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EDPC Education and Skills 2030: Conceptual Learning Framework

Progress Report of the OECD 2030 Learning Framework

6th Informal Working Group (IWG) meeting
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The paper is drafted by the drafting team, Miho Taguma and Lars Barteit (OECD) and Valerie (OECD expert) based on the previous version [EDU/EDPC(2016)23], with the new contributions from the thematic working group leaders, representing the members of the working groups [EDU/EDPC(2017)25/ANN1; ANN2; ANN3].

To further the framework and continue the iteration at the 6th IWG meeting, participants are invited to:
· CONTINUE TO DISCUSS and AGREE on the general directions of the OECD Learning Compass 2030 with respect to key concepts.
· DISCUSS and AGREE on the next steps/ priorities for the thematic working groups
· NOTE the country examples of how the concepts identified in the OECD Learning Compass 2030 are embedded in curriculum in Section II
Send written comments in advance to the meeting to the OECD secretariat (education2030@oecd.org) by Friday 20 October 2017, if you wish to contribute but unable to come to the meeting.

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WORK-IN-PROGRESS: THE OECD LEARNING FRAMEWORK 2030[1]

Background

1. The OECD conceptual Learning Framework 2030 has been continuously developed, furthered and revised through an iterative process. Therefore, this document is a living document, a work-in-progress.

2. At meetings of Informal Working Group (IWG) of the OECD Education 2030 project, the framework first build key concepts based on solid research as its theoretical underpinnings, which were then carefully reviewed, tested, and validated by various stakeholders for global relevance, as well as policy and practical implications. Therefore, the framework is a result of iterative co-creation processes of all participants, with their global and collective efforts. Participants are thus expected to be "contributors" to the meetings, not "consumers" of the meetings.

3. The IWG participants include system leaders and action leaders, who are policymakers, academics, school leaders, teachers, and students from school networks, and social partners (e.g. private foundations, private companies unions, community services) who have a genuine interest in supporting system change for better a future towards 2030. It is now suggested that parents be included as stakeholders

4. All round the world, such system, thought and action leaders have been working hard to make change happen for a better future. However, such efforts are often found to be fragmented or isolated and these leaders often report change fatigue or burnout in the long run. Or, their initiatives are found to be competing with each other for similar funding sources. The IWG recognised such issues as an unintended obstacle to making change happen, agreed that there is a sense of urgency for transformative change in education by leapfrogging towards a better future, and suggested that the project bring together these leaders to create critical mass and create a global movement for transforming education towards well-being 2030.

5. The OECD E2030 IWG participants are thus expected to not only inspire each other at the meetings and be informed of latest research findings, new thoughts and inspiring actions, but also are they are expected to bring back home what they have learnt from the global dialogues and inspire people around them to support local changes. Similarly, they are expected to bring their local perspectives, issues and good practices to the global fora to inspire the global movement with local narratives. This way, we can all work together to ensure that the co-created framework be "globally informed and locally contextualised", as a shared vision, which is one of the critical factors for a coherent and impactful system change.

Introduction

6. At the 5th meeting of the Informal Working Group of the Education 2030 project in Lisbon, Portugal, the conceptual framework was presented as “a learning compass”. The idea was discussed and supported as the concept of "compass" can convey that students should learn to navigate themselves through various

1 This paper is a revised and elaborated version, built on the papers presented in the past [EDU/EDPC(2017)16; EDU/EDPC(2016)23].

contexts towards "well-being of the individual and of society 2030", and that "student agency" is the underlying key concept of the framework. The concept was carefully built on theoretical underpinnings (e.g. part of the conclusions of the DeSeCo framework as well as new directions of curriculum frameworks suggested by multi-disciplinary experts) as well as strongly supported by a wide range of multi-level stakeholders, including students themselves. Other underlying concepts were similarly welcomed [EDU/EDPC(2017)M3].

7. From the 5th IWG meeting, the participants have undertaken more active roles as contributors and thus more ownership for strengthening the conceptual base for the following key concepts and visualisation of the OECD Learning Compass 2030 [EDU/EDPC(2017)25/ANN2; EDU/EDPC(2017)25/ANN3].

- Future We Want
- Student Agency
- Teacher Agency
- Foundation skills/ literacies for 2030
- Transformative competencies for 2030
- Construct Analysis
- Knowledge for 2030
- Skills for 2030
- Attitudes and Values for 2030
- Anticipation-Action-Reflection competency development cycle
- Visual presentation with conceptual coherence across different themes

Action required

8. To further the framework and continue the iteration at the 6th IWG meeting, participants are invited to:

- **CONTINUE TO DISCUSS and AGREE** on the general directions of the OECD Learning Compass 2030 with respect to:
  - Narratives around the "Future We Want"
  - Refined concept of "student agency", "co-agency" with "teacher agency"
  - Elaborated concepts on the "transformative competencies 2030", including (i) creating new value, (ii) taking responsibility, and (iii) reconciling tensions, dilemmas, trade-offs and contradictions.
  - Newly created "foundation skills/ new types of literacies" for 2030
  - Elaborated concept of "Anticipation-Action-Reflection" competency development cycle
  - Further researched constructs that are (a) relevant for 2030, (b) impactful on later outcomes, (c) interrelated to each other, (d) malleable and (e) measurable
  - Elaborated re-thinking of "knowledge", "skills" and "attitudes and values" for 2030
  - Refined visualisation, and suggest visual improvements
- **DISCUSS and AGREE** on the next steps/ priorities for the thematic working groups
- **NOTE** the country examples of how the concepts identified in the OECD Learning Compass 2030 are embedded in curriculum in Section II
- Send written comments in advance to the meeting to the OECD secretariat (education2030@oecd.org) **by Friday 20 October 2017**, if you wish to contribute but unable to come to the meeting.

9. This document consists of two sections:

- Section I: The revised OECD Learning Framework 2030
- Section II: Translating the OECD Learning Framework 2030 into curriculum

SECTION I: THE REVISED OECD LEARNING FRAMEWORK 2030[2]

1. What our future looks like

10. The Future is being shaped by multiple factors. These factors include: technological changes (including Artificial Intelligence, 3D printing, bio-technology), globalisation and growing diversity, increasing global inequalities, demographic changes, climate change, resource depletion, ecological destabilisation, loss of biodiversity, new forms of communication and interaction, large-scale value changes, instability of norms, conflicts and new forms of violence, poverty and population movements, imbalance between economic, social and environmental development [EDU/EDPC(2017)25/ANN1; EDU/EDPC(2016)23/ANN1].

11. Future and foresight studies provide valuable insights on expected longer-term global trends that will have major societal impact in all spheres of societies, organizations, institutions and ultimately the individual, his or her life and mind. Some of these global trends are not new: they have been apparent for decades. In recent years however they have accelerated. Moreover, some of these changes in various fields are becoming more and more intricately inter-connected, such that in a number of domains (for example those concerning the environment) we are dealing with complex systems, changes which may not proceed in a linear fashion, but rather reach a 'tipping point' (an uncontrollable and irrevocable shift), such as technological singularity and exponential growth. Such changes are different in kind, and not simply in relation to their speed.

12. These challenges and opportunities are sometimes summarised in the mnemonic VUCA: a world marked by **volatility** (nature and dynamics of change, and the nature and speed of drivers of change), **uncertainty** (lack of predictability), **complexity** (the confounding of issues) and **ambiguity** (cause-and-effect confusion).[3]

13. The OECD Education 2030 Working Group members recognise that education for 2030 not only depends on the future trends and demands but also on the societal aspirations. A powerful vision for change will drive people's behaviours. A change vision is indispensable for any successful change. Drawing on data from governments, NGOs, and the World Values Survey, Miguel Basáñez (2016) argues:

> …that a country's developmental path is profoundly influenced by its people's values and culture, as crystallized through its formal and informal governing institutions. Culture is passed down over generations through families, schools, the media, religious institutions, leadership, and the law. Although culture

2 . See EDU/EDPC(2016)23; EDU/EDPC(2016)23/ANN1; EDU/EDPC/RD(2016)40; EDU/EDPC/RD(2016)38; [EDU/EDPC(2017)25/ANN1]

3 . In many ways the challenges of a VUCA world resonates with the contextual analyses and conceptualization of DeSeCo's competence framework which is grounded in a vision of the world as «complex, diverse, interdependent, and conflict-prone».

and values are in a permanent state of evolution, leaders and policymakers can also push cultural change in order to promote desirable goals such as economic growth, democratization, and equality…

14. Furthermore, in the new age of social media and diffusion of power, the process of making change has become highly complex. The role of leadership for change management should not be underestimated. It may no longer be the case that leaders and policymakers can any longer 'push' cultural change (in Basáñez's terms) but they are able to create a tone, and influence the quality of the public conversation.

15. Members of the OECD Education 2030 project are committed policymakers, thought and action leaders who are working together to create a powerful change vision, and aspire and inspire people around them to make that change happen both locally and globally. We are co-creating the vision with new narratives for the "future we want", the "education we want", and the "transformative competencies" which students will need in order to make the future we want a reality. The vision will be also supported by and grounded with a solid research base and theoretical underpinnings. This document is work-in-progress to strengthen the conceptual making of the OECD conceptual Learning Framework 2030.

2. The Future we want

Well-being 2030

16. The OECD is committed to **redefine the growth narrative from economic growth to inclusive growth.**[4] The new narrative is placing **"well-being"** at the centre of our efforts.[5] In the discourse surrounding "knowledge economies", the demands on education systems have focused on equipping students with the knowledge and skills for economic growth (often represented by macro-economic statistics such as GDP), productivity and efficiency.[6] Today, there is an increasing recognition that an economic narrative is not sufficient. We need a new narrative - going beyond economic growth - that can help shape a country or a region for better lives for individuals, for societies, and for environments.[7]

17. The OECD's Better Life Initiative: *Measuring Well-Being and Progress* presents 11 dimensions of **individual well-being**, including housing, income, jobs, community, education, environment, civic engagement, health, life satisfaction, safety and work-life balance (Figure 1). The individual well-being will contribute to **societal well-being**, including economic capital, human capital, social capital and natural capital and, vice versa, these societal resources will also return to and enhance individual well-being.

18. For example, individual well-being with the environment could contribute to societal well-being with natural capital. Alternatively, the continued extinction of other species, due to human action, is likely to significantly impact the quality of human life. The concept of well-being therefore may need to embrace a holistic view, recognising the **complexity of the eco-system of which humans are a part.** [8]

4 . The *OECD's Inclusive Growth Initiative* has pioneered analysis illustrating how increasing inequality has an adverse impact, not only on social cohesion, but also on economic growth, based on a multidimensional approach. The concept of 'inclusive growth' may need to further factor in the forms of growth that contribute to both a thriving planet and to the continued existence of bio-diversity.

5 . It is one of the eight overarching goals set out by the Secretary General for the 2016-21 perio. See https://www.oecd.org/about/secretary-general/21-for-21-A-Proposal-for-Consolidation-and-Further-Transformation-of-the-OECD.pdf

6 http://www.oecd.org/innovation/research/1842070.pdf

7 . Besides cited examples of OECD, another example is from Europe. The European Commission supported the New Narrative project designed "to identify a new, encompassing narrative that takes into account the evolving reality of the European continent, as well as highlighting that the EU is not solely about the economy and growth, but also about cultural unity and common values in a globalised world. Europe's core values of human dignity, freedom, democracy, equality, and respect for human rights are an essential part of the European project" http://ec.europa.eu/culture/policy/new-narrative

8 Kolbert, E. 2014. *The Sixth Extinction: An Unnatural History.* London: Bloomsbury

Figure 1. The OECD framework for measuring well-being

19. In line with the OECD's Better Life Initiative, the OECD Education 2030 project supports redirecting global challenges towards well-being. We could give voice to our collective aspirations for the future we want, i.e. well-being of our home planet with all its creatures including humans.

Who are "we"?

20. We, the stakeholders contributing to this paper, are representative of the stakeholders who are committed to make the future we want a reality. We are the collective voices of people with various backgrounds – policymakers, researchers with different disciplinary backgrounds, practitioners, educators, students, social service providers, businesses, parents, families, and communities. Enhancing individual and societal well-being calls for comprehensive and collective efforts and actions in all relevant areas of life. Thus, we are committed to grow our collective efforts to lead **a global movement towards change for both individual and societal well-being 2030.**

Box 1. African Proverb

"If you want to go fast, go alone. If you want to go far, go together."

21. Our "well-being 2030", towards which our conceptual learning framework will be directed, should be "**globally informed but locally contextualised**". Thus, not only collective voice but also individual voice can tell a powerful narrative. Here is an example of a student voice from one of the Education 2030 school networks.

Box 2. Voice of a student from the Philippines from a school network

"The Philippines has been blessed with such beautiful biodiversity and landscapes to the point where you can somehow call it paradise. But instead of seeing paradise in our country, most of what is left in our environment is garbage, dirty water and deforested areas. Thinking of how we wasted what was given to us and how we took it for granted really alarmed me. Specially seeing some families who drink water from dirty rivers and looking for food in garbage dumps ignited something within me to take action.

I have a concrete vision of how I want my future to look like: My vision is that people in my community and country will treasure and revive the beautiful waters, hills, landscapes that we have. That they will think of how their actions can affect others and actually give some of their time to contribute to solving environmental and health issues in their own ways. Honestly, I know that we have a long way to go in terms of realizing this dream, but I am positive that through collective efforts that encourage young people to take action, nothing is impossible.

The project that we worked on for the International Student Innovation Forum 2017 is a portable bio filter which treats greywater from the sink before it is discharged to the sewers. We did this project because in our country, most households or institutions directly discharge their wastewater without knowing that it can have harmful effects to aquatic life and to neighboring communities. People don't find it important to actually look into this issue and do something about it since they think that they have bigger problems to focus on."

22. Such personal stories and narratives will be collected to give life and real meaning to the "Future We Want" of our OECD Learning Framework 2030.

Threats to well-being

23. We also recognise the "future we don't want". It includes:

- Technology threatening the meaning of human existence
- Inequality
- Ecological survival & recuperation
- Lack of job security
- Inefficiency of representative democracy
- Terrorism & war of ideas
- End of privacy

Education We Want

24. Education can make systematic change towards a better future as it can shape the minds of young people, which can consequently change the institutions that are the products of previous generations'

struggles and achievements. To make the "future we want" a reality, education has a huge role to play.[9] Education policymakers in OECD countries have recognised the increasing importance that education systems should contribute to shaping the future through **System Resilience** (thriving in a structurally imbalanced world)[10], **System Innovation** (creating new value to the world)[11], and **System Sustainability** (keeping the world in balance)[12] [EDU/EDPC/M(2015)1] .

25. However, current educational systems appear to be unprepared. There are many reasons for this. They include the fact that our educational systems were built for the requirements of the Industrial Revolution in the 19th Century. Then, the paradigms of our school systems were largely set and haven't changed radically ever since. However, educational systems need to change, as the challenges are severe.

26. A reorientation of the goals of education is necessary and urgent. While academic performance acquiring proficiency in the basic and advanced academic knowledge and skills certainly remains an education priority worldwide, studies have confirmed that in both developed and developing countries, the main focus of education is still largely on academic performance, not on the various aspects of well-being of students, and much less on future prospects and the sustainability of life in their own communities, nations and the planet. In many ways education is still 'business as usual' although the world is now steeped in unforeseen 21st century realities, making transformational change in what and how students learn a matter of considerable urgency.

27. We share **a sense of urgency for change**. We are committed to change our own mind-set as well as that of our peers and to action the following list. The list is still tentative, drawing on all the past IWG discussions as well as the discussions among the members of the working group on the "Future We Want". It will be furthered at the 6th IWG meeting. Systems need to **shift the paradigms of education**. Systems need too the analytical tools to assess which actions hold the most potential for successful change.

- **Educating for broader goals – well-being 2030**. This will include not only educating for jobs and skills, but also educating for "citizenship" with national and global levels, and educating for digital/ data intelligence.

- **Educating for common goods**. In some countries, too much stress is currently laid on individual autonomy, individual excellence, and development of individual skills. There is a need to reaffirm the social nature of being a person. Furthermore, education systems must no longer focus only on achieving excellence and innovation, at the cost of the disengagement of the under-served and dis-

9 . The scope of education in a broader sense includes formal, non-formal and informal learning.

10 . The Meeting of the OECD Council at Ministerial Level 2016 focused on policy discussions on "Resilient Economies and Inclusive Societies – Empowering People for Jobs and Growth". In building resilient societies, Ministers emphasised the importance of achieving inclusive growth through better social-protection systems and the empowerment of individuals, combined with labour policies that facilitate the participation in the labour market of under-represented groups, such as women, youth, older people and migrants. Ministers called on the OECD to conduct further work on the effects of the distribution of skills on well-being outcomes and job quality, highlighting that poor skills severely limit people's access to decent jobs. They urged further work to implement the Giving Youth a Better Start Action Plan at the national level. Ministers underscored the usefulness of PISA and PIAAC to guide policymakers in unleashing the full potential of human capital. See https://www.oecd.org/mcm/mcm-2014-chair-summary.htm

11 . The OECD released the Innovation Strategy in 2010. The Strategy was one of the first dedicated horizontal projects in the OECD. Since its launch, it has been well received and affected policy developments in many countries. The 2014 OECD Ministerial Council Meeting (MCM) signalled the importance of carrying out such update. The Meeting of the OECD Council at Ministerial Level 2015 sets out 5 priorities for policy makers that together provide the basis for a comprehensive and action-oriented approach to innovation. These priorities are:

1. Strengthen investment in innovation and foster business dynamism
2. Invest in and shape an efficient system of knowledge creation and diffusion
3. Seize the benefits of the digital economy
4. Foster talent and skills and optimise their use
5. Improve the governance and implementation of policies for innovation

See https://www.oecd.org/sti/OECD-Innovation-Strategy-2015-CMIN2015-7.pdf

12 . The 2030 Agenda for sustainable development with the 17 Sustainable Development Goals provide a universal normative reference frame, to build a better world with no one left behind. See https://sustainabledevelopment.un.org/post2015/transformingourworld

advantaged.[13] Education systems should not reproduce the social inequality nor the environmental exploitation that exists today.

- **Educating for "agency"** and taking action in a responsible and meaningful manner. This will be the key underlying concept of the OECD Learning Framework, and will be detailed later.

- **Educating for a whole person**, e.g. "*Bildung* (German)", "德智体 (Chinese)", etc. This will include fostering social and emotional skills, cultivating moral values, not focusing only educating for academic achievements.

Box 3. The concept of "Bildung" in Nordic and Germanistic countries

The German concept of *Bildung* has seen a revival within Nordic and Germanistic countries from the 1960s and onwards. This 18th century concept originally constructed for describing a way of combining knowledge and personal growth within a frame of Greek tradition, has been transformed into an aim for schooling not just for the elite, but for all students. From being an aim for a very limited group in society it has become an aim for all students. This ambition has implications for our thinking about what knowledge is, how knowledge can be obtained and who should have access to knowledge and culture.

Bildung provides the key to master and understand the culture. The cultural codes in society are based upon social values which will be part of context for any situation where language is used. Knowledge and competences are a prerequisite for *Bildung* in an educational context, but they are not identical concepts. *Bildung* is competences plus something more. A student with all the competences described within the curriculum might still not have obtained *Bildung*. *Bildung* implies internalized values embedded in the culture [..]; this means both personal as well as cultural values in relation to others.

Source: https://www.coe.int/t/dg4/linguistic/Source/Prague07_LS_EN.doc

13 . The term 'education systems' is intended to include not only schools but also other actors that share the responsibilities for providing students learning opportunities in a systemic and ecological way, often labelled as "learning ecosystems".

Box 4. Moral-Wisdom-Body (德智体) in Asian countries

In China, the holistic approach to education can be represented its philosophy of "五育" (Five Ways of Life) as an overall development of the student. It includes "德智体群美". From the traditional Chinese culture perspective, 德 (moral values) is considered as the primary virtue of an individual and therefore of most importance. After that is "智" (knowledge/wisdom/intellect). As for 体(physical well-being/physique) is considered as a more modern value of education. In addition to individual development, "群"(social/collective interaction skills) emphasises on the importance of being part of a collective group and "美" (aesthetics) aims at training students on the ability to appreciate art, music and the diversity of human cultures. The Chinese curriculum reform today regards "德智体群美" as an important principal of education as to promote the overall well-being and development of its students both as an individual and as part of the society.

In Korea, "知德体" is also valued and in recent years, in particular, Korea promotes a development of a well-rounded person, stressing the needs for 德 and 体. For 德, Korea issued a Character Education Promotion Act (2015) to raise intelligent learners who are able to communicate well with others and have balanced growth of strength, virtue, and wisdom. For 体, Korea recently invest its efforts to promote a balanced growth of body and mind in students by strengthening school sports and physical activities.

In Japan, "知德体" is still considered as the fundamental base of today's curriculum, articulating that the balance between the three is fundamental in thriving in the rapidly changing societies.

Source : http://www.mext.go.jp/a_menu/shotou/new-cs/idea/index.htm; Kim M (2016), presentation at the E2030 4th IWG meeting, November, 2016

- **Educating for passion to learn across a lifetime**. This will include self-directed learning, curiosity, and motivation.

- **Educating with a growth mind-set model, not a deficit model**. Teachers should believe that their students can learn, and students should believe that they can learn. Teachers and students should have high expectations of the students, instead of focusing on their shortcomings.

- **Educating with issues in the real world.**[14] When students grow up, they are likely to face real-life problems that teachers or textbooks may not have answers for. Learners are likely to feel intrinsic motivation when they feel "authenticity" with their learning. Providing opportunities to learn from real life experiences in the real world outside school will help learners to develop skills and insights to seize new opportunities, identify key issues, creating several responses to these issues, and selecting a response that seems fit for a particular given context.[15] Education systems should no longer consider that everything can be or should be taught in school.

14 In the discourse exploring responses to mega global trends such as the 4th industrial revolution or the planet at risk, the following skills are often emphasised: creativity, empathy, dealing with ambiguity, engagement with uncertainty, stewardship, patience, sense-making, mind-shift, adaptation in the face of disruptive change, long-term thinking and anticipation and many others. Through the acquisition of these skills, it is argued, students will be well equipped to tackle complexity in a manageable way.

15 . One of the competent human models in psychology is "puzzle solver" (Haste, 2001). The DeSeCo dismissed this model as its theoretical approach because it suggests that there is one right answer that can be arrived at by linear logical processes. In reality, however, "there are several routes to solutions, where for example, feedback loops and multiplex iteration are involved, and where there are a number of possible – and equally useful – outcomes. It is inherently intolerant of ambiguity, uncertainty, and the kind of model associated, in control-theory terms, with 'closed loop-open solution problems, or with fuzzy logic'"(Mc Neill & Freiberger, 1993, in Haste, 2001, p. 95). According to Haste, the 'problem solver' model tends to neglect ambiguity and uncertainty because it is about

- **Educating through deeper learning, not more learning.** Education systems should offer quality learning opportunities to all students, avoiding curriculum and assessment overloads.

- **Shifting the focus from "sage on the stage" to "guide on the side".** Education systems should not assume that teachers or textbooks can suggest all the solutions to problems students are given in classrooms;

- **Re-thinking "student success" – from student outcomes to learning processes**. Student success is often understood in the context of "students outcomes", in particular, academic outcomes. In recent years, however, "process" is understood not as factors leading to outcomes, but as having intrinsic value in and of itself. Students' learning experiences or learning processes (e.g. whether the students are happy with their school life) are equally important as student outcomes. For example, the PISA 2015 analysis has shown that students who experience a greater sense of belonging at school, are in schools with a positive disciplinary climate and report receiving parental support are not only more likely to perform better academically but also to report higher levels of satisfaction with life compared to other students. Children and students should be able to enjoy the process. of attaining their academic objectives, but also enjoy childhood, enjoy their school life, build friendship with peers, and be happy in life.

finding the right answer. In other words, to pursue simplicity, it tends to cut through diversity and complexity. Hence, this approach was found inadequate when it comes to deal with a messy world and fuzzy boundaries and complex issues that young people and adults will face.

3. The OECD Learning Compass 2030 and the concept of agency

The OECD Learning Compass 2030 - Navigating in time and social space towards the right direction

28. In the face of high levels of change and instability, it would be futile to adopt an overly prescriptive approach to detailing specific knowledge or skills in the OECD Learning Framework. Rather, what the framework can do to guide learners for their future is to articulate what can give them a firm foundation as well as what can help them to navigate the as-yet-unknown, whilst rooting them in cultural and individual identities.

29. The metaphor of a 'learning compass' offers some insight into what is needed. A "compass" points direction to, for example, the North Pole for people in the northern hemisphere and the Southern Cross for people in the southern hemisphere; the OECD Learning Compass 2030 suggests direction towards the "Future we want". Where we want to be, individually and collectively in the future, is a fundamental starting point to how we utilise our knowledge, skills, attitudes and values. The OECD Learning Compass 2030 aims to enable the learners to clarify their own vision - where they want to be, locate their current position in comparison with the future vision, and navigate with confidence the way forward. This is the best legacy we can confer on today's learners. They will need to find solutions to economic, social and cultural challenges which our generation has yet to solve or even recognise. We will need to work together - children, students, youth, adults, seniors – towards the same direction in order to make the "Future we want" a reality.

30. The metaphor of a "compass" also highlights the need for "**navigating oneself across unfamiliar contexts**" **in meaningful and responsible ways**, especially, when facing expected, unexpected, or unprecedented opportunities and challenges with digitalisation, individual empowerment[16], the advent of artificial intelligence, increasing migration, accelerated globalism, growing inequality, and new threats such as cyber security, which are all interconnected. Today's students will be "**travelling across a wide variety of contexts"** (Kegan, 2001), i.e. travelling in **time** (past, today, future), in **social space** (family, community, region, nation, world), which today includes **digital space**, to actively take part in different spheres of life. They also need to encounter and engage with the natural world, to appreciate its fragility, complexity and its value.

16 Or the diffusion of power among states and from states to informal networks (the National Intelligence Council, 2012)

31. Part of education's task is to enable the learner to locate herself in wider and interrelated social and environmental contexts. The OECD Learning Compass 2030 could be conceived as enabling learners to acquire a sense of personal purpose, orientation toward the future and a meaningful life plan. Critical to this will be the possession of a sound personal identity or self-concept and the ability to translate, in a responsible way, needs and wants into acts of will: **decision, choice, voice, and action.** It is about acting rather than being acted upon; shaping rather than being shaped; and making decisions and choosing rather than accepting decisions and choices determined by others.

Student Agency, co-agency and the OECD Learning Compass 2030

32. At the heart of the proposed OECD Learning Compass 2030 is the concept of 'Student Agency'. In order to achieve the 'Future we want' students need to emerge from education as purposeful, reflective responsible agents, investing themselves actively to achieve goals that they have understood and endorsed. Student agency is both a process and a goal (desired outcome). As a process, agency and learning have a circular reinforcing relationship. Building a student's self-belief in their capacity to be agents of learning (and change) makes them more likely to learn, as the research on motivation shows. As a goal, it is critical that student agency be fully understood in its complexity and depth, and in the context of social and cultural diversity.

33. The first layer of complexity concerns the *levels* at which agency might operate.[17] Whilst 'agency' can be defined as meaning individual autonomy, acting autonomously does not mean functioning in social isolation, nor does it mean acting solely in self-interest. In fact people become more effective agents together, in social contexts. We become agents, find our identity and purpose in and through the relationships we have with others. Thus, student agency should be understood as operating at **the individual, collaborative (group) and collective (or societal) levels**. These 'levels' are not linear or hierarchical: but context is of key importance. It could evolve in a non-linear, spiral, circular or co-existing manner, depending on a given context. There will be situations and settings where individual autonomy alone is unhelpful and undesirable - for example where collaborative action is critical to success or where social cohesion is paramount.

34. Moreover, each 'level' of agency may be applied to a variety of "domains": **moral, political, economic, creative.** There is too a developmental or progression dimension to the exercise of agency – at all the levels and in all the domains above. As Hart set out in 1997, when discussing the notion of youth participation, the depth of participation may be thought of as a ladder (Box 5). The bottom rungs are tokenistic and inauthentic; the middle range primarily adult-directed; and the upper rungs are when participation becomes youth-initiated (whilst in partnership). So with agency: with maturation and with the right experience, agency and co-agency become more authentic over time.

[17] Leadbeater C 2017 *Student Agency* Background paper for OECD Education 2030

Box 5: Eight Ladder of Youth Participation

Source : Hart R, 1997 Children's Participation: The Theory And Practice Of Involving Young Citizens In Community Development And Environmental Care UNICEF

35. In such circumstances, students need to learn to exercise 'co-agency'. This refers to the idea that students, their peers, parents and teachers 'reciprocally co-regulate' their development (and their action)[18] Students try to attain their goals and regulate their behaviour in social context. Thus co-agency is important for student construction and reconstruction of their goals. Developmentally, the importance of peers for students' co-agency increases during adolescence. This is a phase where the importance of co-agency with parents too should not be underestimated: it is common misunderstanding that parents become less important as students go through this phase. Even as adolescents gain independence in various domains of life, parental support for autonomy continue to be critical to well-being (Ryan and Lynch, 1989). And this is a 'two-way street', with parents and children mutually influencing each other.[19]

36. At the collective or societal level, co-agency is vital for the development of **social responsibility and the achievement of shared goals**. Many of the biggest challenges we face are **collective, and are complex. Making an impact** on complex challenges requires the capacity to connect and to co-operate with people with different world-views and assumptions. It is through co-agency that innovation is created: students create new value through building on others' ideas, sharing viewpoints, argumentation, tolerance, trust, and collaboration. At the most basic level, societies will continue to exist through the exercise of others and trust, and co-agency is fundamental to its preservation. [20]

[18] Katerina Salmela-Aro 2017 *Co-agency in the context of life span model of motivation* Background paper for OECD Education 2030
[19] Salmelo-Aro ibid.
[20] Abiko t., 2017 *Comments on 'Student Agency: A Japanese view* Background paper for OECD Education 2030

Agency and cultural context

37. Cultural and contextual factors are critical in determining at which level, and in what circumstances, agency and co-agency are appropriately exercised. The most obvious illustration of this is the different conceptions surrounding agency between the East & the West, and the North & the South. Indeed, in some languages there is no direct translation for the term 'agency' and it is equated with related but not identical ideas around 'student centered' or 'independent' or 'active' learning. [21] Moreover, apart from the difficulty of making a clear translation of the term itself, more fundamental cultural differences - centering on the relationship of the individual to the group – are critical to adaptation in different contexts. The degree to which harmony, compliance and conformity are valued above creativity and individualism are at the heart of these differences. (Box 6). There are implication of these considerations for 'agency', as both an education process and outcome. There may not be a universal formulation, relevant to all contexts, which captures the underpinning ideas in 'agency'. It may be that practical illustrations, cumulatively, may be the best way to communicate and develop the concept. And sensitive account needs to be taken of any cultural context within which it will need to evolve, without necessarily adopting the view that any historical cultural view is incontestable. Upcoming generations – both east and west – are raising questions about the value frame their society has bequeathed.

Box 6: Student agency in different cultural contexts

1. "Ubuntu" in the South African tradition

This asserts that 'a person is a person through other people'.

Sources: Tutu Desmond. "Who we are: Human uniqueness and the African spirit of Ubuntu" https://www.youtube.com/watch?v=0wZtfqZ271w#t=162 *retrieved September 2017*Source:

2. "I" in the Japanese language

Specifically, in Japan, such differences are embedded in the very language. Whilst in English 'I' is used by everyone, in Japanese different words for 'I' are appropriate in different situations contexts, like 'Watakusi', 'Boku', 'Ore', 'Shousei', or 'Jibun'. It depends on the relation between the people. In Japan then the notion of the individual is derived from relations within a community: the community is primary. In some Western traditions one might say communities are derived from relations among individuals who choose to associate: the individual is primary.

Sources: Tadahiko Abiko (2017)

Agency in adversity

38. Education 2030 places student agency and co-agency at the heart of the project because it is apparent that the 'Future we want' cannot be achieved without it. Nevertheless, the challenge of incorporating these concepts, both as process and as goal, is fully acknowledged. Fortunately, there are now educators across the world who are exploring the evolving practice of promoting agency (just as there are systems who have explicitly included the goal – or variant of it – within their vision statements).[22] However, it should be noted that it is not wholly (or in some cases primarily) in schools that young people are placed in circumstances where they develop agency.

[21] *Student Agency in Asia: Educators' Perceptions on Its Promises and Barriers* 2017 Namji Steinemann, AsiaPacificEd Program for Schools East-West Center, Honolulu, Hawai'i(background paper of OED Education 2230)

[22] See section 3.4 below

39. In many parts of the world, children face adverse circumstances – of poverty, ill-health, crime, abuse, family dysfunction – such that their struggle to achieve well-being is monumental. Research and case studies in such contexts[23] demonstrate the imperative of enabling children to develop agency to overcome their circumstances, and the variety of supports and methods which can be powerful. Many of these lie outside the classroom: for example, mentorship and social organisations. In schools though, what is needed is the right pedagogy (including transformational experiences); also close, personalised knowledge of the individual student and her circumstances; and empathy. When these come together, not only can a child overcome adversity: she can herself become a change agent.

Box 7. Student agency in adversity: Rajesh's story

Rajesh came from a poor slum in Bangalore. He fell in love with Rugby when the program was introduced in his school. He was academically doing well, enjoyed Rugby and had dreams of playing in the Indian Rugby Team. The various interventions developed his agency to tackle challenges in the future. When he joined college, both his parents were diagnosed with chronic diabetes and in a span of six months, they lost their job. Rajesh, overnight became the sole bread winner for the family, took on the family debt from his sister's marriage and the medical needs of his parents and aging grand-parents. Rajesh had developed the agency he needed to overcome this challenge. He took responsibility by choosing to drop out of college, took on multiple jobs, negotiated the debt payments, sought support from his mentors and now over four years, he has cleared the majority of his debt, has a stable job where he is following a life of purpose and feels confident to thrive in this new world. He has gotten back to Rugby practice. He is creating new value in his community by running free rugby coaching for other children in his slum and runs outdoor experiential camps for disadvantaged youth. Rajesh says, Rugby helped me find an identity for myself, build my confidence, kept me in school, kept me away from drugs and gangs and gave me the positive self-orientation to look forward to life. I want to create the same for other children in my slum. His inspiration is his mentor, Vivek.

Source: Vishal Talreja (2017)

Teacher Agency

40. No discussion of student agency could be complete without locating it within a real context of education process that includes teachers. Teachers are after all the critical mediators in students' learning (and are likely to remain so for the foreseeable future). Effective changes in classroom interactions/experiences will not happen without teachers' involvement. There is therefore an urgent need to understand better the role of teachers in enabling environments which facilitate agency.

41. Knowledge is growing about the kinds of skilled and sophisticated pedagogy for active, rather than passive, learners. However, in addition to pedagogical knowledge there is the question of the attitudes and values that teachers bring to the enterprise. We have to acknowledge that teachers are themselves a 'product' of the very same education system that they are being exhorted to overhaul. Rarely have they experienced 'student agency' at first hand – and their own teacher preparation program is unlikely to have modeled the kind of learning experience now needed in their classrooms with their students.[24]

42. *First* then, is the question of the degree to which educators can themselves exercise agency and co-agency in their work. The 'teacher effectiveness' movement, whilst it has brought real benefits in terms of deepening understanding of methodological approaches, also supplied an emerging discourse in education which "de-composed what teachers do into specific, auditable, competencies and performances"[25] It has

[23] Vishal TALREJA 2017 *The impact of adversity on student agency* Background paper for OECD Education 2030

[24] Teacher Agency Working Group Report for OECD Education 2030 (Leader, Suzanne Dillon)

[25] Connell, R. (2009) Good teachers on dangerous ground: towards a new view of teacher quality and professionalism in Critical Studies in Education Vol 50(3) pps213-229

facilitated the development of measures of teacher performance and a narrow focus on learner outcomes which are measurable. In this culture of performativity, it is hard for teachers to see themselves as co-drivers of change, facilitating - not 'delivering' - learning which is relevant and reflective of their students' social, cultural and linguistic experiences[26]. What is lacking in many systems is teacher agency: *"the capacity of teachers to act purposefully and constructively to direct their professional growth and contribute to the growth of their colleagues."*[27]. Teachers need to be supported by system-level enabling conditions (policy frameworks, statements and regulations) that recognize and develop *their* co-agency as professionals in a knowledge industry that is not changing fast enough.

43. *Second* there is the need for widening and deepening the processes which are known to be successful in promoting teachers' own learning in this domain[28]. How and where teachers learn needs now to model the kind of learning we are advocating for children. In Phase II of the OECD Education 2030 project will offer the opportunity to explore different types of effective pedagogies, and to reimagine the architecture within which teacher education and practice take place, in order to provide scope for co-agency in their professional lives. This will involve more emphasis on professional learning communities and peer networks; breaking down isolation both in the classroom and in professional development; being open to learning from students; learning from and within the communities within which their schools are based. Without such shifts, it will be difficult for the teaching profession to acquire the new competencies that are needed to realize the objectives of Education 2030.

4. The competency development cycle and student agency

44. Student agency, as the underlying key concept of the OECD Learning Compass 2030, is not intended simply as a goal but, equally or more importantly, as a process of developing transformative competencies for 2030. A "competent human" is self-sufficient, able to focus attention and plan, has a future orientation, is adaptable to change, has a sense of responsibility, has a belief that one can have an effect and is capable of commitment (Haste, 2001). The desirability of 'self-sufficiency' as a goal needs, as we have discussed, to be nuanced, recognising inter-dependence. Nevertheless, the notion of student agency appears to underpin the acquisition of these competencies. This calls for a continuous cycle of **"anticipation-action-reflection" (A-A-R)**: a learning spiral in which students can develop competencies through lifelong and life-wide learning.[29]

Anticipation[30]

45. The first element that is critical for the student to develop competencies needed to be a change agent himself/ herself includes not only the ability to understand others' intentions, actions and feelings and anticipate short- and long-term consequences, but also the ability to widen their perspectives of "others" and feel prepared to create and influence the future. Research in psychology has identified 'prospection', or the ability of the individual being able to "pre-experience the future by simulating it in our minds" (Gilbert & Wilson, 2007). Prospection enables the learner to consider - and to predict - the possible different courses of their potential actions, and to reflect on different scenarios, "previewing" events and "pre-feeling" the effects of those events. Prospection "may increase children's psychological connection to their future self,

[26] Steinemann N 2017 ibid

[27] Calvert, L. (2016). *Moving from compliance to agency: What teachers need to make professional learning work.* Oxford, OH: Learning Forward and NCTAF. Available https://nctaf.org/wp-content/uploads/2016/03/NCTAF-Learning-Forward_Moving-from-Compliance-to-Agency_What-Teachers-Need-to-Make-Professional-Learning-Work.pdf

[28] For a discussion of future trends in PI and PD see *Global Trends in Professional Learning and Performance & Development* 2013 Innovation Unit London.

29 . See literature on "goal orientation".

[30] Material on the A-A-R cycle here drawn from *Anticipation-Action-Reflection Competency Development Cycle* Working Group on AAR for OECD Education 2030 Report, September 2017

subsequently increasing their motivation to engage in academically oriented behaviours that will benefit their future self" (Prabhakar, 2016).

46. Foresight presents us with the idea of the future as non-linear and open, with many different consequences, (Bishop, 2016); while prospection gives us the ability to imagine many possible 'scenarios' within our heads. The conception of the future as open - and able to be influenced by action - in turn can lead to the learner generating a sense of hope that they can enact change. Students should be able to feel excitement about real life and the future, instead of believing that the future is already determined by nature or by others outside of their control. Without this, students will have difficulty coping with challenges and opportunities of the world. They should feel prepared to anticipate and influence change with confidence and joy. For this, they should have not only the knowledge base (such as history, environmental change, current demographic change, current news events), cognitive skills (such as analytical or critical thinking skills, or general problem-solving skills) to anticipate future needs or the consequences of today's action on future; but also social and behavioural components such as motivation, emotions, commitments, and values.

Action

47. A second element critical for the competencies needed for the future is the willingness and capacity to take action. Underlying this is an **action competence model** that is holistic and dynamic in the sense that it relates complex demands, psychosocial prerequisites and context into a complex system that makes competent performance or **effective action** possible.[31]. In the same way as agency is in itself neutral (hence the need for a firm values base) -- action is also neutral, and could result in either very positive or very negative outcomes for society and global well-being. For this reason, it is important that the action taken is responsible. Perspective-taking is therefore required to take effective and responsible action. (Selman, 2003; Gehlbach, 2004).

Reflection

48. The third fundamental grounding for a competent human is **reflective practice**. Many scholars and experts agree that dealing flexibly with novelty, change, diversity and uncertainty in a responsible way calls for the development of reflectivity or 'reflective practice': a higher level of mental complexity that implies the combined use of self-directed and self-motivated skills, creative thinking skills, encompassing appropriate motivation, ethical, social and behavioural components along with cognitive and intellectual components (Canto-Sperber & Dupuy, 2001).[32]

49. 'Reflection' is the ability to take a critical stance before deciding, choosing and acting, such as, by stepping back from the assumed, known, apparent, and accepted, comparing a given situation from other, different perspectives, and looking beyond the immediate situation to the long-term and indirect effects of one's decisions and actions. This enables individuals to reach a level of social maturity that allows them to adopt different perspectives, make independent judgments and take responsibility for their decisions and actions. The reflective approach is based on a model of human development in which individuals are able to integrate increasing levels of complexity into their thinking and actions. Through reassessing one's own actions with a critical eye, reflection allows the student to assess themselves and to improve their future actions. This gives the student a sense of power and control over their future actions - as well as a sense of direction -- leading to the development of further agency.

50. In an era of curriculum overload, in which there is a need for students to be able to effectively express their agency through taking action, it may be easy for reflection to be neglected. But experience alone

[31] For an in depth elaboration on the concept of competence see Weinert (2001)

32 . Underlying is an "objectivation" process: what was "subject" in our knowing becomes "object" (Kegan, 2001).

does not necessarily lead to learning; rather deliberate reflection on experience is essential in order to learn from the experience and adjust accordingly.

Anticipation and action

51. The willingness and capacity to take action therefore stems from anticipation. Action *could* be taken without anticipation, but through diving directly into action, the learner would not take into account the possible consequences of the action, either in relation to themselves or to others. In order for action that shows responsibility and awareness of its potential effects on others to take place, it is necessary that this is guided by anticipation. Equally, anticipation without taking the step towards action may have the consequence of overwhelming the learner with the uncertainty of the future.

52. Goal-setting can provide a bridge between anticipation and action: 'pre-experiencing' or forecasting future events can help convert these into motivators of behaviour. As Bandura states, "Action is motivated directed by cognized goals rather than drawn by remote aims" (Bandura, 1989). The ability to be able to set goals reinforces the learner's sense of agency. In order to set goals it is necessary for the student to have intrinsic motivation, to set the goal at least partially by themselves and to develop a mastery-based goal setting approach. A sense of proactiveness and self-efficacy also provide a bridge between anticipation and action: both assume that the student already has some motivation, and agency.[33]

Action and reflection

53. It is though reflection that the learner is able to build agency through constructive review of their actions. However, the literature on reflective practice supports the idea not only of 'reflection-*on*-action', (which describes the individual reflecting on an experience they have already had) but on 'reflection-*in*-action', which describes an individual reflecting on their actions while doing them (Schön, 1983). The concept of reflection-in-action indicates not only the interlinking of the two elements, but the potential for the two to take place almost simultaneously (a person must assume that the action has already started in order for them to reflect on it). This distinction illuminates the idea that A-A-R is both a learning strategy for the development of other competencies (reflection-on-action) as well as a competency in itself that enhances one's ability to act for the greater good from moment to moment (reflection-in-action).

Reflection and anticipation

54. Metacognition, self-awareness, critical thinking and effective decision-making are all capacities that are developed through reflection. These are also capacities that are required for effective anticipation. Therefore, the practice of any one should help strengthen any other. In particular, reflection - the "meaning-making process that moves a learner from one experience into the next with deeper understanding" (Dewey) can be seen as the competency that enhances a person's anticipation by building knowledge and experience of the implications of their actions.

Anticipation-Action-Reflection cycle

55. 8The A-A-R cycle is one that is dynamic and fluid, in which all three elements are linked, and flow into each other to inform, complement and strengthen each other. While anticipation, action and reflection within the cycle are required for the development of both agency and competencies, they should also be seen as competencies in themselves. Through the constant continuation of the cycle, the learner develops a competency in each, which will also lead to the development of further competencies and the development of agency. The benefits of such a cycle being present in the learning environments that children and ado-

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lescents are exposed to, during the development of the prefrontal cortex, may not only develop competencies and agency but may become a lifelong practice of approaching the world, so that the cycle can therefore be employed as an approach to learning and to living.[34]

5. Competencies to shape the world towards well-being 2030

56. In 2001, the OECD Education ministers recognised that "sustainable development and social cohesion depend critically on the competencies of all of our population – **with competencies understood to cover knowledge, skills, attitudes and values**", building on the project Definition and Selection of Competencies (DeSeCo).[35] The OECD's Future of Education and Skills 2030 project revisited the DeSeCo key competencies and specified different priorities on the demands for competencies for today's students to be able to shape their future towards individual and collective well-being in 2030.

57. While DeSeCo is recognised to be still relevant today and for the future, new priories have emerged.[36]

- **New cross-cutting competencies (transformative competencies for 2030)** are being articulated in light of the 2030 context:

- The types and levels of **foundation skills** that students need to thrive in 2030 may be more varied and higher.

- New demands for **new types of literacy** are emerging, which are varied and more complex (e.g. global competency, financial literacy, media literacy, etc.) as was discussed at the 3rd IWG [EDU/EDPC/RD(2016)38]. While recognising the importance of these new literacies, countries also recognise that it is important not to simply add them to the curriculum as "new subjects", instead, it is important to understand how these complex literacies be embedded into the existing curriculum.

DeSeCo still in use

58. The DeSeCo three categories are found to be still relevant today and in 2030:[37]

- Using tools interactively[38]

- Interacting in heterogeneous groups[39]

- Acting autonomously[40],

34 Report of AAR Competency Development Cycle Working Group (OECD Education 2030) September 2017 ibid

35 DeSeCo, the acronym of the OECD project *Definition and Selection of Competencies: Theoretical and Conceptual Foundations* (www.deseco.ch) was launched in 1998 and concluded with the final report Key Competencies for a Successful Life and a Well-Functioning Society in 2003 and with the Executive Summary in 2005.

36 . The new priorities are identified based on the final report of the DeSeCo, the recent global trends, IWG meeting discussions, and the on-going OECD's new curriculum analysis.

37 . DeSeCo was constructed three categories of key competencies by way of a deductive approach mainly based on the scholarly theorizations from different disciplines including sociology, psychology, philosophy, economics, history, and anthropology and the subsequent interdisciplinary and multi-stakeholder exchanges. Furthermore, within each of the three categories, particular key competencies are listed as the result of an examination of the many lists received from experts and country reports in light of the established normative, definitional and conceptual criteria.

38. Including the ability to use language, symbols and text interactively, the ability to use knowledge and information interactively, the ability to use technology interactively

39. Including the ability to relate well to others, the ability to cooperate, the ability to manage and resolve conflicts

40. Including the ability to act within the big picture, the ability to form and conduct life plans and personal projects, the ability to assert rights, interests, limits and needs

Transformative competencies for 2030

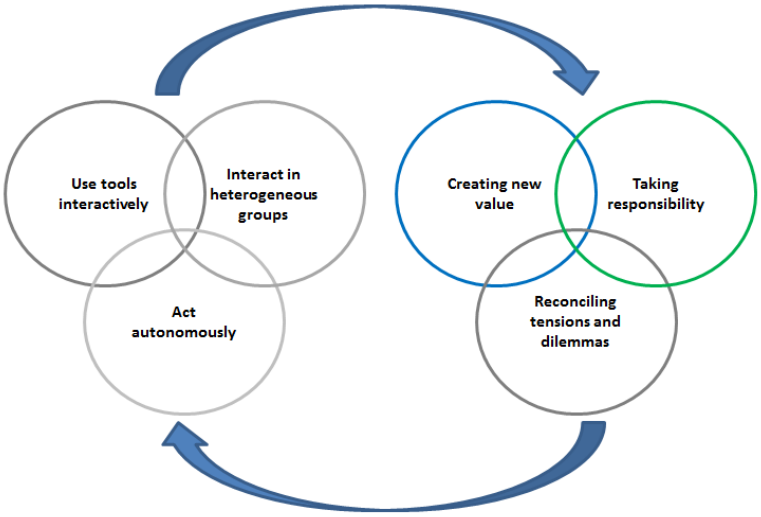
59. The most important shift of focus is the articulation of competencies that students need to shape the future themselves towards well-being 2030. Anchored in the theoretical underpinnings of the DeSeCo, the Learning Compass 2030 embodies competencies that enable learners to navigate across unfamiliar contexts and to shape the future for everyone to achieve individual and collective well-being. Many countries now aspire that their citizens should be adaptive and flexible, innovative, creative, open-minded, tolerant, self-directed, and self-motivated, and able to take responsibility for their decisions and actions as lifelong learners – may they be a student, parent, teacher, school leader, employee or employer.

60. **The OECD Learning Compass 2030 articulates three cross-cutting, inter-related and transformative competencies:**

- Creating new value
- Taking responsibility
- Reconciling tensions, dilemmas, trade-offs, and contradictions

4 The selection of the transformative competencies is well aligned with self-determination theory, as well as the competence theories of relatedness and autonomy, building on the DeSeCo set of competencies.

Figure 2: DeSeCo and Transformative Competencies for 2030



Creating new value (innovation compass)

61. Creating new knowledge for, and adding new value to, the world must clearly be a desired competence in the VUCA world that is now our future. The OECD member countries have recognised that new sources of growth are urgently needed to help the world move to a stronger, more inclusive and sustainable development path, in particular, following the financial crisis and threats of climate change that innovation can be a critical part of the solution, including economic innovations, social innovations and cultural innovations. For example, social enterprises are long-standing agents of inclusive growth and they have proved resilient to economic adversity all the while addressing socio-economic challenges in innovative ways, re-integrating people back to the labour market, and contributing to overall social cohesion (OECD, 2017).

62. The OECD countries also recognised that innovation can help address pressing social and global challenges, including demographic shifts, resource scarcity and the changing climate, at lower cost, and that innovative economies are more productive, more resilient, more adaptable to change and better able to support higher living standards. [41]

63. Education is considered as core to innovation**.** Innovation can be embedded into school curricula in different means and forms[42]. Broad curricula with appropriate pedagogical approaches will encourage innovation. Innovation includes the creation of new value, new demands, new jobs, new products, new services, new tools, new processes, new ways of thinking, new ways of living**,** etc. But it must be accompanied by an ethical basis (see below ethical compass). The need for new forms of value comes not just from the deep human impulse towards curiosity and new forms of expression, but also because the changing conditions facing learners are creating new demands, unmet needs, conflicts and ambiguity.

64. To develop such a basis in transformed conditions requires new narratives.[43] Sense and meaning making and the need for new narratives become essential in the VUCA world which we now inhabit. For example, the revolutions in biotechnology and Artificial Intelligence are pushing back the current thresholds of life span, health, cognition, and capabilities. This will compel us to redefine what it means to be human, not only in our moral and ethical boundaries but also our relation to others, and the environment.[44]

65. While innovation implies multidisciplinary or inter-disciplinary approaches, academics rightly argue that disciplinary knowledge would still be fundamentally essential to tackle cross-cutting and complex issues, as knowledge at the boundaries of the disciplines requires an understanding of how emerging disciplines are derived from foundation disciplines, e.g. mechanical engineering from physics and mathematics, or how emerging issues can be decomposed into foundation disciplines to gain necessary knowledge to tackle the issues at the boundaries (Young, 2016).

66. It is important to note that innovation is not a predominantly individual preserve. Now, more than ever, it requires processes of co-creation for which skills such as cooperation and collaboration are increasingly important as well as the capacity to connect existing knowledge to create new knowledge. This is often achieved through inter-disciplinary teams.

67. In practical terms, developing a competence for creating value relies, not so much on being liberated from the existing structure of educational practices or measurements, and *more* from being able to repeatedly take new unfamiliar situations as opportunities to create value. This can occur in any situation where learners might encounter unfamiliar challenges or novel experiences. Learning how to approach them, navigate them, and judge different forms of value, is what matters to the development of the competence. Moreover, the essence of this competence relies not only on novelty, but also on learning how to judge different forms of *value,* and to understand different perspectives on this question. Being able to address the social, cultural, civic, ethical, economic and environmental context in which specific actions and projects lie, is therefore an essential part of framing the competence.

Taking responsibility (ethical compass)

68. Not all innovations can ensure benefits to the world; innovation is inherently risky. Innovation for economic growth should not endanger ecological sustainability .Ethics in science is increasingly playing a key role to ensure that new discoveries in science contribute to a better future, not to its detriment. Afford-

41 . The OECD Innovation Strategy 2015 An Agenda for Policy Action was adapted at the Meeting of the OECD Council at Ministerial Level. See https://www.oecd.org/sti/OECD-Innovation-Strategy-2015-CMIN2015-7.pdf

42 See EDU/EDPC/RD(2016)38

43 see Hannon V (2017)

44 see Schwab (2016) o

ability should not come at the cost of low security or health (e.g. cheap food). The entrepreneurial spirit must be accompanied with ethics that guide enterprises to contribute to building a better common future.

69. The importance of taking responsibility is also of increasing importance in light of global risks and, in particular, under current geopolitics. Changes and shifts in power and substantial socio-economic inequalities have the potential for increased conflicts and instability within and among states and regions. Some 1.5 billion people in an estimated 40 countries live in an environment affected by conflict and violence. Key issues include fragility of context, ungoverned spaces, tensions and contestation, insecurity. Furthermore, available data suggest a decrease of trust in government across OECD countries (OECD, 2014) and social and civic disengagement in democratic processes (OECD, 2013). Discriminatory and extremist ideologies and radicalisation go hand in hand with new forms of violence, some with a global reach. Such developments challenge peace and prosperity and undermine democratic core values and institutions.

70. "Taking Responsibility" is defined for the purposes of education 2030 as the capacity to accept obligations and perform different roles, with the belief that personal actions and choices can influence events and outcomes[45]. As with agency, this may be conceived as operating at a number of levels: the personal, the interpersonal and the social[46]. This entails learning to *formulate goals*, test them against experience, and understand the perspectives of others, in developing the capacity to act responsibly. Research now shows how adolescence is a window of opportunity because of the plasticity of brain development and the importance of formative social experiences and examples in shaping the cognitive, meta-cognitive and affective bases for judgment and decision-making[47]. Knowledge, skills and attitudes are again vital in this domain.

71. The cognitive and metacognitive processes by which we evaluate and choose among alternatives must however be aligned with ethical principles. This assumes an overall understanding of the meaning of actions, events, experiences and critical values. The importance of value orientation as an integral part of a competence has been widely recognized. For instance, with regard to the risks and opportunities of industry 4.0 Schwab (2016) emphasizes that "we must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural, and human environments. In the end, it all comes down to people and values".

72. In the international community, an emphasis is being increasingly placed on strengthening global competency and global citizenship. For instance, the OECD plans to include global competency in the 2018 Programme for International Student Assessment (PISA) (OECD, 2016). Deardorff (2013) noted the following elements as key themes across different cultures in regard to global competence: respect, listening, adaptation, relationship building, seeing from multiple perspectives, self-awareness and cultural humility. The UNESCO's Global Citizenship Education[48] program aims to empower learners to assume active roles to face and resolve global challenges and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world, as part of the *UN 2030 Agenda for Sustainable Development*[49]. The

[45] Bentley T. 2017
[46] Steinberg L, 2017 Background paper for OECD education 2030
[47] Steinberg ibid
[48] http://en.unesco.org/gced
49. The agenda was adopted in 2015 by 193 countries of the UN General Assembly provides a normative reference fame and transformative vision for a better world. This vision echoes with the common values and societal goals to which DeSeCo referred to when defining and selecting key competencies. Furthermore, the Sustainable Development Goal 4.7 aims to ensure that by 2030 «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»

OECD Education 2030 project and the UNESCO Global Citizenship Education program are in close cooperation to make the global competency agenda a reality.[50]

73. Additionally, experience is growing about the practice and value of 'service learning' or 'community-based problem-solving projects' as a major opportunity for developing responsibility. These projects can provide novel challenge, demand collaborative and team-based effort, and ground young people's learning experience in a broader context of shared, social responsibility.

Reconciling tensions, dilemmas, trade-offs and contradictions

74. Countries and societies differ in terms of economic and political goals and priorities, power relations, cultural traditions, environmental settings, available resources, and employment and social opportunities. Increasing diversity and heterogeneity, however, is only one facet of our world. Globalization (despite its increasing contestation), interconnectivity and complexity are other central features. The now-common representation of the world as global, interdependent, complex, multipolar, rapidly changing, diverse, conflict-affected, fragile, and uncertain makes it no easier to navigate. Societies and individuals need to be able to deal with tensions, dilemmas, trade-offs, ambiguity, non-simultaneity, and non-linear processes in a constructive, future-oriented way. Taking a long-term perspective, going beyond the either-or, will be critical in the future.

75. The VUCA world (of volatility, uncertainty, complexity, and ambiguity) demands that we avoid rushing to a single answer, to an either-or solution, but rather deal with tensions, dilemmas and trade-offs – for instance, between equity and freedom; autonomy and solidarity; efficiency and democratic processes; ecology and simplistic economic models ; diversity and universality; and innovation and continuity. This requires the integration of seemingly contradictory or incompatible goals as aspects of the same reality.

76. Reflection with an integrated, holistic view is most likely to lead to the best answer to the often complex, intractable, dynamic, and multifaceted problems posed by the challenges and opportunities of the 21st century. Choosing between ambiguous or contradictory positions and actions is not, in itself, challenging; the challenge, which must be incorporated in key competencies, is dealing reflectively with multiple, dynamic and often conflicting aspects and recognizing that there may be more than one solution or solution method. To be prepared for the future, individuals have to learn to think and act in a more integrated way, taking into account the manifold interconnections and interrelations between contradictory or incompatible ideas, logics, and positions both in short- and long-term perspectives. In short, they have to learn to be systems thinkers.

77. In the light of the increasing cultural and social diversity and the existence of social, economic and ecological imbalances, dealing in constructive ways with differences, contradictions, and ambiguities is another frequently mentioned requirement. For example, the concept of sustainable development is one possible answer to the tension between economic growth, ecological constraints, and social cohesion, recognizing their complex and dynamic interplay instead of treating them as separate and unrelated, if not mutually exclusive issues. The competence required to attain a more complex picture of the world, is the "ability to manage diversity and dissonance in a creative and coping way, and avoid premature closure or dissolution into relativism" (Haste, 2001) or absolutism.

78. The three 'transformative competences' discussed in this section reflect the need for learners and education to function and thrive *between* existing categories of thought and action, in an increasingly networked, uncertain and interdependent world. The growth of these connections increasingly blurs the boundaries between different spaces, social groups and categories of knowledge. The competences that are being developed therefore need to help the learner to interpret and navigate that world of uncertainty and

50 see EDU/EDPC/RD(2016)38

new opportunity, and help them to act more effectively in it. In that sense, these competences are 'meta-learning' capabilities, in the sense that they need to help learners to guide themselves and develop their own learning over time, across a whole range of specific situations and experiences. Therefore, all three 'transformative competences' are deeply bound up with the development of both *intra*-personal, and *inter*-personal, understanding. Learning how to create new value, how to take and share responsibility, and how to reconcile tensions and conflicts, all involve learning to understand the relationships between self and other, and how to interpret and judge value of different kinds, in different situations.

79. Transformative competencies are complex. They are developmental in nature, and not binary constructs that individuals either or have or do not have. Given the developmental nature of the competencies, they require educational contexts and experiential learning opportunities that foster their growth and development.[51] Classroom pedagogical practices must reflect the belief that transformative competencies are not innate, but are learnable. In their practice, teachers can reflect this view of student learning as an iterative process, recognising the importance of student mindset.

New types of literacies for 2030

80. Literacy was originally understood as a set of skills: reading, writing and arithmetic (the three R's), the focus of literacy programs has been to foster individuals' ability for written communication (UNESCO, 2004). In a diverse and changing world, it is not enough to treat literacy as a purely technical skill one masters – rather, we have to embed it into its sociocultural context. 'As society and technology change, so does literacy' (NCTE 2013). The plurality of literacies stems from the plurality of their social and communicative contexts.

81. The Education 2030 IWG participants recognised a wide range of new literacies that are increasingly recognised in curricula. Examples include: Global Citizenship/ Competency; Sustainable Development; Innovation; Well-being; Computational thinking/ Programming/ Coding; Financial Literacy; Foresight; Media Literacy; Health Literacy; etc. At the 4th IWG meeting, the participants discussed how these literacies or transversal themes can be embedded into curricula, without overloading them. Participants confirmed that the taxonomies suggested in the Learning Compass 2030 create a useful curriculum management tool for practitioners and curriculum designers to explore the most effective ways to embed newly emerging themes and literacies into the curriculum in their own particular contexts [EDU/EDPC/RD(2016)38].

Foundation skills for 2030

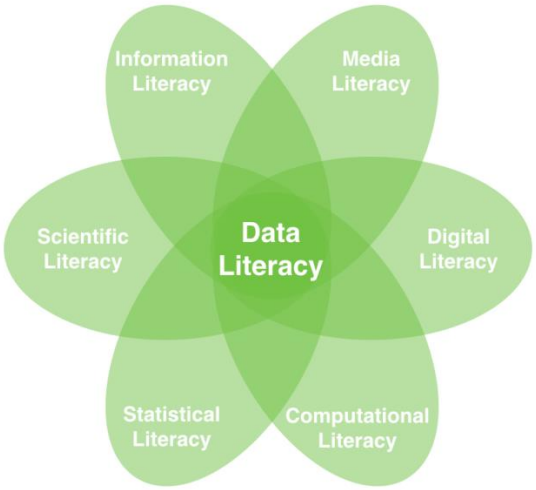
82. Literacy and numeracy are considered as "foundation skills" and they will continue to be important in 2030. However, there are some emerging questions that are currently under discussion. One is whether the threshold level for literacy and numeracy in 2030 will remain the same or will be higher than today. Another is what would be the literacies, amongst those newly identified, which will be the prerequisite foundations for the formerly mentioned transformative competencies for 2030.

83. A foundational literacy should equip students with the capacity to develop and diversify the skills they have acquired through formal teaching, giving them many opportunities to use those skills for many diverse purposes, and then deepen their understanding by reflecting upon that use. Pedagogy intended to lay the foundations for literacy in a rapidly changing world should enable pupils to learn transversal skills that can continue to develop over time through the exercise of agency in a complex social world. During the iterative process of the project, data literacy and digital literacy are likely to become part of the foundation skills in 2030, considering the high transfer value of these literacies to many different contexts.

[51] Report of the Working Group on Transformative Competencies (OECD Education 2030) Sept 2017

84. As the advance of digital technologies has altered communication channels, educators and policy makers have been forced to re-evaluate the content of literacy, calling for new types of literacy such as "digital literacy", "information literacy", and maybe most often "data literacy" (Bhargava, 2015). Data literacy is not about processing data, but about learning to think and communicate through data. It is closely connected with other types of literacies (Figure 3). Data literacy is increasingly essential to navigating our digital world and therefore is a foundational skill of Education 2030.

Figure 3. Data-Pop Alliance's interpretation of data literacy as the intersection of other literacies.



6. Constructs for 2030

85. It is of critical important that the OECD Learning Compass 2030 be not only supported by research and theoretical underpinnings but also that it is "actionable". This way, the OECD Learning Compass 2030 can not only serve as a tool to inspire conversations towards the future but at the same time it can be a useful tool to translate theory and research into practice. To this end, it is essential to make the key concepts of the framework, e.g. "student agency", "transformative competencies", and "anticipation-action-reflection cycle", more concrete and contextualised in the school context. To this end, the first step is to translate these concepts into more concrete "constructs" that are multiple and inter-related.

86. Indeed, it is vital that all of the constructs are clearly defined and illustrated such that they make sense to practitioners so that they will be sufficiently equipped with the knowledge that will enable them to action the key concepts of the learning framework. The constructs are being selected, discussed, and refined in an iterative process throughout the project.[52]

87. The constructs are analysed by the following 6 principles (CRIIMM):

- **Clear definition**: Commonly used and understood definitions.

52 . e.g. Feedback is obtained during or after the IWG meetings, summaries of the key constructs are updated, refined, and further explicated as an on-going, iterative process (e.g. [EDU/EDPC(2017)16/ANN1] [EDU/EDPC(2016)23/ANN2/REV1]).

- **Relevance for 2030**: Relevance for students to thrive in the world of 2030, in line with the key concepts of the Learning Compass

- **Impact**: Empirical evidence demonstrating a significant bearing on future life outcomes.

- **Interdependence**: Relation to how it is connected/ developed interdependently with other constructs.

- **Malleability**: Considered in relation to the ways in which it is developed through the processes of learning.

- **Measurability**: Considered in relation to whether it can be given (or thought capable of being given) a comparative numerical value on a scale, or given a non-numerical account.

88. The following constructs are currently being analysed. The constructs are also aligned with the constructs being looked at in other OECD large-scale surveys such as PISA, Early Learning Study, and PIAAC. And, the constructs are also focused constructs of the curriculum content mapping exercise [EDU/EDPC(2017)19].

Student agency:
- Gratitude
- Growth mind-set
- Hope
- Identity/ Spiritual identity
- Motivation (e.g. to learn, to contribute to society)
- Purposefulness
- Self-efficacy/positive self-orientation

Creating new value:
- Adaptability/ Flexibility/ Adjustment/ Agility
- Creativity/ Creative thinking/ Inventive thinking
- Curiosity
- Global mind-set
- Manual Skills for Information and Communication Technology (related to learning strategies)
- Manual skills related to the Arts and Craft, Music, Physical Education needed for 2030
- Open mind-set (to others, new ideas, new experiences)

Reconciling tensions and dilemmas:
- Conflict resolution
- Empathy
- Engagement/ Communication skills/ Collaboration skills
- Perspective taking and cognitive flexibility
- Resilience/stress resistance
- Trust (in self, others, institutions)

Taking responsibility:
- Critical thinking skills
- Meta-learning skills (including learning to learn skills)
- Mindfulness
- Problem solving skills
- Responsibility (including locus of control)

- Risk management

Anticipation-Action-Reflection competency development cycle:
- Compassion
- Global mind-set
- Goal orientation and completion (eg grit, persistence)
- Pro-activeness
- Reflective thinking/ evaluating/ monitoring
- Self-awareness/self-regulation/self-control

Values orientation:
- Equality/ Equity
- Gratitude
- Integrity
- Justice
- Respect (for self, others including cultural diversity)

89. These constructs come from the following domains/ sub-domains:

- Cognitive & meta-cognitive skills
- Social & emotional skills
- Physical & practical skills
- Attitudes & values

90. It is important, however, to note that there is no clear-cut distinction or categorisation of constructs under each sub-domain because construct analysis requires a complex process due to the reasons set out below. The main purpose of the construct analysis is ***not*** to seek consensus on which construct belongs to which sub-domain.

91. First, we need to have a clearer understanding about the complex nature of some constructs. Some are **multi-faceted** and thus difficult to be classified into a single domain or a single sub-domain. For example, while there is a general consensus that "critical thinking" is a construct as part of "cognitive skills," "empathy," is generally understood as a multi-faceted construct and therefore it is often categorised under different domains or sub-domains according to different sources, different foci, and different definitions. For instance, the Council of Europe's Competencies for Democratic Culture Framework classifies "empathy" as part of both "cognitive" and "emotional" skills as it includes "cognitive perspective-taking, which involves apprehending and imagining the perceptions, thoughts and beliefs of other people", "affective perspective-taking, which involves apprehending and imagining the emotions, feelings and needs of other people", and " sympathy, which involves feelings of compassion and concern for other people based on apprehending their cognitive or affective state or condition or their material situation or circumstances" (Council of Europe, 2016). In other literature, empathy is also considered an attitude (Shapiro, 2002), which is considered as a different domain than "skills".

92. Second, we need to be aware that some constructs are more **context-dependent**; others are less so. For example, "leadership" can be defined, understood or expected in different ways in different cultural contexts. Depending on the definition and context, it is not always the case that "the more, the better". In comparison, "integrity" is often suggested as a "common" value across different cultures, and it can be expected that having more integrity is better in the scale.

93. *Third,* we need to consider the **age-appropriateness** of developmental trajectories of certain constructs. A growing body of research findings from neuroscience, learning science, and developmental or cognitive psychology has shown that not only cognitive but also social and emotional skills are malleable (i.e., can be taught and learned) over the life course. Moreover, the life-cycle approach to construct analysis has revealed that the scope and selection of key constructs that are developmentally appropriate or most sensitive to brain development may vary across different ages. For example, the key constructs in early years that matters for later student outcomes such as education attainment, employment, health, law abiding, and happiness, and life satisfaction, include verbal skills, numeracy, social skills, locus of control, and motor skills (Schoon, Nasim, Sehmi, & Cook, 2015). However more and varied constructs in various domains, i.e. knowledge (including disciplinary; inter-disciplinary; practical), skills (including cognitive & meta-cognitive; social & emotional; practical & physical) and attitudes and values may be more salient across middle childhood or adolescence. Additionally, specific attitudes and values may be more salient in adolescence, such as purposefulness, reflective thinking/ evaluating/monitoring, integrity, and justice.

94. *Fourth,* some constructs can be defined within **subject-specific** contexts or more broadly. For instance, "self-efficacy" can be defined broadly as part of "life skills", but PISA has measured "self-efficacy in math", ICCS has measured "students' political internal efficacy" (Schulz et al., 2008). These measurement tools are designed differently for different subjects/ themes or for a different scope even though the construct "self-efficacy" is considered the same.

95. *Fifth,* some of the constructs that appear under "attitudes and values" in the following section are also often covered under "social and emotional skills", e.g. empathy.

Skills for 2030

96. There is a consensus that the skills domain should address a broad range of skills that help today's students to achieve not only academic success but also their physical and psychological well-being towards a better future in 2030. Broad skills can be grouped into three sub-domains and they are developed interdependently.

- Cognitive & metacognitive skills: Cognitive skills are a set of thinking strategies that enable the use of language, numbers, reasoning and acquired knowledge. They comprise verbal and nonverbal skills, higher-order thinking skills, effective use of executive functions (especially working memory) and problem solving. Meta-cognitive skills, in particular, include the ability to *recognise* one's knowledge, skills and attitudes and values.

- Social & emotional skills: A set of individual capacities that can be manifested in consistent patterns of thoughts, feelings and behaviours. Social and emotional skills can help balance and ground personalities and strengthen character.

- Physical and practical skills: A set of abilities to use physical tools, operations, functions including: e.g. manual skills (e.g. using new ICT devices, new machines, playing musical instruments, crafting arts, playing sports, bicycling), life skills (e.g. first-aid skills), professional skills (e.g. conducting operations/ surgeries) or ability to mobilise capacities (e.g. strength, muscular flexibility, stamina), etc.

132. The Foundation Skills for 2030 need now to be defined inclusively as literacy, numeracy, digital literacy and data literacy to reflect contemporary conditions.[53] They are deemed 'foundation' (out of the

[53] It should be noted however that there is some dispute amongst experts about the degree to which the new "digital literacy" is cognitively similar to traditional forms and is most accessible to individuals who have mastered traditional literacy skills. Although traditional written literacy is acquiring a new dimension in digital environments, it can be argued this does not automatically imply a cognitive

plurality of 'literacies' to be found in the literature) since they act as gateways both for many other skills, and also for the achievement of basic citizenship and human rights. Moreover they are '*know-how'* (as opposed to '*know-that'*. In contrast, various domain-specific literacies such as financial, entrepreneurial, health, cultural, ecological, or civil literacy all belong to the 'know-that' type and are standing on the shoulders of foundational know-how literacies. The plurality of literacies reflects a move away from thinking about literacy as a purely cognitive phenomenon, made up of a technical set of processing skills that the individual either has or doesn't have, to understanding literacy as a social practice shaped by the context in which it occurs.[54]

133 Since it is the newest, least familiar, entrant to the field it may be worth setting out the case for the inclusion of 'data literacy'. Data are objects and variables that can be collected, stored, and identified. As an individual unit, data has no value beyond its content, but in collections they form information. Data can be understood as the building blocks or atoms of information.[55] To be 'literate' in this context therefore may be defined as 'the ability to create and exchange information'. Data is being produced at an unprecedented rate and this growth is not only in size but also source. Sequencing the first human genome took researchers a decade and cost billions of dollars, now it can be accomplished in a week for less than one-millionth of the price. "Data is the new oil of the digital economy"[56]. It will be essential in preparing the next generation of students for the future economic and social changes. Deconstructing the constituents of 'data literacy' requires keeping up with a fast-moving field. The technical, or cognitive components, might have been defined as

1. Data Discovery – identifying the source or sources of data.

2. Data Collection – collecting, storing and maintaining the data.

3. Data Science – extracting information, significance or answers often with the use of statistical analysis and modeling tools.

4. Data Visualization – sharing these insights through a mixture of graphical and textual explanations.

97. Many of these skills are technical, requiring familiarity with a particular software platform or a specialized language. However, recent technologies such as artificial intelligence and virtual reality pose to completely transform the set of skills needed to address these challenges. Additionally, software trends have shown that current platforms may become outdated and replaced by newer technologies. Thus, promoting data literacy must be adaptive and flexible and focus on the challenges of working with data rather than the technical skillsets used to face them.

98. Since the aim is to build evidence demonstrating that knowledge and skills are *NOT* competing constructs, the OECD Education 2030 curriculum analysis includes an exercise, called a Curriculum Content Mapping. This has been inspired by the Australian country experience, "Heat Map" conducted by the Australian Curriculum, Assessment and Reporting Authority (ACARA). The exercise aims to help better understand **how particular skills, attitudes and values are intended to be cultivated interdependently with the acquisition of knowledge in certain learning areas/subjects** [see EDU/EDPC(2017)19].

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shift to a new type of literacy of a different nature *Foundational Literacies For 2030: Agency Through Texts And Numbers* Report of the Working Group on Foundational Literacies for OECD Education 2030, September 2017

[54] Working Group on Foundational Literacies for OECD Education 2030, September 2017 ibid

[55] Daniel Kunin 2017 *Data Literacy: Redefining Literacy in the Age of Big Data*_Background paper for OECD Education 2030

[56] Wired Magazine 2014, quoted in Kunin D, ibid.

Attitudes and values for 2030

99. Attitudes are defined as 'a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour' (Eagly & Chaigen, 1993, p.1). Attitudes can be formed and changed and are generally considered much less enduring and stable than other personality attributes such as traits or temperament (Schwartz & Bohner, 2001). Attitudes are considered separate from and more malleable than personality tendencies and values[57]) In addition to an evaluative aspect (either positive or negative) an attitude may entail a tendency to behave in a particular way towards a given object.[58]

100. Values are guiding principles by which particular beliefs, behaviours and actions are judged to be good or desirable (adapted from Halstead and Taylor, 2000). Values develop through a process of exploration and experimentation, where young people make sense of their experiences and refine what they believe (CCSR, 2015). The OECD PIACC adopts the definition of personal values as "core conceptions of the desirable within every individual and society" (Rokeach, 1979). A similar definition is, "conceptions of the desirable that influence the way people select action and evaluate events" (Schwartz and Bilsky, 1987, p. 550). Values transcend specific actions and contexts, have a normative prescriptive quality about what ought to be done or thought in different situations, and may be used to guide individuals' attitudes, judgments and actions." [59]

136 Both attitudes and values can operate or be applied to the personal, social, societal or global level. In each of these domains, there is a tension in seeking to articulate common or core (universal) human values; and the recognition and respect for diversity – without descending into cultural relativism. Naturally, any attempt to include attitudes and values into a learning framework will provoke the questions: "Whose values? Which values? In what context?" Moreover we need to distinguish between whether the aim is to teach the values and attitudes we want young people to have – in line with the Future We Want; or to help young people find their own.[60]

137 It should be noted that education is in any case never value-free. Even if a formal, intended curriculum may not articulate explicitly the teaching of values and attitudes, values and attitudes still may inform and govern the experience in schools, including how expectations about desirable behaviour are communicated; in how conflict and consensus-making between and amongst young people and adults in schools are managed; how student voice and choice matters or do not matter in schools; and how young people experience and act in their school cultures and learning environments. The very choice of curriculum content is underpinned by a set of values, whether explicit or implicit.

138 In the literature review developed for Education 2030,[61] 3 distinctive perspectives may be discerned in relation to the genesis of attitudes and values:

- Value development rests on *emergent habits, skills and predispositions,* which are seen as enduring and predictable attributes of the person. They are established through practice and role modelling and are strongly linked to a sense of oneself as being or becoming a certain type of person.

57. Knowledge, skills, and attitudes, or KSA's are often considered the essential components of educational programs, and are based upon Bloom's taxonomy that includes cognitive (knowledge), psychomotor (skills) and affective (attitudes) learning (Bloom, 1956).

[58] Council of Europe 2016

[59] Council of Europe 2016

[60] Report of the Education 2030 Working Group on Values and Attitudes (led by Dr Connie Chung)

[61] Dr Helen Haste Lit Review I DON'T139. HAVE ACCESS TO THE CORRECT REF

- Values, beliefs, and attitudes, especially those relating to ethical or moral judgment, depend on *reasoning and justifications based on principles and intention-based evaluation.*

- Values and attitudes, and the motivations to act in accordance with them, depend also on *emotional factors*.

139. The field of attitudes and values is one where more work needs to be done in terms of Education 2030. A literature review of the attitudes and values most relevant for the 2030 Learning Framework is proposed, which will explore, inter alia:

- The most salient attitudes and values for development in childhood/early adolescence

- *How* young people learn their values

- The role of attitudes and values in the transformational competencies

101. In addition, we will explore how the treatment of attitudes and values in the Education 2030 framework relates to those embedded in international documents like the Sustainable Development Goals and the Universal Declaration of Human Rights.

SECTION II: TRANSLATING THE TRANSFORMATIVE COMPETENCIES FOR 2030 INTO CURRICULUM

1. Background

102. At the beginning of the project, the IWG members suggested that the OECD learning framework be developed based on solid theoretical underpinnings and, at the same time, be made actionable by schools and teachers, not that the framework be kept at the level of abstraction and theories. Translating "transformative competencies for 2030" into school curricula, using the language that speaks to curriculum designers, school leaders, teachers and students, has been a challenge. But, collective efforts with the E2030 multilevel stakeholders have made it doable so far. For students to demonstrate the selected transformative competencies through reflection, anticipation, and action with respect to the demands in a particular context as well as to their aspirations to change the future, they will need to be able to mobilize all dimensions of knowledge, skills and attitudes and values.[62]

2. Taxonomy of "competencies" adapted in the OECD Learning Framework 2030

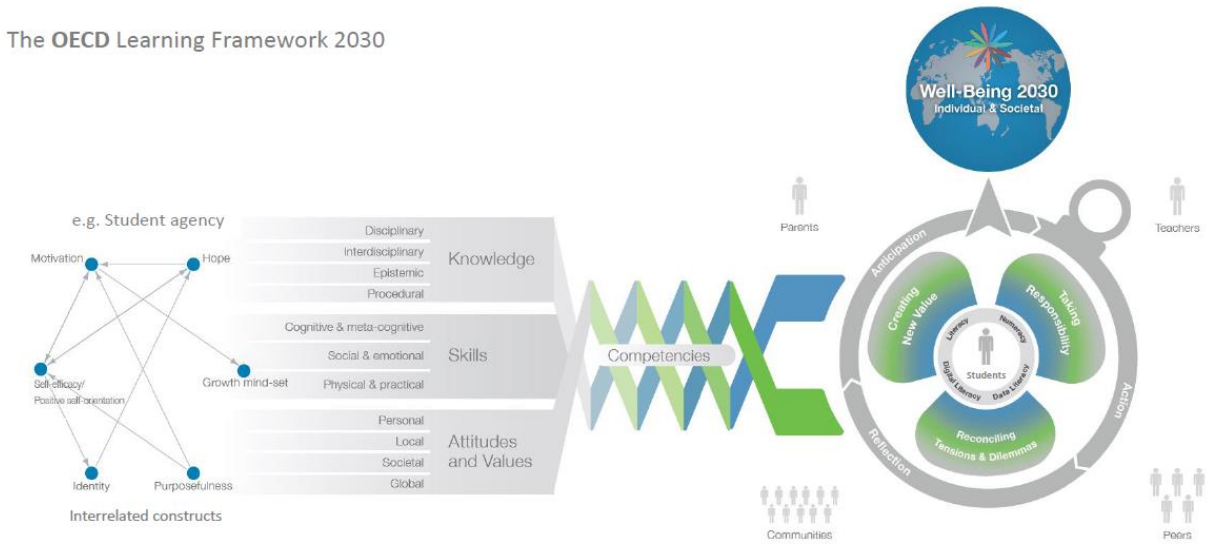
103. The taxonomy of "competencies" adapted for the OECD Learning Framework 2030 comprises "knowledge", "skills", and "attitudes and values". These are the least contested and most commonly used in many curricula in OECD countries.[63]

104. The IWG multi-level stakeholder groups are currently working with the OECD secretariat and experts to review, identify and clarify what kind of knowledge, skills and attitudes should be highlighted to develop the "transformative competencies for 2030" (see Figure 3).

62 This relates to a “holistic concept” of competence.

63 . For example, a taxonomy "character" was proposed at the early stage of the project suggesting to include "social and emotional skills" as well as "attitudes", and "values". However, it did not gain global support or reach global validation, while gaining support from some countries in Asia that used similar terms in their curricular.

Figure 4: OECD Learning Compass 2030 in Curricular Framework



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3. Overview of some emerging trends towards 2030, curricular reflections and examples

105. The OECD secretariat and the OECD experts have been working further to review the types of knowledge, skills, and attitudes and values required for 2030. The curriculum analysis also aims to identify "design principles" that endure across different countries and different times, and thus, can guide policy-makers to make the curriculum redesign process more evidence-based and systematic. Some of the emerging discussions include the following.

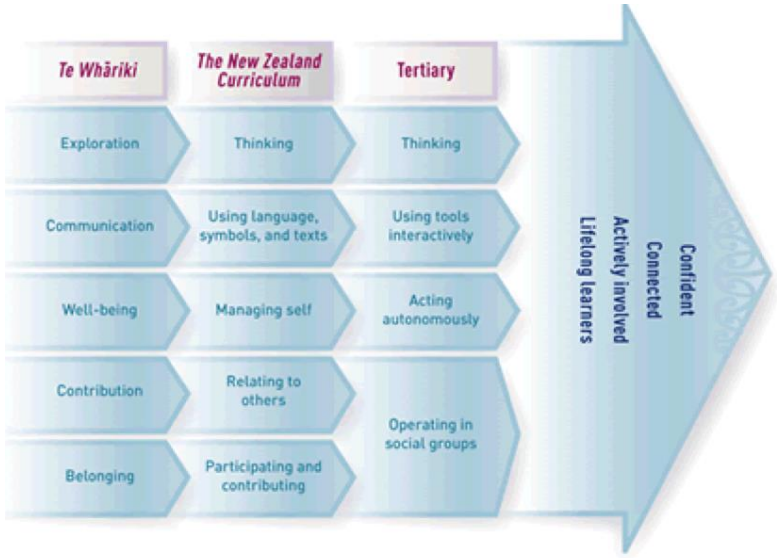
Student agency in curriculum

106. How can "student agency" be translated into the curriculum? This has been increasingly articulated in the vision statements in current curriculum of many OECD countries. For example, the New Zealand curriculum includes, in its vision statements, that they envision that their children and students be “confident, connected, actively involved, lifelong learners”, who are “literate and numerate”, “critical and creative thinkers”, “active seekers, users, and creators of knowledge”, and “informed decision makers”. It further aligns key competencies from early years, school and tertiary education, taking into account the age-appropriateness (Box 8).

BOX 8: NEW ZEALAND CONCEPTUAL CURRICULUM FRAMEWORK

Towards the clear vision set out by curriculum (i.e. confident, connected, actively involved lifelong learners), New Zealand also sets outs a framework to indicate how the selected key competencies at different learning stages are aligned, in accordance with the developmentally age-appropriateness, including Te Whariki (early years), school curriculum, and tertiary education.

For example, a sense of "belonging" in early years will be developed into "participating and contributing" in school curriculum, and furthered into "operating in social groups" at the tertiary level.



107. Some countries also articulate the importance of lifelong learning by highlighting the core competencies, general capabilities or curricular competencies which will play a key role in becoming a lifelong learner, in particular, metacognitive skills such as **learning strategies, self-direction, self-reflection, self-management, academic mindset**. The New Zealand curriculum suggests "**student agency**" in classroom practices[64], e.g.

- students setting, managing, & reflecting on learning goals and processes (metacognition) through online learning journals
- students leading discussions with parents & teachers over reporting progress (3 way conferencing)
- students being responsible for cross-curricular homework tasks
- students contributing to school & classroom decision-making e.g. contexts for learning

64 . Presentation of the New Zealand Curriculum – The Journey So Far – by Sonia Glogowski, Acting Project Manager, NZ Curriculum, Ministry of Education.

New types of literacies in curriculum

108. Preliminary document analysis has shown that countries have identified various literacies/ competencies/ skills/ attitudes and values as "cross-curricular" and to embed theme into curriculum.

Table 1. A comparative overview (preliminary) of cross-curricular literacies/ constructs articulated in curriculum

	AUS	CAN Ontario	CHL	CHN	CZE	DNK	EST	FIN	HKG	IND	IRL	KAZ	KOR	MEX	NZL	NOR	POL	RUS	GBR Scot-land	SWE	NDL	GBR Wales
Cross-Curriculum Key competencies/capabilities																						
Literacy	x	x	x	x			x	x	x	x	x	x	(x)	x	x	x	x	(x)	x	x	x	(x)
Numeracy	x	x	x	x			x	x	x	x	x	x	(x)	x	(x)	x	x	(x)	x	x	x	(x)
ICT literacy/ digital literacy	x	(x)					x	x	x		x	x	(x)	x		x	x	(x)		x	x	(x)
Global competency	x						(x)	x		x		x						x				
Fiscal literacy		x			x		x	x				x						(x)				
Critical thinking	x	x	x	x	x	x		x	x		x	x	x		x	x	x	(x)		x	x	
Creative thinking	x			x			x	x	x		x	x	x			x				x		
Social and emotional skills	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x		x	x	
Attitudes and values/ethical and cultural awareness	x		x			x	x	x	x	x	x	x	x	x	x			x		x	x	
Meta-learning		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	
Others			x	x		x		x		x	x									x		

Foundation skills 2030 in curriculum

109. Literacy, numeracy and digital literacy are articulated as foundations skills in curriculum in the majority of countries as indicated above, in line with the OECD Learning Compass 2030. Data literacy, however, is increasingly recognised for its importance and is embedded in certain subjects, while it is still not yet evident in intended curriculum.

Knowledge for transformative competencies for 2030

110. Knowledge will obviously continue to play a key role in human life. As mentioned earlier, the social, economic and cultural issues surrounding us are increasingly intricately interconnected, which now requires us to think creatively or outwith the boundaries of the foundation disciplines to find solutions to challenges and to seize opportunities in these surroundings.

111. For this, it is increasingly recognised that teaching traditional subject knowledge is not enough. It is important to recognise 4 different types of knowledge in curriculum. Students gain knowledge form dots and connect the dots. They can then identify common or different patterns across different disciplines and suggest solutions and see them in real life situations, where possible.

- **Disciplinary knowledge** (or gaining knowledge to form the dots)
- **Interdisciplinary knowledge** (connecting the dots across different disciplines)
- **Epistemic knowledge** - label to be confirmed (connecting the dots to the real world)
- **Transversal procedural knowledge** – label to be confirmed **(**knowledge about how to connect the dots across different contexts and in unfamiliar contexts)

Discipline Knowledge

112. Disciplinary foundations will remain essential in the future (Young, 2016). Disciplinary foundations are prerequisite to build one's own learning compass. "Navigating in time, social and digital space across different fields and unfamiliar situations" will require **recognising patterns**. Students may have already encountered some patterns in their past experiences, establishing analogies between the patterns in previously experienced situations and new ones, imagining alternatives to these patterns, and using the selected patterns to guide an activity today and in the future (Canto-Sperber & Dupuy, 2001).

113. It also requires **taking different perspectives** and exploreingwhether these patterns can fit in different social, economic and cultural situations. In this context, disciplinary knowledge will continue to be important. It is also important to further the foundational concepts of specific disciplines. The growing trends towards global value chains, for example, suggests that the need for specialized knowledge and expertise in certain sectors is expected to grow (OECD, 2013).[65]

114. Disciplinary knowledge can be separated into **"key concepts" or "big ideas"** from the **"detailed content knowledge"** in specific subject areas. The New Zealand curriculum defines key concepts as "Key concepts are the ideas and understandings that we hope will remain with our students long after they have left school and have forgotten much of the detail. Key concepts sit above context but find their way into every context. Students need time and the opportunity to explore these concepts; to appreciate the breadth, depth, and subtlety of meaning that attaches to them; to learn that different people view them from different perspectives; and to understand that meaning is not static. By approaching these concepts in different

65 . https://www.oecd.org/sti/ind/interconnected-economies-GVCs-synthesis.pdf

ways and by revisiting them in different contexts within a relatively short time span, students come to refine and embed understandings".[66]

115. The British Columbia curriculum also makes the distinction, in their terms, "knowing" vs "understanding" (Box 9). **The Big Ideas** consist of generalizations and principles and the key concepts of each learning area. The Big Ideas are what students will understand at the completion of the curriculum for their grades. Students are expected to bring those ideas beyond a single grade and even after their completion of education. The example of big ideas in the science curriculum for K4 include:

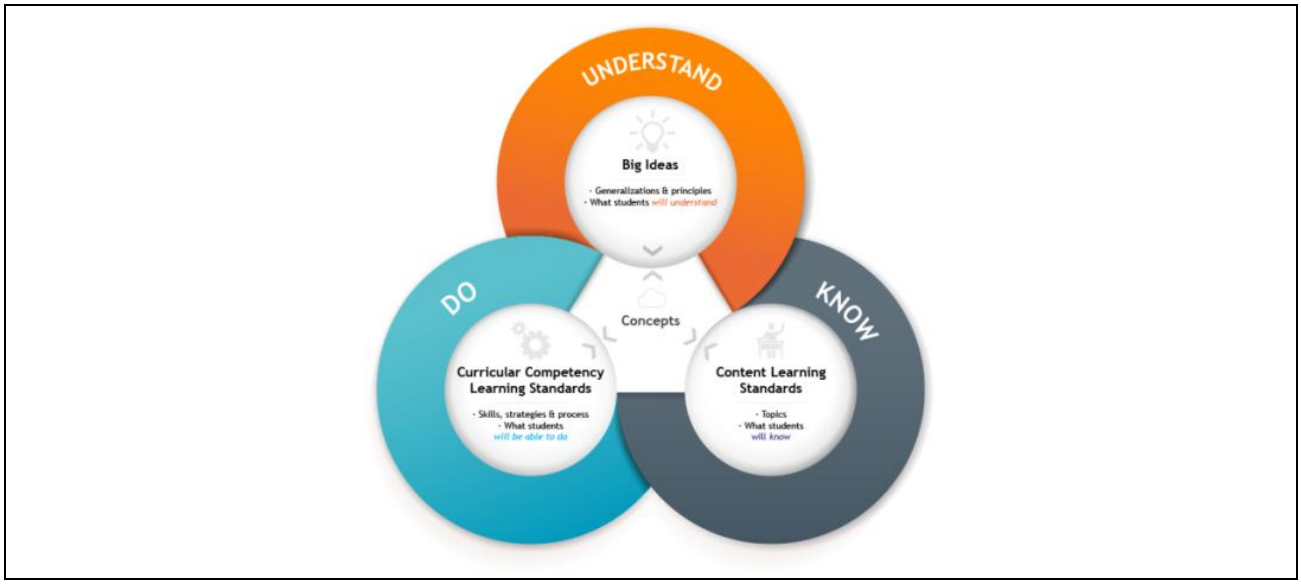
- All living things sense and respond to their environment.
- Matter has mass, takes up space, and can change phase.
- Energy can be transformed.
- The motions of Earth and the moon cause observable patterns that affect living and non-living systems.

116. The distinction between such "big ideas" and "content-specific details" can help addressing the issue of "curriculum overload". "Big ideas/ key concepts" and "topics that have more transferable values across different disciplines" are considered of greatest value, while discipline-specific details could be considered for removal, so as to keep the curriculum as "focused".

BOX 9: CONCEPT OF BIG IDEAS: BRITISH COLUMBIA, CANADA

The case of British Columbia, Canada, presents a "concept-based competency-driven" model. The BC Canada new curriculum places the core competencies along with literacy and numeracy foundations and essential content and concepts at the centre of the redesign of curriculum and assessment. Core competencies are defined as "sets of intellectual, personal, and social and emotional proficiencies that all students need to develop in order to engage in deep learning and life-long learning". In order to foster the Core Competencies, while at the same time ensuring subject-specific deeper learning, the new curriculum is designed based on the curriculum principle which consists of three elements; "Know-Do-Understand". These three elements correspond to Big Ideas (Understand), separate from Content (Know), and Curricular Competencies (Do).

66 . http://seniorsecondary.tki.org.nz/Social-sciences/Business-studies/Key-concepts/What-are-key-concepts



Interdisciplinary Knowledge

117. Interdisciplinary knowledge, capacity to see real-life problems, phenomena, issues through multiple lenses (different disciplines) to connect them to the world around them is becoming increasingly important, whilst acknowledging that the acquisition of inter-disciplinary knowledge is contingent upon the acquisition of disciplinary knowledge. In order words, having a familiarity with the knowledge, values, rules, and concepts, specific to the discipline will help students to recognize key patterns within certain disciplines and texts if they are to be applicable to other disciplines. To date, three different approaches to organize interdisciplinary knowledge are observed: i) meta-concept-driven, ii) thematic focused, and iii) subjects regrouping

1. Meta-concept-driven

118. Concepts that appear across different concepts can function as "**meta-concepts**" (i.e. big ideas/ key concepts that are transferable across different subjects). The "8+1 fundamental ideas of science" project identified 8 fundamental ideas that are a representation of the small number of ideas by which science can explain the way the natural world works, at a deep-structural level spanning various fields of science [EDU/EDPC(2016)9]. They are:

Atoms. Everything is made of atoms and atoms are composed of subatomic particles.
Cells. Cells are the basic unit of organisms.
Radiation. Electromagnetic radiation pervades our world.
Evolution. Systems evolve and change in time according to simple rules or laws.
Systems change. Parts of a system move and interact with each other through forces.
Energy and matter. Parts of a system can exchange energy and matter when they interact.
Physical concepts like energy and mass can be stored and transformed, but are never created or destroyed.
Life systems evolve through variation.
+ 1. Inquiry

119. In the BC curriculum, Canada, they are labelled as "**cross-cutting concepts**", i.e. *having "value because they provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas"*. The BC curriculum have identified 7 cross-cutting concepts within science:

1. Patterns. Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
2. Cause and effect: Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
3. Scale, proportion, and quantity. In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.
4. Systems and system models. Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.
5. Energy and matter: Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
6. Structure and function. The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.
7. Stability and change. For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.

120. The BC curriculum further attempted to identify the cross-cutting concepts that can be found beyond science and across 7 curriculum subject areas (ELA, Art Education, Social Studies, Science, Health Education/ PE, Mathematics, FRALP). Preliminary findings include 11 concepts that cut across more than 3 areas of learning.

1. Change
1. Community
2. Culture
3. Form
4. Identity
5. Pattern
6. Place
7. Point of view / perspective
8. Role
9. Systems and structures
10. Time

2. Thematic-focused

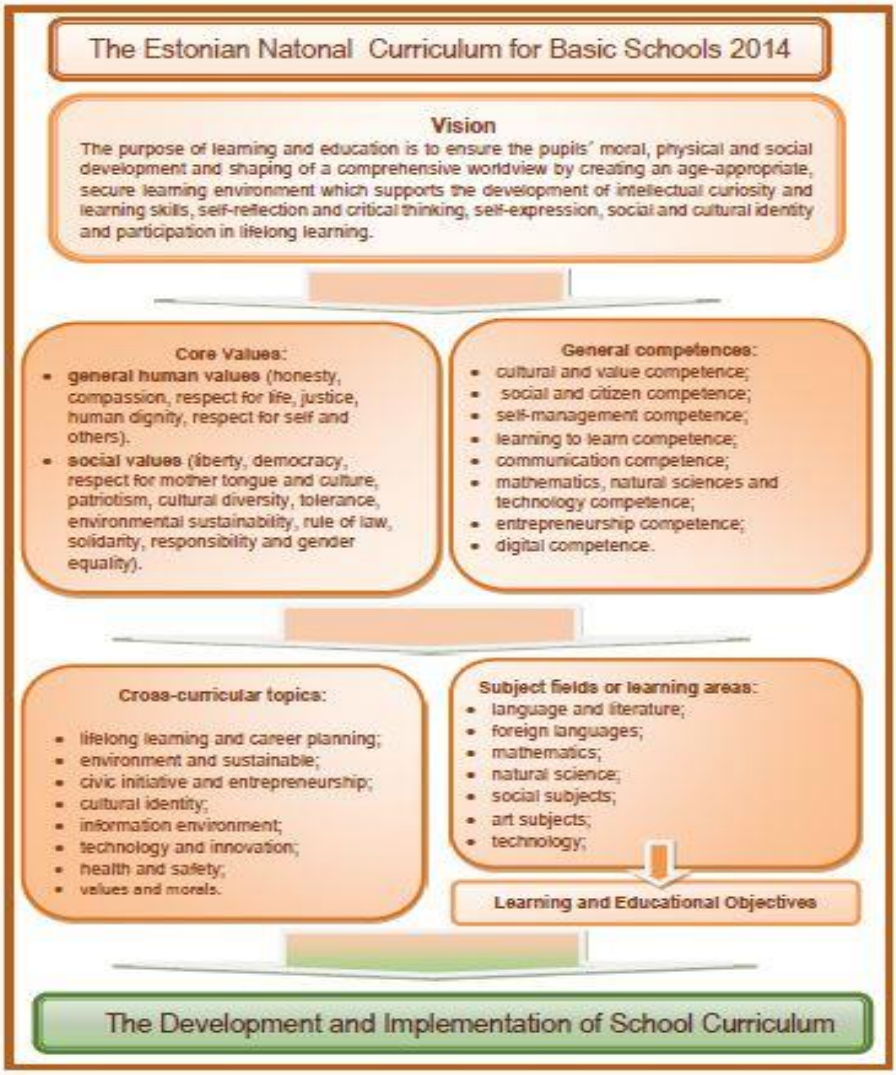
121. Some countries have attempted to provide opportunities for students to explore **inter-disciplinary issues/ phenomena/ themes** by embedding them into existing curriculum instead of creating "new subjects" so as to avoid curriculum overload. Estonia, for example, embed cross-curricular topics as well as cross-cutting competencies into curriculum (Box 10).

BOX 10: ESTONIA'S NATIONAL LEARNING FRAMEWORK

Estonia sets out eight "general competences" including: cultural and value competence; social and citizen competence; self-management competence; learning to learn competence; communication competence; mathematics, natural science and technology competence; entrepreneurship competence; and digital competence.

Also, as interdisciplinary topics, "cross curricular topics" are suggested, such as "lifelong learning and

career planning", "environment and sustainability", "civic initiative and entrepreneurship", "cultural identify", "information environment", "technology and innovation", "health and safety", and "values and morals".) These general competences and cross-curricular topics are well aligned.



122. In Finland, the government approved a new Decree on the goals and allocation of teaching hours between subjects in 2012. Based on that, the National Agency of Education has drawn up new core curricula for pre-primary and basic education. The main goals of the reform are in improving pupils' opportunities for experiencing the joy of learning, for deeper learning and good learning achievement. Municipalities, which are responsible for providing education, have designed the new local curricula based on the national core curriculum. For the first time, transversal competencies needed in the rapidly changing and complex world are described and a new tool for integrative teaching and learning is defined as obligatory. Themes that cut across different subjects are suggested as "phenomena" learning. Teaching and learning according to the new curricula has started in August 2016.

123. Preliminary document analysis has shown that cross-cutting themes are also suggested in curriculum.

Table 2. A comparative overview (preliminary) of cross-curricular themes articulated in curriculum

	AUS	CAN On-tario	CHL	CHN	CZE	DNK	EST	FIN	HKG	IND	IRL	KAZ	KOR	MEX	NZL	NOR	POL	RUS	SGP	GBR Scot-land	SWE	NDL
Cross-curriculum Themes/Topics/ Priorities																						
Sustainable Development	x	x	x		x		x	x			x	x	x		x	x					x	x
Globalization			x		x		x	x				x	x		x		x			(x)	x	
Technological change/ICT/Digitalization		x	x	x	x	x	x	x	x			x						x				
Innovation				X		x	x					x			x							
Entrepreneurship						x	x	x	x		x	x	x	x	x							x
Well-being		x	x		x	x	x	x			x	x	x	x		x		x		x	x	x
Citizenship/civic education	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
Indigenous History/Culture	x		x		x		x		x	x		x	x		x		x	x			x	

Epistemic Knowledge (label – still to be confirmed)

124. Teachers increasingly argue that in order to motivate students, it would not be enough to teach the subject contents but to introduce knowledge such as knowledge about how that subject contributes to solving real life problems by learning the subject and knowledge about how to think like mathematicians, historians and engineers. Epistemic knowledge, or whatever we label this type of knowledge, is becoming critically important to stimulate student motivation with "authenticity", which will lead to student engagement. Such knowledge can be stimulated by questions e.g. "What am I learning in this subject and why?", "what can I use the knowledge for in real life?" "how do certain professionals from this disciplinary field think?"

125. Recent findings from developmental psychology, neuroscience, learning science, etc. have driven curriculum designers to seek stronger learner motivation by ensuring that (at least some) curriculum content manifests recognisable "authenticity". In this context, knowledge becomes much wider than subject-specific contents or key concepts of disciplines.

126. Intrinsic motivation is deeply increased if students are able to recognise relevance and purpose in their learning. Achieving this in curriculum and pedagogical design is not easy. Thus, some countries embed such epistemic knowledge in the concept descriptions in curriculum to support teachers themselves to be able to better understand how certain concepts in specific subjects are related to real life issues or how certain professionals think.

127. For example, in the New Zealand curriculum, three key concepts are introduced for math **with an implication for applicability to real life issues**: [67]

Change and variation	Students uncover stories in which variation is omnipresent. Mathematics and statistics can be used to model the beating of the heart and explore the efficacy of heart medications.
Structure and generalisation	Students unlock stories using models, abstractions, and representations. Mathematics and statistics can be used to investigate climate change and design new virtual worlds.
Argumentation and proof	Students tell stories using evidence and reasoning. Mathematics and statistics can be used to triangulate forensic data and prove Pythagoras' theorem in more than 300 different ways.

128. In social sciences, four key concepts are suggested to support **authentic understanding in history and support students to be able to think like "historians**": [68]

Significance	Historians weigh the importance, durability, and relevance of events, themes, and issues in the past and the appropriateness of using the past to provide contemporary lessons; historians debate what is historically significant and how and why the decisions about what is significant change.
Continuity and change	History examines change over time and continuity in times of change. Historians use chronology to place these developments in context. Historians debate what has changed, what has remained the same, and the impact of these changes.
Cause and effect	Historians investigate the reasons for and the results of events in history; they debate the causes of past events and how these events affect people's lives and communities. Historians study relationships between events to identify pervasive themes, ideas, and movements, such as terrorism, revolution, and migration.
Perspective	There are multiple perspectives on the past (both at the time and subsequently). Interpretations of the past are contested – historians base their arguments on historical evidence and draw from

67 . http://seniorsecondary.tki.org.nz/Mathematics-and-statistics/Key-concepts
68 . http://seniorsecondary.tki.org.nz/Social-sciences/History/Key-concepts

	a variety of perspectives.

3. Subjects regrouping

129. Subjects regrouping is one of the strategies to recognising the importance of interdisciplinary knowledge, while at the same time, addressing the challenges of curriculum overload and competing subjects. There are different approaches in the regrouping. One example is to **re-organise specific subjects into "key learning areas".** For example, in the 1990s, New Zealand reframed "subjects" as "**key learning areas**" with an aim to remove the distinction between "core subjects" and "non-core", i.e. English, Maths, Science, Social studies, PE/ Health, Design and Technology, and Arts (Kennedy, 1995). The movements towards "STEM – science, technology, engineering, and mathematics" (with some variations e.g. STEAM – stem + art and design) is another example of grouping certain subjects for a particular purpose.

130. Japan has been in the process of curriculum reform, including subject reorganisation. According to the most recent draft, Japan will introduce some new subjects by reorganising existing subjects into wider learning areas. One example in upper secondary education is "exploration on math and science", which is to foster interdisciplinary and multi-angled thinking skills across math and science. This learning area is intended to focus on learning process how students identify problems, how they address these problems, and how they find solutions or reach conclusions. It is intended to foster deeper thinking skills as well as attitudes such as persistence. In social science, "national history" and "world history" will be merged and reorganised into "history. At the basic level, it will focus on a landscape of both Japanese history and world history with particular observations on how they interact, focusing on modern and contemporary history which has direct impact on the society we live today. Advanced subjects will remain as "exploration on national history" and "exploration on world history" as optional s. This will allow those students who are interested in specific knowledge on each subject to have opportunities to go more in-depth, building on the basic knowledge or fundamental concepts of history (e.g. perspectives).

Transversal Procedural Knowledge (label – still to be confirmed)

131. Transferable knowledge about procedures is also becoming important – knowledge about thought patterns/ frameworks that are applicable across different contexts (e.g. system thinking, design thinking). These procedural knowledge will require **a certain craft logic**. This develops through understanding of how something is done, or made (e.g. **"knowing how"**), e.g. a series of steps, or actions, done to accomplish a goal, often characterised as strategies, productions, and interiorized actions' (Byrnes & Wasik, 1991, p. 777). Some are **domain-specific** (procedural knowledge in mathematics), others are **transferrable across different domains** (e.g. understanding possible actions or a sequence of these actions that will lead to appropriate solutions when implemented appropriately). This transversal procedural knowledge develops through real life problem-solving practice, and thus should be tied to particular problem types towards making well-being 2030 a reality in the Learning Compass 2030.

132. It was also noted that cutting-edge jurisdictions argued for the importance **of teaching the thought patterns** that could help students identify issues in real life and find / suggest solutions to these issues. British Columbia would be a good example of this with their ADST (Applied Design, Skills and Technology) curriculum. The ADST curriculum has been seen as somewhat of a catalyst for change in BC and it is an area that integrates well with other areas of learning. In fact, at grades K-5 the competencies must be applied with content in other curricular areas with the intent that students will develop foundational mindsets and skills in design thinking and making. The competencies of design thinking as articulated in ADST

include: understanding context, defining, ideating, prototyping, testing, making and sharing/reflecting on design thinking and processes.

133. Relatively new frameworks, **such as systems thinking and design thinking**, are gaining increasing traction as methods particularly well-suited to addressing the circumstances of the 21st century. The former (system thinking) addresses complexity and inter-connection; it entails looking at the totality of a context (whether biological, digital, physical or social) and explores such concepts as homeostasis or self-regulation, tipping points, and feedback loops. The latter (design thinking) also seeks to incorporate systems approaches, but emphasises user perceptions, co-creation and practical solutions. As both disciplines grow within the higher education sector, it can be expected that they will become of increasing use and value within schools settings.

Attitudes & Values in curriculum

134. Whilst it remains a contested area in some regions of the globe, the OECD survey demonstrates that countries are starting explicitly to integrate values into curriculum design. To deepen our understanding of the treatment of values orientation and ethics in curriculum, a stock-taking exercise on "values in curriculum" is currently conducted in the overall OECD curriculum analysis [see EDU/EDPC(2017)16/ANN2].

135. In formal schooling, many countries articulate certain values – mostly in either education acts or curriculum. Embedding "values" is increasingly recognized as integral part of the curriculum, while the selection and scope of values may vary across countries due to its national and local contexts (**Box 11**)[69].

BOX 11. VALUES IN CURRICULUM

The following "values" are suggested in the country responses to the OECD 2030 policy survey on curriculum redesign:

- Collective well-being/ common good
- Environmental respect
- Sustainability
- Social cohesion
- Solidarity/ community/ care
- Citizenship
- Inclusion**;** Inclusiveness
- Equity/ Equality
- Gender equity / equality
- Peace and security
- Safety and life and health protection
- Human rights; Humanistic literacy
- Dignity; Human dignity
- Democracy
- Spirits of collectivism
- Freedom; Freedom of speech
- Rule of law
- Rights and responsibilities**;** Responsibility
- Ethics/ Moral

69 . Sources is the country responses to the OECD Education 2030 questionnaire on curriculum redesign. This is still an initial stage of synthesising and thus may capture all the values listed by every country and that the information is limited to countries, who have taken part in the policy survey on curriculum [EDU/EDPC(2017)16/ANN2]

- Integrity; Fairness; Justice
- Respect; Respect for self / themselves; Respect for tradition and culture of one's own nation / Patriotism; Respect for others; Respect for diversity; Respect for cultural diversity
- Tolerance; Tolerance of ambiguity; Rejects discrimination
- Empathy
- Benevolent
- Kind
- Compassion
- Collaboration, cooperation, communication
- Personal capability
- Creativity/ innovation
- Undertake initiatives
- Challenge spirit
- Enterprise
- Autonomy
- Scientific quality
- Wisdom
- Cognitive curiosity
- Wisdom
- Self-confidence
- Self-efficacy
- Persistence
- Resilience
- Credibility
- Aesthetic appreciation
- Honesty
- Education/ Learning

Source: OECD Education 2030 comparative analysis on curriculum

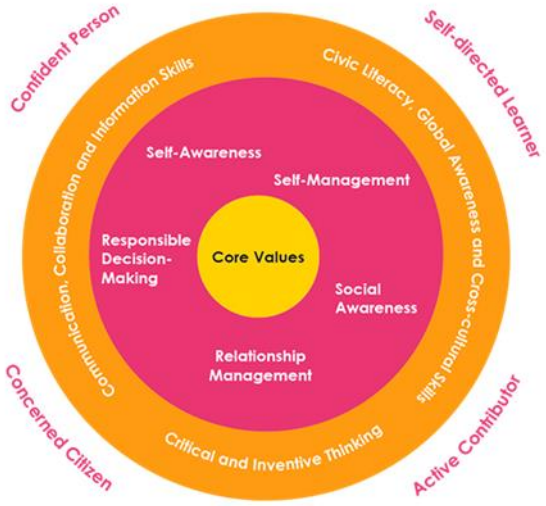
136. For example, the Singaporean curriculum highlights that the competencies are to be learned in the context of Singaporean core values at the centre of learning, i.e. **respect, resilience, responsibility, and harmony**, not that learning the 21st century competencies in a vacuum (Box X2). They are expected to be embedded into every subject. At the same time, a particular subject "character and citizenship education" is included in the syllabus where concrete guiding principles are provided along with the examples of contents, pedagogies, and assessments.

137. Scotland aims to embed values "**wisdom, justice, compassion and integrity**" in its curriculum. While Scotland broadly defines its core values, Estonia specifies what students should value as "general human values" (i.e. **honesty, compassion, respect for life, justice, human dignity, respect for self and others**) and "social values" values (i.e. **liberty, democracy, respect for mother tongue and culture, patriotism, cultural diversity, tolerance, environmental sustainability, rule of law, solidarity, responsibility and gender equality**) and both core values and general competences are to be embedded into learning areas and cross-curricular topics. Furthermore, the importance of "values and morals" are articulated by being suggested as one of the cross-curricular topics. The Education 2030 curriculum analysis is currently reviewing the types of values commonly addressed across participating countries [EDU/EDPC(2017)16/ANN2].

BOX 12: SINGAPORE'S NEW NATIONAL LEARNING FRAMEWORK

Singapore's *21st Century Competencies Framework* puts the primary emphasis on **values**: respect, responsibility, resilience, integrity, care and harmony.

Values shape a young person's **social and emotional** competencies, such as self and social awareness, relationship management, self -management and responsible decision-making. They also inform **21st century competencies** such as Civic Literacy, Global Awareness & Cross Cultural Skills, Critical and Inventive Thinking Skills and Communication, Collaboration and Information Skills. These competencies have been developed to address globalisation, changing demographics, technological advances and other trends. Together, they are intended to nurture a confident person, a self-directed learner, a concerned citizen and an active contributor.



138. Discussions in the international community also mirror the increasing importance of fostering common values through education for individuals' better life and for societal well-being. The OECD is committed to support countries to recover **trust** in institutions and among communities, which will require a stronger effort to develop core values of citizenship at school (**tolerance, respect, fairness, personal and social responsibility, integrity and self-awareness**) towards more inclusive, fair, and sustainable economies and societies."[70]

139. The values included in the OECD Global Competency Framework include "valuing **human dignity**" and "valuing **cultural diversity**" as guiding principles for attitudes such as "**Openness towards people from other cultures**", "**Respect for cultural otherness**", "**Global-mindedness**", and "**Responsibility**".[71] The SDG 4.7 includes Global Citizenship Education, which suggests to foster an attitude supported by an understanding of multiple levels of identity; knowledge of global issues and universal values such as "justice", "equality", "dignity" and "respect", as well as aptitudes for "networking and interacting with people of different backgrounds, origins, cultures and perspectives", and behavioural capacities to "act collaboratively and responsibly to find global solutions for global challenges", and to "strive for the collective good".[72] The Council of Europe Competence Framework for Democratic Culture includes values (i.e. valuing "human dignity and human rights", "cultural diversity", "democracy, justice, fairness, equality and the

70 . The OECD's Proposal for Consolidation and Further Transformation of the OECD"21 x 21" https://www.oecd.org/about/secretary-general/21-for-21-A-Proposal-for-Consolidation-and-Further-Transformation-of-the-OECD.pdf
71 . https://www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf
72 . http://unesdoc.unesco.org/images/0022/002277/227729E.pdf

rule of law") as well as attitudes (i.e. "openness to cultural otherness and other beliefs", "world views and practices", "respect", "civic-mindedness", "responsibility", "self-efficacy", and "tolerance of ambiguity").

140. The G7 Summit Leaders' Declaration 2016 recognises the importance of common values and principles for all humanity (e.g. "Freedom", "Democracy and respect for privacy", "Human rights", "Human dignity") at this time of the rise of violent extremism, terrorist attacks and other challenges. The values articulated in the United Nations instruments (e.g. the Universal Declaration of Human Rights; the UN Charter; the UN Millennium Declaration) include "Equality", "Freedom", "Justice", "Dignity", "Solidarity", "Tolerance", "Peace & Security", and "Sustainable Development".

4. On-going work on curriculum analysis and next steps

141. The OECD Learning Framework 2030 cannot be context-free. In order to translate the OECD Learning Framework 2030 into curriculum, the policy issues that countries are facing in their approach to curriculum renewal have been reviewed. In order to build a knowledge base to support countries in making the process of curriculum design and development a more evidence-based and systematic process [EDU/EDPC(2016)11], the IWG agreed upon the proposed overarching policy question of the project as the following: **What are country examples of effective strategies to address key policy issues concerning curriculum redesign?**

142. The scope of the key policy issues was also agreed to focus on the following five issues:

- **Issue 1. Shortening the period between recognising significant developments and responding to them with new curricula**. Currently, even the most agile countries revise curricula only every six to seven years. But the quickening pace of change makes that too slow a response. New and ubiquitous digital technologies have had a surprisingly slow impact on the classroom, and the relatively poor education performance of some countries that do deploy them suggests that curriculum and pedagogy remain fundamentally misaligned with the most promising education technologies. Similarly, the introduction of rigorous global education has lagged well behind the rapid increase in migration. As a result, a number of countries, particularly in East Asia, have invested in enhanced forecasting and horizon-scanning processes.

- **Issue 2. Resisting curriculum overload**. The tendency to add new subjects to existing ones has led to overloaded curricula and "hurried" children. A number of countries have therefore looked to broaden the learning experience, while allowing time for deeper learning, by reorganising subjects into learning areas, integrating new subjects, topics and themes into traditional curriculum areas, and highlighting key concepts and big ideas as the priority foundations.

- **Issue 3. Enhancing the quality of curriculum content and standards**. Broader learning does not lead inevitably to deeper learning, and many countries recognise an urgent need to identify and promote core underlying disciplinary concepts. The work of the National Science Foundation in the United States to improve the coherence, rigour and focus of science teaching, and Singapore's adoption of the mantra "Teach Less, Learn More", both reflect this aspiration.

- **Issue 4. Ensuring learning equity and opportunity.** A clearly defined curriculum is believed to be one of the key policy levers that can bring multiple benefits. A common framework or standards can ensure even quality levels as well as equal learning opportunities across different schools and classrooms. This is particularly important for students at risk.

- **Issue 5. Planning for effective implementation.** Increasing attention is being paid to the gap between the intended and the implemented curriculum. Countries that involve teachers in curriculum design are more likely to win teacher engagement in putting the curriculum into effect.

143. The "curriculum overload" and "enhancing the quality of curriculum contents and standards" were discussed at the last IWG meeting on 16-18 May 2017, hosted by the Ministry of Education of Portugal. Other topics will be discussed at future IWG meetings. The "managing the time lag between today's curriculum and future needs by shortening the period between recognising significant developments and responding to them with new curricula" and "planning for effective implementation" will be discussed at the next meeting, scheduled on 23-25 October 2017, at the OECD, Paris.

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