



OECD Future of Education and Skills 2030

Conceptual learning framework



ATTITUDES AND VALUES FOR 2030



IN BRIEF

ATTITUDES AND VALUES FOR 2030

Attitudes and values are a key component of the OECD Learning Compass 2030, which helps students navigate towards well-being and the future we want. They refer to the principles and beliefs that influence one's choices, judgements, behaviours and actions on the path towards individual, societal and environmental well-being.

Strengthening and renewing trust in institutions and among communities hinges on developing core shared values of citizenship (respect, fairness, personal and social responsibility, integrity and self-awareness) at school in order to build more inclusive, fair, and sustainable economies and societies.

Knowledge, skills, attitudes and values are not competing concepts; they are developed interdependently. As schools, workplaces and communities become more ethnically, culturally and linguistically diverse, it will be more important than ever to emphasise the inter-relatedness of knowledge, skills, attitudes and values.

Approaches to developing attitudes and values often draw on cultural and societal traditions while addressing global challenges.

KEY POINTS

- Attitudes and values are increasingly integrated into curriculum frameworks – an acknowledgement that competencies require more than knowledge and skills.
- A diverse range of education systems are pursuing integrated approaches to developing values and attitudes, often drawing on cultural and societal traditions, while addressing global challenges.
- Recent trends in technology, notably the use of artificial intelligence, have put ethics high on the education agenda. Today's students will benefit from the capacity to evaluate the extent to which technology may or may not ensure a fair and equitable world.

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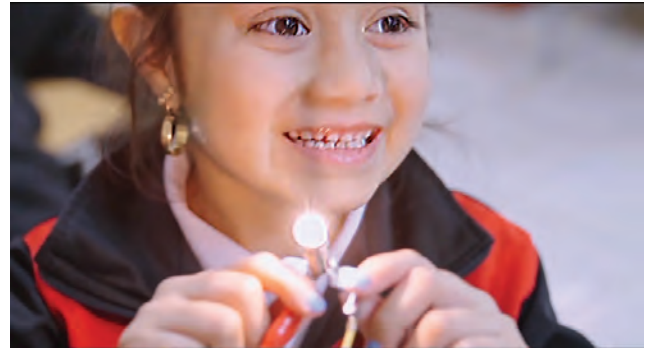


CHANGING ATTITUDES AND VALUES THROUGH SOCIO-EMOTIONAL LEARNING



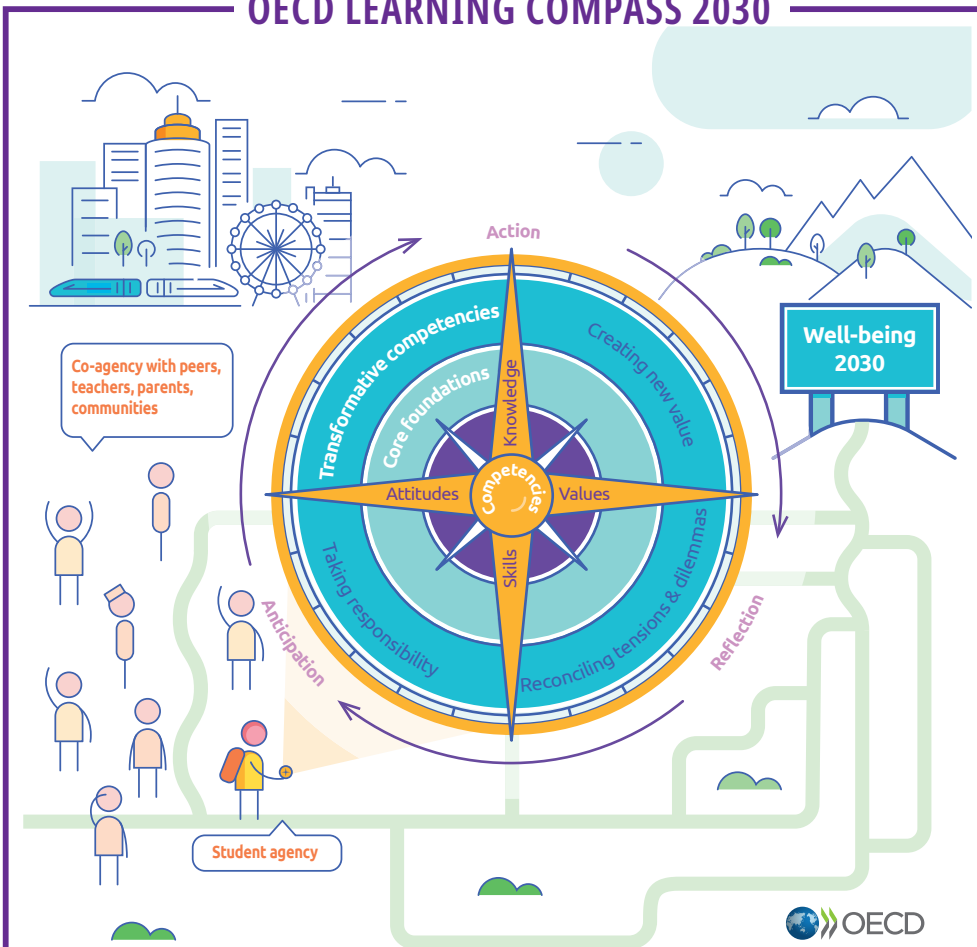
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Attitudes and Values for 2030

The OECD Learning Compass 2030 defines attitudes and values as the principles and beliefs that influence one's choices, judgements, behaviours and actions on the path towards individual, societal and environmental well-being.

Values are the guiding principles that underpin what people believe to be important when making decisions in all areas of private and public life. They determine what people will prioritise in making a judgement, and what they will strive for in seeking improvement (Haste, 2018^[1]).

Attitudes are underpinned by values and beliefs and have an influence on behaviour (UNESCO IBE, 2013^[2]). It reflects a disposition to react to something or someone positively or negatively and attitudes can vary according to specific contexts and situations (Haste, 2018^[1]).

The OECD Learning Compass 2030 was co-created by multiple stakeholders as a tool that is globally informed but locally contextualised. To acknowledge local differences, “values” are classified into four categories:

- **Personal** values are associated with who one is as a person, and how one wishes to define and lead a meaningful life and meet one's goals.
- **Social** values relate to those principles and beliefs that influence the quality of interpersonal relationships. They include how one behaves towards others, and how one manages interactions, including conflict. Social values also reflect cultural assumptions about social well-being, i.e. what makes a community and society work effectively.
- **Societal** values define the priorities of cultures and societies, the shared principles and guidelines that frame the social order and institutional life. These values endure when they are enshrined in social and institutional structures, documents and democratic practice, and when they are endorsed through public opinion.
- **Human** values have much in common with societal values. However, they are defined as transcending nations and cultures; they apply to the well-being of humanity. These values can be identified across spiritual texts and indigenous traditions spanning generations. They are often articulated in internationally agreed conventions, such as the Universal Declaration of Human Rights and the United Nations Sustainable Development Goals (SDGs).

Different terminologies for “attitudes and values” are used in different contexts

Depending on social and cultural contexts, different terms may be used instead of “attitudes and values”. These terms include “affective outcomes”, “aptitudes”, “attributes”, “beliefs”, “dispositions”, “ethics”, “morality”, “mindset”, “social and emotional skills”, “soft skills” and “virtues” (or “character qualities”).

Personal, social, societal and human attitudes and values can be incorporated into curricula using a variety of approaches and terms. While this concept note uses the term “attitudes and values” throughout, it does not exclude other terms. Indeed, clarifying these terms is essential for developing a common language and shared understanding. Haste (2018^[1]) provides definitions for the following concepts¹ related to attitudes and values:

- **Affective outcomes** refer to the emotional consequence of a person's experience of events, performance or judgement – for example, anger, disgust, elation or regret.
- **Aptitudes** refer to potential areas of capability, skill, talent, or a predisposition to learn or adapt easily in a particular domain.
- **Attributes** refer to characteristics of a person's beliefs, values, skills or personality.
- **Beliefs** refer to both facts and strong convictions associated with values. Factual beliefs are those based on (or claimed to be based on) evidence and data. Beliefs as strong convictions are based on core commitments to values, through which factual data is filtered to create a convincing argument.
- **Dispositions** refer to a tendency to respond in particular ways to a situation due to pre-existing values that affect judgement or action. Dispositions may reflect preferences based on aesthetics or what is enjoyed (e.g. sport). They may also reflect general personality or mood states, such as a tendency towards optimism or pessimism, or qualities such as risk-avoidance or curiosity.
- **Ethics and morality** are terms related to values and behaviour associated with causing or preventing intentional harm to others, and to protecting and helping others. The terms are also used in conjunction with maintaining integrity with regard to one's values, especially when these values match the dominant values of one's culture, such as trustworthiness, honesty, loyalty or fairness. Ethical and moral judgement derives from values, but not all values derive from ethics and morals.
- **Mindset**, a term popularised by Carol Dweck, means a disposition to frame experience, information or problems within a set of strategies based on values or purposes. For example, a student with a “growth mindset” understands that his or her talents and abilities can be developed through effort. A mindset predetermines a person's responses to and interpretations of situations. Depending on the type, mindsets can be productive and motivating, or rigid and resistant to change.
- **Social and emotional skills** refer to the abilities to interact and communicate with others; form and sustain relationships; manage conflicts; take others' perspectives and empathise; manage one's own responses, especially affective responses, in social situations; and understand one's own emotional experiences in ways that enable affect to be positive and growth-oriented.
- **Soft skills** is a term often used as a generic category for social and emotional skills, but the term may also include managing motivation and applying values.
- **Virtues (or character qualities)** are one way of looking at morality. A virtue is an enduring and consistent pattern of responses – affective, cognitive and behavioural – within a moral/ethical classification. Virtues are seen as attributes of a person, like traits, and are formed over time as habits of response. Character is a constellation of virtues.

International bodies have identified attitudes and values as integral to individual and social well-being

The importance of developing attitudes and values through education is increasingly discussed in international forums. The OECD is committed to helping countries strengthen and renew trust in institutions and among communities. This will require stronger efforts to develop shared values of citizenship (respect, fairness, personal and social responsibility, integrity and self-awareness) at the school level in order to build more inclusive, fair and sustainable economies and societies. The table below shows the values articulated by various international bodies and instruments.

Table 1. Values articulated by international bodies and instruments

OECD Global Competency Framework	Includes values (“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”
Sustainable Development Goal 4.7 on Education	Focuses on Global Citizenship Education and Education for Sustainable Development; 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”
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 rule of law”) and attitudes (i.e. “openness to cultural otherness and other beliefs”, “world views and practices”, “respect”, “civic-mindedness”, “responsibility”, “self-efficacy”, and “tolerance of ambiguity”)
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 a time of violent extremism, terrorist attacks and other challenges
United Nations instruments	Values articulated in the Universal Declaration of Human Rights, the UN Charter and the UN Millennium Declaration include “equality”, “freedom”, “justice”, “dignity”, “solidarity”, “tolerance”, “peace and security”, and “sustainable development”

Although the terminologies used to articulate the values above are not identical, a common thread emerges on the importance given to certain values, such as **human dignity, respect, equality, justice, responsibility, global-mindedness, cultural diversity, freedom, tolerance and democracy**. These values would help shape a shared future built on the well-being of individuals, communities and the planet.

For example, values such as **respect** includes a wider scope, including research for self, others including cultural diversity, and the environment. Studies show that self-respect improves academic outcomes, e.g. Rosenberg et al. (1995^[3]). Self-respect also allows the students to take a healthy middle ground between self-loathing and self-forgiveness (Dillon, 2001^[4]). Respect also improves societal relations as valuing others is essential for forming close relationships.

As for the value of **equality** and social equity, low inequality is a strong predictor of democratic stability (Anderson and Singer, 2008^[5]). Income equality is associated with greater child well-being, more trust, less mental illness, less drug use, greater life expectancy, lower infant mortality, less obesity, higher educational performance, and less homicides (Wilkinson and Pickett, 2009^[6]). Valuing equality helps people to understand the situation of people of different social status and of people who are suffering from

inequality as well as take responsibility to reduce inequality (Reysen and Katzarska-Miller, 2013^[7]). Research suggests that **integrity** is associated equity and equality (Lippman et al., 2014^[8]). **Justice** is also closely associated with equality; in order to make just decisions, an individual must take into consideration the ways in which issues of equality and equity for all others are achieved (Lerner, 2015^[9]). The value of equality helps us to take **responsibility** to reduce inequality (Reysen and Katzarska-Miller, 2013^[7]).

Justice is another example that is integral to individual and social well-being. Valuing justice has been found to increase tolerance and reduce prejudice across ages (Killen and Smetana, 2010^[10]). The development of justice values is critical because values toward justice are considered to be an important bridge between moral judgment and moral action to protect the rights of others (Hardy and Carlo, 2011^[11]) and necessary for promoting positive intergroup relations across cultures (Lerner, 2015^[9]). Adolescents who have a sense of justice also exhibit prosocial behaviours (i.e. helping, co-operating, sharing), which in turn are associated with both academic achievement and school success (Caprara et al., 2000^[12]; Jones, Greenberg and Crowley, 2015^[13]; Wentzel, 1993^[14]).

Attitudes and values are increasingly integrated into curriculum frameworks, an acknowledgement that competencies go beyond knowledge and skills

Attitudes and values appear not just in international documents but in curriculum frameworks around the world. Countries acknowledge that curriculum content is underpinned by a set of explicit or implicit values. Many countries note that education is never value-free. Even if a formal, intended curriculum may not articulate explicitly the teaching of attitudes and values, attitudes and values may still inform and govern the experiences in schools, including how expectations about desirable behaviour are communicated; how conflict and consensus-making between and amongst young people and adults in schools are managed; how student voice and choice matter or do not matter in schools; and how young people experience and act in their school cultures and learning environments. In their responses to the Policy Questionnaire on Curriculum Redesign, countries most frequently mentioned the values such as respect (for self, others, country, diversity, and the environment), empathy, integrity and resilience.

The curriculum in Singapore, for example, highlights that competencies are to be learnt with core values – care, integrity, respect, resilience, responsibility and harmony – at the centre of their learning framework. Singapore’s Ministry of Education believes that 21st-century competencies are not learned in a vacuum, but in specific contexts (Box 1, next page). These values are expected to be embedded into every subject. At the same time, a particular subject, called “character and citizenship education”, is included in the syllabus. Guiding principles for this subject are provided along with examples of content, pedagogies and assessments.

Box 1. Singapore's new National Learning Framework

Singapore's 21st-Century Competencies Framework emphasises the values of **respect, responsibility, resilience, integrity, care and harmony**.

Singapore believes that values shape a young person's social and emotional competencies, such as self- and social awareness, relationship management, self-management and responsible decision making. Values also inform 21st-century competencies, such as civic literacy, global awareness and cross-cultural skills, critical and inventive thinking skills, and communication, collaboration and information skills. These competencies are needed 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.

Figure 1. Singapore's Framework for 21st Century Competencies and Student Outcomes



Source: www.moe.gov.sg/education/education-system/21st-century-competencies.

In 2009, the Estonian Ministry of Education and Research approved the national programme, “Values Development in Estonian Society 2009–2013”; the programme was subsequently renewed for the years 2015–20. The values described in the national curriculum derive from the ethical principles specified in the Constitution of the Republic of Estonia, the Universal Declaration of Human Rights, the Convention on the Rights of the Child and the foundational documents of the European Union.

Box 2. Values Development in Estonian Society

The objective of the programme Values Development in Estonian Society is to support the formation of common values in Estonia and contribute to the development of attitudes that would become the basis for a happy personal life and successful functioning of the society.

The programme focuses on the principal values formulated in the national curricula for basic and upper secondary schools. These are divided into **general human values (honesty, consideration, reverence for life, justice, human dignity, respect for oneself and others)** and **social values (freedom, democracy, respect for mother tongue and culture, patriotism, cultural diversity, tolerance, sustainability of the environment, adherence to law, solidarity, responsibility and gender equality)**. The programme supports the implementation of basic and upper secondary curricula, the realisation of the Estonian strategy of lifelong learning 2020, and several other national strategies and development plans.

The programme concentrates on values education for children and young people in order to help them grow into versatile and creative people who can find fulfilment in the family, at work and in public life. Systematic values education presupposes a broader agreement on the aims of education and on what kind of a society citizens would like. The programme thus emphasises public discussions on social values and the aims of education.

The main objectives of the programme are to:

- support children's and young people's values education and systematic values development in educational institutions and youth-work institutions so that each child and young person can grow up in an environment that facilitates the development of the person and integration into society. It is essential to give everyone the ability to reflect on values in connection with their everyday lives, to interpret their deeds, motives for action and the potential consequences.
- reduce the gap between rhetoric on values and actual choices. Values education develops young people's ability to assess situations of everyday life against their own personal values and those agreed by society. It also develops the ability to assess the alignment between the values that are considered essential and one's actual behaviour.
- enhance the level of discussions on ethics and values in the society by helping different social groups reach a common understanding of general human and social values that help to live a good life, and implement the constitutional objectives of the Republic of Estonia.

Source: www.eetika.ee/en/values-development-0.

The revised Norwegian Core Curriculum – values and principles for primary and secondary education and training – was established by Royal Decree. As part of the national curriculum, the core curriculum elaborates the key values and the general principles for primary and secondary education and training. These values, the foundation of Norwegian democracy, helps Norwegians live, learn and work together.

Box 3. Excerpts from the revised Norwegian Core Curriculum

School shall base its practice on the values in the objects clause of the Education Act.

The objects clause expresses values that unite the Norwegian society. These values, the foundation of our democracy, shall help us to live, learn and work together in a complex world and with an uncertain future. The core values are based on Christian and humanist heritage and traditions. They are also expressed in different religions and worldviews and are rooted in human rights.

These values are the underpinning of the activities in school. They must be used actively and have importance for each pupil in the school environment through the imparting of knowledge and development of attitudes and competence. The values must have impact on the way the school and teachers deal with the pupil and the home. What is in the best interests of the pupil must always be a fundamental consideration. There will always be tensions between different interests and views. Teachers must therefore use their professional judgment so that each pupil is given the best possible care within the school environment.

Human dignity

School shall ensure that human dignity and the values supporting this underpin the education and training and all activities.

The objects clause is based on the inviolability of human dignity and that all people are equal regardless of what makes us different. When teachers show care for the pupils and acknowledge each individual, human dignity is then recognised as a fundamental value for the school and society.

Based on human dignity, human rights are an important part of the foundation of our constitutional state. They are based on universal values that apply to all people regardless of who they are, where they come from and where they are. The UN Convention on the Rights of the Child is also a part of human rights, giving children and young people special protection. The education and training given must comply with human rights, and the pupils must also acquire knowledge about these rights.

Equality and equal rights are values that have been fought for throughout history and which are in constant need of protection and reinforcement. School shall present knowledge and promote attitudes which safeguard these values. All pupils shall be treated equally, and no pupil is to be subjected to discrimination. The pupils must also be given equal opportunities, so they can make independent choices. School must consider the diversity of pupils and ensure that every pupil experience belonging in school and society. We may all experience that we feel different and stand out from the others around us. Therefore, we need acknowledgement and appreciation of differences.

Critical thinking and ethical awareness

School shall help pupils to be inquisitive, so they will ask questions, develop scientific and critical thinking and act with ethical awareness.

The teaching and training shall give the pupils understanding of critical and scientific thinking. Critical and scientific thinking means applying reason in an inquisitive and systematic way when working with specific practical challenges, phenomena, expressions

and forms of knowledge. The teaching and training must create understanding that the methodologies for examining the real world must be adapted to what we want to study, and that the choice of methodology influences what we see.

If new insight is to emerge, established ideas must be scrutinised and criticised by using theories, methods, arguments, experiences and evidence. The pupils must be able to assess different sources of knowledge and think critically about how knowledge is developed. They must also be able to understand that their own experiences, points of view and convictions may be incomplete or erroneous. Critical reflection requires knowledge, but there is also room for uncertainty and unpredictability. The teaching and training must therefore seek a balance between respect for established knowledge and the explorative and creative thinking required to develop new knowledge.

Ethical awareness, which means balancing different considerations, is necessary if one is to be a reflecting and responsible human being. The teaching and training must develop the pupils' ability to make ethical assessments and help them to be cognisant of ethical issues.

Source: www.regjeringen.no/contentassets/53d21ea2bc3a4202b86b83cfe82da93e/core-curriculum.pdf.

Knowledge, skills, attitudes and values are developed interdependently

Attitudes and values are integral to developing knowledge, skills and agency:

- as motivation for acquiring and using knowledge and skills, and providing the cognitive and affective engine for agency (Cerasoli, Nicklin and Ford, 2014_[15]; Clary and Orenstein, 1991_[16]; Haste, 2018_[1])
- as framing the priorities for what comprises “well-being”, good personhood and good citizenship (Banks, 2006_[17]; Haste, 2018_[1]; Reysen and Katzarska-Miller, 2013_[7]; Killen and Smetana, 2010_[10]; Hardy and Carlo, 2011_[11])
- as endorsing and supporting societal and human values that promote social capital and societal well-being (Haste, 2018_[1]; Lerner, 2015_[9]; Mattessich and Monsey, 1992_[18]; Wood and Gray, 1991_[19]; Noddings, 1992_[20]; Vorauer and Sasaki, 2009_[21])
- for moral agency (Berkowitz and Miller, 2018_[22]; Gough, McClosky and Meehl, 1952_[23]; Hardy and Carlo, 2011_[11]; Malin, Liauw and Damon, 2017_[24]).

The concept of competency implies more than just the acquisition of knowledge and skills; it involves the mobilisation of knowledge, skills, attitudes and values to meet complex demands. Acquiring these competencies leads to desirable individual development and well-being, and to flourishing cultures and societies (Keyes and Haidt, 2002_[25]). For example, critical thinking is the cognitive process by which one evaluates and chooses among alternatives consistent with ethical principles. The perception and assessment of what is right or wrong, good or bad in a specific situation is about ethics. It implies asking questions related to values and limits, such as: What should I do? Was I right to do that? Where are the limits? Knowing the consequences of what I did, should I have done it? This supports a holistic understanding of a competency, assuming attitudes and values are inseparable from cognitive processing. To shape the future we want, students need to be able to use their knowledge, skills, attitudes and values to act in responsible ways (see the [concept note on Core Foundations](#)).

Some researchers note that knowledge and skills overlap when knowledge is transferred from one situation to apply to other situations (Meyer, 2004_[26]; Oliver and Butler, 2004_[27]). Problem solving, in general, requires the use of a combination of knowledge, skills, attitudes and values. For example, design thinking is one method of problem solving as it is “a process, a set of skills and mindsets that help people solve problems through novel solutions” (Goldman, 2017_[28]). It is concerned with the methods of solving a problem, whether the solution works, what users need, the social and cultural appropriateness of the solution, and the aesthetic appeal of the solution (Pourdehnad, Wexler and Wilson, 2011_[29]). Thus, design thinking requires not only knowledge about the problem, but also social and emotional skills to develop solutions empathetic with and suitable for users, and attitudes and values to ensure that procedures and products are ethical and culturally appropriate.

Attitudes influence the transfer of knowledge and skills

Not only do knowledge, skills, attitudes and values develop interdependently, but research has shown that attitudes influence the transfer of knowledge and skills. For example, Pea (1987_[30]) suggests that learner beliefs about the appropriate context for a skill will strongly influence its transfer. He used the example of Brazilian street children who could do calculations when they were selling merchandise on the street, but who were unable to do basic mathematics when they got to school.

In later research, Liu and Su (2011_[31]) and Cooley, Burns and Cumming (2016_[32]) present research indicating that if learners are enjoying the learning process and valuing the lesson, they are more likely to transfer the knowledge and skills to a new context. McCombs and Marzano (1990_[33]) also show that attitudes are key to self-regulation models affecting metacognition. Before a student can be metacognitively aware, he or she must believe that this is possible and desirable, thus setting up the possibility for transfer.

Cooley, Burns and Cumming (2016_[32]) explore how student attitudes might relate to transfer. They find that university students who were sceptical of group work, undertook an outdoor education course that taught the value of group work through experiential learning. Attitudes towards group work improved, and students reported a strong intention to continue to use group work in the traditional university setting. Similarly, in workplace training, Grossman and Salas (2011_[34]) find that cognitive ability, beliefs of self-efficacy, motivation, and perceived utility of new skills are strongest in individuals who demonstrate transfer of skills in employment training.

In a 2013 review of the impact of non-cognitive skills (defined in the review as “a set of attitudes, behaviours and strategies that are thought to underpin success in school and at work, such as motivation, perseverance and self-control”) on outcomes for young people, Gutman and Schoon (2013_[35]) note that children’s perception of their ability, their expectations of future success, and the extent to which they value an activity influence their motivation and persistence, leading to improved academic outcomes, especially among low-attaining pupils. They also note that in school, effective teaching, the school environment, and social and emotional learning programmes can play an important role in developing key non-cognitive skills. Elsewhere, researchers note that “self-discipline out-predicts IQ for academic outcomes by about a factor of two” (Duckworth and Seligman, 2005_[36]; Seligman, 2017_[37]).

The inter-relatedness of knowledge, skills, attitudes and values is not new

Teaching knowledge, skills, attitudes and values in combination is not new: they have been taught and learned in combination across cultures and time. For example, with roots in ancient Greek tradition, the German concept of *Bildung* was originally constructed for combining knowledge and personal growth.² The concept was transformed into an aim of schooling not just for the elite, but for all students, and has seen a revival in the Nordic countries from the 1960s onwards.

In an education context, knowledge and skills are prerequisites for *Bildung*. *Bildung* includes knowledge and skills plus something more. A student with all the knowledge and skills taught in the curriculum might still not have attained *Bildung*. *Bildung* implies internalised values embedded in the culture; this means both personal and cultural values in relation to others. This kind of holistic understanding of a competency resonates with the pedagogical “trinity” model (“hand-heart-head”) also observed in the West.³

The holistic approach to competency can also be found in the curriculum traditions of the East. In recent curriculum reforms, an Asian “trinity” model (“Moral-Knowledge-Body - 德[de]智[zhi]体[ti]”) is articulated more explicitly. In China, for example, the trinity model is embedded in its philosophy of “Five Ways of Life (五 育 育 德 智 体 群 美 [de] [zhi] [ti] [qun] [mei])”. From the traditional Chinese culture perspective, 德 (moral values) is considered as the primary virtue of an individual, followed by 智 (knowledge/wisdom/intellect) and 体 (physical well-being/physique). In addition to these individual attributes, 群 (social/collective interaction skills) highlights the importance of being part of a collective group and 美 (aesthetics) supports students’ appreciation of art, music and the diversity of human cultures.

In Korea, “知(ji)德(deok)体(che)” is also valued. In particular, Korea promotes the development of a well-rounded person, stressing the needs for 德 and 体. For 德, Korea adopted a Character Education Promotion Act in 2015 to develop intelligent learners who are able to communicate well with others and have a balance of strength, virtue and wisdom. For 体, Korea promotes balanced growth of body and mind by strengthening school sports and physical activities.⁴ In Japan, “知(chi)德(toku)体(tai)” is still considered to be the basis of the curriculum, and fundamental to thriving in society.⁵

As schools, workplaces and communities become more ethnically, culturally and linguistically diverse, it will be more important than ever to emphasise the inter-relatedness of knowledge, skills, attitudes and values. Cognitive skills, such as exposure to and training in other languages; and emotional and social skills, such as perspective-taking and empathy (OECD, 2018_[38]), are critical for fully participating and thriving in increasingly diverse communities.

The capacity to combine and apply knowledge, skills, attitudes and values in unfamiliar circumstances is uniquely human

When Luckin and Issroff (2018_[39]) identify a number of things that people should know and be able to do with artificial intelligence (AI), they mention a combination of knowledge (basic AI concepts, digital literacy, data literacy, online safety protocols), skills (basic AI programming, AI systems building), attitudes and values (ethics of AI). Everyone should understand not just the opportunities that AI offers but also its limitations.

An understanding of the ethics of AI is crucial to the future use of AI, both in how systems are developed and how people can make good and effective use of AI systems (see the [concept note on Core Foundations](#) for more information on digital and data literacy).

Other researchers note that AI is unlikely to replace people in jobs that require complex social interactions, such as persuasion and negotiation. These jobs demand not only knowledge, but also skills, attitudes and values. Although a wide range of low-skilled production, sales and service jobs are likely to be automated, as are jobs requiring manual dexterity, some relatively simple tasks, such as assisting and caring for others, are unlikely to be. In other words, although AI is making inroads into some domains, it is unlikely to replace workers whose jobs require complex social interactions.

In order to adapt to accelerating technological advances, workers will have to acquire social skills, along with knowledge, attitudes and values (Berger and Frey, 2015_[40]). To remain competitive, workers will need to acquire new knowledge and skills throughout their working life. That requires flexibility, a positive attitude towards lifelong learning and curiosity. Education should thus focus on “fusion skills” – that is, a combination of creative, entrepreneurial and technical skills that allows workers to shift into new occupations as they emerge (Berger and Frey, 2015_[40]).

Recent trends in technology have put ethics high on the education agenda

Gilroy (2012_[41]) suggests that scientific and technological advances pose ethical questions, such as:

- Is a fully automated vehicle safer and more effective than a human-operated vehicle? Who will be responsible in case of accidents?
- Will 3-D printers offer affordable products and deliver them faster by cutting out the manufacturing process? What will happen when 3-D printers are used to produce home-printed guns or personalised pharmaceuticals?
- How often do we consider the massive amounts of data we give to commercial entities when we use social media, store discount cards or order goods via the Internet?

Recent developments in technology, particularly in AI, have put ethics at the centre of discussion on what kind of competencies today’s students need for their future. Being ethical about using AI is crucial to how AI is integrated in our lives.

While the ethical imperative is greatest for students who will be designing, using and evaluating AI systems, an ethical attitude to AI is still essential for every student, as everyone will need to be able to evaluate systems, have knowledge of what is legal and illegal (and of what should be legal and illegal), and have the capacity to decide when it is inappropriate to use AI systems and when to report unethical and/or dangerous systems so that people are kept safe.

In exercising their moral agency (see the [concept note on Student Agency](#)), students could think about how AI can be harnessed for good, and learn what to do when AI is not being used for legal and ethical purposes (Luckin and Issroff, 2018_[39]).

When considering attitudes and values as part of education, it is useful to ask, now and in the future: what kinds of attitudes and values would we want our leaders and decision makers to have, to ensure a fair and equitable world in which everyone would want to live and thrive? It is important to keep in mind that attitudes and values are often caught, not taught.

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Notes

¹ The definitions of these concepts were drawn from Haste, H. (2018_[42]), *Attitudes and Values and the OECD Learning Framework 2030: A critical review of definitions, concepts and data*, which includes the full list of citations used.

² www.coe.int/t/dg4/linguistic/Source/Prague07_LS_EN.doc

³ For instance, this was postulated in the 18th century by the Swiss pedagogue and educational reformer Johann Heinrich Pestalozzi (1746–1827).

⁴ Presentation by Ms. Moonhee Kim at the Future of Education and Skills 2030 4th IWG meeting, November, 2016

⁵ www.mext.go.jp/a_menu/shotou/new-cs/idea/index.htm

