



## 2. 21<sup>st</sup> century skills

"21<sup>st</sup>-century skills" can be described as an umbrella term with a broad spectrum of different skills (Chen, 2021). Those skills vary from one source to another, there is no consensus nor consistency in what skills to implement in such framework (Kocak et al, 2021; Mitsea et al, 2021) but the 21<sup>st</sup> century skills are often characterized as higher-order skills (Chen, 2021; Thornhill-Miller et al, 2023).

According to Raitskaya and Tikhonova (2019), at least nine frameworks for 21st-century skills have been developed. Yet, there are many combinations and approaches to the different frameworks. Kocak et al. (2021) researched seven skills as 21<sup>st</sup>-century skills: problem-solving, critical thinking, cooperativity, digital literacy, algorithmic thinking, creativity, and effective communication skills, and they proposed three models of the relationship between these skills. Raitskaya and Tikhonova (2019) propose "three major clusters of skills" (pp. 7), namely social and communicative skills, cognitive skills, and personal attributes and emotional intellect. World Economic Forum (2015) proposed 16 skills divided into three categories: Foundational Literacies (literacy, numeracy, scientific literacy, ICT literacy, financial literacy, cultural and civic literacy), Competencies (critical thinking/problem-solving, creativity, communication, collaboration) and Character Qualities (curiosity, initiative, persistence/grit, adaptability, leadership, social and cultural awareness). Battelle for Kids (2019) proposes a model visually represented as a rainbow with different components: Life and Career Skills, Learning & Innovation skills- 4Cs, Information, Media & Technology Skills, Key Subjects – 3Rs & 21<sup>st</sup> Century Themes. The 4C from Battelle for Kids stands for (1) creativity and innovation, (2) critical thinking and problem solving, (3) communication, and (4) collaboration (Syahril et al., 2022; Thornhill- Miller et al. 2023) and are quite like the "Competencies" from the report by World Economic Forum (2015).

In their study, van Laar et al. (2017) lists different skills associated with 21<sup>st</sup>-century skills while acknowledging that the emphasis is on the knowledge-based workforce with the essence to "put employees in charge of their own learning" (pp. 584). Due to the lack of a clear, universal definition of 21<sup>st</sup>-century skills, there is an expectancy of a natural or implicit understanding of what skills employees could need in their future work. But according to Suleman, there is an underlying assumption that "employers are undoubtedly aware of their needs. But is this a reliable assumption?" (2016, pp. 173). Suppose the context of the 21st-century skills is to get the students to be better equipped for work possibilities in the future. In that case, there is no chance of knowing exactly what skills would be needed since these possibilities do not exist yet (Bates, 2022). However, González-Pérez and Ramírez-Montoya argue further that: "It is necessary to analyze the curricula holistically to balance the various objectives of education with the soft and technical competencies" (2022, pp. 2). Every framework or strategy might shed some light on the topic, but predicting skills is a gamble with no clear solution. Even more, one could argue that if such a solution existed, it might differ from person to person, from situation to situation and from paradigm to paradigm.

## 3. Teachings paradigms

There are many paradigms of teaching. Some of the more famous are behaviorist, constructivist and cognitivist (Ertmer & Newby, 2013). These paradigms are described differently in different countries, depending on tradition, history, and the development of pedagogy and didactics in the area (Sajdak-Burska, 2013). In general, Behaviorism is based on the formation of expected student attitudes with the help of feedback. The goal is to form the desired knowledge (Skinner, 2011). The student is more passive, while the teacher is more active. Constructivism is based on the student's creative approach to learning (von Glasersfeld, 2000). Instead of passively receiving knowledge, the student is encouraged to be involved, act, develop, and solve problems. There doesn't have to be the only proper solution, but different solutions are possible depending on different expectations. Constructivism assumes students should learn by exploring the world, not just by listening to lectures and reading textbooks. As a result, students gain knowledge and practical skills to successfully deal with challenges at school and in life (Sajdak-Burska, 2013). Cognitivism assumes that the student is an active recipient of the information (Bruner, 1964). The learning process involves actively processing information and assimilating new knowledge. Cognitivism emphasizes the student being an active participant in the learning process, not just a passive recipient of information. The main goal of cognitivism is to develop students' cognitive skills, such as memory, attention, abstract thinking, analysis, knowledge synthesis, creativity, and problem-solving. Cognitivism also assumes students should learn based on understanding, not just memory.

The various paradigms appear to vary in degrees in different teaching models.

#### 4. University educational models

There are many approaches to educating students. The best-known are the Humboldt model and the French model (Sajdak-Burska, 2013). The Humboldt model is an approach to education developed by German student Alexander von Humboldt in the early 19th century. This model focuses on an interdisciplinary approach to learning and on developing students' intellectual, moral and emotional personalities.

Features of the Humboldt model (Tomicic, 2019) include:

- **Interdisciplinarity:** The Humboldt model assumes that science should be based on a combination of different disciplines, such as the natural sciences, humanities, and social sciences, to increase understanding of the world.
- **Individualization:** The Humboldt model focuses on an individualized approach to learning, meaning that teachers must adapt their teaching methods to each student's needs and abilities.
- **Personality development:** The Humboldt model focuses not only on shaping students' knowledge but also on their personality development, including developing their intellectual, moral, and emotional abilities.
- **Critical thinking:** The Humboldt model encourages students to think critically and analyze information rather than accepting it uncritically.

The model stipulated that learning should be combined with practice to shape practical knowledge and professional skills. In the Humboldt model, the teacher acts as a guide to help students discover and shape their interests and talents. Also crucial in the Humboldt model was academic freedom, the freedom to educate and research without interference from authorities and other institutions. This paradigm aimed to create a society where freedom of learning and research is the basis for social and economic development.

A French model is a traditional approach to education that has developed in the French school system over the centuries. Features of the French model (Rüegg, 2004) include:

- **Centralization:** The French model focuses on the centralization of power in the education system, meaning that decisions about curriculum and teaching methods are made by central government bodies.
- **Structure:** The French model emphasizes structure, meaning teaching is organized around curricula and rigid lesson plans.
- **Examinations:** The French model uses examinations as a tool to assess students' progress and as a condition for advancement to the next levels of education.

These features of the French model have influenced the concept of education in many countries around the world, especially in Europe. As a result, modern educational approaches are often based on a combination of different elements of educational models, including the French model.

The Humboldt and French educational models are very different and differ in many aspects (Macfarlane & Erikson, 2021). Here are some of the most important differences between these models:

- **The purpose of education:** The Humboldt model assumed that the purpose of education was to develop an individual's personality and enable him to reach his full potential. In the French model, conversely, education aimed to ensure the teaching of the ruling class, which was to be an elite educated in the humanities and mathematical and natural sciences.
- **Curriculum structure:** In the Humboldt model, curricula consisted of various subjects, and students were free to choose the subjects they wanted to study. In the French model, the curricula were more centralized and based on divisions into departments and majors, with little freedom of choice.
- **Teaching methods:** The Humboldt model emphasized practical classes and exercises, and teaching was more individualized. The French model was dominated by lectures and seminars, and teaching was more centralized and focused on learning by memory.
- **Status of university teachers:** In the Humboldt model, academics were considered academic authorities. Their role was to inspire and provoke students to think and explore. In the French model, the teacher's role was to impart knowledge to students.

Although the two models are fundamentally different, they influenced the development of education worldwide. They played a crucial role in shaping the concept of the university. These models do not exist in their pure form but are after many transformations and evolutions.

## 5. Discussion and conclusions

What university model is practical enough to give work knowledge and prepare for new challenges? Are some pedagogical theories better matched to unknown current and future abilities?

The Humboldt model is based mainly on individual learning, using various methods and speeds. The goal is to expand one's knowledge. Each student does this in their own way, learning and being in an academic environment - through conversations, discussions, polemics, research, lectures, etc. The student chooses the paradigm independently.

The French model's primary goal is to provide the expected (central) skills for a large segment of population. Individual objectives and values are less important. The paradigm of behaviorism is often used - reinforcement of desired (socially and politically) behavior.

21st-century skills mean not specific measurable skills but more qualities such as preparing to solve a problem, cooperating, talking, and planning time and resources. Therefore, behaviorism, which focuses on repeating specific behaviors, may not be considered an appropriate teaching model for 21st-century skill development. Instead, more relevant are constructivist or cognitivist paradigms. These paradigms, in turn, require different preparation, i.e., teaching and learning.

"Traditional educational approaches cannot meet the educational needs of our emergent societies if they do not teach, promote, and assess in line with the new learner characteristics and context of the 21<sup>st</sup> century" (Thornhill-Miller et al., 2023, pp. 23).

The Humboldt and French models exist as a virtual reference points. In today's world, there is no way to return to the times when a student used as much time as he wanted to assimilate knowledge. In turn, the model of educating everyone equally provides the knowledge needed in the near future. It is (and will be) necessary to change the way of teaching, focusing more on individuality, critical thinking, creativity, and problem-solving cooperation and less on hearing, memorized learning, and instruction-based work.

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