

THE FUTURE OF EDUCATION AND SKILLS

Education 2030



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Foreword

We are facing unprecedented challenges – social, economic and environmental – driven by accelerating globalisation and a faster rate of technological developments. At the same time, those forces are providing us with myriad new opportunities for human advancement. The future is uncertain and we cannot predict it; but we need to be open and ready for it. The children entering education in 2018 will be young adults in 2030. Schools can prepare them for jobs that have not yet been created, for technologies that have not yet been invented, to solve problems that have not yet been anticipated. It will be a shared responsibility to seize opportunities and find solutions.

To navigate through such uncertainty, students will need to develop curiosity, imagination, resilience and self-regulation; they will need to respect and appreciate the ideas, perspectives and values of others; and they will need to cope with failure and rejection, and to move forward in the face of adversity. Their motivation will be more than getting a good job and a high income; they will also need to care about the well-being of their friends and families, their communities and the planet.

Education can equip learners with agency and a sense of purpose, and the competencies they need, to shape their own lives and contribute to the lives of others. To find out how best to do so, the Organisation for Economic Co-operation and Development (OECD) has launched *The Future of Education and Skills 2030* project. The aim of the project is to help countries find answers to two far-reaching questions:

- **What** knowledge, skills, attitudes and values will today's students need to thrive and shape their world?
- **How** can instructional systems develop these knowledge, skills, attitudes and values effectively?

This position paper describes the first results from this work. The initial framework was reviewed, tested and validated in an iterative process involving a range of stakeholders from around the world. They ensured that the framework is relevant across the globe, consistent with wider policies and can be implemented. We will finalise the framework by the end of 2018. In 2019, we will change gears and begin to explore the translation of the framework into pedagogy, assessment and the design of an instructional system.

Working with policy makers, academic experts, school networks, teachers, education leaders, students and social partners, the framework provides a space in which to exchange ideas, compare proven and promising practices, discover cutting-edge research and contribute to a new ecosystem of learning. If you'd like to join us, please get in touch.

Andreas Schleicher

Director for Education and Skills

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OECD Learning Framework 2030

This OECD Learning Framework 2030 offers a vision and some underpinning principles for the future of education systems. It is about orientation, not prescription. The learning framework has been co-created for the OECD Education 2030 project by government representatives and a growing community of partners, including thought leaders, experts, school networks, school leaders, teachers, students and youth groups, parents, universities, local organisations and social partners. This is work in progress and we invite you to join us in developing future-ready education for all.

Education 2030: A Shared Vision

We are committed to helping every learner develop as a whole person, fulfil his or her potential and help shape a shared future built on the well-being of individuals, communities and the planet.

Children entering school in 2018 will need to abandon the notion that resources are limitless and are there to be exploited; they will need to value common prosperity, sustainability and well-being. They will need to be responsible and empowered, placing collaboration above division, and sustainability above short-term gain.

In the face of an increasingly volatile, uncertain, complex and ambiguous world, education can make the difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them. And in an era characterised by a new explosion of scientific knowledge and a growing array of complex societal problems, it is appropriate that curricula should continue to evolve, perhaps in radical ways.

Need for new solutions in a rapidly changing world

Societies are changing rapidly and profoundly.

A first challenge is **environmental**: e.g.

- Climate change and the depletion of natural resources require urgent action and adaptation.

A second challenge is **economic**: e.g.

- Scientific knowledge is creating new opportunities and solutions that can enrich our lives, while at the same time fuelling disruptive waves of change in every sector. Unprecedented innovation in science and technology, especially in bio-technology and artificial intelligence, is raising fundamental questions about what it is to be human. It is time to create new economic, social and institutional models that pursue better lives for all.
- Financial interdependence at local, national and regional levels has created global value chains and a shared economy, but also pervasive uncertainty and exposure to economic risk and crises. Data is being created, used and shared on a vast scale, holding out the promise of expansion, growth and improved efficiency while posing new problems of cyber security and privacy protection.

A third challenge is **social**: e.g.

- As the global population continues to grow, migration, urbanisation and increasing social and cultural diversity are reshaping countries and communities.
- In large parts of the world, inequalities in living standards and life chances are widening, while conflict, instability and inertia, often intertwined with populist politics, are eroding trust and confidence in government itself. At the same time, the threats of war and terrorism are escalating.

These global trends are already affecting individual lives, and may do so for decades to come. They have triggered a global debate that matters to every country, and call for global and local solutions. The OECD Education 2030 contributes to the UN 2030 Global Goals for Sustainable Development (SDGs), aiming to ensure the sustainability of people, profit, planet and peace, through partnership.

Need for broader education goals: Individual and collective well-being

Unless steered with a purpose, the rapid advance of science and technology may widen inequities, exacerbate social fragmentation and accelerate resource depletion.

In the 21st century, that purpose has been increasingly defined in terms of well-being. But well-being involves more than access to material resources, such as income and wealth, jobs and earnings, and housing. It is also related to the

quality of life, including health, civic engagement, social connections, education, security, life satisfaction and the environment. Equitable access to all of these underpins the concept of inclusive growth.

Education has a vital role to play in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future. Learning to form clear and purposeful goals, work with others with different perspectives, find untapped opportunities and identify multiple solutions to big problems will be essential in the coming years. Education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens.

Learner agency: Navigating through a complex and uncertain world

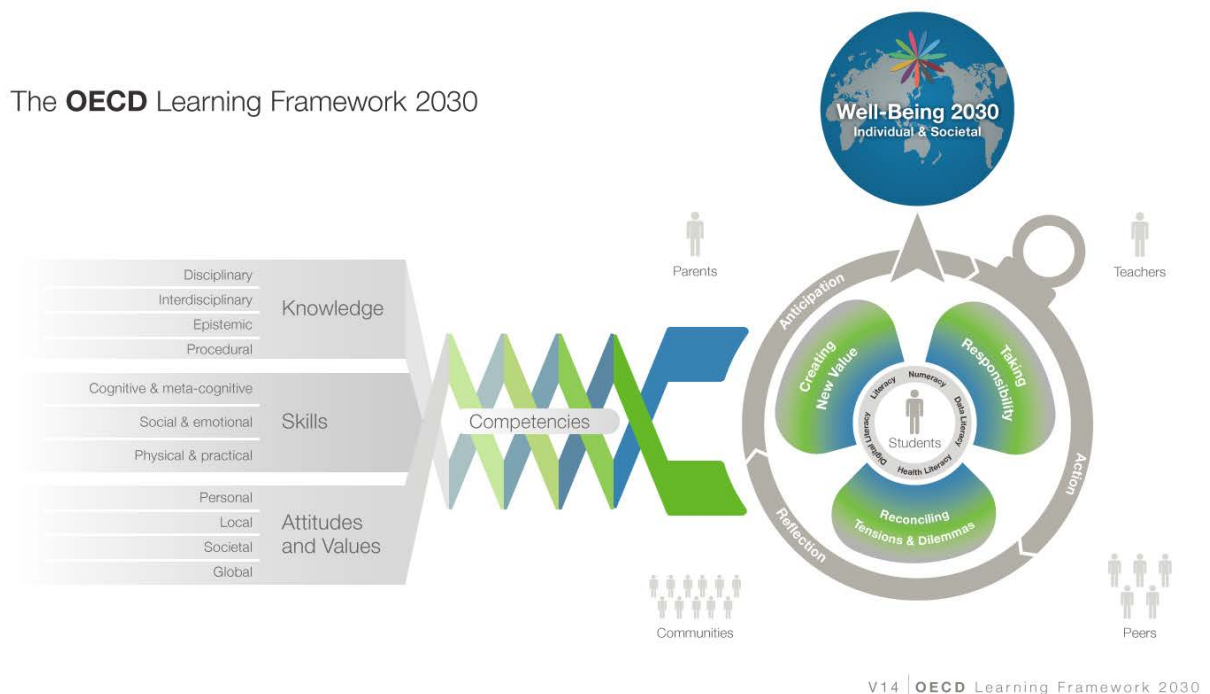
Future-ready students need to exercise agency, in their own education and throughout life. Agency implies a sense of responsibility to participate in the world and, in so doing, to influence people, events and circumstances for the better. Agency requires the ability to frame a guiding purpose and identify actions to achieve a goal.

To help enable agency, educators must not only recognise learners’ individuality, but also acknowledge the wider set of relationships – with their teachers, peers, families and communities – that influence their learning. A concept underlying the learning framework is “co-agency” – the interactive, mutually supportive relationships that help learners to progress towards their valued goals. In this context, everyone should be considered a learner, not only students but also teachers, school managers, parents and communities.

Two factors, in particular, help learners enable agency. The first is a personalised learning environment that supports and motivates each student to nurture his or her passions, make connections between different learning experiences and opportunities, and design their own learning projects and processes in collaboration with others. The second is building a solid foundation: literacy and numeracy remain crucial. In the era of digital transformation and with the advent of big data, digital literacy and data literacy are becoming increasingly essential, as are physical health and mental well-being.

OECD Education 2030 stakeholders have co-developed a “learning compass” that shows how young people can navigate their lives and their world (Figure 1).

Figure 1. The OECD Learning Framework 2030: Work-in-progress



Need for a broad set of knowledge, skills, attitudes and values in action

Students who are best prepared for the future are change agents. They can have a positive impact on their surroundings, influence the future, understand others' intentions, actions and feelings, and anticipate the short and long-term consequences of what they do.

The concept of competency implies more than just the acquisition of knowledge and skills; it involves the mobilisation of knowledge, skills, attitudes and values to meet complex demands. Future-ready students will need both broad and specialised knowledge. Disciplinary knowledge will continue to be important, as the raw material from which new knowledge is developed, together with the capacity to think across the boundaries of disciplines and “connect the dots”. Epistemic knowledge, or knowledge about the disciplines, such as knowing how to think like a mathematician, historian or scientist, will also be significant, enabling students to extend their disciplinary knowledge. Procedural knowledge is acquired by understanding how something is done or made – the series of steps or actions taken to accomplish a goal. Some procedural knowledge is domain-specific, some transferable across domains. It typically develops through practical problem-solving, such as through design thinking and systems thinking.

Students will need to apply their knowledge in unknown and evolving circumstances. For this, they will need a broad range of skills, including cognitive and meta-cognitive skills (e.g. critical thinking, creative thinking, learning to learn and self-regulation); social and emotional skills (e.g. empathy, self-efficacy and collaboration); and practical and physical skills (e.g. using new information and communication technology devices).

The use of this broader range of knowledge and skills will be mediated by attitudes and values (e.g. motivation, trust, respect for diversity and virtue). The attitudes and values can be observed at personal, local, societal and global levels. While human life is enriched by the diversity of values and attitudes arising from different cultural perspectives and personality traits, there are some human values (e.g. respect for life and human dignity, and respect for the environment, to name two) that cannot be compromised.

Competencies to transform our society and shape our future

If students are to play an active part in all dimensions of life, they will need to navigate through uncertainty, across a wide variety of contexts: in time (past, present, future), in social space (family, community, region, nation and world) and in digital space. They will also need to engage with the natural world, to appreciate its fragility, complexity and value.

Building on the *OECD Key Competencies* (the DeSeCo project: Definition and Selection of Competencies), the OECD Education 2030 project has identified three further categories of competencies, the "Transformative Competencies", that together address the growing need for young people to be innovative, responsible and aware:

- Creating new value
- Reconciling tensions and dilemmas
- Taking responsibility

Creating new value

New sources of growth are urgently needed to achieve stronger, more inclusive and more sustainable development. Innovation can offer vital solutions, at affordable cost, to economic, social and cultural dilemmas. Innovative economies are more productive, more resilient, more adaptable and better able to support higher living standards.

To prepare for 2030, people should be able to think creatively, develop new products and services, new jobs, new processes and methods, new ways of thinking and living, new enterprises, new sectors, new business models and new social models. Increasingly, innovation springs not from individuals thinking and working alone, but through co-operation and collaboration with others to draw on existing knowledge to create new knowledge. The constructs that underpin the competency include adaptability, creativity, curiosity and open-mindedness.

Reconciling tensions and dilemmas

In a world characterised by inequities, the imperative to reconcile diverse perspectives and interests, in local settings with sometimes global implications, will require young people to become adept at handling tensions, dilemmas and trade-offs, for example, balancing equity and freedom, autonomy and community, innovation and continuity, and efficiency and the democratic process. Striking a balance between competing demands will rarely lead to an either/or choice or even a single solution. Individuals will need to think in a more integrated way that avoids premature conclusions and recognises interconnections. In a world of interdependency and conflict, people will successfully secure their own well-being and that of their families and their communities only by developing the capacity to understand the needs and desires of others.

To be prepared for the future, individuals have to learn to think and act in a more integrated way, taking into account the interconnections and inter-relations between contradictory or incompatible ideas, logics and positions, from both short- and long-term perspectives. In other words, they have to learn to be systems thinkers.

Taking responsibility

The third transformative competency is a prerequisite of the other two. Dealing with novelty, change, diversity and ambiguity assumes that individuals can think for themselves and work with others. Equally, creativity and problem-solving require the capacity to consider the future consequences of one's actions, to evaluate risk and reward, and to accept accountability for the products of one's work. This suggests a sense of responsibility, and moral and intellectual maturity, with which a person can reflect upon and evaluate his or her actions in light of his or her experiences, and personal and societal goals, what they have been taught and told, and what is right or wrong. Acting ethically implies asking questions related to norms, values, meanings and limits, such as: What should I do? Was I right to do that? Where are the limits? Knowing the consequences of what I did, should I have done it? Central to this competency is the concept of self-regulation, which involves self-control, self-efficacy, responsibility, problem solving and adaptability. Advances in developmental neuroscience show that a second burst of brain plasticity takes place during adolescence, and that the brain regions and systems that are especially plastic are those implicated in the development of self-regulation. Adolescence can now be seen as a time not just of vulnerability but of opportunity for developing a sense of responsibility.

Design principles for moving toward an eco-systemic change

These transformative competencies are complex; each competency is intricately inter-related with the others. They are developmental in nature, and thus learnable.

The ability to develop competencies is itself something to be learned using a sequenced process of reflection, anticipation and action. Reflective practice is the ability to take a critical stance when deciding, choosing and acting, by stepping back from what is known or assumed and looking at a situation from other, different perspectives. Anticipation mobilises cognitive skills, such as analytical or critical thinking, to foresee what may be needed in the future or how actions taken today might have consequences for the future. Both reflection and anticipation are precursors to responsible actions.

The OECD Learning Framework 2030 therefore encapsulates a complex concept: the mobilisation of knowledge, skills, attitudes and values through a process of reflection, anticipation and action, in order to develop the inter-related competencies needed to engage with the world.

To ensure that the new learning framework is actionable, the OECD Education 2030 stakeholders have worked together to translate the transformative competencies and other key concepts into a set of specific constructs (e.g. creativity, critical thinking, responsibility, resilience, collaboration) so that teachers and school leaders can better incorporate them into curricula. The constructs are currently under review (Annex 2).

They have also built a knowledge base for curriculum redesign. Curriculum change assumes that education is an ecosystem with many stakeholders. Students, teachers, school leaders, parents, national and local policy makers, academic experts, unions, and social and business partners have worked as one to develop this project. In its work across different countries, OECD Education 2030 has identified five common challenges.

1. Confronted with the needs and requests of parents, universities and employers, schools are dealing with curriculum overload. As a result, students often lack sufficient time to master key disciplinary concepts or, in the interests of a balanced life, to nurture friendships, to sleep and to exercise. It is time to shift the focus of our students from "more hours for learning" to "quality learning time".
2. Curricula reforms suffer from time lags between recognition, decision making, implementation and impact. The gap between the intent of the curriculum and learning outcome is generally too wide.
3. Content must be of high quality if students are to engage in learning and acquire deeper understanding.
4. Curricula should ensure equity while innovating; all students, not just a select few, must benefit from social, economic and technological changes.
5. Careful planning and alignment is critically important for effective implementation of reforms.

In response to these challenges, working group members and partners are co-creating "design principles" for changes in curricula and education systems that will be relevant in different countries over time.

Concept, content and topic design:

- **Student agency.** The curriculum should be designed around students to motivate them and recognise their prior knowledge, skills, attitudes and values.
- **Rigour.** Topics should be challenging and enable deep thinking and reflection.
- **Focus.** A relatively small number of topics should be introduced in each grade to ensure the depth and quality of students' learning. Topics may overlap in order to reinforce key concepts.

- **Coherence.** Topics should be sequenced to reflect the logic of the academic discipline or disciplines on which they draw, enabling progression from basic to more advanced concepts through stages and age levels.
- **Alignment.** The curriculum should be well-aligned with teaching and assessment practices. While the technologies to assess many of the desired outcomes do not yet exist, different assessment practices might be needed for different purposes. New assessment methods should be developed that value student outcomes and actions that cannot always be measured.
- **Transferability.** Higher priority should be given to knowledge, skills, attitudes and values that can be learned in one context and transferred to others.
- **Choice.** Students should be offered a diverse range of topic and project options, and the opportunity to suggest their own topics and projects, with the support to make well-informed choices.

Process design:

- **Teacher agency.** Teachers should be empowered to use their professional knowledge, skills and expertise to deliver the curriculum effectively.
- **Authenticity.** Learners should be able to link their learning experiences to the real world and have a sense of purpose in their learning. This requires interdisciplinary and collaborative learning alongside mastery of discipline-based knowledge.
- **Inter-relation.** Learners should be given opportunities to discover how a topic or concept can link and connect to other topics or concepts within and across disciplines, and with real life outside of school.
- **Flexibility.** The concept of "curriculum" should be developed from "predetermined and static" to "adaptable and dynamic". Schools and teachers should be able to update and align the curriculum to reflect evolving societal requirements as well as individual learning needs.
- **Engagement.** Teachers, students and other relevant stakeholders should be involved early in the development of the curriculum, to ensure their ownership for implementation.

Next steps

This paper summarises a global effort for education change. You are invited to add your voice and your support to its visions and ideas by joining the Working Group of the OECD Education 2030 project.

The group is collecting ideas and examples of good practice for making the learning framework actionable. They call on:

- National, regional and local governments to share their policy design and curriculum design experiences related to the learning framework
- Students, teachers, school leaders, and parents to share practices and experiences as concrete examples of using the OECD Learning Compass 2030
- Experts and researchers to help strengthen the links between evidence-based policy and practice, especially on the constructs of the framework
- Local communities, professional associations and industries, including representatives of teachers' unions and the business sector, to share practices of supporting student learning and creating appropriate learning environments
- International communities and organisations to contribute to the OECD Education 2030 dialogue in support of the UN Sustainable Development Goal 4.7 and other relevant initiatives.

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Annex 2: List of constructs currently reviewed

The following constructs are currently under review based on the following guiding principles:

- **Clear definition:** Does the construct have a commonly used and understood definition?
- **Relevant for 2030:** Does the construct, alone or in combination with others, equip people for future challenges?
- **Interdependent:** Can we say how the construct develops in conjunction with others?
- **Impactful:** Is the construct proven to have a bearing on future life outcomes?
- **Malleable:** Can the construct be developed through the processes of learning?
- **Measurable:** Can the construct be given a comparative numerical value on a scale, or a non-numerical account?

The list is not exhaustive but constructs are selected that are closely related to the key concepts underpinning the framework.

- Adaptability/ Flexibility/ Adjustment/ Agility
- Compassion
- Conflict resolution
- Creativity/ Creative thinking/ Inventive thinking
- Critical-thinking skills
- Curiosity
- Empathy
- Engagement/Communication skills/Collaboration skills
- Equality/ Equity
- Global mind-set
- Goal orientation and completion (e.g. grit, persistence)
- Gratitude
- Growth mind-set
- Hope
- Human dignity
- Identity/Spiritual identity
- Integrity
- Justice
- Manual skills for information and communication technology (related to learning strategies)
- Manual skills related to the arts and crafts, music, physical education skills needed for the future
- Meta-learning skills (including learning to learn skills)
- Mindfulness
- Motivation (e.g. to learn, to contribute to society)
- Open mind-set (to others, new ideas, new experiences)
- Perspective-taking and cognitive flexibility
- Pro-activeness
- Problem solving skills
- Purposefulness
- Reflective thinking/Evaluating/Monitoring
- Resilience/Stress resistance
- Respect (for self, others, including cultural diversity)
- Responsibility (including locus of control)
- Risk management
- Self-awareness/Self-regulation/Self-control
- Self-efficacy/Positive self-orientation
- Trust (in self, others, institutions)

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THE FUTURE OF EDUCATION AND SKILLS

Education 2030

Schools are facing increasing demands to prepare students for rapid economic, environmental and social changes, for jobs that have not yet been created, for technologies that have not yet been invented, and to solve social problems that have not yet been anticipated. Education can equip learners with the agency, the competencies and the sense of purpose to shape their own lives and contribute to the lives of others. Children entering school in 2018 will be young adults in 2030. So, change is imminent.

The aim of OECD's Education 2030: The Future of Education and Skills project is to support countries to find answers to two far-reaching questions: "What knowledge, skills, attitudes and values will today's students need to shape and thrive their world in 2030?" and "How can instructional systems develop these knowledge, skills, attitudes and values effectively?"

This OECD Education 2030 position paper considers the challenges that young people will face; suggests the importance of the concept of learner agency; proposes an overarching learning framework with transformative competencies; reviews the nature of the knowledge, skills, attitudes and values that young people will need; and ends with possible curriculum design principles. It encapsulates the key messages of the project so far.

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OECD Education 2030 welcomes countries and stakeholders to contribute to the project. If you are interested, please contact: education2030@oecd.org.

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