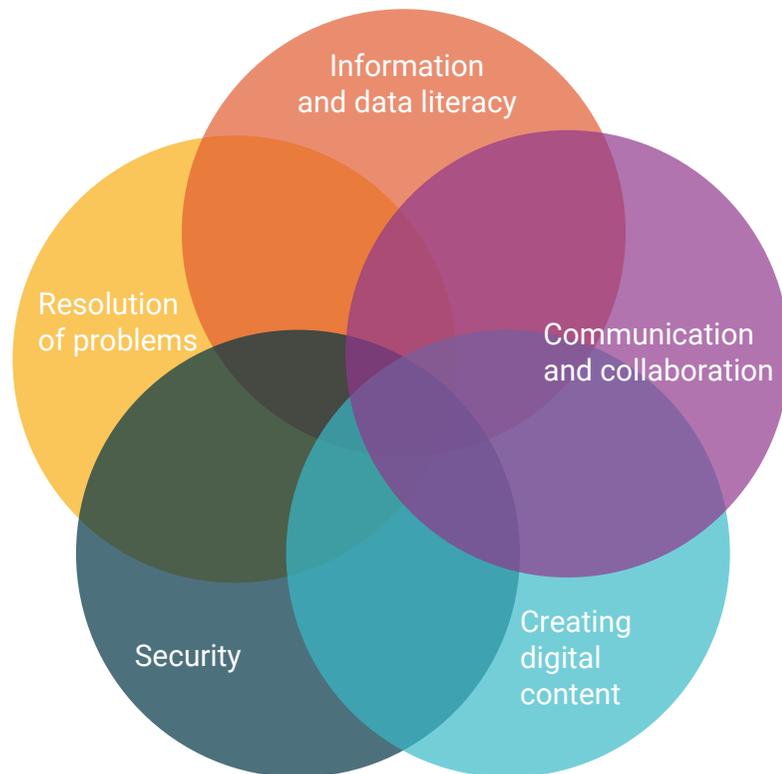
Figure 52. Areas of the Common Framework of Reference for Digital Teaching Competence. INTEF. MEFP

The Common Framework of Digital Teaching Competence project began in 2012 with the aim of offering a descriptive reference that may serve for training purposes and in processes of evaluation and accreditation. It is part of the School Digital Culture Plan and the Strategic Framework for Professional Teaching Development, which are a combined result of the shared reflection process which the Ministry began and which involves the active participation of the regions and the reports involving external experts and the heads of various units of the MECD.

Scope 1. Information and data literacy

Identifying, locating, obtaining, storing, organising and analysing digital information, data and digital content, evaluating their purpose and relevance for teaching tasks.

Skills:

1.1. Browsing, searching and filtering information, data and digital content: searching for information, data and digital content online and accessing them, expressing in an organised manner the information requirements, finding information that is relevant to teaching tasks, selecting educational resources efficiently, managing different information sources, creating personal information strategies.

1.2. Evaluating information, data and digital content: compiling, processing, understanding and evaluating information, data and digital content in a critical manner.

1.3. Storage and recovery of information, data and digital content: managing and storing information, data and digital content to facilitate its recovery; organising information, data and digital content.

Scope 2. Communication and collaboration

Communicating in digital environments, sharing resources through online tools, using digital tools to connect and collaborate with others, interacting and participating in communities and networks; cross-cultural awareness.

Skills:

2.1. Interaction through digital technologies: interacting by means of various devices and digital applications, understanding how digital communication is distributed, presented and managed, understanding the adequate use of the various ways of communicating through digital means, contemplating different communication formats, adapting communication strategies and methods to specific users.

2.2. Sharing information and digital content: sharing the location of information and digital content found, being willing and able to share knowledge, content and resources, acting as an intermediary, being proactive in disseminating news, content and resources, knowing how to quote and include references and integrate new information in an existing body of knowledge.

2.3. Online citizen engagement: engaging with society through online involvement, seeking technological opportunities for empowerment and self-development with regard to technologies and digital environments, being aware of the technological potential for citizen engagement.

2.4. Collaboration through digital channels: using technologies and media for teamwork, for collaborative processes and for the shared creation and construction of resources, knowledge and content.

2.5. Netiquette: being familiar with rules of conduct in online or virtual interactions, being aware of cultural diversity, being able to protect oneself and others from potential online dangers, developing active strategies to identify improper conduct.

2.6. Managing digital identity: creating, adapting and managing one or various digital identities, being able to protect one's own digital reputation and managing the data generated through the various accounts and applications used.

Scope 3. Creation of digital content

Creating and editing new digital content, integrating and re-elaborating prior knowledge and content, staging artistic productions, multimedia content and IT programming, knowing how to apply intellectual property rights and licences.

Skills:

3.1. Developing digital content: creation of digital content in different formats, including multimedia content, editing and improving one's own or others' content, expressing oneself creatively through digital media and technologies.

3.2. Integrating and re-elaborating digital content: modifying, perfecting and combining existing resources to create digital content and new, original and relevant knowledge.

3.3. Copyright and licences: understanding how to apply copyright and licences to information and digital content.

3.4. Programming: performing modifications in computer programmes, software, configurations, programmes, devices; understanding the principles of programming; understanding what lies behind a programme.

Scope 4. Security

Protecting personal information and data, protection digital identity, protecting digital content, measures for security and responsible and safe use of technology.

Skills:

4.1. Protecting devices: protecting one' own devices and digital content, understanding online risks and dangers and protection and security measures.

4.2. Protecting personal data and digital identity: understanding the normal terms of use of programmes and digital services, actively protecting personal data, respecting other people's privacy and protecting oneself from threats, frauds and cyberbullying.

4.3. Healthcare: avoiding health risks linked to the use of technology in relation to threats to physical well-being and psychological well-being.

4.4. Environmental protection: taking into account the impact of technologies on the environment.

Scope 5. Problem-solving

Identifying needs for using digital resources, making informed decisions about the most suitable digital tools in accordance with the purpose or need, solving conceptual problems through digital means, using technology creatively, solving technical problems, updating one's own competence and that of others.

Skills:

5.1. Technical problem-solving: identifying potential technical problems and solving them (from basic problems to the most complex ones).

5.2. Identifying technological needs and responses: analysing one's own needs in terms of using resources and tools like skills development, assigning potential solutions to the needs pinpointed, adapting tools to personal needs and critically evaluating potential solutions and digital tools.

5.3. Innovation and the creative use of digital technology: innovate using digital technology, actively participating in multimedia and digital collaborative productions, creative expressing through digital media and technologies, generating knowledge and resolving conceptual problems with the support of digital tools.

5.4. Identifying gaps in digital competence: understanding the need for improving and updating one's own competence, supporting others in the development of their own digital competence, keeping abreast of new developments.

The proposed levels of progress in competences are classified as basic, intermediate and advanced and, in turn, each of these levels of proficiency is divided into two:

- Basic level: A1 and A2.

- Intermediate level: B1 and B2.

- Advanced level: C1 and C2.

Each competence, from each area and each level, comprises a detailed set of descriptors to see the basis on which one can progress and advance to the next level, and can also be used to create learning itineraries by level, based on the descriptors, for each area and their related competences.

They are backed by the validation process, in which almost a hundred people took part, and which is embodied in the Portfolio of Digital Teaching Competence, an online instrument for self-assessment, evidence and recognition of said competence through open digital credentials, and through a digital teaching competence passport, a service tested by more than a thousand Spanish teachers in the 2016-2017 academic year. Furthermore, there are already online learning itineraries based on the framework for developing digital teaching competence, by levels of proficiency and areas of competence.

This is a good tool for reflection and with the added value of the evidence of professional teaching development, based on competences, which each teachers must contribute in order to request their level of proficiency at each given time. In addition, it can easily be transferred to other contexts, at both conceptual and technological level, since the Portfolio is already developed and can be continuously evolved, adapting it to the professional teaching requirements, in accordance with the context. A disadvantage is that their future is unknown and so is the length of time they will remain openly available to the education community, and neither is it known whether or not they will be underpinned by regulations at the national level.

Common European Framework of Reference for Professional Competences

This framework emerged as the final product of the Teaching Competences Common Framework, financed by Erasmus +, comprising nine competences, divided into groups, each with their relevant sub-competences (31 in total), with proficiency levels ranging from basic to advanced, although it is lacking a high level of specificity.

The competences and sub-competences of the reference document are defined below:

"Personal" group

Competence 1. Personal and interpersonal skills: management of social relations in the education community (treating others with consideration, fostering positive and participatory approaches, highlighting ethical principles, creating a good climate).

Sub-competences:

1. Developing personal skills: openness, honesty, courage and wisdom.
2. Developing positive relationships: tutoring and guidance for students.
3. Managing and fostering educational values.
4. Developing social relationships and taking part in the life of the educational community.
5. Taking care of oneself and one's colleagues.

Competence 2. Collaborative: establishing relationships of trust for working as part of a team.

Sub-competences:

1. Working with colleagues.
2. Working with students.
3. Working with the educational community.

"Communication" group

Competence 1. Communicative: capacity to establish communication and foster relationships inside and outside of the educational community.

Sub-competences:

1. Communicating with students.
2. Communicating with other teachers.
3. Communicating with the management team and other members of the educational community.

Competence 2. Communication technologies for learning: being confident in the use of information technologies for education and communication. Teachers should be able to find, evaluate, store, create and exchange information safely, as well as to communicate and take part in social media using adequate information technologies. They must be able to integrate the most suitable learning approach into e-learning environments, whether in person or in mixed environments with the support of ICT.

Sub-competences:

1. Didactic and methodological.
2. Instrumental.
3. Organisational.
4. Ethical and critical.

"Framing and supporting learning" group

Competence 1. Promotion of health and well-being: identifying aspects that may pose risks, support the educational community through measures and tools to nurture well-being, identifying learning obstacles that may prevent students from attaining their potential and taking the right measures to remove those barriers.

Sub-competences:

1. Promoting a healthy environment.
2. Building confidence.
3. Fulfilling needs.

Competence 2. Promoting social justice, diversity and global citizenship: teachers' attitudes, skills and knowledge that meet the need to promote understanding and develop constructive approaches to these aspects of society.

Sub-competences:

1. Learning for a better future.
2. Promoting students' rights.
3. Learning for global citizenship.

"Professional" group

Competence 1. Knowledge and understanding of the teaching profession: teachers' competences, skills and knowledge, and the tools required to contribute to students' development.

Sub-competences:

1. Knowledge of the subject matter.
2. Methodological knowledge.
3. Planning the teaching/learning process.
4. Knowledge of the education system.

Competence 2. Lifelong personal and professional development: lifelong learning to identify new knowledge, skills, content, activities, methodology, resources and assessment methods that can be used to improve their work.

Sub-competences:

1. Reflection/self-assessment.
2. Lifelong learning.
3. Openness to change: innovator/researcher.

Competence 3. Evaluation: understanding the principles of assessment and knowing how to use them to successfully improve learning.

Sub-competences:

1. Understanding the assessment role.
2. Using assessment in teaching and learning.
3. Using different assessment systems.

The document divides the sub-competences into three levels: basic, intermediate and advanced. Progression between these three levels of proficiency ranges from "knowing" for the basic level, to "identifying, developing and promoting" for the intermediate level, to "applying, researching and innovating" for the advanced level.

ANNEX VII:
VALIDATION PROCESS

The Global Framework of Competence for Learning in the Digital Age (GFCLDA) and the Global Framework of Competence for Education in the Digital Age (GFCEDA) represent an ambitious attempt to analyse and describe learning and education in the 21st century. Learning and educating in the digital age implies, firstly, a timeline that extends throughout a person's life, with multiple opportunities to build knowledge based on our own reflection, contact with other people and involvement in social practices with the most varied profiles, and, of course, the use of technology.

A key idea in designing the GFCLDA and GFCEDA was always to propose a truly global tool. On the one hand, the GFCLDA and GFCEDA aim to be global in the sense that they can be adopted and adapted to various national and regional contexts. On the other hand, the GFCLDA and GFCEDA aim to be global because they aspire to be used in various different learning situations and by different kinds of learners (and teachers).

To realise this mission, the validation of both frameworks had to fulfil a fundamental criterion of plurality in the parties analysing and assessing the document. In this regard, these frameworks could not really be called "global" unless they had received contributions from education professionals and stakeholders at least in two contexts as broad and diverse as Latin America and Europe. Consequently, thanks to the contributions by all these collaborators, today we can at last assert that we have a valid document that is ready to be disseminated, used, discussed and expanded to be adjusted to the various learning and education realities in the world.

Along with this commitment to plurality, the creation of a reference framework is a process of technical design and research based on four pillars: analysis of the situation in which the framework is to be used, systematic review of the literature produced concerning the scope of the framework, sequential design of various prototype reference frameworks and the related validation processes.

The validation phase was completed by means of two complementary techniques: expert judgement and the Delphi panel. Validation by means of expert judgement consists of the analysis and reasoned debate concerning the product in question by a group of prestigious people with proven knowledge and competences in the subject matter at hand.

To validate the frameworks presented here, a heterogeneous group of people with broad experience in education and educational technology was chosen. Specifically, three expert panels were called (July 2019, December 2019 and January 2020). All the sessions were recorded and the members of the research team present (three people in all cases) took notes that were later compared and contrasted.

The objectives of each session were explained to the members of the expert panel. These objectives were:

- To reflect openly on the structure and definition of the GFCLDA and GFCEDA.

- to develop a process of validation of the GFCLDA and GFCEDA that ensure they fulfil the necessary scientific and technical criteria for their presentation and use.

Subsequently, the work schedule was outlined and the experts were asked about its suitability in relation to the objectives established.

The first item on the work schedule for each session was the detailed presentation of the framework by members of the research team. Members of the expert group had previously received a dossier with the material for analysis, but as a starting point for debate this first approach was important to guarantee in-depth knowledge of the meaning and structure of the document being analysed.

After presentation of the material, the expert panel began their discussions. For development purposes, the experts were asked a series of questions aimed at fostering discussion and focusing it on the most relevant aspects for improving the document.

The questions were organised into two blocks. In the first discussion block, a general analysis of the document was conducted, considering its strengths and weaknesses. In this block, each expert made a general assessment of the document and set out what, in their opinion, were its main strengths and weaknesses.

For the second block of analysis, a series of questions drawn from the work of Baartman, Bastiaens, Kirschner and van der Vleute (2006)[16] were assessed. This publication proposes quality criteria for the assessment of competence-based programmes, from which the following questions were drafted:

1. Authenticity: Does the framework accurately describe the professional life of an educator?

2. Fairness: Does the framework take a balanced view of competition or does it present a polarisation that benefits one type of person?

3. Transparency: Is the framework clear and transparent for all its users?

4. Educational consequences: Can the framework have any positive effect on the professional development of the user?

5. Comparability: Does the framework suggest that future use will be consistent and coherent?

6. Transfer: Can framework information be easily transferred into a professional development process?

7. Relevance and representativeness: Does the framework capture the most relevant knowledge, skills or attitudes of the competence in question?

8. Training and guidance: Does the framework require any training for its use? What information should the framework guide contain so that it is clearly understood?

Following Popham (2011)[17] and Parratt (2015)[18], the proposal made to the experts was to address each question in its entirety and, after the discussion, each expert was to respond positively or negatively to each question. The framework would only be considered validated in relation to this criterion on the consensus basis of 75 % of the experts. Finally, the experts were also asked whether there were any issues in relation to the framework that had not been addressed in the previous questions and that should be addressed.

After the sessions, the information collected by the three researchers was triangulated and contrasted with the recordings. Based on this contrast, a report was drawn up containing the criticisms and proposals made by the experts, which were later incorporated into the document in a new iteration of the GFCLDA and the GFCEDA.

In addition to the panel of experts, both the GFCLDA and the GFCEDA were submitted to a Delphi panel. The Delphi method was conceived as a group technique whose objective was to obtain as reliable a consensus of opinions as possible from a group of experts through a series of questionnaires with research-controlled feedback (Dalkey & Helmer, 1963).

[16] Baartman, L., Bastiaens, T., Kirschner, P., & van der Vleuten, C. (2006). The wheel of competency assessment: Presenting quality criteria for competency assessment programs. *Studies In Educational Evaluation*, 32(2), 153-170. doi: 10.1016/j.stueduc.2006.04.006.

[17] Popham, J. W. (2011). *Classroom Assessment: What Teachers Need to Know.* 6th ed. Pearson Education, Boston, MA.

[18] Parratt, J. A., et al. (2015), Expert validation of a teamwork assessment rubric: A modified Delphi study, *Nurse Education Today*, vol. 36, pp.77-85, http://dx.doi.org/10.1016/j.nedt.2015.07.023

The use of the Delphi methodology offers several advantages to the research being undertaken: the creation and validation of a Global Framework of Competence for Learning in the Digital Age. On the one hand, this type of design provides the research process with great flexibility and adaptability to research (Donohoe & Needham, 2009). Furthermore, the use of this technique allows us to reduce the effect of those experts with dominant opinions and to control the feedback provided by them, supported in turn by a statistical corpus that represents each expert in the final results.

In this sense, the Delphi technique is a widely validated option when the objective of the study cannot be represented solely from a statistical perspective, but benefits from the subjective judgements of all the experts as a whole. For this reason, it is suggested that the Delphi technique is interesting for research supported at the beginning by documentary and scientific literature reviews. Furthermore, Delphi designs "lend themselves particularly well to exploratory theory based on complex and interdisciplinary questions" (De Haes and Van Grembergen, 2008, p. 446), as is our case.

In both cases, the Delphi panel was developed through two rounds and an online questionnaire in which participants had to assess the level of relevance and transparency of each item in the framework (practices) using a Likert scale. Although there is no universal recipe that would indicate exactly the cut-off values for these criteria (Von der Gracht, 2012), consensus can be understood as "the degree of convergence of individual estimates by at least 80 %" (Pozo et al., 2007, p. 355). The values for the saturation criteria used and which indicate a strong consensus or agreement are:

- Average 3.4.
- Median 3.
- >85 % experts score 3-4.
- Deviation <1.

These criteria are widely used in the scientific literature (Garson, 2012; Keeney et al., 2011; Landeta, 1999) and allow a clear and consistent interpretation with the standards of the GFCLDA and the GFCEDA.

Finally, any item that did not meet the requirements has been reviewed by the investigation team to consider possible modifications or removal from the corresponding framework. Furthermore, through the suggestions section of each of the blocks, the participants have been able to provide ideas and comments that have also been analysed and assessed by the research team.

Thus, the comments and contributions made by the experts in the discussion group and the participants in the Delphi panel closed the design and validation process for the Global Framework of Competence for Learning in the Digital Age and the Global Framework of Competence for Education in the Digital Age.

197 List of figures and tables

LIST OF FIGURES AND TABLES

ProFuturo

LEARNING AND TEACHING IN THE DIGITAL ERA:

REFERENCE FRAMEWORKS

A PROGRAMME OF:

Telefónica
FOUNDATION

"la Caixa" Foundation