

**DIRECTORATE FOR EDUCATION AND SKILLS
EDUCATION POLICY COMMITTEE**

Cancels & replaces the same document of 03 July 2015

Framework Issues paper including Cross-walks

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Education 2030

Addendum to

“Framework Issues, including Cross-Walks”

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With sincere thanks, and appreciation for its generous support, to the:



Fondation
Henri Moser

DEFINITIONS

CCR Definitions:

In its framework of Knowledge, Skills, Character, and Meta-Learning, CCR has used the following definitions¹:

- **Knowledge:** “Facts and information, acquired through experience or education; the theoretical or practical understanding of a subject”².
 - “Traditional Knowledge” refers to traditional subjects such as:
 - Maths
 - Science
 - Languages - domestic
 - Languages - foreign
 - Social Studies (History, geography, civics, economics, etc.)
 - Arts incl. Music
 - Etc. (country-dependent)
 - “Modern Knowledge” refers to new subjects, *often interdisciplinary*, rarely if at all learned or optionally learned, such as:
 - Technology & Engineering, including:
 - Robotics & A.I.
 - Synthetic Biology
 - Media, including:
 - Journalism (digital)
 - Cinema
 - Entrepreneurship
 - Personal finance
 - Wellness:
 - Physical
 - Mental
 - Social systems (sociology, anthropology, etc.)
 - Etc.
 - “Themes” refer to important lenses which must be infused in all Knowledge, such as:
 - Global literacy
 - Environmental literacy
 - Information literacy
 - Digital literacy
 - Systems thinking
 - Design thinking
 - Etc.
- **Skills:** “The ability to do something well”³. For example: creativity, critical thinking, communication, etc. as they represent the application of Knowledge. The definition used are P21’s⁴:

¹ Also, see section from main paper titled “What needs to be considered for a correct taxonomy/ontology?”

² http://www.oxforddictionaries.com/us/definition/american_english/knowledge

- Creativity: “Think creatively, work creatively with others, implement innovations”
 - Critical thinking: which includes problem-solving and decision-making: “Reason effectively, use systems thinking, make judgments and decisions, solve problems”
 - Communication: “Articulate thoughts and ideas effectively”
 - Collaboration: “Demonstrate ability to work effectively and respectfully with diverse teams”
- **Character:** “The mental and moral qualities distinctive to an individual”⁵.
 - “Character” is a catch-all word for all of the confusing terminology used worldwide: Agency, Aptitudes, Attitudes, Attributes, Behaviors, Characteristics, Compass, Dispositions, Mindsets, Personality, Temperament, Values, etc. including “Social & Emotional Skills”⁶ and the improper: “soft skills” and “non-cognitive skills”.
 - The definitions used for the six Character qualities of the CCR framework are a composite of all the associated traits and concepts describing the quality holistically, per the table below:

<i>Mindfulness</i>	Wisdom, self-awareness, self-actualization, observation, reflection, consciousness, compassion, gratitude, empathy, caring, growth, vision, insight, equanimity, happiness, presence, authenticity, listening, sharing, interconnectedness, interdependence, oneness, acceptance, beauty, sensibility, patience, tranquility, balance, spirituality, existentiality, social awareness, cross-cultural awareness, gregariousness, warmth, sympathy, deliberation, esthetics ...
<i>Curiosity</i>	Open-mindedness, exploration, passion, self-direction, motivation, initiative, innovation, enthusiasm, wonder, appreciation, spontaneity, activity, imagination, actions, excitability...
<i>Courage</i>	Bravery, determination, fortitude, confidence, risk taking, persistence, toughness, assertiveness, adventurousness, unconventionality, zest, optimism, inspiration, energy, vigor, zeal, cheerfulness, humor...
<i>Resilience</i>	Perseverance, grit, tenacity, resourcefulness, spunk, self-discipline, effort, diligence, commitment, self-control, self-esteem, confidence, stability, adaptability, dealing with ambiguity, flexibility, feedback, ...
<i>Ethics</i>	Benevolence, humaneness, integrity, respect, justice, equity, fairness, compassion, kindness, altruism, inclusiveness, tolerance, acceptance, loyalty, honesty, truthfulness, straightforwardness, authenticity, genuineness, trustworthiness, decency, consideration, forgiveness, virtue, love, care, helpfulness, generosity, charity, devotion, belonging, civic-mindedness, citizenship, ...

³ http://www.oxforddictionaries.com/us/definition/american_english/skill

⁴ For more comprehensive definitions, please see: <http://www.p21.org/our-work/p21-framework>

⁵ http://www.oxforddictionaries.com/us/definition/american_english/character

⁶ <http://www.oecd.org/edu/cei/educationandsocialprogress.htm>

<i>Leadership</i>	Responsibility, abnegation, accountability, dependability, reliability, conscientiousness, selflessness, humbleness, modesty, self-reflection, inspiration, organization, delegation, mentorship, commitment, compliance, dutifulness, achievement, heroism, charisma, followership, engagement, leading by example, goal-orientation, focus, results orientation, precision, execution, efficiency, negotiation, consistency, socialization, social intelligence, diversity, decorum...
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- **Meta-Learning:** “The process by which learners become aware of and increasingly in control of habits of perception, inquiry, learning, and growth that they have internalized”⁷. CCR’s Meta-Learning framework is made of:
 - Growth Mindset: “talents and abilities can be developed through effort, good teaching and persistence.”⁸
 - Metacognition (Reflection): “Awareness and understanding of one’s own thought processes.”⁹
 - Self-Directed Learning: “select, manage, and assess learning activities, which can be pursued at any time, in any place, through any means, at any age”¹⁰

The complete CCR framework is represented as follows:



⁷ Maudsley, D.B. (1979). A Theory of Meta-Learning and Principles of Facilitation: An Organismic Perspective. University of Toronto, 1979. (40, 8,4354-4355-A)

⁸ Dweck, C. S. (2006). Mindset: The new psychology of success. New York: Random House.

⁹ http://www.oxforddictionaries.com/us/definition/american_english/metacognition

¹⁰ <http://www.selfdirectedlearning.com/>

As a reminder, we include again this section from the original submission: **What needs to be considered for a correct taxonomy/ontology?**

In developing its top-most taxonomy, CCR has used the following logic:

- Is the word generally comprehensible by a non-education expert?
- Is the word generally comprehensible by non-native English speakers?
- Does the word mean, to the greatest extent possible, the action required?
- Is it used at the right layer of abstraction?

By this method, it has zeroed in on the following:

Possible words	CCR's Choice	Logic
Subjects; Content; Knowledge; Understanding	Knowledge	<ul style="list-style-type: none"> • Subjects are what constitute Content • Content is a subset of Knowledge • Understanding is the resulting goal, and "Understandings" is clumsy and has diverse meaning.
21 st Century Skills; Higher Order Thinking Skills	Skills	The word "Skills" is widely understood as "using knowledge," but is vastly overused in varied contexts, from multiplication tables to entrepreneurship. CCR uses it to describe the "4 C's" only.
Character, Agency, Aptitudes, Attitudes, Attributes, Behaviors, Compass, Dispositions, Personality, Temperament, Values, Social & Emotional Skills	Character	<ul style="list-style-type: none"> • No single word satisfies everyone • Character is used most often in countries, particularly Asia where it is less politically charged than in the US/UK • Character is understandable by even the non-specialist • Other terms each have their limitations and biased understanding • Social & Emotional skills is too long, academic sounding, and "skills" is confusing
Metacognition, Learn how to learn, Reflection	Meta-Learning	<ul style="list-style-type: none"> • To imply "the process by which learners become aware of and increasingly in control of habits of perception, inquiry, learning, and growth that they have internalized"¹¹ • Separating this into a fourth dimension, as difficult as it is, allows for extra focus rather than subsuming under skills, given the importance of this dimension. • "Metacognition" is overly technical and may be confusing in other languages • Meta-Learning captures the placement of this level as improvement of the other three dimensions, and reflection and adaptation of oneself.

¹¹ Maudsley, D.B. (1979). A Theory of Meta-Learning and Principles of Facilitation: An Organismic Perspective. University of Toronto, 1979. (40, 8,4354-4355-A)

1) Definitions used by other frameworks:

In its survey of thirty-two frameworks, CCR noticed that they do not clearly define their basal taxonomy. This was already noted in publications such as OECD's New Millenium Learners which stated: *"Most countries do not, however, provide a clear answer to how these skills and competencies are defined in their documents or simply state that such national definitions do not exist"*. This fact has also been confirmed by Emma Green¹² in her research for the OECD Education 2030 project. *Often, the word "definition" is used at the macro level, using entire paragraphs to define broad competencies, not single-sentence definitions of words such as "knowledge",* as for instance in the OECD's DeSeCo project¹³ and P21's work on 21st century skills¹⁴.

But even P21's terminology receives the following caution from the "Glossary of Education Reform"¹⁵: *"It should be noted that the "21st century skills" concept encompasses a wide-ranging and amorphous body of knowledge and skills that is not easy to define and that has not been officially codified or categorized. While the term is widely used in education, it is not always defined consistently, which can lead to confusion and divergent interpretations. In addition, a number of related terms—including applied skills, cross-curricular skills, cross-disciplinary skills, interdisciplinary skills, transferable skills, transversal skills, noncognitive skills, and soft skills, among others—are also widely used in reference to the general forms of knowledge and skill commonly associated with "21st century skills."*

One exception surfaced: The European Commission's Cedefop glossary¹⁶ defines a skill as follows: *the ability to perform tasks and solve problems.*

This lack of definitional rigor can be conjecturally attributed to four reasons:

1. Users pre-assume that people have a basic mental model of what the words mean, and are not disciplined at checking with each other as team meetings get under way
2. The words are not easily defined semantically beyond a dictionary definition, which is assumed by #1 above
3. Categorizations and taxonomies are an endless exercise with no clear answers, leading to #4 below
4. The true definition eventually comes from a shared view of how the parameter (for example, Creativity) is assessed.

CCR posits that definitions will never be perfect because language is ultimately referential, not absolute, and definitions are emergent. Words have slightly different meanings for different people, and cultures around the world, while collective understandings are constantly growing and evolving. Further, this contains the demonstrated risk of paralysis via endless academic debates.

¹² Private communication on July 22, 2015

¹³ <http://www.oecd.org/education/skills-beyond-school/definitionandselectionofcompetenciesdeseco.htm>

¹⁴ <http://www.p21.org/our-work/p21-framework>

¹⁵ <http://edglossary.org/21st-century-skills/>

¹⁶ http://www.cedefop.europa.eu/EN/Files/4117_en.pdf

Usable suggestions from webinars/in-person meetings

- 1) **Competency:** there was general agreement, including through the intervention of Ms. Julia Atkin, that “a competence is the ability to apply learning outcomes adequately in a defined context (education, work, personal or professional development. A competence is not limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects (involving technical skills) as well as interpersonal attributes (e.g. social or organizational skills) and ethical values.”¹⁷. Consequently, the word “Competencies” could be used to describe all four dimensions¹⁸ of an education: Knowledge, Skills, Character and Meta-Learning.

- 2) **Meta-Learning:** the intervention by Norway highlighted the importance of the broader concept of Meta-Learning, not just Metacognition, which has been synthesized by CCR to now mean “*how we reflect and adapt*” and represents:
 - Growth Mindset
 - Metacognition (Reflection)
 - Self-Directed Learning

- 3) **Transversality of Competencies:** The representative of Finland, while describing Finland’s most recent framework, explained how their seven competencies would work across school subjects. This has been CCR’s opinion as well, summarized by the matrix below:

CCR Framework Matrix													
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	Skills				Character					Meta-Learning			
	Creativity	Critical thinking	Communication	Collaboration	Mindfulness	Curiosity	Courage	Resilience	Ethics	Leadership	Growth Mindset	Metacognition	Self-directed learning
Interdisciplinarity													
Traditional Knowledge													
Mathematics													
Science													
Language													
etc.													
Modern Knowledge													
Robotics													
Entrepreneurship													
Wellness													
etc.													
Themes - embedded ↑													
Global literacy													
Environmental literacy													
Information literacy													
Digital literacy													
Systems thinking													
Design thinking													
etc.													

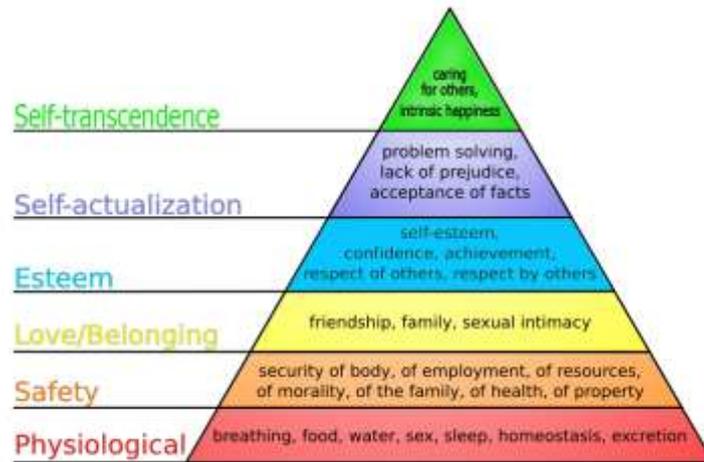
Note that some relevant, modern Knowledge areas are “Themes” that run throughout all subjects, such as for instance global literacy, systems thinking etc.

- 4) **Goals of an education:** both Ms Atkin and the Dutch representative brought up the need to keep in mind the totality of the goals of an education (“knowledge for learning and work, citizenship and personal engagement”), not only the economic outcomes. CCR had proposed a psychology-based approach to reconcile all these needs, using the Maslow pyramid¹⁹:

¹⁷ <http://www.oecd.org/edu/cei/centreforeducationalresearchandinnovationcei-newmillenniumlearners.htm>

¹⁸ Also to mean: Abilities, Capacities.

¹⁹ Maslow, A. (1954). Motivation and personality. New York, NY: Harper.



Both personal and societal needs are represented by all the layers of the pyramid, while economic needs are represented by layers 1, 2 and 4.

Additional Suggestions for OECD's Edu2030 project

Based on its interactions with the OECD2030 team since March 2015, and as it is a strong supporter of the OECD's EDU2030 project, the CCR would like to recommend the following steps and processes:

- Better leverage internal OECD resources, as well as pre-existing external resources, to build a knowledge base of existing evidence
- Review/synthesize countries with forward looking curricula containing components of the 21st century competencies (e.g. Finland, Australia, Singapore, etc.)
- Conduct a country survey to find out what are the key components of their curricula, what are they willing to give up and what do they think should be added
- Conduct a teacher survey to find out what are they competencies they believe should be developed, and what are the resources/tools they need in order to be able to develop them
- Review employer surveys (in collaboration with BIAC) to find out what are the key competencies they are looking for.
- Establish a common understanding and alignment of taxonomy and ontology among key stakeholders involved in the process – *this is the hardest part as it is synthetic and iterative. This will require careful planning and execution.*
- Start brainstorming a communication strategy for various stakeholders- this could happen in a staggered fashion as the framework is being developed in order to start engaging the key stakeholders (for example - social media strategy for students, guidebooks for teachers, etc..)