CENTER FOR CURRICULUM REDESIGN

Making Education *More* Relevant

Redesigning the Curriculum for a

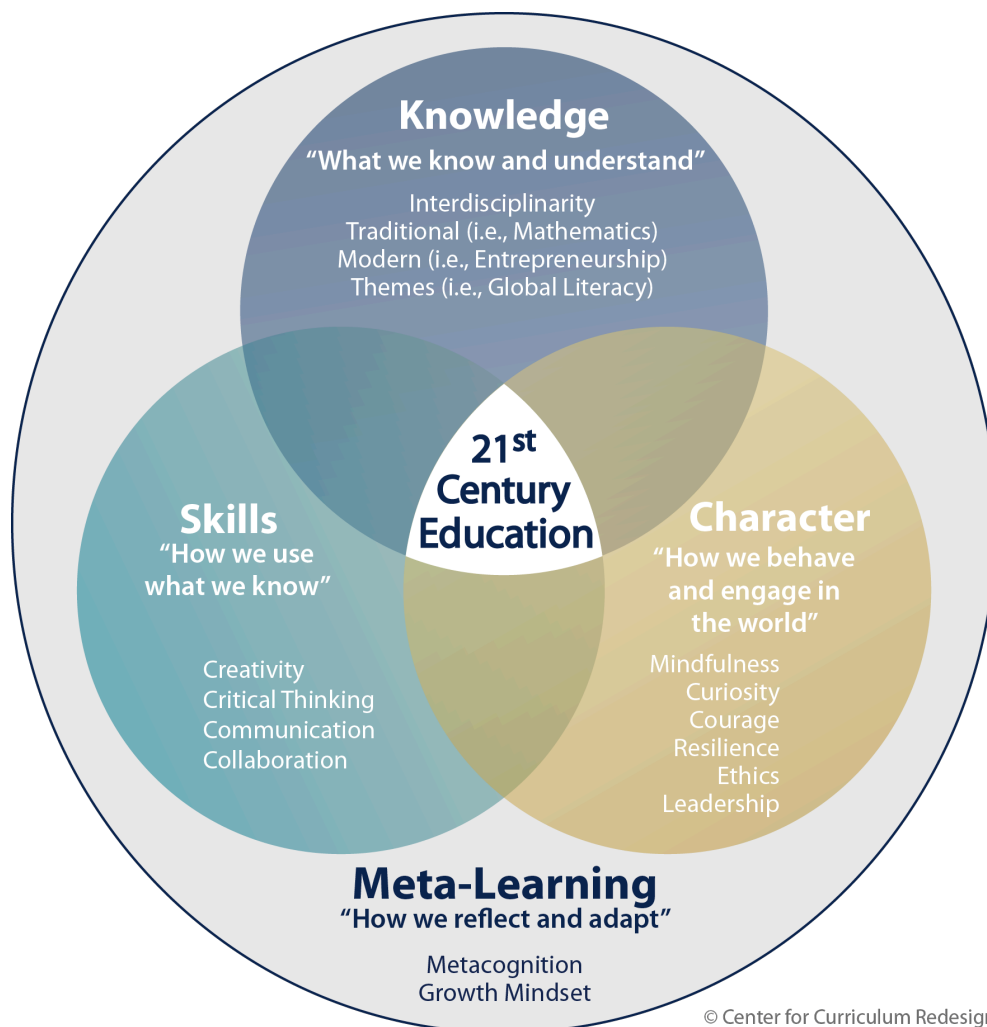# 21st Century Education

The CCR Foundational White Paper

In the 21st century, humanity faces severe challenges at the societal (climate change, financial instability), economic (globalization, innovation) and personal levels (employability, happiness). Technology's exponential growth is rapidly compounding the problems via automation and offshoring of tasks, which are producing societal disruptions. Education is falling behind the curve of technological progress,[1] as it did during the Industrial Revolution.

The last major changes to curriculum[2] were effected in the late 1800's as a response to the sudden growth in societal and human capital needs. As the world of the 21st century bears little resemblance to that of the past, education curricula are overdue for a major redesign, *emphasizing depth and versatility.* Curricula worldwide have often been tweaked, of course, sometimes to a large extent, but have never been **deeply** redesigned for all the dimensions of an education: Knowledge, Skills, Character, and Meta-Learning. Adapting to 21st century needs means revisiting each dimension and their interplay:

Knowledge
"What we know and understand"
Interdisciplinarity
Traditional (i.e., Mathematics)
Modern (i.e., Entrepreneurship)
Themes (i.e., Global Literacy)

21st Century Education

Skills
"How we use what we know"
Creativity
Critical Thinking
Communication
Collaboration

Character
"How we behave and engage in the world"
Mindfulness
Curiosity
Courage
Resilience
Ethics
Leadership

Meta-Learning
"How we reflect and adapt"
Metacognition
Growth Mindset

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❖ **Knowledge** — *What we know and understand.*
Knowledge is the dimension most emphasized in the traditional view of curriculum and content. Yet as collective knowledge increases, curriculum has not successfully kept up. The current curriculum is often *relevant* neither to students (reflected in their

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[1]   Goldin, C. & Katz, L. (2009). *The race between education and technology*. Harvard University Press.
[2]   Also known as "standards", "programmes" etc. depending on the country.

disengagement and lack of motivation) nor to societal and economic needs. Thus, there is a profound need to rethink the significance and applicability of *what* is taught, and simultaneously to strike a better balance between the theoretical and the practical.

Traditional disciplines (Maths, Science, Languages - domestic & foreign, Social Studies, Arts, etc.) are of course essential. Tough choices must be made about what to pare back in order to allow for more appropriate areas of focus (for instance in Maths, more statistics & probabilities, and less trigonometry), including concomitant depth that will cultivate the other three dimensions (Skills, Character, Meta-Learning). Modern disciplines (such as Technology & Engineering, Media, Entrepreneurship & Business, Personal Finance, Wellness, Social Systems, etc.) respond to present and future demands and must be accommodated as a normal part of the curriculum, not as ancillary or optional activities.

Interdisciplinarity is a strong binding mechanism within and between traditional and modern disciplines, and the practices it requires have the potential to impact the Skills, Character and Meta-Learning dimensions as well as accentuate transfer. Interdisciplinary approaches to knowledge will help learners make connections between concepts, facilitating deeper learning.

Themes of contemporary importance should be interwoven throughout knowledge disciplines, both modern and traditional. These include Global Literacy, Environmental Literacy, Information Literacy, Digital Literacy, Systems Thinking, and Design Thinking.

In order to make these difficult redesign decisions, each discipline will need to consider the three areas outlined below: (using Maths as an example)

(1) Concepts (e.g. rate of change) and Meta-Concepts (e.g. proof), which are often transferable to other disciplines,
(2) Processes (e.g. formulate a question mathematically), Methods (e.g. proportional reasoning), & Tools (e.g. multiplication tables)
(3) Branches (e.g. discrete mathematics), Subjects (e.g. game theory), and Topics (e.g. the Prisoner's Dilemma).

There are three sources of value for each discipline:

- **Practical** — That which students will need in their everyday lives, and for many of the projected jobs of the future; this aspect should be highlighted via the Concepts etc. presented above.

- **Cognitive** — Studying each discipline can enhance Skills, Character and Meta-Learning, "if done right". Often this assumption is the driving force in the curriculum's focus on disciplines (such as the idea that maths enhance critical thinking). This underlying learning model needs to be empirically examined for different disciplines and competencies, and curriculum must be aligned accordingly.

- **Emotional** — A discipline has both inherent beauty and power to help understand the world. This should be emphasized as an achievement of the human species, and can serve as a source of motivation for students. One must be careful to avoid the idea that beauty of a discipline can only be taught once the practical and cognitive aspects have been covered, as all three aspects should be learned *simultaneously* throughout all of schooling.

❖ **Skills**[3] — *How we use what we know*

Higher-order skills (such as the "4 C's" of Creativity, Critical thinking, Communication, Collaboration, also known as "21st Century Skills"[4]) are essential for deeply learning Knowledge as well as for demonstrating understanding through performance.[5] Yet the curriculum is already overburdened with content, making it harder for students to acquire (and teachers to teach) Skills. Additionally, there is a lack of support for educators in combining knowledge and skills in robust pedagogies and deeper learning experiences. There is, however, a reasonable global consensus on what the Skills are at the broadest level[6], and how different pedagogies (such as projects) can affect their acquisition.

❖ **"Character"** — *How we behave and engage in the world*

Increasingly, the need for development of qualities beyond knowledge and skills is being highlighted around the world. There are three commonly cited, broad purposes of character education—it can:

- Build a foundation for lifelong learning

- Support successful relationships at home, in the community, and in the workplace

- Develop the personal values and virtues for sustainable participation in a globalized world.

This dimension has very different nomenclature in different spheres, making consensus challenging. The dimension of Character encompasses all of the terms: agency, attitudes, behaviors, beliefs, dispositions, mindsets, personality, temperament, values, social and emotional skills, non-cognitive skills, and soft skills[7]. Character, although sometimes charged with non-educational connotations, is nevertheless a concise and inclusive term that is recognizable by all cultures.

CCR has synthesized more than 32 frameworks, research and feedback[8] from around the world to arrive at the essential six character qualities, each encompassing in it a broad range of related terms. These qualities are: Mindfulness; Curiosity; Courage; Resilience; Ethics; and Leadership, in which all other qualities and concepts can be fitted. Character learning is also likely to happen in out-of-school settings such as sports, scouting, adventure trips, etc. which heightens the challenge.

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[3]   There is no word that works equally well in all languages to convey the meaning of "Skills", which ends up being the best compromise. It could be "competencies", "savoir-faire", "proficiencies", etc.

[4]   Trilling, B. & Fadel, C. (2009). 21st Century Skills. Wiley — www.21stcenturyskillsbook.com

[5]   The Conference Board's "Are they really ready to work?"; AMA "Critical skills survey"; PIAAC program (OECD); etc.

[6]   www.oecd.org/site/piaac/mainelementsofthesurveyofadultskills.htm

[7]   The latter two should not be used, as their connotations may be misleading

[8]   Including more than 500 teachers

Top Qualities	Associated Qualities and Concepts (non-exhaustive)
Mindfulness	Wisdom, self-awareness, self-management 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, etc.
Curiosity	Open-mindedness, exploration, passion, self-direction, motivation, initiative, innovation, enthusiasm, wonder, appreciation, spontaneity etc.
Courage	Bravery, determination, fortitude, confidence, risk taking, persistence, toughness, zest, optimism, inspiration, energy, vigor, zeal, cheerfulness, humor etc.
Resilience	Perseverance, grit, tenacity, resourcefulness, spunk, self-discipline, effort, diligence, commitment, self-control, self-esteem, confidence, stability, adaptability, dealing with ambiguity, flexibility, feedback, etc.
Ethics	Benevolence, humaneness, integrity, respect, justice, equity, fairness, kindness, altruism, inclusiveness, tolerance, acceptance, loyalty, honesty, truthfulness, authenticity, genuineness, trustworthiness, decency, consideration, forgiveness, virtue, love, helpfulness, generosity, charity, devotion, belonging, civic-mindedness, citizenship, equality, etc.
Leadership	Responsibility, abnegation, accountability, dependability, reliability, conscientiousness, selflessness, humbleness, modesty, relationship skills, self-reflection, inspiration, organization, delegation, mentorship, commitment, heroism, charisma, followership, engagement, leading by example, goal-orientation, focus, results orientation, precision, execution, efficiency, negotiation, consistency, socialization, social intelligence, diversity, decorum, etc.

❖ **Meta-Learning** — *How we reflect and adapt*
The fourth and final dimension of the CCR framework is one that lies overarching to the other three. Meta-Learning concerns the processes related to reflecting on and adjusting one's learning. It includes metacognition (predicting, monitoring, and evaluating one's learning), as well as internalizing a Growth Mindset about one's capacities.

Meta-Learning is essential for creating lifelong learning habits and the learning of the other three dimensions, and ensuring the transfer of learning beyond its original context. The most successful students very often already engage in a productive virtuous cycle of Meta-Learning, and explicitly encouraging this dimension can help all students in all areas of learning, throughout their lifetimes and across their careers. In a world requiring constant and increasingly fast adaptation, deliberately highlighting this dimension – rather than subsuming it and thus often neglecting it – is critical.
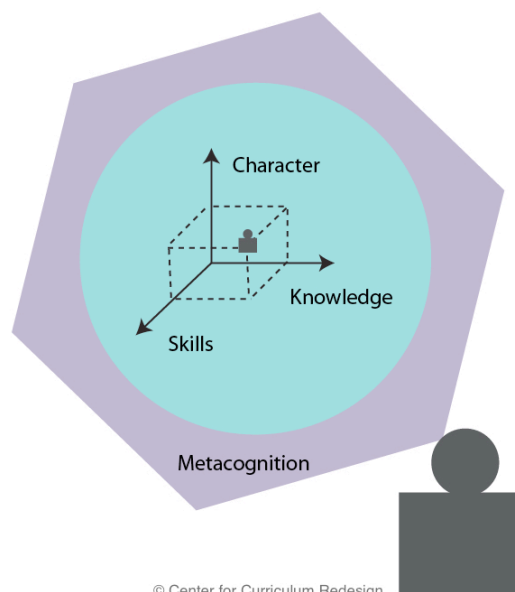
Calling for a 21st Century Education

Historical inertia has been so far a large deciding factor when it comes to curriculum design at the policy level, as well as given the human dynamics involved. For policy at the system level, most countries face political life-cycle instabilities that make it hard for systems to innovate in an ambitious way due to lack of continuity, and thus generally preclude the removal of obsolete areas. As for human dynamics, decisions are made by subject-matter experts in relative isolation from the demands of the real world (and the users of the discipline itself), and thus tend to take an incremental (and perhaps overly collegial) approach. Herein lies *the deep value to jurisdictions of the Center for Curriculum Redesign (CCR): it is independent of local politics, and mindful of biases, dogma and "groupthink".*

Most of the education transformation efforts worldwide are focused on the How of education, which is very laudable. But very little is being done about the What. Education much needs an innovative curriculum adapted to the needs of 21st century learners and societies: *Is Education relevant enough for this century? Are we educating learners to be versatile in a world that is increasingly challenging?*

The CCR addresses the fundamental question of "*WHAT* should students learn for the 21st century?" and openly propagates its recommendations and frameworks on a worldwide basis. The CCR brings together non-governmental organizations, jurisdictions, academic institutions, corporations, and non-profit organizations including foundations. Please join us on this exciting journey.

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www.curriculumredesign.org