

Learning Outcomes for the 21st Century: How and What to Learn in an Increasingly Dynamic World

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Picture credit: Toshifumi Katamura

Which are the *Necessary Conditions* for Learning in a Dynamic World?

As a saying goes, *'One man's jungle is another's rainforest'*. The choice of educational outcomes relates to rather diverse socio-cultural, economic-political, psychological and philosophical assumptions so that we may never find a final, all-encompassing consensus on contemporary educational goals. Still, in order to derive at a sensible pragmatic result, we can ask critically for the *necessary conditions* that are required for people of the 21st century to constitute their lifeworld and systems, to use the terms of Jürgen Habermas. At the end of the day, our influence on the real world is the final measure of success. If only the less capable and competent run our world it demonstrates that our educational and political systems are at peril.

We know that epistemological competencies of knowledge construction are equally as important as the ability to communicate knowledge within society or to create new knowledge in context. To add to the list of expectations, we are aware that the challenges of globalized and digitized societies raise the bar for individual self-regulation. This means that people need to be able to cope psychologically with ongoing changes (such as how workplace changes affect one's personal life), unlike traditional societies that are still based on rigidly-structured and predictable cycles of knowledge acquisition. A good example of this change is the new ideal of *lifelong learning* as well as the awareness of the increasing diversity and discontinuity of contemporary careers and jobs markets. On a societal level, things do not become less complex.

This is how, looking for relevant goals, it is not only important to secure better individual and social learning opportunities for young people but to empower them to develop, manage and improve the social systems they live in. This notion entails the fostering of *systemic competencies*. If people do not want to become passive onlookers on their lives, they need to be able to mediate the disruptions and conflicts arising from technological and economic developments. This is how the superordinate educational meta-goals need to assist sustaining the continuous improvement of individual, social as well as systemic conditions. Since self-governance and cooperative problem-solving play a major role in our historical situation of globalized and technologically transformed societies, we find ourselves redirected to the values of autonomy and solidarity of the Age of Enlightenment.

The Overarching Structure of Modern Educational Goals

Traditional education systems rely heavily on the acquisition of individual-cognitive competencies (such as, e.g., traditional reading, writing, arithmetic etc.) which serve as a resource to draw upon for the rest of life. Society 4.0, in stark contrast, requires continuous professional development, the situational updating of social and intercultural skills as well as restructuring our psychological organisation to accommodate the complexity of multi-dimensional change. Once we become aware of the new societal conditions governing the 21st century, we can paint a fairly coherent picture of the critical conditions that are needed for sustaining successful biographical life projects within an open democratic society.

In this light, **Self-Determination Theory (SDT)** (Deci & Ryan, 2012; Ryan et al., 2012) differentiates between the human needs for social relations, competence and autonomy. The latter relies not only on individual factors such as motivation and basic knowledge but on accommodating social conditions to empower autonomy. Since the cognitive acquisition of competencies remains the central topic in empirical educational science, the need for competency development is hardly an issue of controversy. Likewise, it is generally agreed upon that the acquisition of competencies depends on both individual and social conditions such as access to education for all, adequate support, well-equipped schools and small class sizes.

The concept of embracing both theory and practice corresponds to the German '*duales System*' (dual system) which promotes a dialectic relationship between hypothesis-generation and application, similar to the idea of a scholar-practitioner. We know things by creating them. Instead of talking about the acquisition of competencies, psychologist **Carol Ryff** uses the term '*Environmental Mastery*', which points beyond an abstracted, context-unrelated acquisition of skills and knowledge. Her 6-factor model (Ryff, 1989, 1995) also forwards the question how people make sense of their lives, how they can find happiness and psychological well-being.

The Social Construction of Individual Meaning

- **Positive self-concept and the Art of Living** (Ars Vivendi)

Life goals and resulting life tasks develop through authentic experiences. A prerequisite to translate personal experiences into future-oriented concepts is a positive and self-regulating Global Self that remains active during all stages of life. The goal of education is thus to empower people to assume positive self-regulation and not only functional problem-solving. We need to develop an art of living which is able to safeguard our psychological well-being.

We need to learn how to make and keep ourselves happy and well (in a eudaimonic manner) which entails embracing wisdom, courage, humanity, justice, temperance, and transcendence (Peterson & Seligman, 2004). Human flourishing is what makes life worth living.

- **Future-oriented developmental perspectives versus alienation and social exclusion**

Since life goals are mediated socially, political and socio-economic systems lose their legitimacy the moment personal and systemic interests and activities cannot be mediated reciprocally. Cutting the ties between lifeworld and system renders the system meaningless and epiphenomenal for all democratic participants. Hence, it must be a goal of education to foster mediation skills (*systemic competencies*) between individuals and democratic institutions in order to align individual life projects with institutionally guaranteed rights and benefits. Constructive political participation depends on properly-acquired socio-political competencies (e.g., how to mediate conflicts collaboratively and taking others' perspectives into consideration), which renders in the light of emerging populism a strong argument.

- **Environmental adaptation**

People find meaning in new and novel concepts of structuring their lives. In economy 4.0, more people work in teams and enjoy the benefits of a high division of labour but they are also confronted with problems that previous generations could never have anticipated (e.g., try explaining a Distributed Denial of Service Attack threatening the survival of a rural community to someone who had lived some decades ago). In highly dynamic economies such as of the OECD countries, young people are required to 'learn how to learn', as first conceptualised by Alexander von Humboldt.

Self-motivation in solving problems, conceptual thinking skills and able to work in cooperation with others become essential skills to survive in job markets that currently polarize into higher and lower qualified jobs and thin out medium-qualified positions. Inevitably pressure mounts on education systems to formulate new educational goals that are based on understanding, designing and regulating processes rather than teaching static academic knowledge which is of only limited value in practice. Traditional school knowledge may not vanish completely, but it is currently reinterpreted conceptually (such as favouring *mental operators*, such as analysing, synthesising and evaluating, see [Bloom's Taxonomy](#), over factual knowledge) and has to prove itself in the context of transferability within interdisciplinary study paths.

Connecting points between researchers

In the following some remarks on the chosen authors to exemplify modern educational goals. **Deanna Kuhn** (Kuhn, 1991, 20056) defined competencies to formulate and discuss rational arguments, already present in the work of Barrows, from an epistemological perspective. **Howard Barrows** extended the rational construction of knowledge towards metacognitive reasoning (Barrows, 1992) which, in the meantime, has been further differentiated into individual and social metacognition (Briñol & DeMarree, 2012). As described by Barrows, problem-solving skills depend on a number of discursive-epistemological (hypothesis guided, relating facts to ideas) as well as social-communicative competencies (rational practice, open inquiry and collaborative deliberation). **Albert Bandura**, one of the most influential psychologists of our time, emphasises in his latest publications (Bandura, 2006, 2008) the necessity of rational, future-oriented self-directedness and self-efficacy to guard individual and collective perspectives of social action. All leading researchers agree on the rational foundation of knowledge construction.

Finally, my choice of including **Claude Robert Cloninger** is somehow ambiguous since I call the all-encompassing influence of genetically determined personality traits critically into question. Still, Cloninger identified in his *Temperament and Character Inventory* (TCI) (Cloninger, 1994) important personality traits that are critical to future-oriented learning. These are in particular the development of personal resources, the ability to take responsibility, the social acceptance of others, the ability to empathise, openness towards new experiences and unselfish behaviour. These are noble qualities, we could argue with Bandura (Bandura, 1977), that can also be learned socially and are not exclusively determined genetically.

In conclusion, most leading researchers connect individual and social competencies with abilities of truth finding, concept generation and meaningful social action (Frith, 2012) that integrate systemic perspectives. The arising key argument is that individual, social and systemic competencies relate to each other in a

reciprocally-interactive manner. Traditional education, in stark contrast, has primarily only focussed on the acquisition of individual and cognitive competencies. Active learning philosophy has added social skills, systemic competencies and a more advanced psychological regulation to the list of essential educational goals.

From coarse-grained to fine-grained educational outcomes

In the following, I have mapped the discussed educational outcomes within a matrix as a working hypothesis. Besides the findings of leading researchers, we can verify necessary goals by a simple thought experiment. All we need to do is to imagine the consequences of missing objectives, e.g., what would happen if students cannot relate ideas to facts, or if they are unable to work together with others, what if they fail to communicate their concepts to the public and so on and so forth.

An educational goal can be regarded as critical and necessary if its absence leads to logical contradictions, self-negation or compromises higher mental and psychological functioning. Necessary educational goals do not exist *a priori*, but they evolve from intersubjective relations, which means that the absence or deterioration of objectives (higher educational standards) leads inevitably to social pathologies such as the emergence of aggression-reinforcing group polarisation, the development of rigid social hierarchies, elitist privileges or establishing the permanent exclusion of minority groups.

The concluded critical educational objectives are listed in the following PDF as 'Extended Educational Outcomes' (Click here: [EEO](#)). The associated 24 criteria are by themselves latent variables that require operationalisation within didactic contexts. To this extent, the EEO should not be regarded as a standardised 'one-size-fits-all' model, but an array of logical building blocks that allow for an almost infinite number of pedagogically useful models. It would be insightful to investigate how qualitative and quantitative data of these latent variables could be integrated so that user-generated data-sets for the optimisation and enrichment of learning processes can be utilized more appropriately.

We have just begun to envision the design of more creative, innovative and more holistic schools that encourage the human spirit to flourish, rather than to stifle it. For now, I like to put forward these extended outcomes as a proposal in order to empower young people being able to master our increasingly complex world. Compromising these standards and settling for any lesser would render a huge disservice to upcoming generations that have deserved better.

Summary

While traditional education favours the development of (a) individual cognitive competencies, modern education encompasses in addition (b) social skills, (c) systemic competencies and (d) a more complex internal psychological organisation to empower learners of all ages. Learning outcomes are not arbitrary but are based on real-world environmental demands. As leading researchers agree on the importance of a rational foundation of knowledge creation, the question arises how knowledge construction and extended environmental demands can be woven into a next-generation pedagogy.

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