

OECD Education Working Papers No. 314

Curriculum Frameworks and Visualisations Beyond National Frameworks: Alignment with the OECD Learning Compass 2030

Miho Taguma,

Alena Frid

https://dx.doi.org/10.1787/2a4bdce6-en

OECD

Organisation for Economic Co-operation and Development

EDU/WKP(2024)9

For Official Use English - Or. English

18 April 2024

DIRECTORATE FOR EDUCATION AND SKILLS

Cancels & replaces the same document of 9 April 2024

Curriculum frameworks and visualisations beyond national frameworks – alignment with the OECD Learning Compass 2030

OECD Working Paper No.314

This working paper has been authorised by Andreas Schleicher, Director of the Directorate for Education and Skills, OECD.

Miho Taguma, Senior Analyst; Alena Frid, Analyst – OECD Education 2030 project

JT03541878

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Abstract

This evolving paper follows a first paper released in 2021 on “National or regional curriculum frameworks and visualisations”. It presented a compilation of visualisations of curriculum frameworks, main competences and strategic schemes provided by countries and jurisdictions as part of the OECD Education 2030 curriculum analysis work.

This paper presents a compilation of visualisations from conceptual frameworks that align with the OECD Learning Framework – OECD Learning Compass 2030, developed by inter-governmental, international organisations, non-governmental associations, or at the school or local level. The OECD Learning Compass 2030 positions itself as an overarching framework, with a taxonomy that serves as a common language for a multitude of audiences and contexts. The paper is an evolving document: new frameworks will be added and updated on a regular basis, in particular with frameworks of those schools, NPOs and other social partners who become part of the OECD Education 2030 multi-stakeholders’ group.

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List of abbreviations/acronyms

AAR	Anticipation-Action-Reflection
CEFR	Common European Framework of Reference for languages
CIVED	Civic Education Study, IEA
DeSeCo	Definition and Selection of Competencies
ESD	Education for Sustainable Development
GCED	Global Citizenship Education
ICCS	The International Civic and Citizenship Education Study
MVP	Minimum viable product
NGSS	Next Generation Science Standards
PISA	Programme for International Student Assessment
SDG	Sustainable Development Goal
SEL	Social and emotional learning
SELFIE	Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies
SQA	Scottish Qualifications Authority
STEAM	Science, Technologies, Engineering, Arts & humanities, Mathematics
TVC	Transversal competencies
UIS	UNESCO Institute of Statistics
VUCA	Volatile, uncertain, complex and ambiguous

Introduction

To shape a better future, visions matter. Visions can be turned into conceptual frameworks for learning, which are often used to help guide curriculum developments or design educational programmes. However, key concepts for learning that underpin such learning frameworks are often challenged by factors such as pressure for narrower focus, content overload, assessment, etc.

There is an ever-increasing pressure to reconsider the overall goals of education and, accordingly, to redesign curriculum or learning standards so that all students can thrive and contribute to shaping a better future for themselves, for others and for the planet. The use of relevant conceptual frameworks helps integrate principles of learning across the scope of learning (e.g. focus, rigor, coherence, flexibility, authenticity).

The OECD Future of Education and Skills 2030 (E2030) Curriculum Analyses (OECD, 2020[1]) identified six policy issues commonly faced within OECD members, as well as partner countries and economies:

1. **Managing time lag between today's curriculum and future needs:** There is a pressure to shift towards a competency-based education. Countries are shifting towards four types of curriculum: digital curriculum, cross-curricular content and competency-based curriculum, flexible curriculum and personalised curriculum (see *What Students Learn Matters: Towards a 21st Century Curriculum*). For curriculum and programme designers the challenge is to prescribe specific content strategies, skills, attitudes and values to better equip students so they can thrive in a volatile, uncertain, complex and ambiguous (VUCA) world.
2. **Curriculum overload**: Curriculum or programme designers are facing the challenge of 'curriculum overload', e.g. covering both the breadth and depth of knowledge, as well as skills, attitudes and values, while applying learning to multiple situations and transferring that learning to new and unknown contexts (see *Curriculum overload: a way forward*).
3. **Ensuring equity through curriculum innovations**: Similarly, curriculum designers aspire to integrate student learning with their immediate and long-term well-being. To this end, there is a growing recognition that students come from diverse backgrounds with different needs that must be met to facilitate their optimal learning, sense of fulfilment, motivation, and educational purpose. (see Adjusting curriculum to bridge equity gaps: towards an inclusive curriculum). Their learning occurs both inside and outside of schools, therefore curriculum need to connect to the wider ecological setting of learners.
4. **Embedding values and attitudes in curriculum:** Attitudes and values are increasingly integrated into curriculum frameworks, raising questions about these values, how they are embedded in curricula, and the challenges related to them (see *Embedding Values and attitudes in Curriculum*).
5. ***Curriculum Flexibility and Autonomy (to be published in 2024)***: Challenges and strategies related to the curriculum's adaptability and accessibility to prepare schools and teachers to respond to students' evolving needs and capabilities.
6. ***Ecosystem Approach to Curriculum Redesign and Implementation (to be published in 2025)***: Redesigning and implementing the curriculum with a broader understanding of the education ecosystem: How can teachers, schools, institutions and society appropriately react to changes and implementations?

Structure of this paper

The countries and jurisdictions, schools, inter-governmental or non-governmental organisations, and other partners participating in the OECD E2030 project have developed a wide variety of conceptual learning frameworks, translating into curriculum frameworks or learning standards for countries/jurisdictions. The curriculum frameworks are developed through consideration of a large range of decisions in order to create

a consistent learning experience. These frameworks often set out underlying values and principles, visions of student profiles, specific content, cross-curricular and discipline-specific competencies, beliefs and norms about teaching, learning and assessment, instruction time, course sequencing, materials and resources, etc. A selection of countries' frameworks has already been published under National or regional curriculum frameworks and visualisation annex, as part of the OECD Education 2030 work on curriculum analysis.

This paper aims to introduce the other types of conceptual frameworks and to illustrate how theOECD E2030 Learning Framework can serve as an overarching framework that provides a taxonomy as a common language for the existing frameworks to be compared and contrasted. Frameworks will be added and updated on a regular basis. The structure of this paper is as follows:

1. An overview of the OECD Learning Compass 2030, including key concepts that underpin the OECD E2030 Learning Framework;
2. Frameworks developed by other inter-governmental and international organisations;
3. Frameworks developed by non-governmental organisations (NGOs), non-profit organisations (NPOs), associations or private companies;
4. Framework initiatives developed at the school or regional and local levels (public institutions);
5. OECD assessment frameworks such as the PISA frameworks, which define specific constructs measured for a specific purpose, with much broader educational goals as suggested in the OECD E2030 Learning Framework.

The OECD Learning Compass 2030

The OECD Learning Framework (conceptual framework)

The OECD Learning Framework draws on research that has been carefully reviewed, tested, and validated by various stakeholders for its global relevance as well as policy and practical implications. The OECD Learning Framework presents an aspirational vision for the future of education that aims for individual and collective well-being and outlines the types of competencies needed for today's students to thrive and shape a better future.

By developing a taxonomy of required competencies as a common language, the framework supports a dynamic conversation about transformative education that includes all domains of knowledge, skills, attitudes and values.

The OECD Learning Framework (conceptual framework):

- is holistic by encompassing knowledge, skills, attitudes and values within a complex system of formal and informal life-long learning, furthering both;
- builds a common understanding of the knowledge, skills, attitudes and values that students need to thrive and shape their world in 2030 and beyond;
- offers a common language for countries, local authorities, schools, teachers, students and other stakeholders within and across different countries and jurisdictions;
- serves as an inspiration using a common language to support different organisations and stakeholders in co-operating and launching collective efforts toward similar goals and visions for 2030 and beyond;
- is not intended to replace any of the existing efforts. On the contrary, the framework should support anyone with the shared vision and goal of co-operation in creating a critical mass of change agents in education.

Box 1. The OECD Learning Framework (conceptual framework):

- is holistic by encompassing knowledge, skills, attitudes and values within a complex system of formal and informal life-long learning, furthering both;
- builds a common understanding of the knowledge, skills, attitudes and values that students need to thrive and shape their world in 2030 and beyond;
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- serves as an inspiration using a common language to support different organisations and stakeholders in co-operating and launching collective efforts toward similar goals and visions for 2030 and beyond;

- is not intended to replace any of the existing efforts. On the contrary, the framework should support anyone with the shared vision and goal of co-operation in creating a critical mass of change agents in education.

Competencies

The OECD Education 2030 project was launched in 2015 to revisit the types of competencies needed for today's students to thrive, shape a better future and further their well-being. For students to succeed, they need core foundations (i.e. literacy, numeracy, digital literacy, data literacy, social and emotional foundations, physical and mental health), from which transformative competencies can be developed (i.e. creating new value, taking responsibility, reconciling tensions and dilemmas). Such competencies can evolve through a competency development cycle (i.e. anticipation, action, reflection). The E2030 project reiterates that competency is a holistic concept, which includes knowledge, skills, attitudes and values.

Knowledge

The OECD Learning Compass 2030 outlines four types of knowledge, which include both theoretical as well as practical concepts: disciplinary, interdisciplinary, epistemic and procedural. These are interconnected and reinforce one another as part of a broader system of understanding. (1) Disciplinary or subject-specific knowledge is necessary as a foundation of knowledge and a structure to develop other types of knowledge. (2) Interdisciplinary knowledge can be woven throughout curricula and is an important way of transferring key concepts and identifying connections through thematic learning. (3) Epistemic knowledge concerns how to think and pertains to the relevance and purpose of learning. (4) Procedural knowledge relates to how a task is performed and how to learn through structured processes.

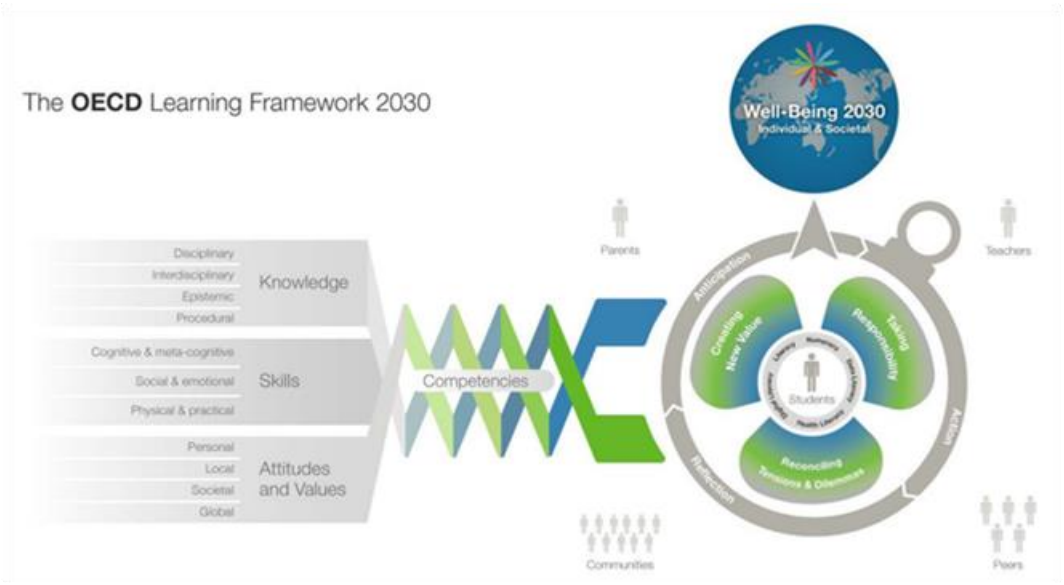
Skills

A skill equips one with both the ability and capacity to execute processes and apply knowledge to accomplish goals. The OECD E2030 Learning Framework examines three skill sets: cognitive and meta-cognitive skills, social and emotional skills, as well as physical and practical skills. As labour markets change, people increasingly depend on their capacity for creativity and the ability to "learn to learn" through a larger set of cognitive and meta-cognitive skills. Social and emotional skills, such as empathy and respect, are essential for collaboration and collective problem-solving. Finally, physical and practical skills are essential not only for manual tasks and labour, but also for the arts and expression.

Attitudes and values

Attitudes and values are fundamental to the OECD E2030 Learning Framework, as they equip students with the ability to advance their well-being and create a better future. They pertain to the influence of one's choices, judgements, behaviours and actions. Creating shared values such as respect, fairness, responsibility and integrity are integral to the process of creating more inclusive, fair and sustainable economies and societies. They are inter-related with knowledge and skills as supportive co-concepts.

Figure 1. OECD E2030 Learning Framework (Conceptual framework)



Source: (OECD, 2018[2])

The OECD Learning Compass 2030 towards well-being

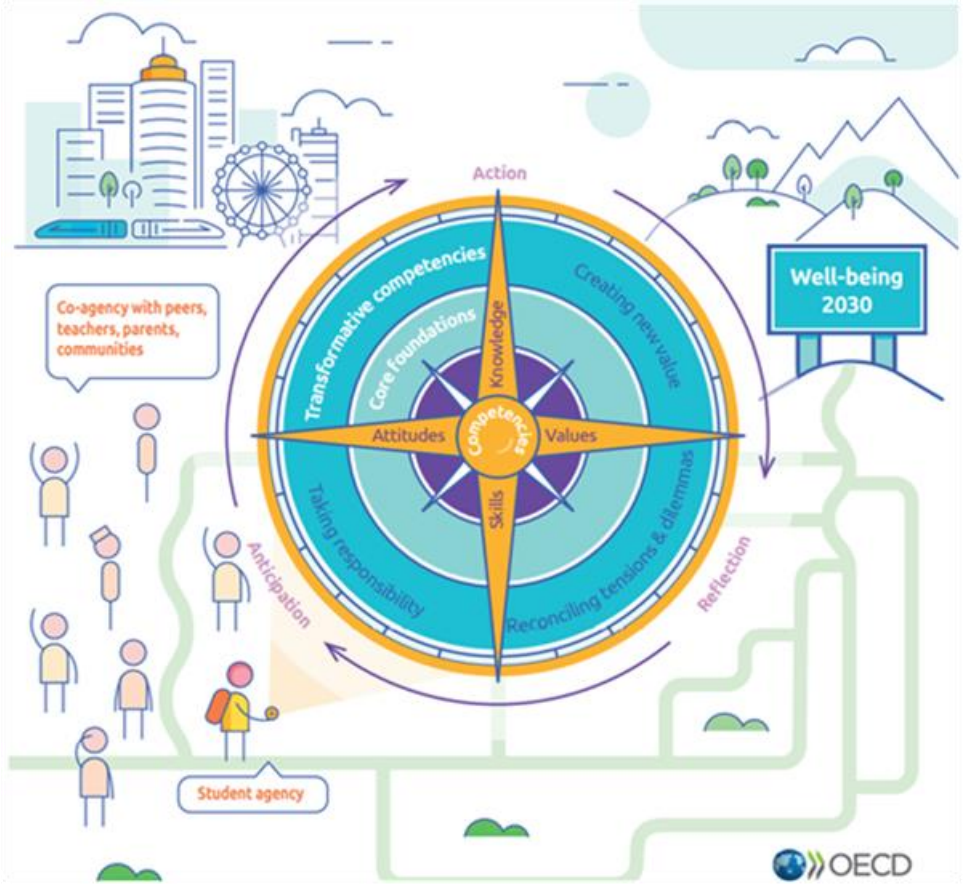
The OECD Learning Compass 2030 is the product of an evolving OECD E2030 Learning Framework, which introduces an aspirational vision for the future we want, i.e. securing the well-being of individuals, as well as society and the planet more broadly. The compass analogy is used to illustrate that today's learners need to learn to navigate increasingly volatile, uncertain, complex, and ambiguous social and digital spaces in a meaningful way.

The OECD Learning Compass 2030 aims to answer two questions:

1. What knowledge, skills, attitudes and values do students need to thrive?
2. How can instructional systems develop these knowledge, skills, attitudes and values?

To address these questions, the Compass outlines the types of competencies today's students will need in order to thrive, as well as some underpinning principles for the future of education systems.

Figure 2. The OECD Learning Compass 2030



Source: (OECD, 2019[3])

Underlying concepts include student agency. The concept of student agency is central to one's ability to orient oneself, maintain a sense of purpose and responsibility while learning to influence people, events and circumstances around them. Other concepts include: core foundations, transformative competencies and the anticipation-action-reflection cycle.

Student agency & co-agency

Student agency is rooted in the principle that students have the belief, ability and will to positively influence their own lives and the world around them. It is the capacity to set a goal, reflect and act responsibly to effect change. Students show greater motivation to learn when they play an active role in what and how learning will occur. Agency can be exercised in all aspects of education, not only in instruction and evaluation. Additionally, co-agency occurs when students become co-creators with teachers, students and other education stakeholders, to form a mutually supportive and interactive relationship. Co-agency recognises that students, teachers, parents and community members work together to help students progress towards their shared goals.

Core foundations

The OECD Learning Compass 2030 recognises core foundations as fundamental conditions in developing core skills, knowledge, attitudes and values necessary for learning across a curriculum. They are the infrastructure supporting context-specific competencies, such as literacy and numeracy as part of a larger

set of cognitive foundations; mental and physical health as part of health foundations; social and emotional foundations, including ethics, as well as data and digital literacy. The meaning of literacy and numeracy will continue to evolve as digitalisation increases. As such, curricula must accommodate these new literacies in meaningful ways to create more engaging learning experiences.

Transformative competencies

The OECD Learning Compass 2030 embeds three transformative competencies to help students thrive and create a better future: (1) Creating new value means innovating techniques to improve lives by questioning the status quo, collaborating with others and thinking "outside the box." (2) Taking into account the many interconnections and inter-relations between ostensibly contradictory or incompatible ideas makes the reconciliation of tensions and dilemmas possible. (3) Taking responsibility is the ability to reflect upon and evaluate one's own actions while considering personal, ethical and societal goals.

Anticipation-Action-Reflection cycle

The Anticipation-Action-Reflection cycle is an iterative learning process that continuously improves one's thinking and facilitates acting intentionally and responsibly over time in order to achieve goals and contribute to collective well-being. The three phases inform, complement and reinforce one another as people anticipate the consequences of their actions and understand their own and others' intentions. Anticipation requires more than just asking questions: It involves projecting the consequences and potential impact of engaging in one action as opposed to another, or even of abstaining from action altogether. Action is a bridge between what learners already know and what they want to bring into being. Finally, through reflection, learners gain a sense of perspective and power over their future actions, leading to the development of agency.

Frameworks developed by other inter-governmental and international organisations

Table 1. Relevant frameworks developed by other inter-governmental and international organisations

International Organisations (in alphabetical order)	Framework
Council of Europe	Competencies for Democratic Culture
	Common European Framework of Reference for languages (CEFR)
European Commission	European Reference Framework on Key Competencies for Lifelong Learning
	DigComp: European digital competence framework
	DigCompOrg: European digital competence framework for educational organisations
	DigCompEdu: European digital competence framework for educators
	LifeComp: European framework for the personal, social and learning to learn key competence
	GreenComp: European sustainability competence framework
	EntreComp: European entrepreneurship competence framework
UNESCO	Education for Sustainable Development Goals: Learning Objectives
	Global Citizenship Education Framework
	Global Framework of Learning Domains
	Transversal Competency Framework
World Economic Forum	A New Vision for Education

The Learning Compass is a globally informed but locally contextualised framework spanning a breadth of contexts. This broader view of education goes beyond knowledge to include aspects of skills, attitudes and values that are evident across many international frameworks, even though exact wording may vary (e.g. cognitive vs. knowledge).

For example, the European Commission has developed a number of reference frameworks such as the European Framework for Personal, Social and Learning to Learn Key Competences (Sala et al., 2020[4]), the Entrepreneurship Competence Framework (Bacigalupo et al., 2016[5]), the Digital Competence Framework for Citizens (Vuorikari et al., 2016[6]), and the European Sustainability Competence Framework

(Bianchi, Pisiotis and Cabrera Giraldez, 2022[7]). These frameworks encompass all education levels and settings, including adult learning and non-formal learning. They are underpinned by the recommendation setting out key competences for lifelong learning, adopted by the Council of the European Union in May 2018 (European Commission, 2018[8]) following public stakeholder consultations. The frameworks have all been developed at the demand of member states and place a significant focus on transversal competencies. They include additional resources such as tools for self-assessment, implementation and follow-up.

According to the EU subsidiarity principle, the European Key Competencies for Lifelong Learning and the detailed reference frameworks outlined above, are not prescriptive: They represent common reference instruments providing a shared vision, discourse and language, and they are meant to be flexibly adopted, deployed and adjusted for implementation by various stakeholders in their specific contexts. As the 2018 recommendation states, key competence frameworks span all education and training levels in a lifelong learning perspective, and contexts including formal, non-formal and informal learning, support member states in addressing gaps in different areas of education, training and learning (European Commission, 2018[8]). Therefore, there are clear complementarities with the broad and non-prescriptive vision of the Learning Compass.

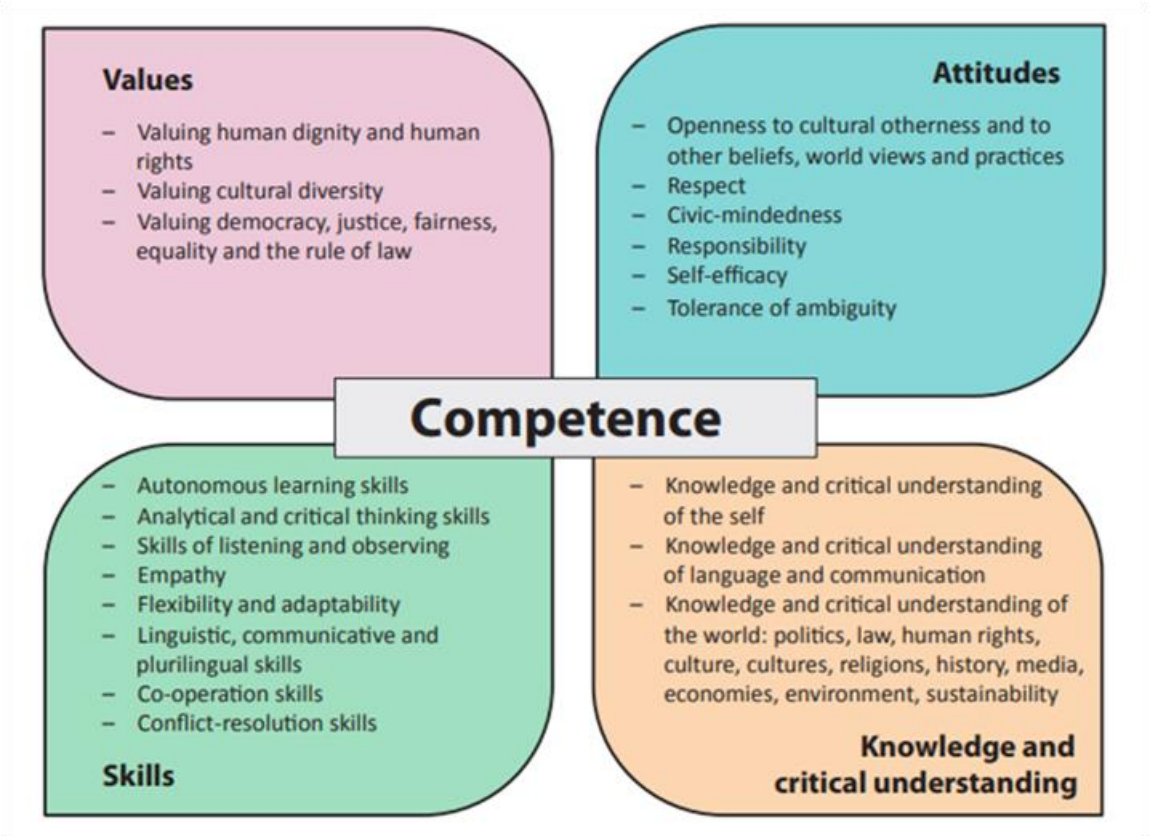
In addition to synergising with various international frameworks, the Learning Compass is a platform that allows for significant contributions to the community of education development. For example, OECD data (PISA, 2017[9]) provides information on progress made regarding the Sustainable Development Goal for quality education (SDG 4). This is one of the seventeen Sustainable Development Goals adopted by the 70th General Assembly of the United Nations in 2015, otherwise known as the Global Goals or the 2030 Agenda for Sustainable Development. These constitute a universal call for action to combat poverty, protect the planet, and foster peace and prosperity for all people.

Council of Europe

Competencies for Democratic Culture Framework

The Council of Europe has put forward an educational framework with 20 competencies that allow member states (and others) to adapt and teach competencies for democratic culture based on the needs of the respective cultures and societies. Democratic values of tolerance and respect, as well as the promotion of rights and responsibilities within a society, are made explicit by the teaching framework. The goal of the framework is to equip educators with the ability to teach the necessary competencies for students to live together harmoniously as democratic citizens in diverse societies. Including values, attitudes, skills, as well as critical knowledge and understanding in a curriculum is reflective of an effort to teach students how to think in order to navigate an ever-changing and uncertain future. The Framework arises from a conviction that, while institutions, laws and elections are vital to democracy, they will not be democratic in practice unless they are rooted in democratic culture: a set of attitudes and behaviours that, among other things, pursues resolution of conflict through dialogue rather than violence, recognises a variety of views as legitimate and desirable, and perceives diversity as a source of richness rather than as a threat.

Figure 3. A schematic view of Council of Europe's Competencies for Democratic Culture Framework



Source: (Council of Europe, 2016[10])

Common European Framework of Reference for languages (CEFR)

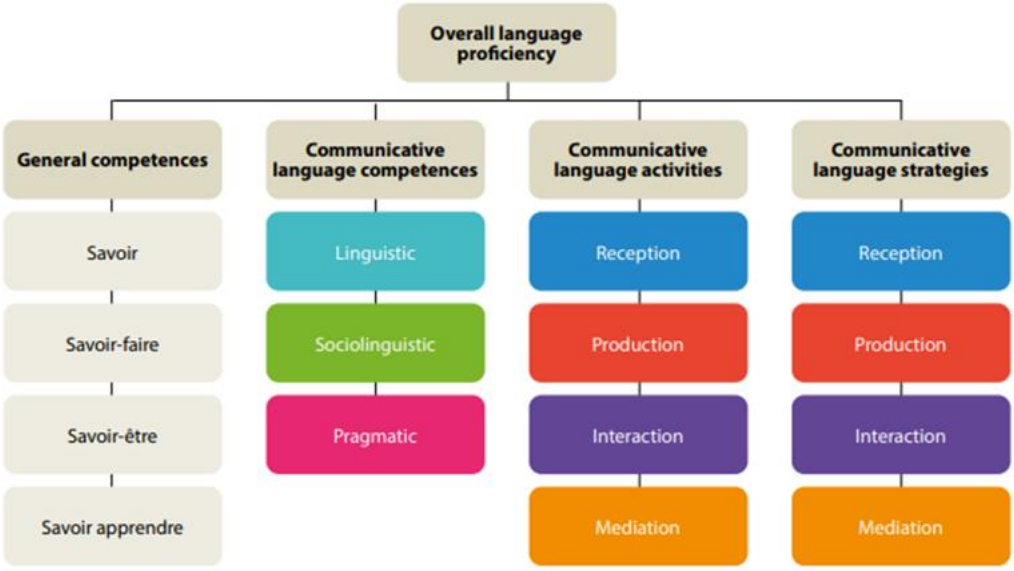
The Common European Framework of Reference for languages: Learning, teaching, assessment (CEFR) was designed to provide a transparent, coherent and comprehensive basis for the elaboration of language syllabuses and curriculum guidelines, the design of teaching and learning materials, and the assessment of foreign language proficiency. The CEFR Companion Volume outlines a set of extended CEFR descriptors for mediation, online interaction, plurilingual and pluricultural competence, and sign language competences.

The CEFR Companion volume underlines a shift towards a complex vision of the situated and integrated nature of language learning and language use. It adopts concepts such as a "can do" proficiency approach; the use of descriptors to align curriculum, teaching and assessment; the importance of interaction; self-assessment and learner autonomy. Concepts such as agency of the user or learner as a social operator; the action-oriented approach; mediation and above all plurilingualism, have been adopted more recently through bottom-up developments.

Despite their different focuses on general education and language learning, the OECD Learning Compass 2030 and the CEFR share many similarities. Both frameworks adopt a competency-based approach to learning. They emphasise the development of skills and competencies rather than limiting focus to knowledge acquisition. The OECD Learning Compass 2030 focuses on cognitive, social and emotional, digital, and ethical competencies, while the CEFR assesses language proficiency levels across various skills (listening, speaking, reading, writing, etc.). For example, the Common European Framework of

Reference for languages (CEFR) replaced the traditional model of the four skills (listening, speaking, reading, writing) with its communicative language activities and strategies. Both frameworks recognise the importance of lifelong learning and the need for individuals to continually develop their skills and competencies throughout their lives. They propose the idea that learning is not limited to formal education but extends to various contexts and situations. Finally, both frameworks offer a standardised and common language to describe learning outcomes and competencies. This allows for better communication and understanding among educators, learners, policymakers and other stakeholders involved in education and language learning.

Figure 4. The structure of the CEFR descriptive scheme



Source: (Council of Europe, 2020[11])

European Commission

European Reference Framework on Key Competencies for Lifelong Learning

The Council Recommendation on Key Competencies for Lifelong Learning identifies eight competencies needed for personal fulfilment and development, employability, social inclusion and active citizenship (European Commission, 2018[8]). The competencies are as follows: knowledge, skills and attitudes, and embedded skills such as critical thinking, problem-solving, team work, communication and negotiation skills, analytical skills, creativity, and intercultural skills. They overlap, interlock and can be combined in different ways to be applied to a variety of situations and contexts. This framework integrates a view of learning that develops throughout life, starting from early age onwards, and is supported by high-quality, inclusive education and training on an on-going basis. In support of the development of these key competencies, the Council Recommendation promotes a variety of learning approaches and contexts for continual learning through diverse experiences. It encourages the development of support action targeting educational staff in order to explore approaches that assess and validate competencies.

Figure 5. A schematic view of the European Union's Key Competencies for Lifelong Learning



Source: (European Commission, 2019[12])

DigComp: European digital competence framework

The European Commission's Digital Competence Framework for Citizens outlines 21 competencies in 5 areas including: (1) information and data literacy, (2) communication and collaboration, (3) digital content creation, (4) safety, and (5) problem-solving. The framework helps define what competencies citizens need in order to use the full range of digital technologies for learning, at work, and for participation in society in a confident, critical and responsible way. The framework is used in different contexts: from policy orientation to curriculum development, career guidance and promotion of learning outcomes. Ideally, its use will help harness digital technologies for innovation and training in a process of lifelong learning and address the need for new and changing digital skills for professional and personal development, as well as social inclusion.

Figure 6. A schematic view of the European Commission's Digital Competence Framework for Citizens (DigComp 2.0)

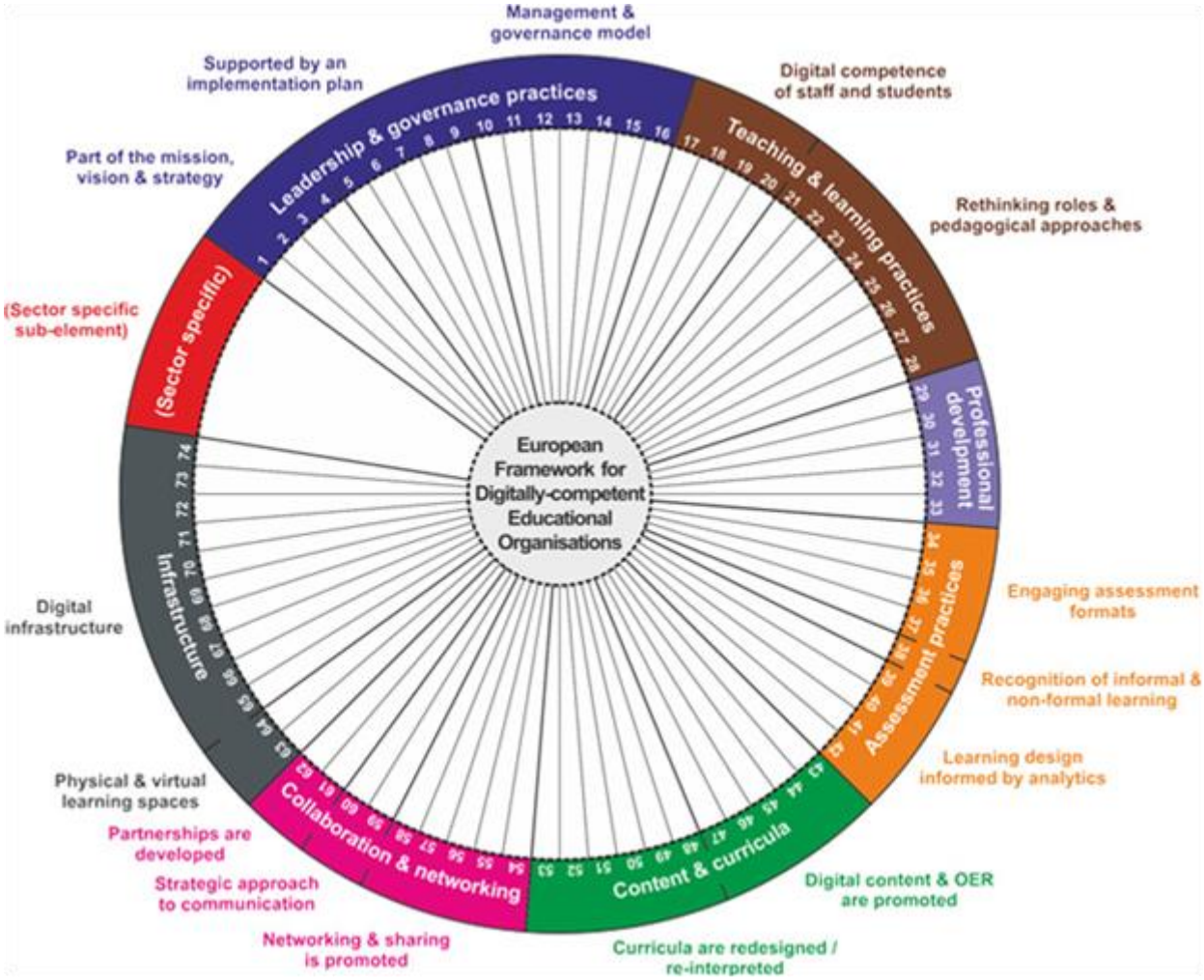


Source: (European Commission, 2022[13])

DigCompOrg: Framework for Digitally Competent Educational Organisations

As evidenced in the OECD Learning Compass 2030 and many of the other frameworks referenced above, digital technologies increasingly affect many aspects of the education system, including formal and non-formal and informal learning, as well as teaching and learning approaches. Further, integration of digital technologies in education is a matter which involves the practices of individuals (e.g. teachers, students, school leaders, etc.) as well as the practices of organisations. As such, the European Commission's DigCompOrg framework (Kampylis, Punie and Devine, 2015[14]), which adopts a holistic approach, supports educational organisations from all education sectors to systematically integrate digital technologies in their practice by focusing on pedagogical, technological and organisational aspects of this integration. Specifically, DigCompOrg is structured by seven thematic elements that are common to all education sectors, namely: leadership and governance practices; teaching and learning practices; professional development; assessment practices; content and curricula; collaboration and networking; and infrastructure (see Figure 7). In addition to these cross-sector elements, DigCompOrg is open to the addition of sector-specific elements. This approach can add value by promoting transparency, comparability and peer-learning. DigCompOrg has served as the basis for the creation of SELFIE (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies), a free online tool designed to support schools in engaging in collective-reflection on how they use digital technologies. Aggregated data from SELFIE is used to support policy-making.

Figure 7. A schematic view of the European Commission's Digitally Competent Educational Organisations (DigCompOrg) Framework



Source: (European Commission, 2022[13])

DigCompEdu: Digital Competence Framework for Educators

The European Framework for the Digital Competence of Educators (DigCompEdu) outlines what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.

DigCompEdu details 22 competences organised in six areas. The focus is not on technical skills. Rather, the framework aims to detail how digital technologies can be used to enhance and innovate education and training. The DigCompEdu study builds on previous work carried out to define citizens' Digital Competence in general, and Digitally Competent Education Organisations (DigCompOrg).

Similar to the OECD Learning Compass 2030, DigCompEdu shares an emphasis on 21st Century Skills. While the first aims to equip students with the skills they need to thrive in a rapidly changing world, the second seeks to empower educators with digital skills to enhance their teaching practices in the digital age. Both frameworks emphasise the relevance of learning outcomes to real-world contexts. As the OECD

Learning Compass 2030 focuses on preparing learners for real-life challenges, DigCompEdu aims to help educators effectively use digital technologies in their teaching, reflecting the realities of modern education.

Figure 8. A schematic view of the European Commission's Digital Competence Framework for Educators (DigCompEdu) Framework

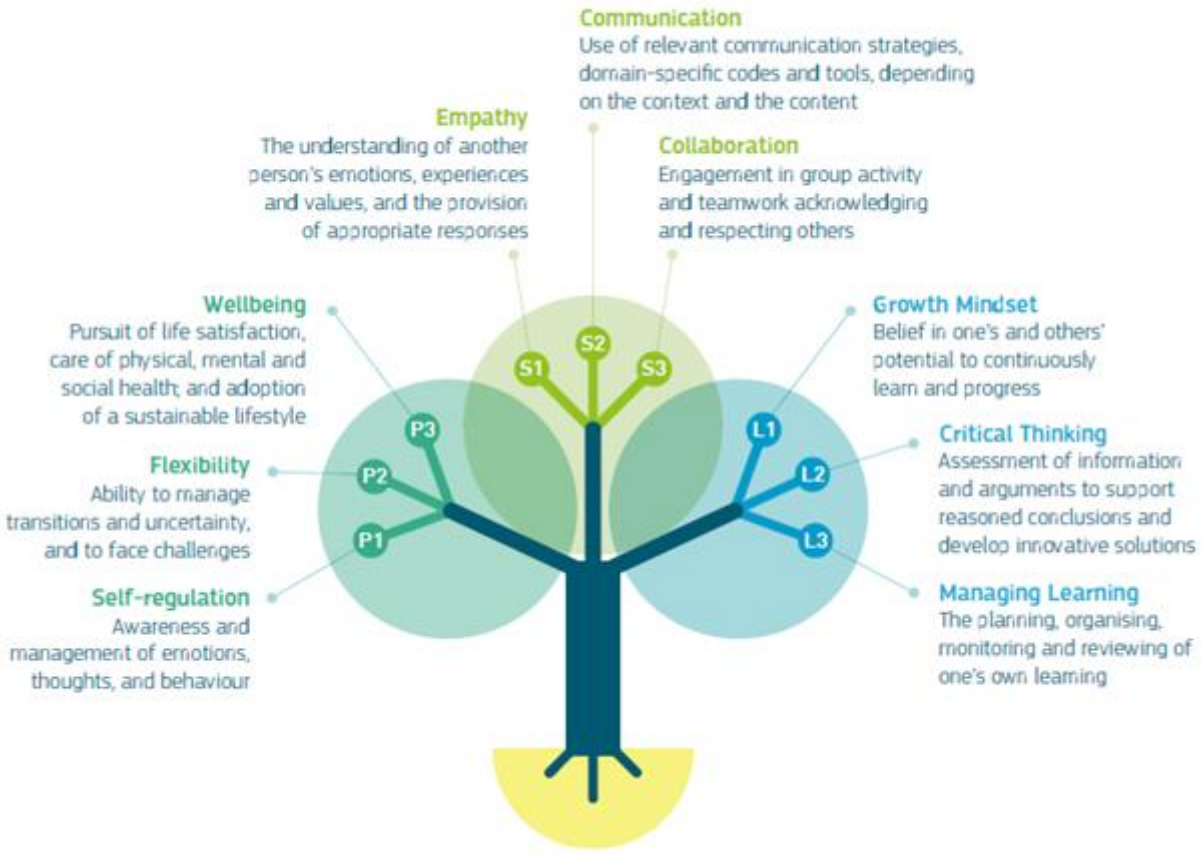


Source: (European Comission, n.d.[15])

LifeComp: European framework for Personal, Social and Learning to Learn Key Competence

The LifeComp framework developed by the European Commission intends to create a shared understanding and common language on the personal, social and learning-to-learn competence areas. Each of these three areas is constituted by three competencies respectively (see Figure 9 below), which apply to all spheres of life and are seen as teachable across different education contexts, including formal, non-formal as well as informal education. LifeComp into Action supports educators so that they better navigate the gap between theory and everyday pedagogical practices. It provides educational practitioners with a selection of principles and guidelines, as well as research-based and learner centred teaching strategies to foster LifeComp competences. LifeComp into Action is expected to inspire educators, not only as a general guide for their teaching practices to foster socio-emotional and meta-cognitive competences, but also as a basis from which to develop tailored strategies and practices to foster these competences. Like the OECD E2030 Learning Compass, LifeComp emphasises that learning and personal development happen in a social environment, which is determinant to the realisation of potential. It also highlights the importance of socio-emotional skills that cultivate collaborative and participative citizen attitudes and respect for diversity, as well as other non-cognitive skills which reinforce resilience and the capacity to adapt to changing contexts.

Figure 9. A schematic view of the European Framework for the Personal, Social & Learning to Learn Key Competence (LifeComp)



Source: (Sala et al., 2020[4])

GreenComp: European sustainability competence framework

The development of a European sustainability competence framework is one of the policy actions proposed by the European Green Deal as a catalyst to promote learning on environmental sustainability in the European Union. GreenComp identifies a set of sustainability competences to implement in education programmes that will help learners develop knowledge, skills and attitudes that promote ways to think, plan and act with empathy, responsibility, and care for our planet and public health.

GreenComp comprises four interrelated competence areas: embodying sustainability values; embracing complexity in sustainability; envisioning sustainable futures; and acting for sustainability. Each area comprises three competences that are interlinked and equally important. Similar to the OECD Learning Compass, it is designed to be a non-prescriptive reference for learning schemes cultivating sustainability as a competence.

GreenComp considers many of the competences outlined in the OECD Learning Compass, such as: systems thinking, critical thinking, problem framing, adaptability, exploratory thinking, political agency, collective action, and individual initiative. Similar to the OECD Learning Compass, it can serve a wide range of purposes, including curricula review; design of teacher education programmes; (self-) assessment and reflection, policy development, certification; assessment, monitoring and evaluation.

Figure 10. A schematic view of the European sustainability competence framework



Source: (European Comission, 2022[16])

EntreComp: European Entrepreneurship Competencies Framework

The European Commission's Entrepreneurship Competence Framework (EntreComp) recognises the ways in which societies are constantly changing. As such, it is essential that people have the capacity to act upon opportunities and ideas, to be able to work together to actively participate in society, manage their own lives and careers, start value-creating initiatives and shape a future for the common good. To this end, people need an entrepreneurial mindset in all aspects of life. The framework provides a comprehensive description of knowledge, skills and attitudes that people need in order to create financial, cultural, and/or social value for others through a structure of 15 requisite competencies. It is intended as an open reference document to be used across multiple sectors, learning settings and education levels in a free and flexible manner.

Figure 11. A schematic view of the European Commission's Entrepreneurship Competencies Framework



Source: (Mccallum, 2018[17])

UNESCO

Education for Sustainable Development Goals: Learning Objectives

UNESCO's Education for Sustainable Development Goals framework identifies learning objectives, suggested topics and learning activities for each of the 17 SDGs, and describes implementation at different levels, from course design to national strategies. For each SDG, learning objectives are described in the cognitive, socio-emotional and behavioural domains.

The cognitive domain comprises the knowledge and critical thinking skills necessary to better understand the SDG and the challenges of achieving it. The socio-emotional domain includes social skills that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as self-reflection skills, values, attitudes and motivation that enable learners to develop themselves. The behavioural domain describes action competencies.

Eight types of competencies are discussed as key for sustainability: systems thinking, anticipatory, normative, strategic, collaborative, critical thinking, self-awareness, and integrated problem-solving. UNESCO's ESD for 2030 Roadmap (2020) provides guidance to member states and other stakeholders to implement ESD as a contributor to achieving SDGs (UNESCO, 2017[18]).

Figure 12. A schematic view of UNESCO's Education for Sustainable Development goals



Source: (UNESCO, 2020[19])

SDG 4 aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" through ten targets, which include socio-emotional and global aspects. Target 4.7 specifically refers to Global Citizenship Education (GCED) and Education for Sustainable Development (ESD): "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development." (Council of Europe, n.d.[20]). This parallels the global and transformative competencies proposed by the Learning Compass and is one example of the high level of complementarity with the SDG 4 Agenda.

Target 4.7 links education with several other SDGs in the global agenda. For example, education for sustainable development is related to environmental-focused SDGs such as SDG 14 (pertaining to marine life) and SDG 15 (pertaining to terrestrial life). This intersectionality requires an ambitious scope of data collection and presents challenges to its measurement on a global scale. UNESCO oversees the education SDG agenda in the context of the United Nations–led SDG framework, with UNESCO Institute of Statistics (UIS) acting as the custodian agency for most of the SDG 4 indicators. UIS is co-ordinating global efforts to develop the indicator framework to monitor progress towards SDG 4 targets, working with partners to develop new indicators, statistical approaches and monitoring tools to better assess progress across the education-related SDG targets.

The OECD is working with UNESCO UIS, the SDG 4 Steering Committee and relevant technical working groups to help build a comprehensive data system for global reporting, which involves agreeing on the data sources and formulating global indicators. As part of this global effort to advance the dialogue and progress of SDG monitoring, the 2015 PISA assessment included a proxy indicator for this target, the percentage of 15-year-old students scoring at or above Level 2 in science, which reflects at least one aspect of the target: the extent to which learners acquire the scientific skills needed to promote sustainable development. In addition, the Education at a Glance reports contribute to tracking indicator 4.7.1, the extent to which Global Citizenship Education and Education for Sustainable Development are mainstreamed across education systems, specifically in the intended curriculum.

Global Citizenship Education Framework

UNESCO's Global Citizenship Education Framework has been developed in response to the needs of member states for overall guidance on implementing global citizenship education in their education systems. It presents suggestions for translating global citizenship education concepts into practical and age-specific topics and learning objectives in a way that allows for adaptation to local contexts. It is intended as a resource for educators, curriculum developers, trainers and policymakers, but it is also useful for other education stakeholders working in non-formal and informal settings.

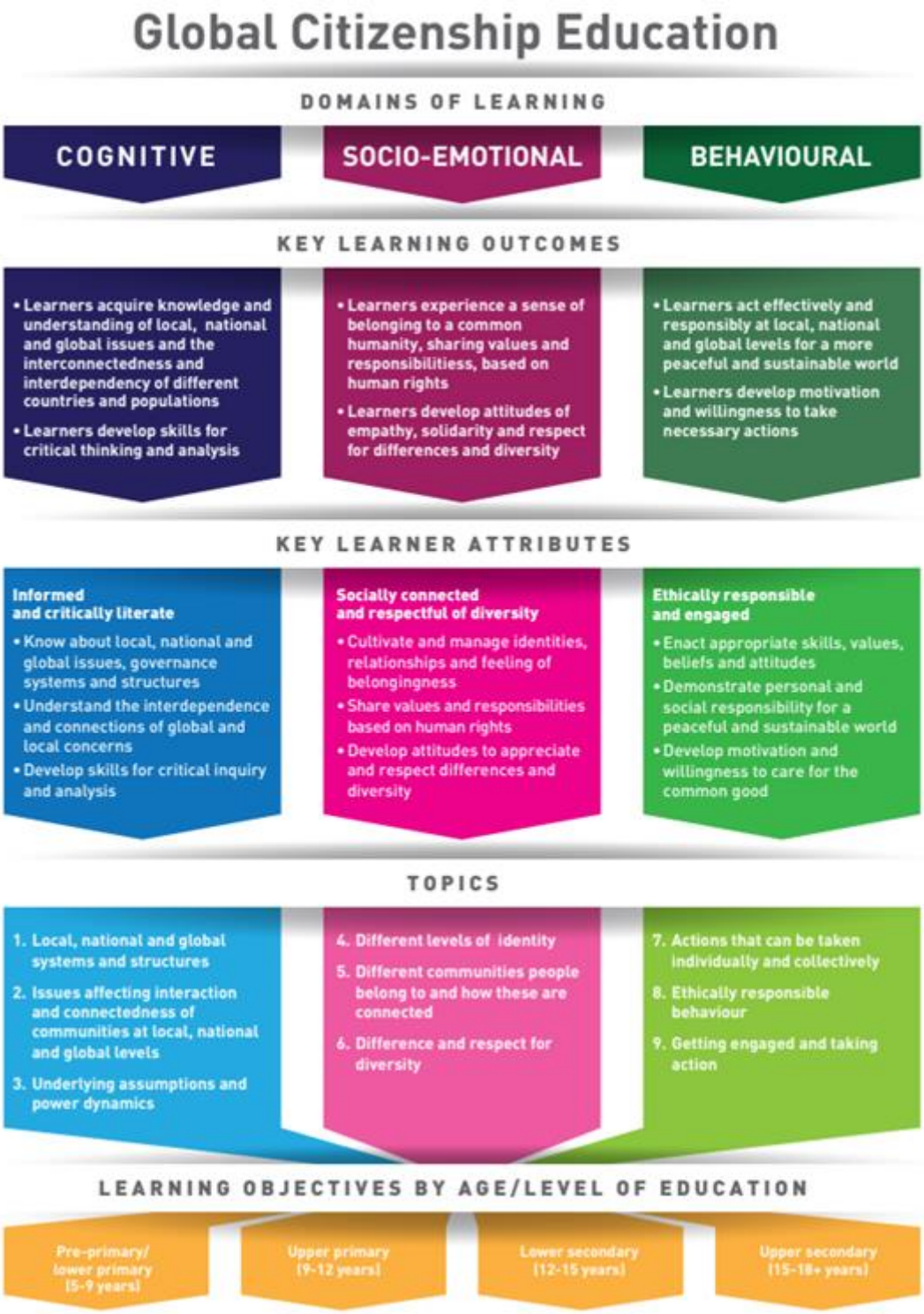
It can also be used to build on existing work in related areas (e.g. civic education, human rights education, education for sustainable development, education for international understanding, among others). The suggested topics and learning objectives included in this guidance are not exhaustive; these can and should be complemented by topics and issues that are locally relevant and appropriate.

Global citizenship education is based on the three domains of learning: cognitive, social and emotional, and behavioural. These correspond to the four pillars of learning described in the report *Learning: The Treasure Within* (Delors, 1996[21]): learning to know, learning to do learning, to live together and learning to be.

- Cognitive: knowledge and thinking skills necessary to better understand the world and its complexities.
- Social and emotional: values, attitudes and social skills that enable learners to develop affectively, psycho-socially, and physically, to enable them to live with others respectfully, harmoniously and peacefully.
- Behavioural: conduct, performance, practical application and engagement.

The key learning outcomes, learner attributes, topics and learning objectives suggested through this guidance are based on the three domains of learning mentioned above. They are interlinked and integrated with the learning process and should not be understood as distinct learning processes (UNESCO, 2015[22]).

Figure 13. A schematic view of UNESCO's Global Citizenship Education

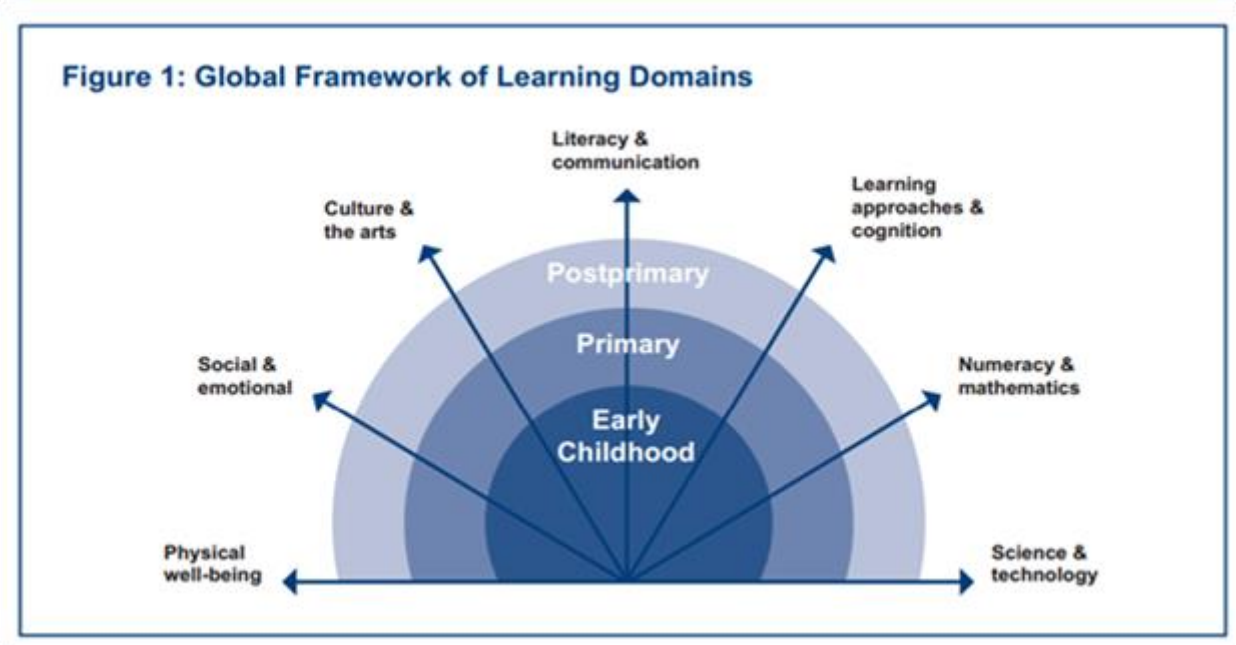


Source: (UNESCO, 2015[22])

Global Framework of Learning Domains

UNESCO's Global Framework of Learning Domains seeks to identify the competencies, knowledge and areas of learning necessary for every student to master in order to achieve success in life. The framework also aims to establish metrics that can be used to implement and improve quality education. It highlights the importance of learning in all domains of life as a necessary component of well-being, and it likewise incorporates socio-emotional skills as part of a broader set of essential skills. The framework seeks to avoid a one-size-fits-all model by elaborating practical and measurable approaches to learning in a variety of domains.

Figure 14. A schematic view of UNESCO's Global Framework of Learning Domains



Source: (UNESCO Institute for Statistics, Brookings Institution Center for Universal Education, 2013[23])

Transversal Competencies Framework

UNESCO's Asia-Pacific Regional Bureau for Education has been using a Transversal Competencies Framework (TVC) since 2013. Many of these competencies have been included in national education policy and curricula of countries in the region, but the importance accorded to them is increasingly gaining attention. As policy makers mountingly require their systems to provide evidence of 21st century skills acquired by their learners, implementation challenges highlight the need for a stronger alignment between curricula, pedagogy and learning assessments.

Figure 15. A schematic view of UNESCO's Transversal Competencies

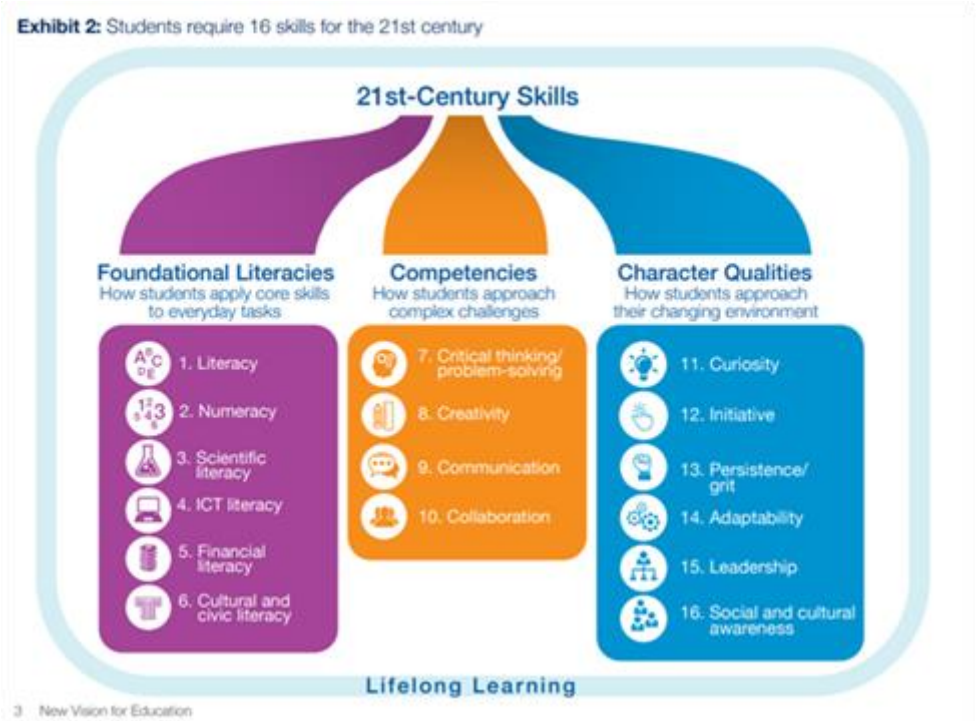


Source: (UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific, 2106[24])

"A New Vision for Education"

The World Economic Forum proposes a visionary framework for 21st Century education. In this model, students do not only require academic learning, but skills for collaboration, communication and problem-solving as part of an integrated curriculum that includes social and emotional learning (SEL). Social and emotional skills in conjunction with traditional skills are necessary to enable students to succeed in a rapidly changing world. The World Economic Forum considers SEL an evolving domain that encompasses competencies and character qualities which are critical for the future of the workforce. They believe that SEL should be taught early and consistently, both in formal and informal education settings, as part of an ecological system.

Figure 16. A schematic view of the World Economic Forum's "A New Vision for Education"



Source: (World Economic Forum, 2016[25])

Frameworks developed by NGOs, NPOs, associations or private companies

Table 2. Relevant educational frameworks created by NGOs, NPOs, associations or private companies

NGOs, NPOs, associations or private companies	Framework
DQ Institute	DQ Framework: Global Standards for Digital Literacy, Digital Skills, and Digital Readiness
IEA (International Association for the Evaluation of Educational Achievement)	Assessment Framework for International Civic and Citizenship Education Study
P21 Network (the Partnership for 21st Century Learning)	Framework for 21st Century Learning
Eidos	Eidos Learning Experience Design Framework
Dream a dream	Well-being through Lifeskills Curriculum
The Joint	Equitable ecosystem to promote 21st century learning
Officina	Officina Learning Framework

The Digital Intelligence (DQ) Framework's Global Standards for Digital Literacy, Skills and Readiness

The DQ Institute aims to set a global standard for digital literacy, skills and readiness to ensure individuals' future readiness in an increasingly technology-oriented society. Its intent is to create a globally shared understanding of terms such as digital skills and digital literacy in both the technology and education sectors, in order to improve and sustain these skills in a more efficient and effective way. The DQ Institute has identified over twenty leading frameworks from around the world in its process of developing the DQ Framework. It has identified the Learning Compass as the most holistic learning framework that can be used as an alignment structure for the DQ Framework (DQ Institute, 2019[26]).The DQ Framework's Global Standards for Digital Literacy, Skills and Readiness emphasises the importance of an inclusive group of technical, cognitive, meta-cognitive and socio-emotional competencies that are grounded in universal morals. These competencies empower students to take advantage of new opportunities and address challenges pertaining to digitalisation. The DQ Framework consists of knowledge, skills, attitudes and values that address a multitude of competencies. It explicitly relates to the OECD Learning Compass 2030 in its use of a flexible approach to meet local needs. It is an evolving and co-agential framework that is

meant to be modified and updated. As the Learning Compass uses the most commonly globally accepted language, the DQ Institute has used it with the intent to combine education agendas on digital literacy with industry efforts to develop digital skills (DQ Institute, 2019[26]).

The Learning Compass consists of core foundations, defined as "the fundamental conditions and certain core skills, which are pre-conditions and a gateway to further learning across the whole curriculum". The scope of the foundations includes cognitive foundations, social-emotional foundations, as well as physical and mental health foundations. It stipulates digital literacy and data literacy as two of the core cognitive foundations that are essential both in the present and for the future.

Figure 17. A schematic view of the Coalition for Digital Intelligence[1]

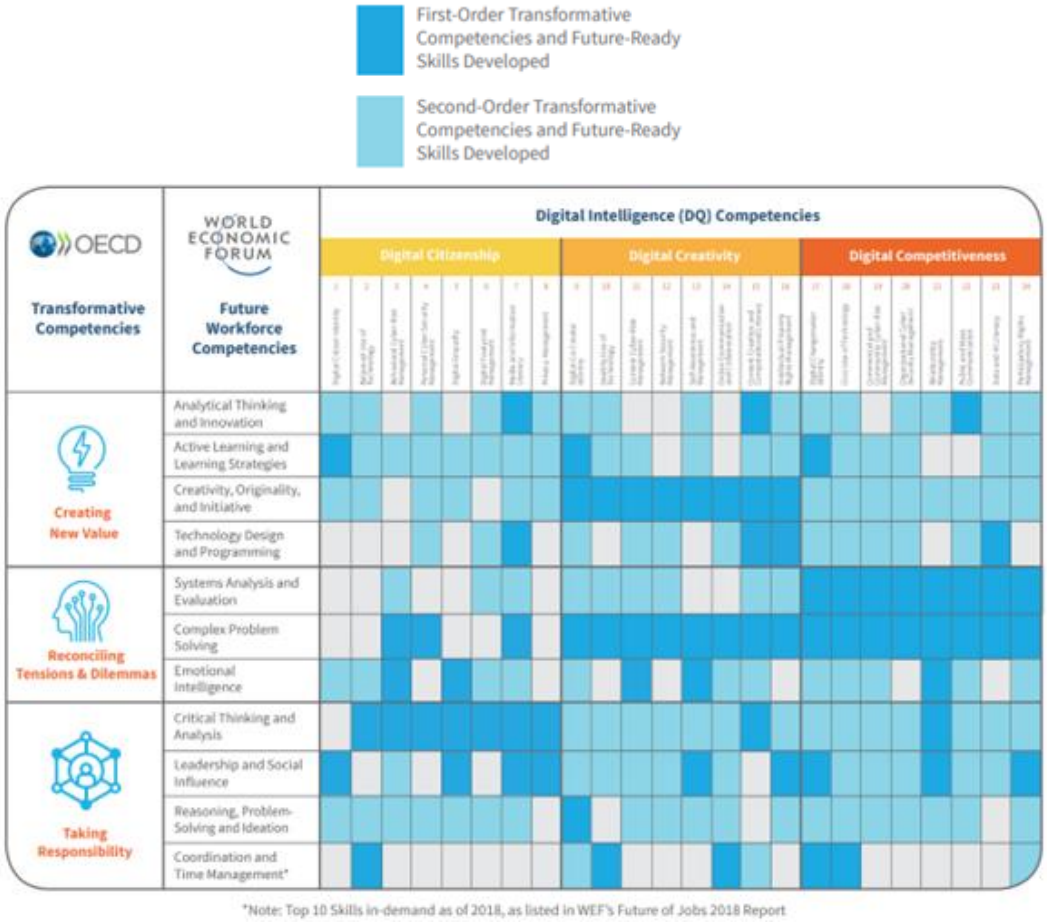


Note: The E2030 Learning Compass has been used as an analytical tool to break down the DQ competencies. The DQ Framework consists of three levels, eight areas and twenty-four competencies. Each competency can be broken down into a selection of knowledge, skills and attitudes, and values as shown by the examples below.
Source: (DQ Institute, 2019[26]).

The DQ Framework of Global Standards for Digital Literacy, Skills and Readiness outlines transformative competencies, providing a path of alignment for other related competencies, such as the World Economic Forum´s future workforce competencies framework "A New Vision for Education." The figure 18 below demonstrates how the competencies of the DQ Framework could contribute to the development of the World Economic Forum´s future workforce competencies and in turn enhance OECD Education 2030´s three transformative competencies.

[1] The Coalition for Digital Intelligence (CDI) is a cross-sector cooperative network of organizations from around the world that aims to improve global digital intelligence by coordinating efforts across educational and technology communities through multi-stakeholder collaborations. It was formed by the Organization for Economic Co-operation and Development (OECD), the IEEE Standards Association, and the DQ Institute in association with World Economic Forum and launched on September 26, 2018. https://www.dqinstitute.org/

Figure 18. Coalition for Digital Intelligence Transformative Competencies

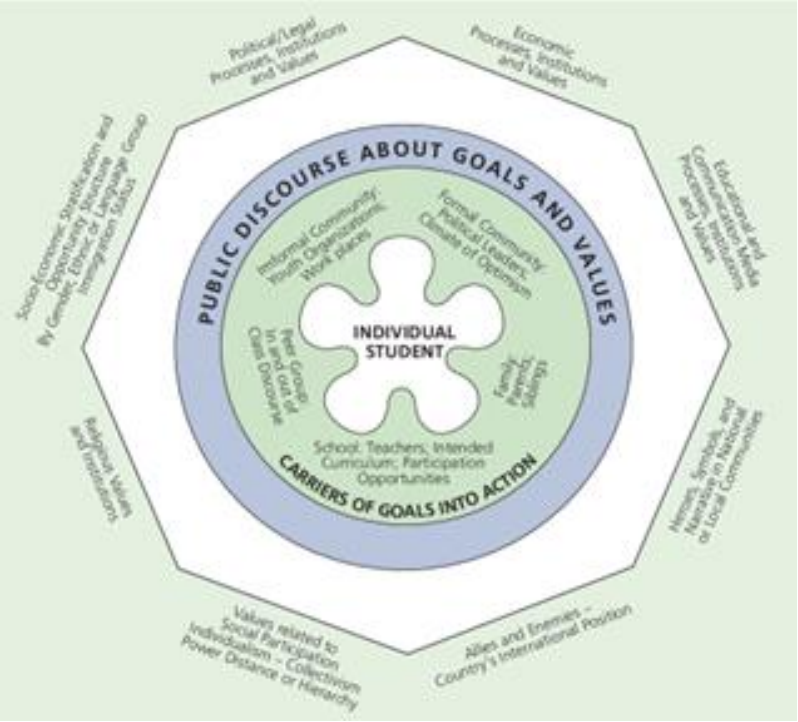


Source: (DQ Institute, 2019[26])

Assessment Framework of the International Civic and Citizenship Education Study

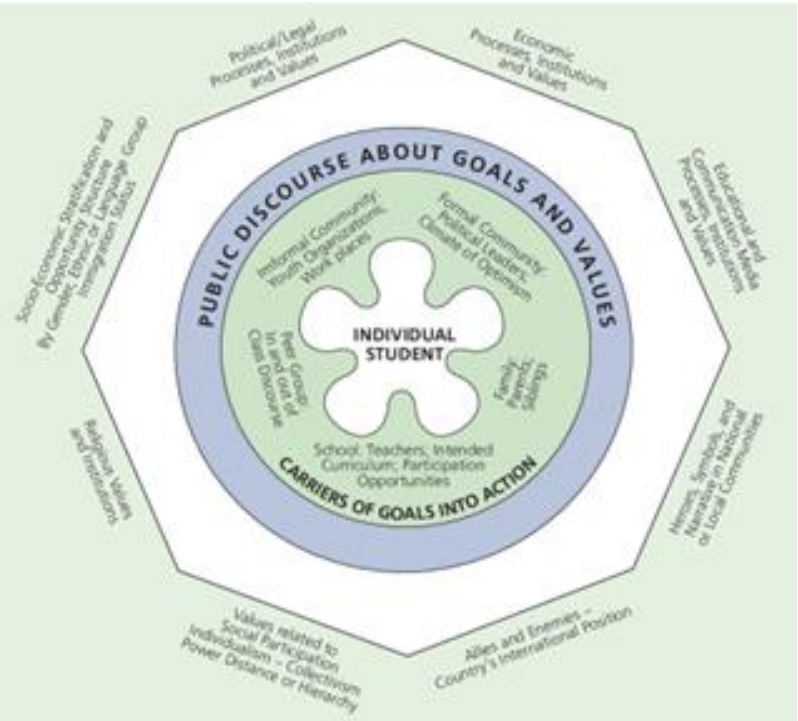
The International Civic and Citizenship Education Study (ICCS) is a comprehensive study on civic and citizenship education. It contributes to understanding of how diverse societies and countries prepare young people to be active citizens. The study seeks to improve our understanding of our role with respect to global citizenship, environmental sustainability, social interactions at school, the use of new social media for civic engagement, digital citizenship, and migration and diversity. It sets the explicit goals of helping to monitor the progress towards UN SDGs.

In alignment with the OECD Learning Compass 2030 concept of student agency, the International Association for the Evaluation of Educational Achievement (IEA), which conducts ICCS, centres the individual student, under the influence of agents of socialisation, in the theoretical model deployed in their studies on civic and citizenship education. It also assumes that students' "learning about citizenship" is not limited to teachers explicitly instructing young people about their rights and duties (Torney-Purta et al., 2003). As a precursor to ICCS, the IEA Civic Education Study (CIVED) conducted in 1999 represented this model as an octagon (Figure 19. A schematic view of IEA Civic Education



Source:

Figure 19. A schematic view of IEA Civic Education



Source: (Schulz, 2008[27])

The conceptual framework for ICCS describes cognitive and affective-behavioural aspects to be measured along three dimensions: content, cognitive and affective-behavioural (Schulz et al., 2016[28])

- The content dimension specified the subject matter to be assessed within civics and citizenship (with regard to both affective-behavioural and cognitive aspects) through the following domains:
  - Civic society and systems with three subdomains: (i) citizens, (ii) state institutions, and (iii) civil institutions.
  - Civic principles with four subdomains: (i) equity, (ii) freedom, (iii) sense of community, and (iv) rule of law.
  - Civic participation with three subdomains: (i) decision-making, (ii) influencing, and (iii) community participation.
  - Civic identities with two subdomains: (i) civic self-image, and (ii) civic connectedness.

- The cognitive dimension described the thinking processes to be assessed by the student test through the following domains:
  - Knowing refers to learned civic and citizenship information that students use when engaging with more complex cognitive tasks.
  - Reasoning and applying refers to the ways in which students use civic and citizenship information in order to reach broader conclusions and how students apply these conclusions to real-world contexts.

- The affective-behavioural dimension outlined the types of student perceptions and activities measured by the international and regional student questionnaires with respect to the following domains:
  - Attitudes refer to judgements or evaluations regarding ideas, persons, objects, events, situations, and/or relationships (such students' self-assessment of their understanding of civics and citizenship or students' attitudes toward the rights and responsibilities of groups in society).
  - Engagement refers to students' active civic engagement, students' expectations of future civic-related action, and students' dispositions to actively engage in society (such as citizenship self-efficacy).

The ICCS contextual framework describes relevant contexts in which civic learning takes place (Schulz et al., 2016[28]). It postulates that young people develop their understandings about their roles as citizens through activities and experiences that take place on different levels. The knowledge, competencies, dispositions and self-beliefs that students possess are potentially influenced by factors related to their wider community (at local, regional, national, and supranational levels), their schools and classrooms, their home and peer environments, and their individual dispositions.

P21 Network's Framework for 21st Century Learning

P21 Network (part of Battelle for Kids, a non-profit organisation) represents a partnership of school systems and communities aiming to actualise the benefits and promise of 21st century learning for every student. In early learning, from K-12 and beyond, they aim to provide a global basis to champion the "4Cs" (Critical Thinking, Communication, Collaboration and Creativity). By harnessing the network of educators, families, associations and business partners, education systems can design and implement systems for all students to instil lifelong learning in a rapidly evolving world.

Figure 20. A schematic view of P21 Network's Framework for 21st Century Learning



Source: (Battle for kids, n.d.[29])

Eidos Learning Experience Design Framework

Eidos Global is a multinational education NGO with programmes reaching 85 countries and over 3,000,000 learners of every age, background and perspective. Its framework identifies a set of foundational skills needed to navigate uncertain futures. These include emotional intelligence, creativity, complex problem-solving; collaboration, communication and active listening; digital literacy, learning to learn, and a global mindset. It also identifies a set of skills that help people create unique and persistent value for society, to live with respect and sustainability, in harmony with communities, neighbours, and the planet. These include understanding context, embracing traditional wisdom, forecasting, trendspotting, as well as ethical and moral analysis.

Figure 21. Eidos learning experience design framework



Source: (Eidos, 2023[30])

The learning path in all Eidos programmes follows a three-step cycle:

1. Action, where learners interact with knowledge and skills as they create or apply something new;
2. Reflection, when learners repeat or continue active interaction, but from a reflective point of view, e.g. using analysis, dialogue, or evaluation (individual or collective); and
3. Consolidation (metacognition), how the understanding of what is learned is made concrete through a process of reviewing what was learned and how it was learned.

In an effort to close today's gaps in skill development and access to opportunities to learn them, The Eidos Way lays out the design of learning experiences with the most essential skills for life and work in the 21st century.

The most relevant points of overlap with the Learning Compass are:

1. Student agency: the framework develops learning experiences where students assume the leading role. Our approach to the design of learning experiences focuses on the motivation of the learners and the particularities of their environment.
2. Teacher agency: the framework considers teachers crucial to creating learning environments where students can develop their agency. It aims to empower them with foundational skills such as empathy, creativity, respect, motivation and reflective thinking so they can (i) implement the experiences Eidos designs and (ii) enrich the design of their own experiences in the classroom.
3. Skill development: Eidos aims to support teachers, trainers, and learners on their path to develop foundational skills for futures full of uncertainty. It understands, as proposed by the Learning Compass, that this not only requires "learning knowledge and skills," but also the "mobilization of knowledge, skills, attitudes and values to meet complex demands in situations of uncertainty."

Dream a dream: Well-being through Lifeskills Curriculum

Dream a dream is a non-profit organisation in India mainstreaming Lifeskills as a critical approach to learning. It is shifting the narratives around the purpose of education. For that, it has developed a framework for life skills curriculum development, with well-being positioned at its core. Its targeted outcome is to strengthen four competencies: Emotional Management, Healthy Relationship with Self, Healthy Relationship with Others, and Creative Problem Solving. Each competency is conceptualised as a set of skills to be practised, values to be instilled, and attitudes to be developed.

Figure 22. Well-being through lifeskills



Source: (Dream a dream, 2022[31])

The Joint: An equitable ecosystem to promote 21st century learning

The Joint is an NGO in Israel testing pilot programmes in Hub school with the goal of moving the needle on social mobility. It has developed a conceptual framework that identifies 7 key Principles of Equity in Education, as a necessary ecosystem to promote 21st century competencies for all:

1. Transparency: clarity and openness of information, goals, curricula and "the Big Picture" for everyone.

2. Caring: connection (connectedness) and empathy between parents, teachers, children, and school staff, while preserving respect for authority; focusing on kindness to foster a safe, warm space that provides a sense of belonging and equips students with the readiness to grow, experiment and take risks.

3. Diversity: creating a safe, inclusive, and equitable learning environment where all are nurtured, valued, and appreciated; with a sensitivity to different needs, identities, gender, nationality, religion, culture, and individual learning styles.

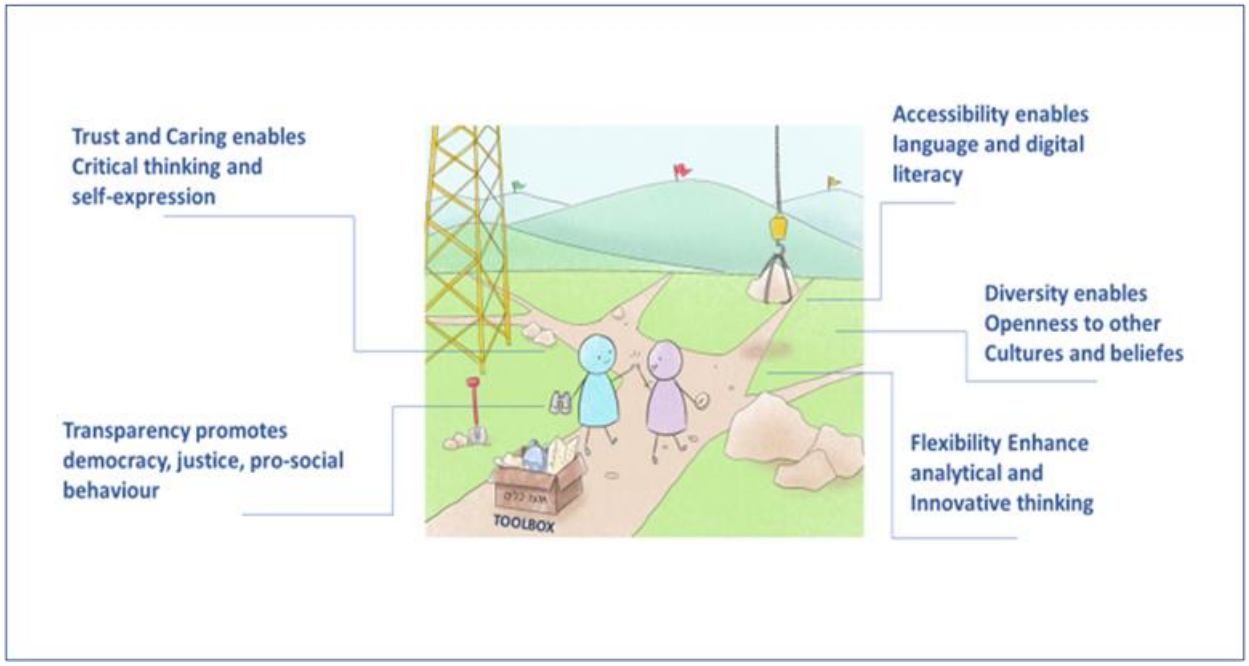
4. Flexibility: include growth mindset, belief in hard work, planning to achieve goals, ability to think critically and pivot directions when needed.

5. Trust: enhance positive relationships in which people believe the other side has good intentions and cares, in which everyone understands expectations and feels safe.

6. Accessibility: to resources (classroom, school, district), and rich learning environments both in and outside of school.

7. Quality: Active and meaningful learning for students, while taking their culture, areas of interest, and ability to 'bring a voice' and make a choice into consideration.

Figure 23. A quality equitable ecosystem to promote 21 century learning



Source: (The Joint, 2022[32])

Officina Learning Framework

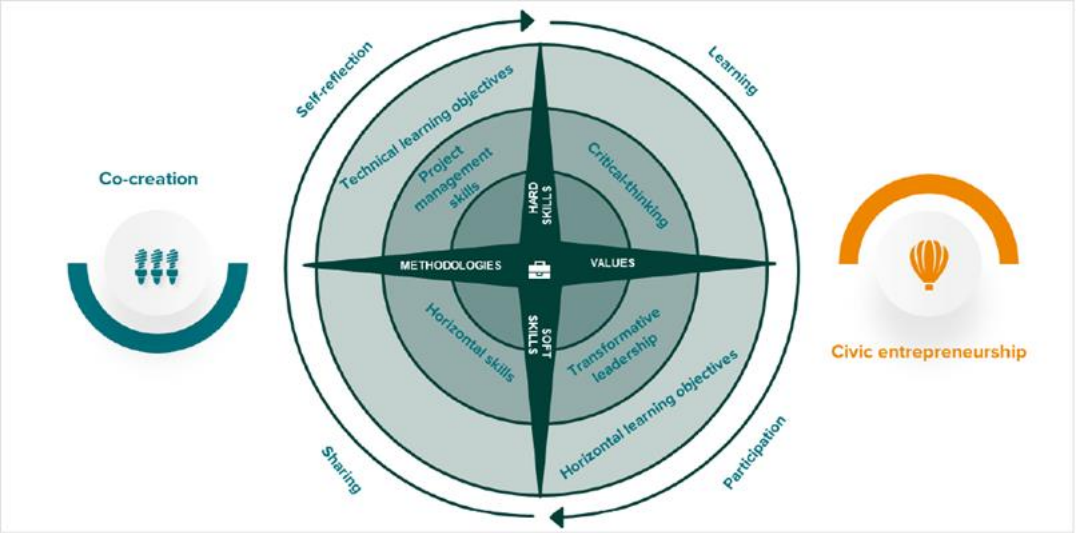
Officina Italia is an association in Italy formed by young professionals with the ambition to build a more far-sighted country, guided by the following principles:

- Social sustainability, the right to live in a social, economic, and environmental context that allows everyone to express their own individuality in order to generate positive outcomes for the entire community.
- Talent recognition, through solutions enabling high-level education opportunities oriented towards a fair recognition of competencies.
- Equality of rights and opportunities, protecting fundamental rights and promoting inclusivity as well as equal access to opportunities, especially by ensuring access to high-level education to all.
- Civic participation and public entrepreneurship, holding citizens accountable while developing awareness of their rights and duties, making them public entrepreneurs directly responsible for the well-being of society.

The Officina training programme aims to train Policy Innovation Analysts, professionals able to leverage a solid basis of shared values and stock of hard skills, soft skills, methodologies, and attitudes, to create value not only in the public or private sector, but also in the academic and non-profit world. The Policy Innovation Analysts will be equipped with an attitude of civic entrepreneurship that prepares them to create value in the public sector through new ideas and a creative, dynamic and enterprising approach. Likewise, they will be able to front-run new innovations, design ground-breaking solutions that can improve processes and services in the public sector and beyond, while adopting an analytical approach to assess the effectiveness of public policies and solve complex problems through qualitative and quantitative analysis.

Officina Learning Framework has been inspired by the OECD Learning Compass 2030 framework, particularly in the definition of its learning methods, its High-Level learning objectives as well as its specific learning objectives. It shares key constructs such as self-reflection, co-creation, and critical thinking. Similar to the OECD Learning Compass, it considers its set of non-prescriptive concepts as guiding principles for lifelong learning.

Figure 24. Officina learning framework



Source: (Officine Italia, 2022[33])

Framework initiatives developed at the school or regional/local levels

Table 3. Framework initiatives developed at the school or regional/local level

Schools (in alphabetical order)	Region, country	Name of the framework
Lady Davis High School	Israel	A model of teacher-student co-design of skills-based curriculum
Public institutions at the regional/local level (in alphabetical order)	**Region, country**	**Name of the framework**
EQ-EL	Israel, Canada, Hong Kong, Finland	The 5-Lands Model
Skrilab	Poland	The Skriware Educational Framework
The Skills Development Scotland (SDS)	Scotland	"Skills 4.0" framework
Twin science and robotics	Turkey	Double-Winged child
National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and Achieve.	United States	Common Core Standards & Next Generation Science Standards

Schools

Lady Davis High School

Lady Davis, a public high school in Tel Aviv, Israel (1800 students, Grades 7-12) is characterised by a unique culture that embraces change, with a focus on pedagogical autonomy for all teachers. In recent years, all humanities and social science subjects were integrated into a year-long interdisciplinary and interactive project-based learning programme, based on formative assessment processes, such as students' self- and peer- reflections and presentations. During the first COVID-19 lockdown, school leaders harnessed the pedagogical changes accelerated by the move to online learning in order to promote a redefinition of the school's values.

The result was a set of transformative values which signified an understanding of the need to create a "new normal": from "I must" to "I wish"; from compulsion to choice; from passive to active; from oppression to liberation; from matriculation exams to maturation processes.

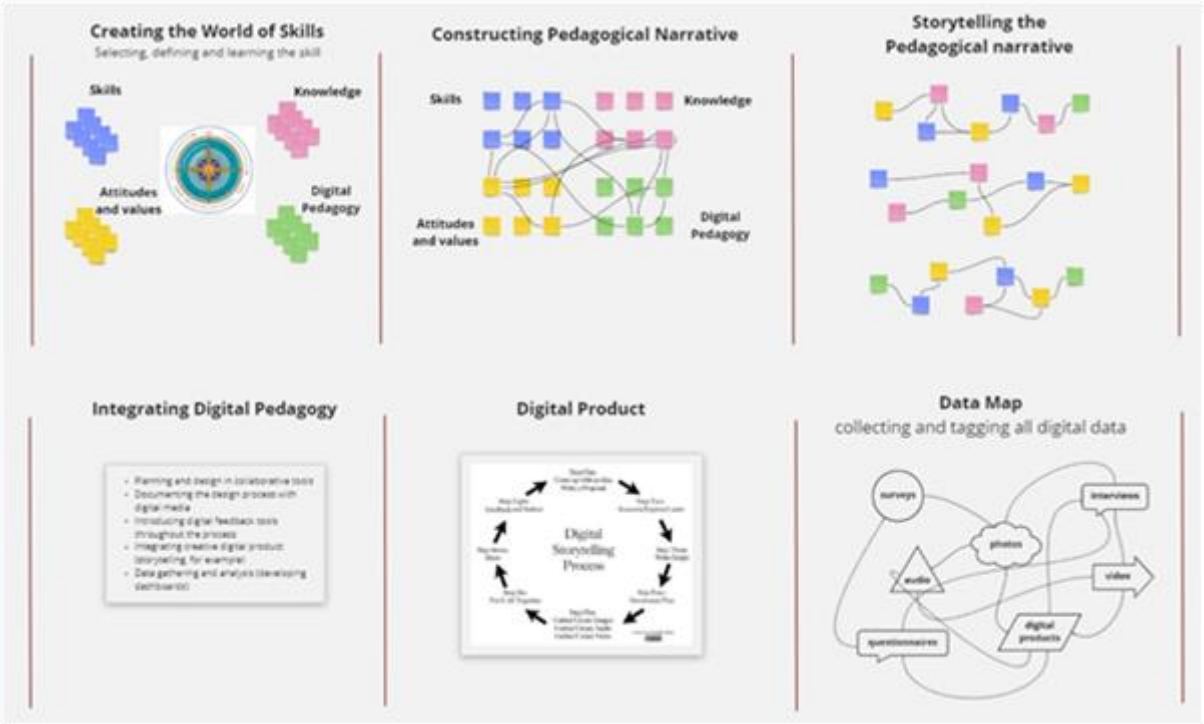
The new curriculum was co-developed by teachers and students with the aim of incorporating skills and competencies development into the school's learning culture, to promote a common pedagogic culture for all teachers and students. The development model uses design thinking methods which apply components of the OECD Learning Compass. Thus, the Learning Compass becomes the pedagogical ecosystem for a new skills-based curriculum used as an antidote to the national curriculum overload. A design thinking workshop with the leading management team and selected teachers developed a new concept of

schooling: “unleashing the nature of learning” in both students and teachers, emphasising teacher agency, student agency and co-agency. The focus was on skill development: communication skills, thinking skills, and social and emotional skills.

The principal of Lady Davis decided to employ entrepreneurship and agile methods to develop the new curriculum. The “lean start-up” methodology was the key to success of the process. A group of six teachers developed a minimum viable product (MVP) for quick testing with the “build-measure-learn" formula. They started with a survey to select the most suited skill for the students, who voted overwhelmingly for problem solving. Then, they broke the problem-solving concept down to its components and decided to focus on “defining a problem,” the basic and most difficult part in the process of conceptualising this skill. Subsequently, a small group of students joined the development and experienced an Anticipation-Action-Reflection (AAR) cycle on defining simple, complex and unrighteous problems, utilising active learning in a flipped learning model. The MVP concluded with an ethnographic interview, a design thinking method that enables both students and teachers to take a holistic approach and deepen the relevancy and importance of skill development to their agency.

The success of this approach helped the Lady Davis team develop a pedagogical model based on the Learning Compass ecosystem for skills-based curriculum. They added Digital Pedagogy to their roster, alongside Knowledge, Skills and Attitudes, which is associated with planning and design in collaborative tools; documenting the design process with digital media; introducing digital feedback tools throughout the process; integrating creative digital product (storytelling, for example); and data gathering and analysis. This learning model begins with creative brainstorming that produces an inter-connected pedagogical frame. This method allows the developers to draw an interdisciplinary view and define the interplay between the different components, as well as to create diverse narratives which refine the learning modules.

Figure 25. A model of teacher-student co-design of skills-based curriculum



Source: Lady Davis High School.

Public institutions at the regional and local levels

EQ-EL: The 5-Lands Model – Becoming the Educational Leader of Tomorrow, Today

Another relevant initiative aligned with the OECD Learning Compass 2030 is the 5-Lands Model, which is a metaphorical journey that educators need to take to upskill or reskill themselves and cultivate the necessary skills for a post-COVID reality. Only the educators of tomorrow will be able to help their students navigate towards well-being in the 4th Industrial Revolution[2] and prepare their students for the "new normal" (EQ.el, 2021[34]).

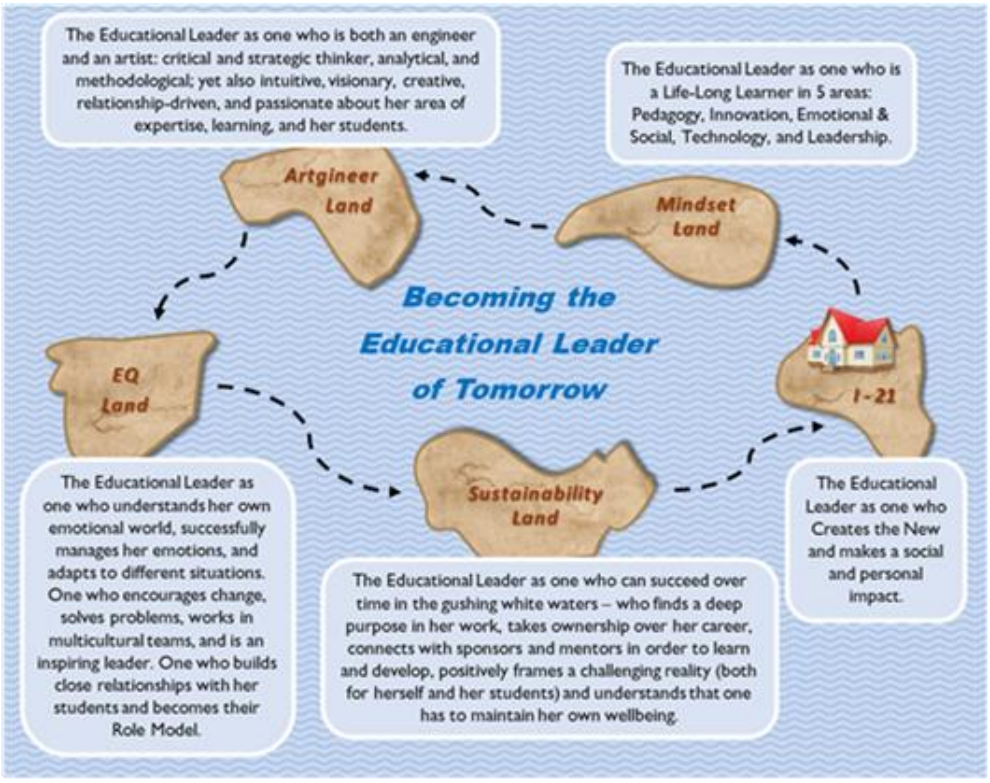
Box 2. The 5 practical stages of the 5-Lands Journey

- Stage 1: The New Map – Understanding the new rules for well-being in the 4th Industrial Revolution.
- Stage 2: Mapping – Getting my personal readiness assessment profile.
- Stage 3: Upskilling – Designing & implementing my personal upskilling process journey.
- Stage 4: TTT – Providing "Train the Trainer" programme for educators and ensuring it is scalable.
- Stage 5: Students' Well-being – Supporting students in navigating towards well-being and success in the 4th Industrial Revolution.

Source: (EQ.el, 2021[34])

[2] "The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres." World Economic Forum: The Fourth Industrial Revolution: what it means and how to respond | World Economic Forum (weforum.org)

Figure 26. A schematic view of the 5-Lands Model



Source: (EQ.el, 2021[34]).

Using the Learning Compass 2030 to Navigate Successfully in the 5Lands™ Journey

To navigate successfully through each of the 5-Lands and acquire the skills for the future, educators will need to ask themselves seven questions based on the seven elements of the Learning Compass:

- ✓ **Core Foundations:** To what extent do we possess a sense of urgency to prepare ourselves for the New Era of the Workplace and to invest time and effort in familiarising ourselves with the main concepts of each Land?
- ✓ **Attituded and Values:** To what extent do the concepts and main principles of each Land influence our choices, judgements, behaviours and actions on the path towards individual, societal and environmental well-being?
- ✓ **Knowledge:** To what extent do the theory and knowledge beyond each Land help us develop new knowledge and understanding which will support our self-navigation in the 4th Industrial Revolution?
- ✓ **Skills:** To what extent do the components of each Land support our ability to develop the skills we need to shape and create the future we want?
- ✓ **Educators' Agency:** In what ways does each Land influence our belief, will and ability to positively influence our own lives, our students' lives, the communities and world around us?
- ✓ **Transformative:** What is the contribution of each Land to our ability to create new value, to be empowered and feel that we can help shape a world where well-being and sustainability are achievable for us, for our students and the planet?
- ✓ **Reflection – Anticipation-Action-Reflection cycle:** What is the contribution of each Land to our ability to use the AAR cycle effectively: to continuously improve

our thinking and act intentionally and responsibly with respect to individual, societal and environmental well-being?

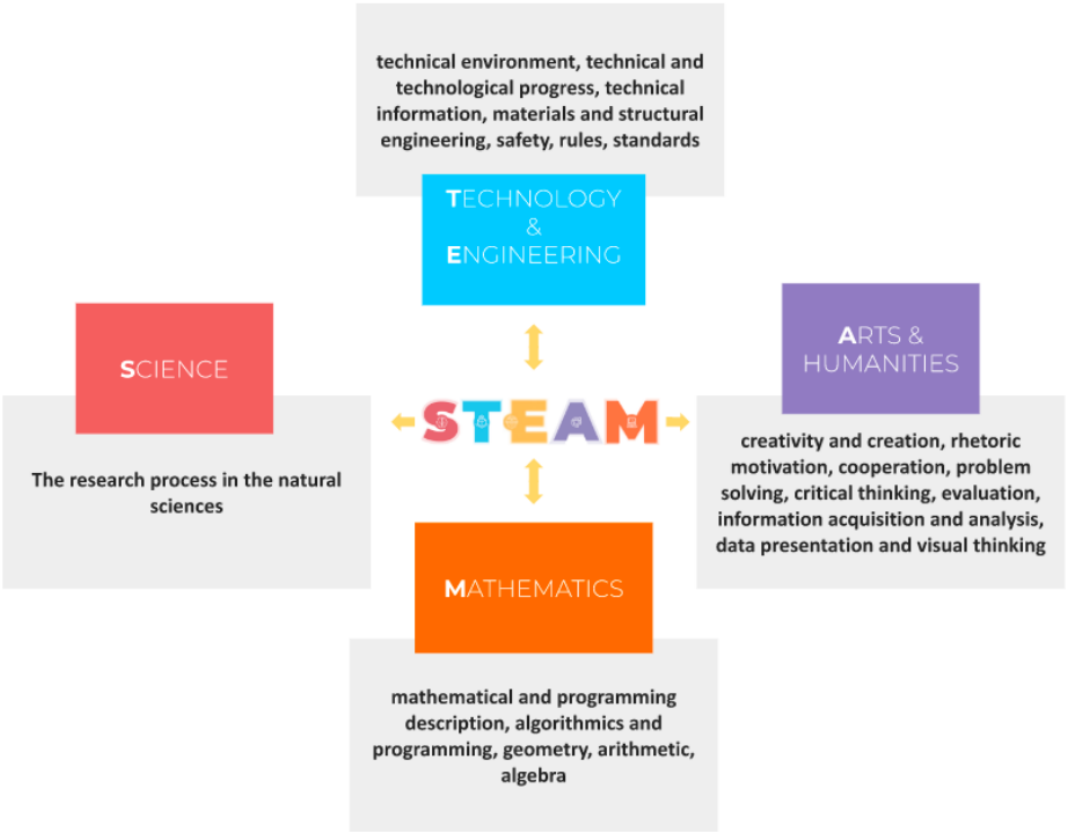
The SkriLab Educational Framework

SkriLab is an educational solution created by Skriware, a Polish EdTech company that creates educational robots and other teaching tools for STEAM-based education. It established SkriLab, an educational laboratory, as a response to the needs of schools that plan to supplement core curricula by preparing students for the challenges of the modern world and future labour market. The individual and social development of the child is conceived as the starting point, which is why the aim is for the student to develop analytical, creative, practical and social skills. One of the main goals is to actively involve students in the process of acquiring knowledge through practical challenges related to everyday life, understanding the operation of modern technologies and the possibilities of their use to solve real problems (SkriLab, 2022[35]).

SkriLab has created educational materials tailored to specific educational goals implemented in school activities, demonstrating that the usage of modern technologies is not the goal itself but a tool to support education. The goals are based on the STEAM (Science, Technologies, Engineering, Arts & humanities, Mathematics) approach, which ensures engaging and interdisciplinary experience. The principles for acquiring knowledge are: stimulating internal motivation, sensory stimulation, learning through analogy and independent research.

By prioritising the cultivation of analytical, creative, practical and social skills, SkriLab echoes the Learning Compass' focus on nurturing essential competencies such as critical thinking, collaboration and creativity. Moreover, SkriLab's approach to active learning through practical challenges mirrors the Learning Compass's call for hands-on experiences that connect learning to real-life scenarios. Both frameworks share a commitment to interdisciplinary learning, as SkriLab's STEAM-based approach aligns with the Learning Compass's recognition of the value of cross-disciplinary knowledge.

Figure 27. A schematic view of SkriLab Educational Framework



Source: (SkriLab, 2022[35])

The "Skills 4.0" framework

Skills Development Scotland (SDS) have developed a 12-point framework of "timeless, higher order skills that create adaptive learners and promote success in whatever context the future brings" (Skills Development Scotland, 2018[36]).

These meta-skills are classified under three headings:

- **Self-management:** "Manage the now" - Focusing, Integrity, Adapting and Initiative;
- **Social intelligence:** "Connect with the world" - Communicating, Feeling, Collaborating and Leading;
- **Innovation:** "Create our own change" - Curiosity, Creativity, Sense-Making and Critical Thinking.

Figure 28. A schematic view of SDS Classification of meta-skills



Source: (Skills Development Scotland, 2018[36])

A focus on meta-skills implies a recognition that technical skills are not enough in an unpredictable future. In the case of skills 4.0 (Skills Development Scotland, 2018[36]), the argument that citizens "need the skills not only to cope with change but to thrive in it … and create change for themselves" is put forth (p. 3); a rationale that aligns with the concepts of student agency and co-agency in the OECD's Learning Compass.

Indeed, learners are proactively supported in new Scottish Apprenticeships to develop the "belief, ability and the will to positively influence their own lives and the world around them". Through a formative and individualised assessment methodology, learners are engaged in context-specific reflective practices, action planning and evaluative activities: an approach that mirrors the iterative anticipation-action-reflection cycle set out in the Learning Compass.

Assessing meta-skills requires approaches that differ from other work-based competences. A core principle to research practice is that assessments are ideally multi-method using the perspective of employer, educator or trainer, and learner. The selection of assessment methods ought to reflect the breadth of desired learning outcomes and the purpose of any assessment in achieving and validating these. SDS's meta-skills are considered highly interdependent, clustering in a multitude of combinations to support resilience, learning and the development of transformative competencies such as those set out in the OECD's Learning Compass (*see mapping overleaf*).

SDS recognises the importance of meta-skills for developing capable individuals and envisions their development as a set of important outcomes within the context of its work-based learning programmes. The skills are, however, not distributed evenly and individuals will naturally show strengths in certain areas based on their interests, abilities and the needs of their jobs. This contextuality lends itself to individualised models of assessment where self-awareness and student agency are nurtured. While originally developed for Scotland's work-based earning system, the country's primary qualifications body, the Scottish Qualifications Authority (SQA) have since adopted the SDS meta-skills framework in their next generation higher national qualification suite, pointing to a broader, system-wide adoption of the framework and an increased focus on student agency, transformative competency development and action orientated learning experiences at a national level.

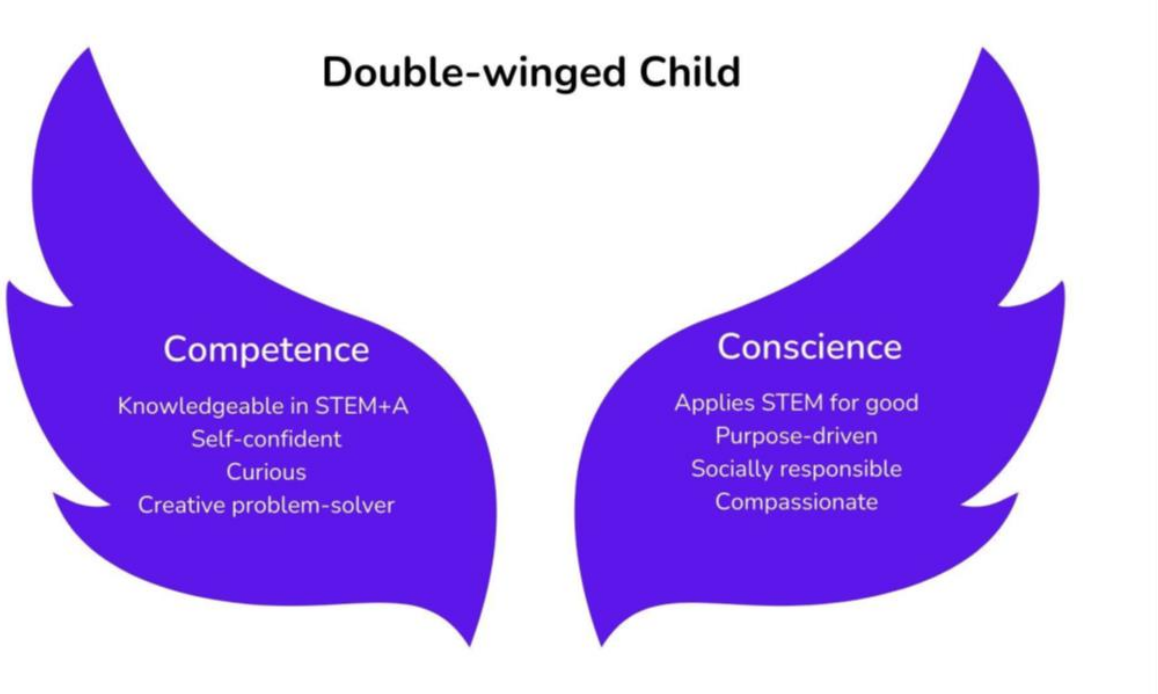
Twin science and robotics: Double-Winged child

Twin is an international educational technology startup founded in Türkiye in 2017, which evolved into a private company, Twin Science & Robotics, based in London, UK in 2020. Twin Science supports schools and empowers teachers to nurture students' STEAM for sustainability competencies. Along with gaining 21st-century skills in robotics, coding and AI, students also learn social awareness, understand responsible decision-making, exercise their conscience, and, most importantly, consider the more far-reaching well-being of the environment. This is the ground of the “STEAM for Sustainability” approach. Students are inspired to use STEAM to build sustainable solutions for the world.

“STEAM for Sustainability” supports students in gaining insights into preventing natural disasters and saving lives through projects such as "Earthquake Detection." They explore sustainable food production and create prototypes for "A Sustainable Farm." Emphasising inclusivity, they design a "Smart Cane" to enhance accessibility for the visually impaired. They also develop an awareness of environmental preservation, utilising technology to prototype an "Ocean Cleaning Robot" to safeguard our planet's future.

The guiding light for Twin’s content vision has been raising “double-winged children.” This is brought to bear on tackling problems of the 21st century: Individuals need to be knowledgeable subject-matter experts, but also socially conscious change-makers, willing to make meaningful changes. One wing represents strong competence in STEAM areas, with highly developed 21st century skills. The second wing denotes a strong sense of social responsibility to apply said knowledge and skills. Similar to the OECD Learning Compass, Twin’s vision of a double-winged child mirrors the emphasis on transformational competencies, such as creative thinking, problem solving and critical thinking.

Figure 29. A schematic view of Double-Winged child



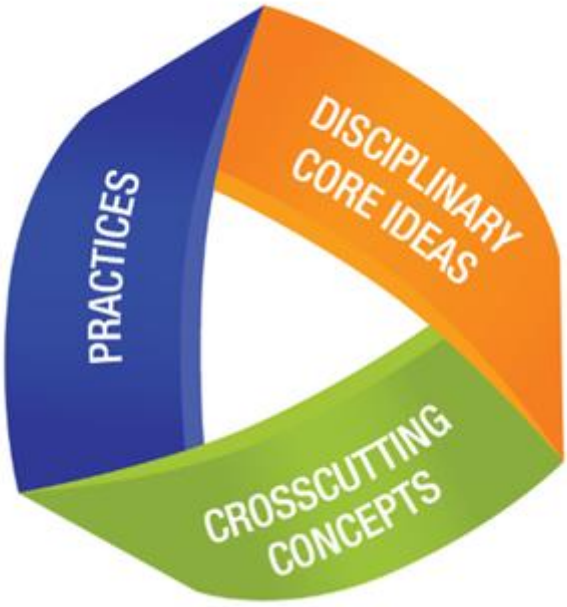
Source: Twin Science (2023) Twin Educational Framework

Next Generation Science Standards

The Next Generation Science Standards (NGSS) were developed through a two-step, internationally-benchmarked process, in the United States. As a first step, the National Academies of Sciences developed a Framework for K-12 Science Education, detailing the scientific competencies all students should have developed by the time of their completion of secondary school. This Framework was used by a consortium of US states to develop science standards that integrate the three themes from the Framework: (1) Practices, i.e. behaviours engaged in while conducting scientific experiments and learning; (2) Disciplinary Core Ideas, which describe the deep knowledge pertaining to specific scientific and engineering domains; and (3) Crosscutting Concepts, which are the interconnections and interdisciplinary ideas that are useful in making sense of the world and solving problems in the sciences and beyond. Each student expectation in the standards requires students to perform at the intersection of these three themes, with a focus on explaining real-world phenomena and solving real-world problems.

Similar to the OECD Learning Compass, it emphasises the development of essential skills and competencies that prepare students for the challenges of the 21st century. Just as NGSS focuses on science and engineering practices, the Learning Compass highlights the development of key skills such as critical thinking, creativity, collaboration and communication. Both frameworks recognise the importance of integrating knowledge from various disciplines and encouraging students to apply their learning to real-world contexts. Moreover, both NGSS and the Learning Compass prioritise the cultivation of lifelong learning skills, empowering students to adapt and thrive in an ever-evolving global landscape.

Figure 30. Next Generation Science Standards



Source: (Next generation science standards, n.d.[37])

Conceptual coherence with OECD assessment frameworks

Table 4. OECD Assessment Frameworks

Programme for International Student Assessment	PISA 2015 – Collaborative Problem Solving
	PISA 2018 – Well-being
	PISA 2018 – Financial Literacy Framework
	PISA 2018 – Global Competency Framework
	PISA 2022 – ICT Framework
	PISA 2022 – Creative Thinking
	PISA 2022 – Mathematics Framework
	PISA 2025 – Science Assessment Framework
Early learning and well-being	International Early Learning and Well-being study
OECD Survey on Social and Emotional Skills	The "Big Five" Domains of Social and Emotional Skills
OECD Survey of Adult Skills	PIAAC

The OECD Learning Compass and other OECD assessment frameworks are connected, but not identical, as they do not serve the same purpose. The Learning Compass is different from other OECD frameworks, such as PISA, PIAAC and Social-Emotional Skills, which are used as assessment frameworks to provide valid and reliable measurement tools. They are more focused and specific to ensuring technical validity and reliability to assess selected constructs. Some concepts and competencies of the Learning Compass are not covered in the OECD assessment frameworks. For example, practical skills, agency and co-agency, data literacy and health, are absent or only implicitly represented in the other assessment frameworks.

Besides these differences, the frameworks also share some commonalities. The Learning Compass aims to provide a framework for structured discussion on competencies to be measured in the future. The taxonomy of "Knowledge, Skills, Attitudes, (and Values)" is shared among the OECD assessment frameworks. The assessment frameworks focus more on cognitive skills than on social and emotional skills and meta-cognitive skills. The latter are increasingly, but cautiously, included in the assessment frameworks (within the context questionnaires' frameworks). Literacy, numeracy and digital literacy are present in both the Learning Compass and the assessment frameworks. The compound competencies

mentioned in the Learning Compass such as global competency and creativity are also represented in the PISA innovative domains.

Examples of the connection between the Education 2030 Learning Compass and other OECD projects are the PISA 2022 ICT framework, the PISA global competence framework, Survey on Social and Emotional Skills (SSES) and the Survey of Adult Skills (PIAAC).

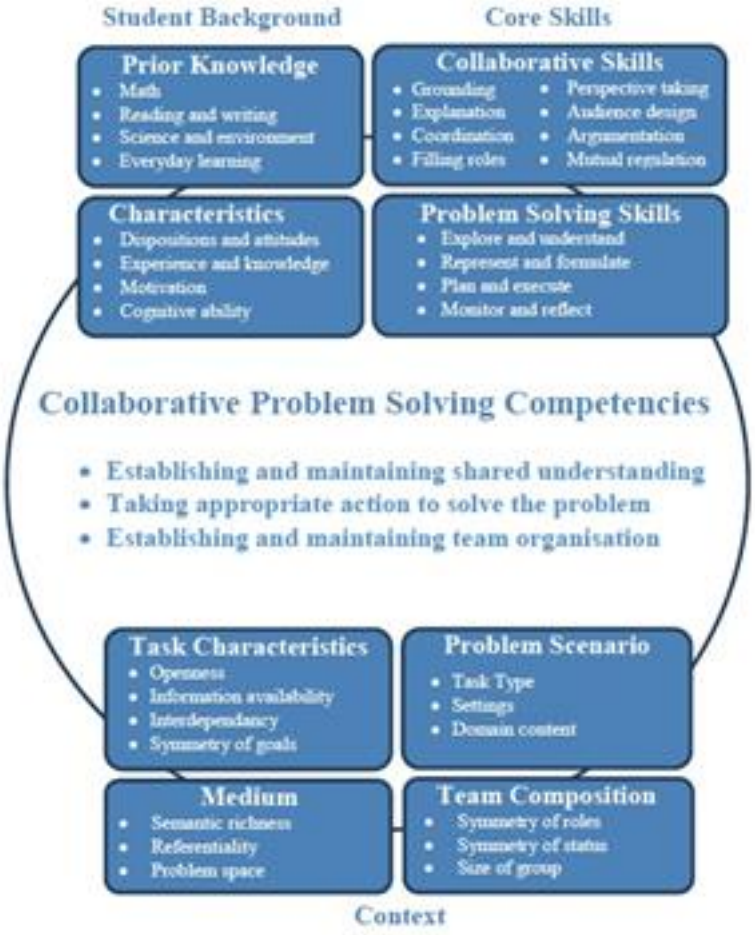
Programme for International Student Assessment

Within the Programme for International Student Assessment (PISA), a number of frameworks have been developed that complement and support one another in measuring and monitoring student competencies. From the late 1990s, PISA has recognised a wide range of key competencies that has progressively added to the assessment, updating existing frameworks to be more inclusive of holistic childhood education.

PISA 2015 - Collaborative Problem Solving

Collaborative problem solving is a necessary skill used in education and the workforce, but also in everyday life. In collaborative problem solving, individuals combine their understanding and effort to collaborate on solving problems. Collaboration has the added advantage over individual problem solving because it allows for: an effective division of labour; the incorporation of information from multiple perspectives, experiences and sources of knowledge; enhanced creativity and quality of solutions stimulated by the ideas of other group members.

Figure 31. PISA 2015 Collaborative Problem Solving Framework

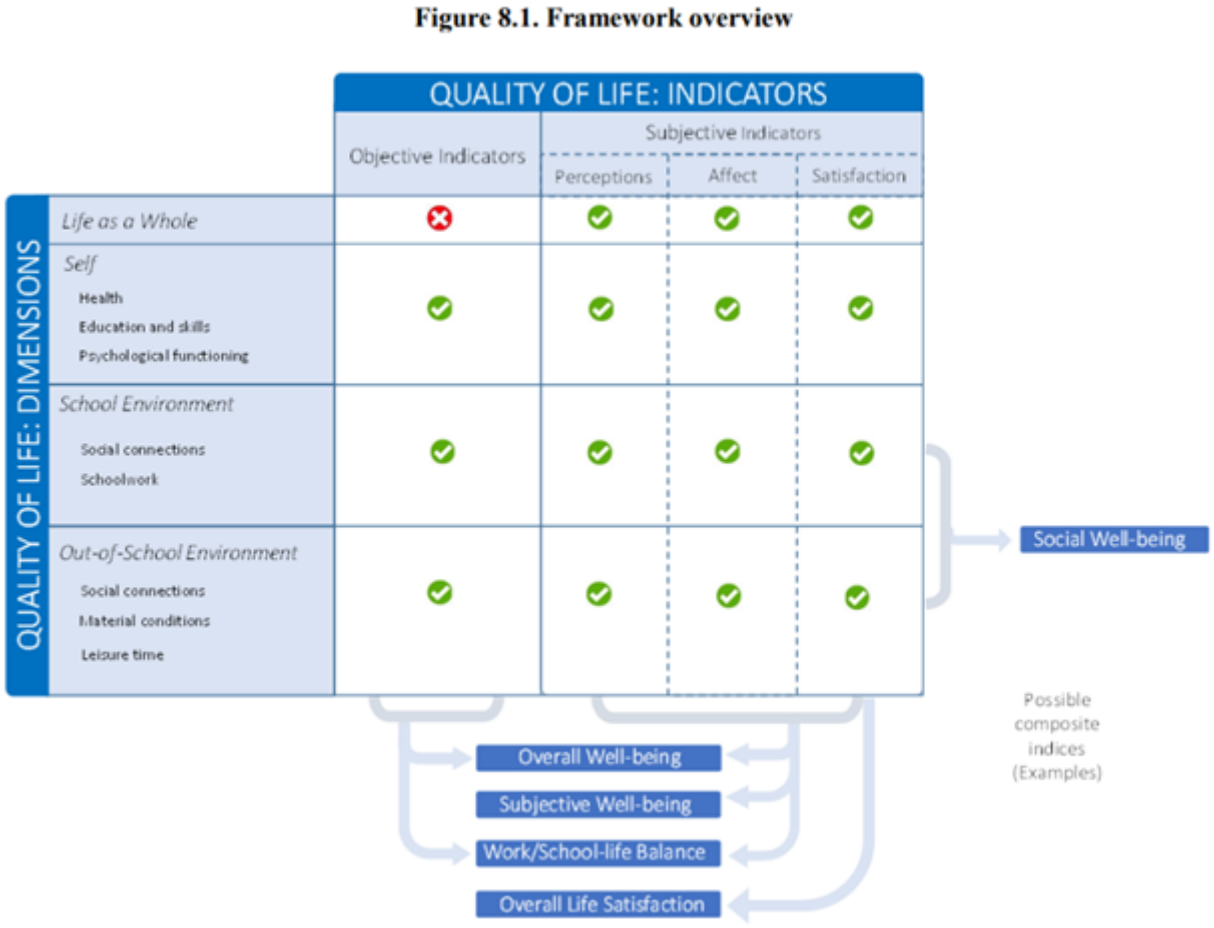


Source: (OECD, 2017[38]).

PISA 2018 - Well-being

The OECD work on well-being highlights the importance of building human capital and social skills for the future, and recognises that a child's well-being in the present will influence their future well-being. As a multi-dimensional concept, well-being includes objective aspects, e.g. material conditions, and subjective elements, e.g. feelings and emotions. The five domains of well-being identified in PISA 2018 are distinct but also closely related and contribute to determining students' overall optimal functioning and satisfaction. Each dimension can be considered both as an outcome and as an enabling condition with respect to other dimensions and ultimately with students' overall quality of life.

Figure 32. Overview of PISA well-being framework

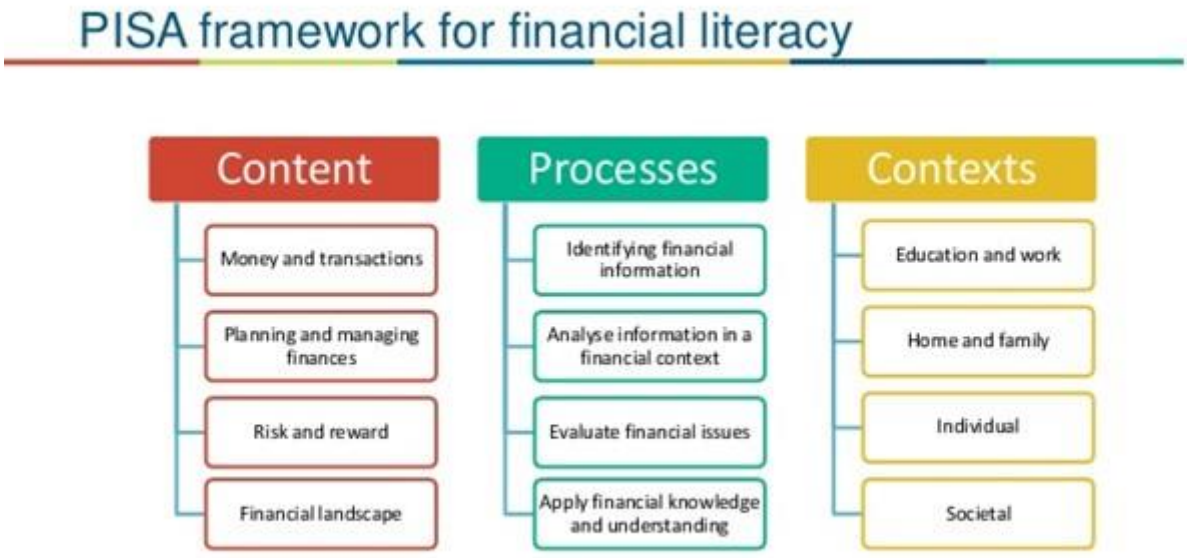


Source: (OECD, 2019[39])

PISA 2018 - Financial literacy framework

Financial literacy is an important life skill and a concern for policy makers. Challenges to welfare systems, changing demographics and increased sophistication and expansion of financial systems mean that greater awareness and literacy of finances must be borne by citizens. The PISA financial literacy assessment aims to monitor changes and provide evidence that enhances students' financial literacy.

Figure 33. PISA framework for financial literacy



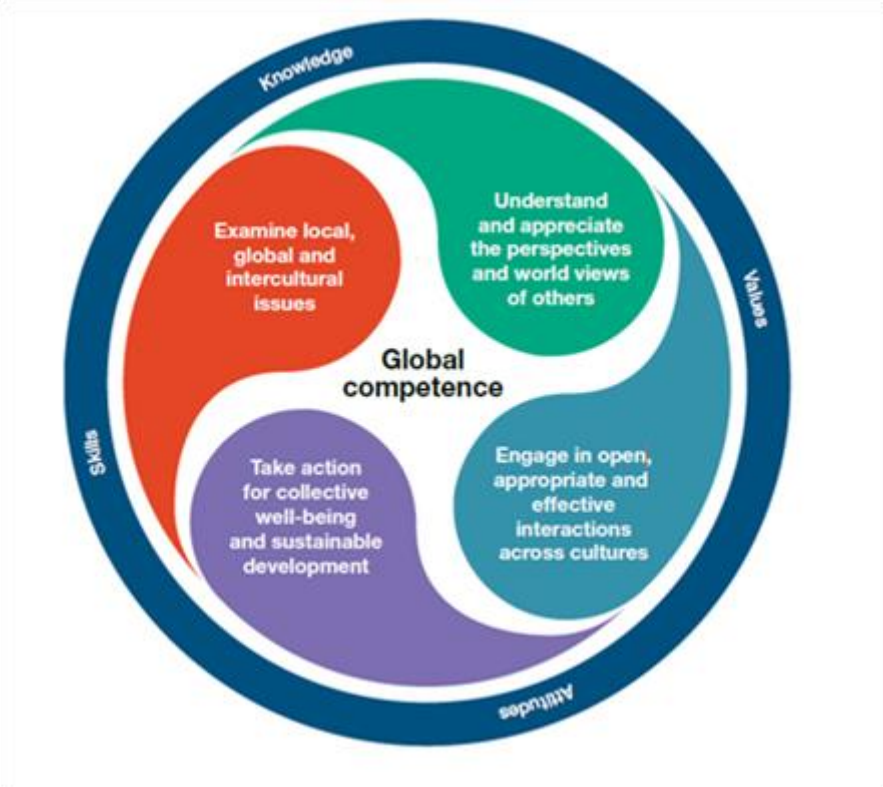
Source: (OECD, 2019[39])

PISA 2018 - Global competency framework

The building blocks for the PISA 2018 global competency framework are the same as those of the Learning Compass – knowledge, skills, attitudes and values. The global competency framework consists of four dimensions, as shown in the figure below (OECD, 2018[40]):

1. The capacity to examine issues and situations of local, global and cultural significance (e.g. poverty, economic interdependence, migration, inequality, environmental risks, conflicts, cultural differences and stereotypes);
2. The capacity to understand and appreciate different perspectives and worldviews;
3. The ability to establish positive interactions with people of different national, ethnic, religious, social or cultural backgrounds or gender;
4. The capacity and disposition to take constructive action toward sustainable development and collective well-being.

Figure 34. PISA 2018 dimensions of global competence



Source: (OECD, 2018[40])

PISA 2022 - ICT framework

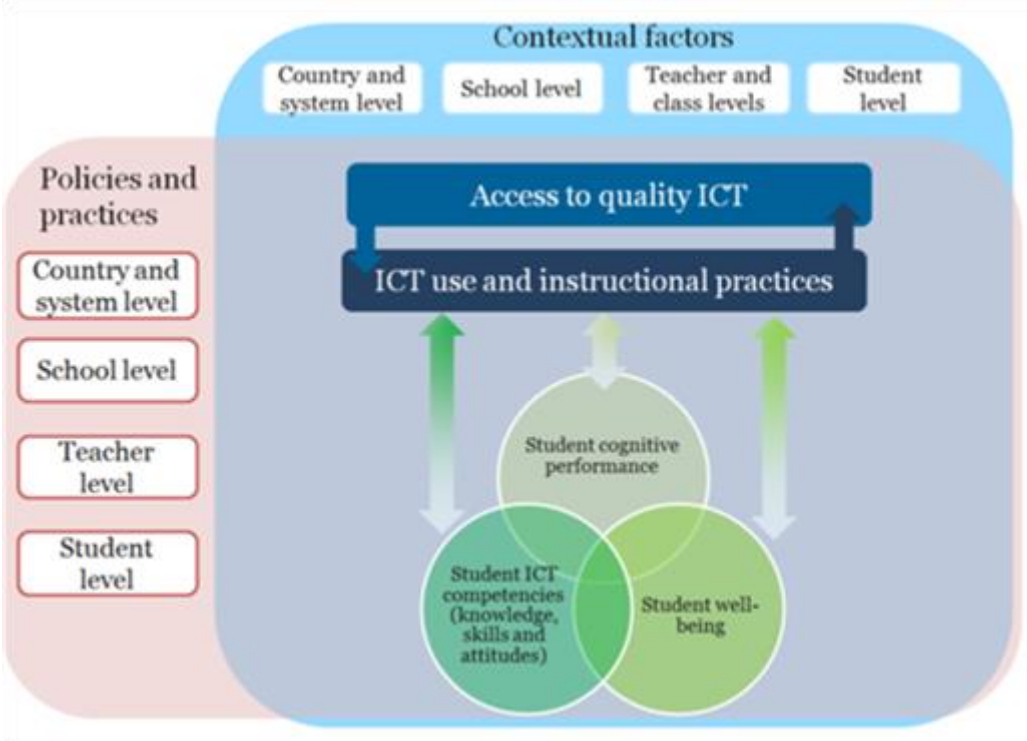
The PISA 2022 Information and communications technology (ICT) framework examines the relationship between students' use of ICT and three outcomes: cognitive achievement, well-being and level of ICT competencies. The framework covers three dimensions, as shown in the figure below (OECD, 2018[41]):

5. Access to ICT, which encompasses availability, accessibility and quality of ICT resources with a special focus on (connected) technologies that can support learning (e.g. digital learning resources, learning management systems, etc.)

6. Use of ICT, which covers the intensity as well as the types and modalities of ICT use by students in an informal, and possibly unsupervised, environment for learning and leisure; in a supervised situation in the classroom, notably through teachers' pedagogical practices with ICT; it also includes alternative uses of ICT by teachers to support teaching.
7. Students' competencies in ICT, which describe the core competency areas identified by existing assessment frameworks for "digital literacy", as well as measures of attitudes and disposition towards ICT use (for learning and for leisure) and propose a self-efficacy assessment of students' ICT competencies.

The OECD Learning Compass also includes digital literacy as one of the core foundations students need for 2030. The core foundations represent the basic competencies, on the basis of which students can build more advanced competencies by developing their knowledge, skills, attitudes and values.

Figure 35. PISA 2022 ICT conceptual framework

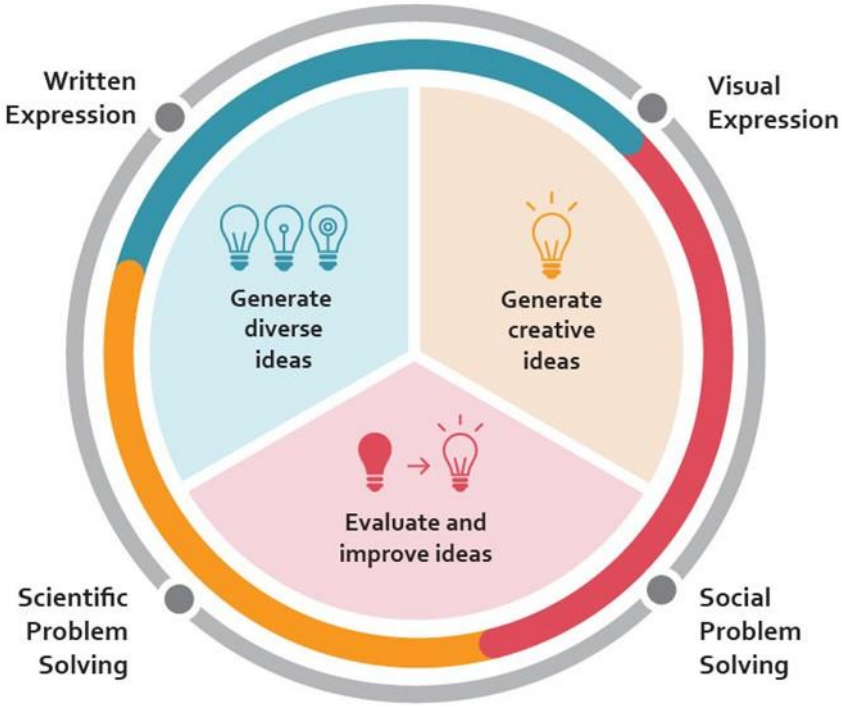


Source: (OECD, 2018[41])

PISA 2022 - Creative Thinking

Creative thinking is a way of thinking that leads to the generation of valuable and original ideas. All people are capable of engaging in creative thinking and practicing everyday creativity (addressing everyday activities in a non-conventional way). Creative thinking can be applied not only to contexts related to the expression of imagination, such as creative writing or the arts, but also to other areas where the generation of ideas is integral to the investigation of issues, problems or society-wide concerns. The PISA assessment of creative thinking includes four domains: written expression, visual expression, social problem solving and scientific problem solving.

Figure 36. Competency model: facets of creative thinking

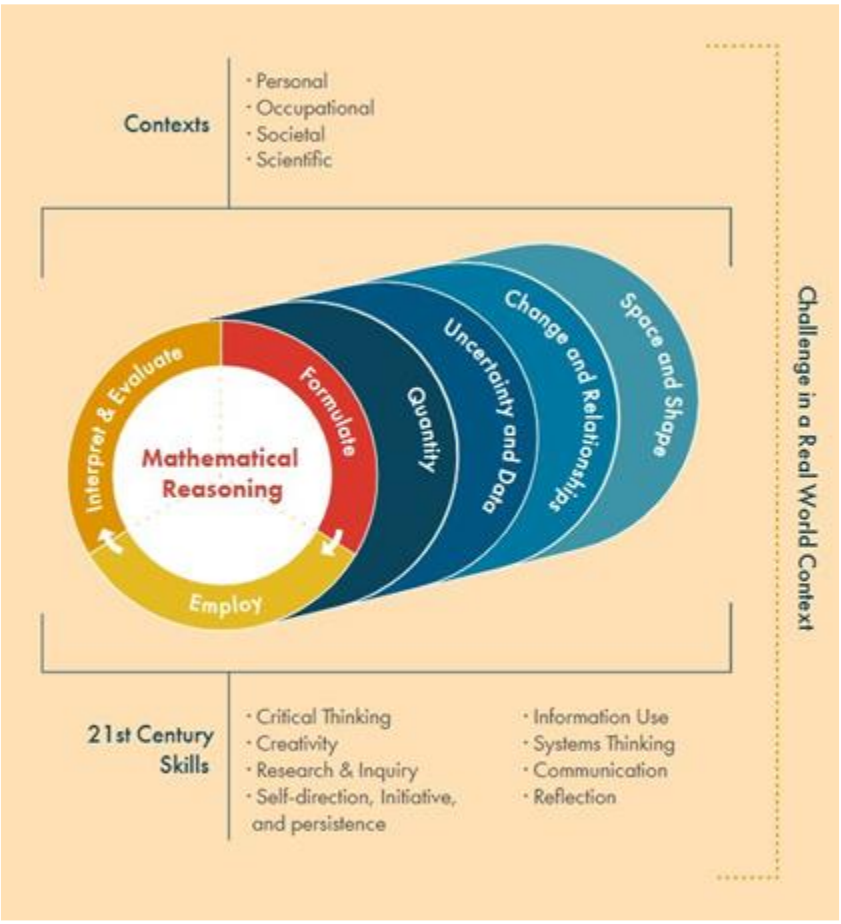


Source: (OECD, 2019[42])

PISA 2022 – Mathematics Framework

The PISA 2022 mathematics framework is the foundation of the PISA math assessment, focusing on mathematical literacy. Mathematical literacy is very important — it is about using math to understand and make informed decisions in different real-life scenarios. It combines math reasoning and problem-solving, with a special emphasis on mathematical modeling. This framework categorises math into four areas and highlights four types of real-world situations where students face math challenges. These areas are quantity, uncertainty and data, change and relationships and space and shape. This framework aids in assessing the effectiveness of math education in preparing individuals for personal, civic, and professional life, fostering proactive and analytical citizenship.

Figure 37. PISA 2022 Mathematics Framework

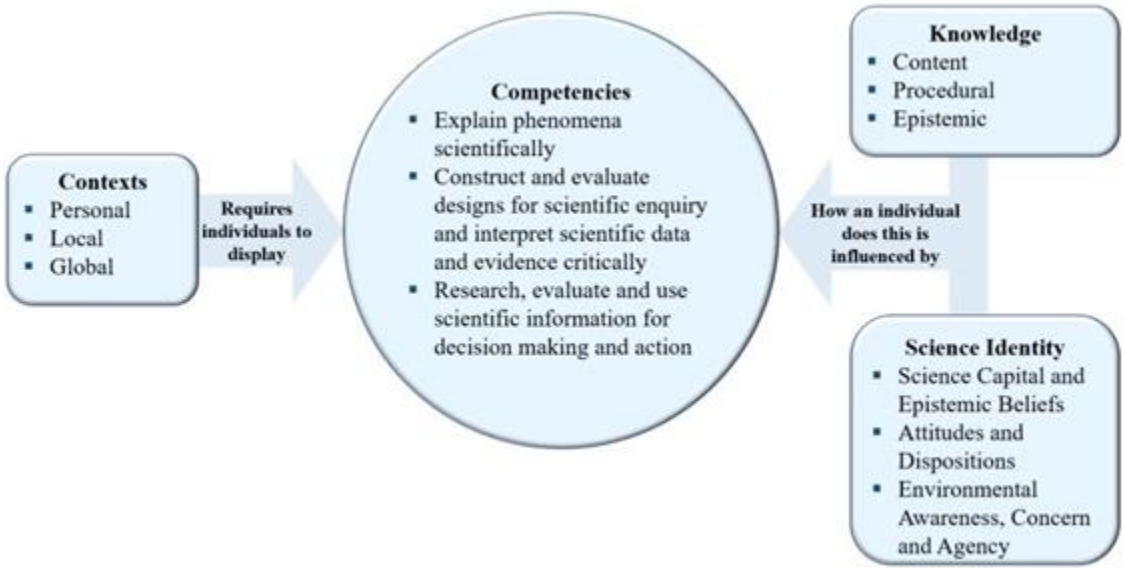


Source: (PISA, 2018[43])

PISA 2025 – Science Assessment Framework

The PISA 2025 Science Framework is based on three key aspects of scientific knowledge: content knowledge, procedural knowledge, and epistemic knowledge. Content knowledge involves understanding scientific facts and concepts, while procedural knowledge relates to the methods scientists use to acquire knowledge. Epistemic knowledge encompasses understanding the processes and values inherent in scientific inquiry. The framework aims to assess individuals' competency in applying these aspects across personal, local, national, and global contexts, emphasising a broader understanding of science beyond mere facts. It also recognises the importance of fostering positive attitudes towards science and the ability to address scientific problems effectively, including environmental and socio-ecological challenges.

Figure 38. Framework for PISA 2025 science assessment



Source: (PISA, 2023, p. 11[44])

Early learning and well-being

The International Early-Childhood and Well-being study by the OECD looks at four areas critical to predicting future outcomes for children: emergent literacy, emergent numeracy, self-regulation and social-emotional skills. Each of these areas overlap with one another, but they each have an independent effect on later outcomes. And while other areas of children's development also matter, such as visual-motor and physical skills, the interrelated and overlapping nature of early learning means it is not necessary to measure every skill to have an accurate indication of how well a child is developing.

Figure 39. A schematic view of International Early Learning and Well-being study

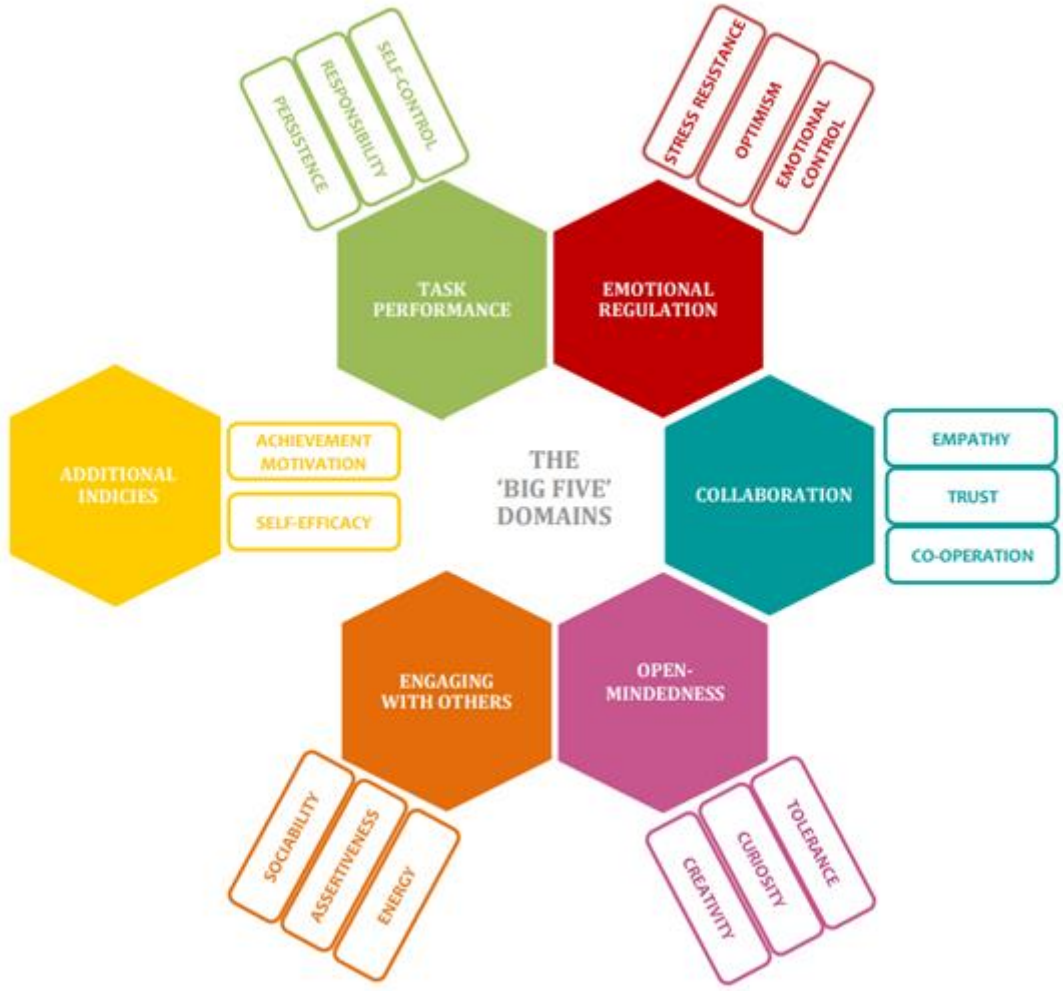


Source: (OECD, 2023[45])

OECD Social and Emotional Skills

The OECD Survey on Social and Emotional Skills (SSES) focuses on aspects crucial to the management of emotions, self-perception and engagement with others. It is meant to be a complementary domain to the cognitive areas of PISA. Drawing upon the well-established "big-five" domains, it uses a cluster of mutually related social and emotional skills; for example, collaboration encompasses empathy, trust and co-operation.

Figure 40. The "Big Five" Domains of Social and Emotional Skills

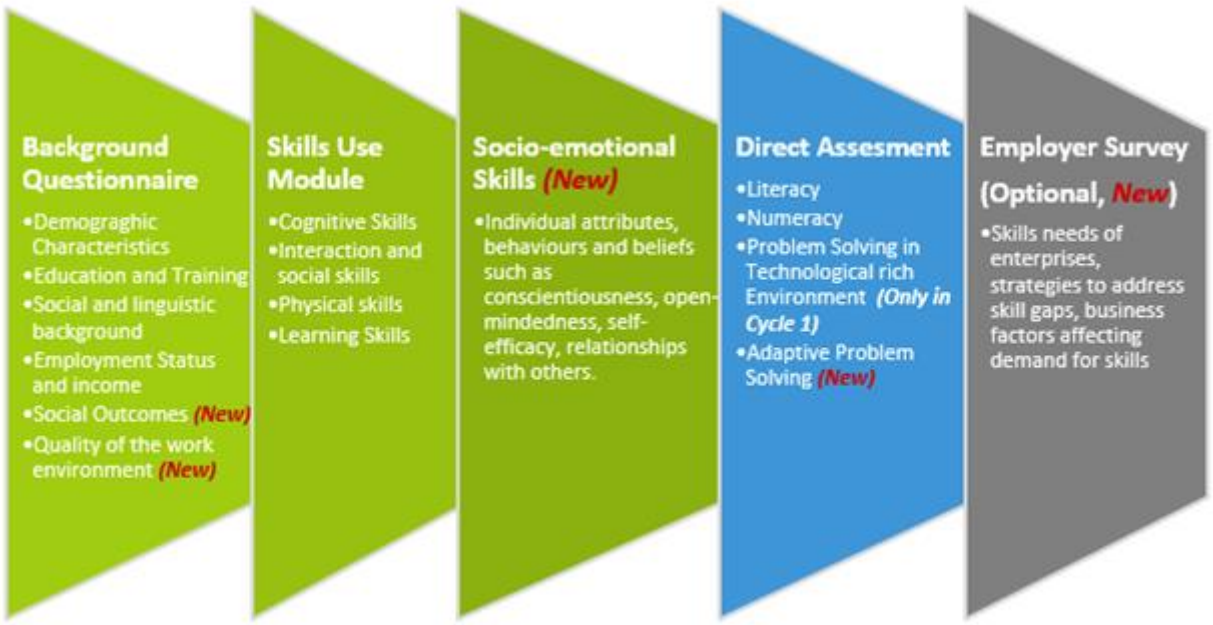


Source: (Kankaraš and Suarez-Alvarez, 2019[46])

OECD Survey of Adult Skills – PIAAC

The Programme for the International Assessment of Adult Competencies (PIAAC) is an assessment and analysis of adult skills, which recognises the importance of life-long learning. Key areas measured include adults' proficiency in key information-processing skills: literacy, numeracy and adaptative problem solving; in addition to other information and data on how adults use their skills at home, at work and in the wider community.

Figure 41. A schematic view of PIAAC Design



Source: (OECD, 2023[47])

List of contributors

Chair of the OECD Education 2030 project

Suzanne Dillon (Former Assistant Chief Inspector, Department of Education and Skills, Ireland)

Observers

Council of Europe: Sjur Bergan (Head of Higher Education and Research Division; Directorate of School, Out-of-School and Higher Education; Directorate General IV - Education, Culture and Cultural Heritage, Youth and Sport)
European Commission: Karen Haegemans (Policy Officer), Margherita Bacigalupo (Research Fellow), Nikoleta Giannoutsou (Scientific Officer), Riina Vuorikari (Former Scientific Officer), Margherita Bacigalupo (Research Fellow), Arianna Sala (Project Officier), Marcelino Cabrera (Senior researcher in the Human Capital and Employment Unit)
UNESCO: Jun Morohashi (Programme Specialist), Alexander Leicht (Chief of Section)

Others

DQ Institute: Yuhyun Park (Founder and Chief Citizenship Officer), James Morgan (Researcher)

IEA (International Association for the Evaluation of Educational Achievement): Wolfram Schulz (Research Director)

P21: tbc

Eidos Global: María Lehmann (Academic Lead)

Dream a Dream: Vishal Talreja (Cofounder & Trustee), Bhavani Arumugham (Director, Programme Design and Development), Punith Balamurugan (Learning Experience Design Manager)

The Joint: Michal Ettinger (Head of Children's Programs), Atara Stein (Director of Strategic Partnerships), Noa Ben-David-Gerassi (Social Mobility Research Knowledge Manager)

Officina: Giulia Di Donato (Economic Advisor to the Italian Minister of Sustainable Infrastructure and Mobility)

Lady Davis High School in Tel Aviv, Israel: Guy Levi (Independent Consultant)

EQ-EL: Ayalla Reuven-Lelong (CEO), Eli Zenberg (International Innovator and Expert for TVET)

Skriware: Karol Górnowicz (CEO)

Skills Development Scotland: Lewis Gale (Development Manager), Bill Lucas (Co-Director), Ellen Spencer (Researcher), Suzie Bowman (Senior Service Designer)

Twin Science and Robotics: Cihan Özalevli (Chief Content Officer & Co-Founder)

OECD Secretariat

Management group
Andreas Schleicher, Director for Education and Skills
Tia Loukkola, Head of Innovation and Measuring Progress division (IMEP)

OECD Future of Education and Skills 2030 team
Miho Taguma (Project Manager, Senior Policy Analyst), Esther Ferreira dos Santos (Analyst), Alena Frid (Analyst), Aynur Gul Sahin (Junior Analyst), Kebure Assefa (Assistant)

OECD former Secretariat members who worked on parts of the paper
Angela Ciceri (Junior Policy Analyst), Carla Campos Cascales (Consultant), Meritxell Fernandez Barrera (Analyst), Nathan Roberson (Analyst), Eva Feron (Analyst), Yubai Wu (Consultant), Alexandra Tieghi (Intern), Kevin Gillespie (Assistant), Charlotte Mapp (Assistant)

Review by OECD teams
Miyako Ikeda (Senior Analyst), Mario Piacentini (Senior Analyst), Rowena Phair (Former Deputy Head of Division in the Directorate for Education and Skills of the OECD), Marta Encinas-Martin (Senior Advisor), William Thorn (Former Senior Analyst)

References

Bacigalupo, M. et al. (2016), *EntreComp: The Entrepeneurship Competence Framework*, Publications Office of the European Union, https://publications.jrc.ec.europa.eu/repository/handle/JRC101581. [5]

Battle for kids (n.d.), , https://www.battelleforkids.org/. [29]

Bianchi, G., U. Pisiotis and M. Cabrera Giraldez (2022), *GreenComp The European sustainability competence framework*, https://publications.jrc.ec.europa.eu/repository/handle/JRC128040?fbclid=IwAR2lOP98KPeb832qe7C6Pb1uJoxGXaZzGRKb4oIrCqXbwC6iTN9PaCEJRvo. [7]

Borgonovi, F. and J. Pál (2016), "A Framework for the Analysis of Student Well-Being in the PISA 2015 Study: Being 15 In 2015", *OECD Education Working Papers* 140, https://doi.org/10.1787/5jlpszwghvvb-en. [50]

Council of Europe (2020), *Common European Framework of Reference for languages*, https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4. [11]

Council of Europe (2020), *Common European Framework of Reference: For languages, learning, teaching, assessment*, https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4. [54]

Council of Europe (2016), *Competences for Democratic Culture. Living together as equals in culturally diverse democratic societies.*, Council of Europe Publisher, https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016806ccc07. [10]

Council of Europe (n.d.), "SDG 4: Ensure inclusive and equitable quality education and", *Council of Europe Contribution to the UN Sustainable Development Goals*, https://rm.coe.int/4-7-education-for-sustainable-development-and-global-citizenship/16808e816e (accessed on 2 April 2024). [20]

Delors, J. (1996), *Learning: the treasure within. Report to UNESCO of International Commission on Education for the Twenty-first Century*, UNESCO, https://www.eccnetwork.net/resources/learning. [21]

DQ Institute (2019), *DQ Global Standards Report 2019. Common Framework for Digital Literacy, Skills and Readiness*, https://www.dqinstitute.org/wp-content/uploads/2019/03/DQGlobalStandardsReport2019.pdf. [26]

Dream a dream (2022), *Well-being through lifeskills curriculum*. [31]

Eidos (2023), *Eidos Framework alignment paper for OECD 2030 Learning compass*. [30]

EQ.el (2021), *The 5-Land Model*, https://www.eq-el.com/the-5-lands-model (accessed on 2 April 2024). [34]

European Comission (2022), *GreenComp The European sustainability competence framework*, https://publications.jrc.ec.europa.eu/repository/handle/JRC128040. [16]

European Comission (n.d.), , https://joint-research-centre.ec.europa.eu/digcompedu_en#:~:text=The%20European%20Framework%20for%20the,specific%20digital%20competences%20in%20Europe. [15]

European Commission (2022), *DigComp 2.2, The Digital Competence framework for citizens*, Publications Office of the European Union, https://op.europa.eu/en/publication-detail/-/publication/50c53c01-abeb-11ec-83e1-01aa75ed71a1/language-en. [13]

European Commission (2019), , https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en. [12]

European Commission (2018), *Commission Staff Working Document. Proposal for a Council Recommendation on Key Competences for LifeLong Learning*, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018SC0014&from=EN. [8]

Future of Education and Skills 2030, OECD (2023), *OECD Learning Compass 2030 Concept Note Series*, https://issuu.com/oecd.publishing/docs/e2030-learning_compass_2030-concept_notes?fr=xKAE9_zU1NQ (accessed on 2 April 2024). [56]

Future of Education and Skills, OECD (2018), *Future of Education and Skills Position Paper*, https://www.oecd.org/education/2030-project/contact/E2030%20Position%20Paper%20(05.04.2018).pdf (accessed on 2024 April 02). [57]

Jonker, H., V. März and J. Voogt (2020), "Curriculum flexibility in a blended curriculum", *Australasian Journal of Educational Technology*, Vol. 0/0, https://doi.org/10.14742/ajet.4926. [53]

Kampylis, P., Y. Punie and J. Devine (2015), *Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organisations*, https://doi.org/10.2791/54070, JRC98209. [14]

Kankaraš, M. and J. Suarez-Alvarez (2019), "Assessment framework of the OECD Study on Social and Emotional Skills", *OECD Education Working Papers*, No. 207, OECD Publishing, Paris, https://doi.org/10.1787/5007adef-en. [46]

Mccallum, E. (2018), *EntreComp into Action - Get inspired, make it happen: A user guide to the European Entrepreneurship Competence Framework*, Publications Office of the European Union, https://publications.jrc.ec.europa.eu/repository/handle/JRC109128. [17]

Next generation science standards (n.d.), , https://www.nextgenscience.org/. [37]

OECD (2023), *PIAAC Design*, https://www.oecd.org/skills/piaac/piaacdesign/. [47]

OECD (2023), *The International Early Learning and Child Well-being Study – The Study*, https://www.oecd.org/education/school/the-international-early-learning-and-child-well-being-study-the-study.htm. [45]

OECD (2020), *Technical Report: Curriculum Analysis of the OECD Future of Education and Skills 2030*, https://www.oecd.org/education/2030-project/contact/Technical%20_Report_Curriculum_Analysis_of_the_OECD_Future_of_Education_and_Skills_2030.pdf (accessed on 2 April 2024). [1]

OECD (2019), *OECD Future of Education and Skills 2030. Conceptual learning framework. A series of concept notes*, OECD Publishing, https://www.oecd.org/education/2030-project/teaching-and-learning/learning/learning-compass-2030/OECD_Learning_Compass_2030_Concept_Note_Series.pdf. [3]

OECD (2019), *PISA 2018 Assessment and Analytical Framework*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b25efab8-en. [39]

OECD (2019), *PISA 2022 Creative Thinking*, https://www.oecd.org/pisa/innovation/creative-thinking/. [42]

OECD (2018), *Curriculum Flexibility and Autonomy in Portugal: An OECD Review*, https://www.oecd.org/education/2030/Curriculum-Flexibility-and-Autonomy-in-Portugal-an-OECD-Review.pdf. [55]

OECD (2018), *PISA 2021 ICT framework*, https://www.oecd.org/pisa/sitedocument/PISA-2021-ICT-Framework.pdf. [41]

OECD (2018), *Preparing our youth for an inclusive and sustainable world - The OECD PISA global competence framework*, https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf. [40]

OECD (2018), *The Future of Education and Skills: Education 2030. Position paper*, https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf. [2]

OECD (2017), *PISA 2015 collaborative problem-solving framework*, OECD Publishing, https://doi.org/10.1787/9789264281820-8-en. [38]

OECD (2016), *PISA 2015 Financial Literacy Framework*, OECD Publishing, https://doi.org/10.1787/9789264255425-6-en. [51]

Officine Italia (2022), *Young Professionals for the Public Sector: A Lab for Innovation*. [33]

PISA (2023), *PISA 2025 SCIENCE FRAMEWORK (DRAFT)*, https://pisa-framework.oecd.org/science-2025/assets/docs//PISA_2025_Science_Framework.pdf (accessed on 2 April 2024). [44]

PISA (2018), *PISA 2022 MATHEMATICS FRAMEWORK*, https://pisa2022-maths.oecd.org/ca/index.html (accessed on 2 April 2024). [43]

PISA (2017), "PISA for Development and the Sustainable Development Goals", *PISA for Development Brief*, https://www.oecd.org/pisa/pisa-for-development/17-PISA-D-and-SDG4.pdf (accessed on 2 April 2024). [9]

Portuguese Ministry of Education (2019), *Explanation of the Students' Profile by the End of Compulsory Schooling*. [48]

Sala, A. et al. (2020), *LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence*, Publications Office of the European Union, https://publications.jrc.ec.europa.eu/repository/handle/JRC120911. [4]

Schulz, W. (2008), “International civic and citizenship education study : assessment framework.”. [27]

Schulz, W. et al. (2016), *Becoming Citizens in a Changing World. IEA International Civic and Citizenship Education Study 2016 International Report*, IEA, https://www.springer.com/gp/book/9783319739625. [28]

Schulz, W. et al. (2008), *International Civic and Citizenship Education Study. Assessment Framework*, IEA, https://research.acer.edu.au/cgi/viewcontent.cgi?article=1015&context=civics. [52]

Skills Development Scotland (2018), *Skills 4.0 A skills model to drive Scotland’s future*, https://www.skillsdevelopmentscotland.co.uk/media/44684/skills-40_a-skills-model.pdf. [36]

SkriLab (2022), *The Skriware Educational Framework*. [35]

The Joint (2022), *LEARNING FOR THE 21st CENTURY FROM INEQUALITY TO EQUITY*. [32]

Torney-Purta, J. et al. (2003), “Citizenship and Education in Twenty-Eight Countries: Civic Knowledge and Engagement at the Age Fourteen”, *Journal of Applied Developmental Psychology*, https://www.researchgate.net/publication/39728718_Citizenship_and_Education_in_Twenty-Eight_Countries_Civic_Knowledge_and_Engagement_at_Age_Fourteen. [49]

UNESCO (2020), *Education for Sustainable Development. A roadmap*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000374802.locale=en. [19]

UNESCO (2017), *Education for Sustainable Development Goals. Learning objectives*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000247444. [18]

UNESCO (2015), *Global Citizenship Education. Topics and learning objectives*, UNESCO, https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000232993&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_59f36c73-b9c9-4898-aea4-f93623d8a898%3F_%3D232993eng.pdf&updateUrl=updateUrl1292&ark=/ark:/4822. [22]

UNESCO Institute for Statistics, Brookings Institution Center for Universal Education (2013), *Toward Universal Learning. A Global Framework for Measuring Learning*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000225210. [23]

UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific (2106), *Assessment of transversal competencies: policy and practice in the Asia-Pacific region*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000246590. [24]

Vuorikari, R. et al. (2016), *DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: the Conceptual Reference Model*, Publications Office of the European Union, https://publications.jrc.ec.europa.eu/repository/handle/JRC101254. [6]

World Economic Forum (2016), *New Vision for Education: Fostering Social and Emotional Learning through Technology*, World Economic Forum, http://www3.weforum.org/docs/WEF_New_Vision_for_Education.pdf. [25]