

# GROWING IMPORTANCE OF CREATIVE THINKING IN HIGHER EDUCATION IN THE 21ST CENTURY

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## **ABSTRACT**

*In this study, we analyse the growing importance of creative thinking in higher education. The central argument is that creativity is at the heart of knowledge economy and successful life. We aim specifically to characterize domain-specific creative thinking, especially focusing on different methodological phenomena of changing domains. In the first part of the paper, we introduce the contextual background and define relevant key concepts (skills gap, creative thinking, transversal skills, soft skills, changing domains), then we explain conceptual changes and the growing complexity of creative thinking. In the second part, we analyze some research data from focus group interviews at Budapest Metropolitan University. The findings put great emphasis on teachers' personality, interactive teaching methods and learning atmosphere. Finally, we conclude our thoughts posing some questions and dilemmas.*

**Keywords:** *creative thinking, knowledge economy, soft skills, transferable skills*

## **1. INTRODUCTION**

### **1.1. Research problem**

The apropos of our study – on the one hand - gives the LinkedIn-research in 2019 dealing with the most important skills in work turning to the new decade.<sup>1</sup> Research tries to map the most critical soft and hard skills. Over 660+ million professionals and 20+ million jobs to reveal the 15 most in-demand soft and hard skills. Basically, '*talent developers want to help them identify skills gaps is to know what the most in-demand skills will be in the future*'. Skills gap refers to the difference between the skills required for a job and the skills an employee actually possesses. On the other hand, the focus of the innovative domain of the next PISA-survey (OECD's Programme for International Student Assessment) will be creative thinking in 2021 (Lucas – Spencer, 2017). '*PISA is not only the world's most comprehensive and reliable indicator of students' capabilities, it is also a powerful tool that countries and economies can use to fine-tune their education policies.*' (Angel Gurría, OECD Secretary-General)<sup>2</sup>. Turning back to the skills gap, one of the fundamental aims is to define and improve individual's skills. Basically, skills have been divided into two parts. Soft skills are broadly classified as a combination of personality traits, behaviors, and social attitudes, for instance leadership skills, teamwork, communication skills, problem solving skills, work ethic, flexibility/adaptability,

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<sup>1</sup> New LinkedIn Research: Upskill Your Employees with the Skills Companies Need Most in 2020  
<https://learning.linkedin.com/blog/learning-thought-leadership/most-in-demand-skills-2020?trk=e-ml-mktg-ldc-lit-20200115-mids-global-email1&src=e-ml&mcid=6614827356689440768&cid=7010d000001KpjkAAC>

<sup>2</sup> Andreas Schleicher: PISA 2018. Insights and Interpretations.  
<https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf>

interpersonal skills.<sup>3</sup> Hard skills are part of the skill set that is required for a job. They include the expertise (knowledge and abilities) necessary for an individual to successfully do the job, for instance, analytical reasoning, business analysis, sales, video production.<sup>4</sup> Turning back to the LinkedIn research, the top soft skills are creativity, persuasion, collaboration, adaptability and emotional intelligence, As the research concluded: *'this year's results signal that companies are gravitating more toward talent with strong people-oriented skills.'*<sup>5</sup> Comparing the required transversal skills from an economic and educational perspective, we find a lot of similarities on the lists. (Lucas and Spencer, 2017) Basically we agree with Lucas's statement: *'creative thinking is an important capability for success in life'*.<sup>6</sup> As we can see, creativity is at the heart of the knowledge economy and successful life. What about education? In this paper we will focus on the growing importance of creativity, especially creative thinking in higher education in the 21st century.

## 1.2. Research focus

Let us imagine an everyday-life situation in project-based courses in higher education. The first critical part is questioning. If you are lucky, some students have original, interesting, open questions. Generally, many students do not ask any questions at all. The second problematic issue is generating ideas. Some students immediately have a lot of ideas during brainstorming activities, the others look at you with a bored face without any ideas. The third critical point is based on project presentations without creativity, for example, reading texts and talking monotonously. Why are original questions, ideas and presentations so important? Because of creative thinking.

## 1.3. Context

Economic, social, scientific and cultural changes have a significant impact on education, especially changing the education system because of growing needs for global competitiveness and transformation. (Cheng, 2019; Vass, 2006) In fact, quality of knowledge, in a wider sense and quality of education is a key to economic progression. (Hanushek – Woessmann, 2009, Hanushek-Woessmann, 2015a, 2016, Hanushek, 2019) Hanushek and Woessmann pointed out strong coherence between cognitive skills, basic skills, learning outcomes and economic productivity. (Hanushek, E. A. – Woessmann, L., 2015b). Florida stated that *'the real driving force is the rise of human creativity as the key factor in our economy and society'*. (Florida, 2011. 5) A knowledge-intense economy and knowledge-based society prioritize creativity, especially effective development of creative thinking. Focusing on transferable skills, for instance, creative thinking, and rethinking education systems is based on Davidson's world-famous data. Namely, 65% of elementary school students in the United States would grow up to do jobs not currently in existence. (Davidson, 2011) Not surprisingly, in this context, the growing importance of transferable skills, such as creativity and innovation can strengthen inventions in new business models. But the context of this new model is VUCA-world, which has four phenomena: volatility, uncertainty, complexity and ambiguity (Fadel, Bialik and Trilling, 2015) Mark Twain's message from the past is relevant: *'It's difficult to make predictions, especially about the future.'* It is much more true in the 21st century. The growing importance of transferable skills raises a fundamental question: *'Knowing what we know about how children learn and what is necessary for individuals and societies to succeed and thrive,*

<sup>3</sup> The 7 Soft Skills You Need to Be Successful <https://www.omniagroup.com/the-7-soft-skills-you-need-to-be-successful/>

<sup>4</sup> The Top Hard Skills Employers Seek <https://www.thebalancecareers.com/what-are-hard-skills-2060829>

<sup>5</sup> New LinkedIn Research: Upskill Your Employees with the Skills Companies Need Most in 2020 <https://learning.linkedin.com/blog/learning-thought-leadership/most-in-demand-skills-2020?trk=e-ml-mktg-ldc-lit-20200115-mids-global-email1&src=e-ml&mcid=6614827356689440768&cid=7010d000001KpjkAAC>

<sup>6</sup> Bill Lucas: The Power of Creative Thinking. <https://www.thersa.org/discover/publications-and-articles/rsa-comment/2017/11/the-power-of-creative-thinking>

*what should students learning?*’ (Fadel, Bialik and Trilling, 2015. 55) Basically, transferable skills are a significant trans- and interdisciplinary phenomenon. Technological and economic creativity has strong interactions with artistic and cultural creativity (Florida, 2011).

## 2. LITERATURE REVIEW

We try to analyze creative thinking from this trans- and interdisciplinary dimension. We agree with Csikszentmihalyi statement: *‘Most of the things that are interesting, important, and human are the results of creativity’* (Csikszentmihalyi, 1996. 1). On the basis of 30 years of Csikszentmihalyi’s research work on creativity, his model has three elements: culture, person and field. According to him, creativity is a domain-specific skill, *‘a process by which a symbolic domain in the culture is changed’*. (Csikszentmihalyi, 1996. 8) Changing the existing domain is a key factor to understanding creative thinking. No doubt, this is a challenging, complex process with some heuristic moments and incalculable steps. In fact, Csikszentmihalyi’s model and process of creativity has played an important role in creativity research, including social-personality approaches to the study of creativity (Sternberg and Lubart, 1999). Turning back to the domain-specific character of creativity, it emphasizes the importance of structure of knowledge. Firstly, quantity of knowledge matters in creative thinking, but parallel to this accumulation, different original combinations of the structural elements are much more important in this process. Csikszentmihalyi analyzed the process of creativity differently, namely he defined five components: preparation, incubation, insight, evaluation and elaboration. Preparation is based on interesting things and curiosity. In the incubation component, unexpected combinations play an important role. The third component contains a lot of „Aha!”-moments. Evaluation requires self-reflections and self-criticism in order to „decide whether the insight is valuable and worth pursuing”. Finally, elaboration is the hardest work among the different components (Csikszentmihalyi, 1996). Turning back to the past of creativity research, creativity traditionally has two fundamental components: originality and task appropriateness (Guilford, 1950) On the basis of these components, Guilford differentiated two types of thinking: convergent and divergent. Divergent thinking is the process of generating multiple ideas to maximize the range of possible solutions, applications and examples. Let us see for instance two types of conclusion in essays in higher education. The first type of conclusion is based on the previous content and gives simplified, descriptive summarization of the topic. The second type of conclusion is based on dilemmas, alternatives and different scenarios. In fact, the first is related to convergent thinking, but the second is based on divergent thinking. Guilford defined the concept of divergent thinking (later Torrance, 1970), according to four characteristics:

- fluency (the ability to produce a great number of ideas or problem solutions in a short period of time);
- flexibility (the ability to simultaneously propose a variety of approaches to a specific problem);
- originality (the ability to produce new, original ideas);
- elaboration (the ability to systematize and organize the details of an idea in one’s head and carry it out)<sup>7</sup>

Parallel to this conceptual work, Guilford created the Structure of Intellect in order to analyze complexity between creativity and IQ. His model contains three components: content, product and operation. Firstly, he focused on measuring personal characteristics in creativity using his model. Secondly, three components (content, product and operation) have an enormous impact on learning: *‘students gain a better understanding of the ways in which they are able to learn*

<sup>7</sup> J. P. Guilford [https://www.newworldencyclopedia.org/entry/J.\\_P.\\_Guilford](https://www.newworldencyclopedia.org/entry/J._P._Guilford)

and the ways in which they use the knowledge' (Richards, 2001). Thirdly, from a teaching perspective, these components emphasize the importance of cross-cultural strategies and interdisciplinary approach. No doubt, this psychometric approach to creativity stressed personal phenomena, but it started to indicate complexity. Under the umbrella of giving more details and research data about divergent thinking, the increasing complexity of creativity should be mentioned. Structuralization of creativity has resulted in some models, which can put consciousness into the developmental process. For instance, the Center for Real-World Learning defined a five-dimensional model of creativity.

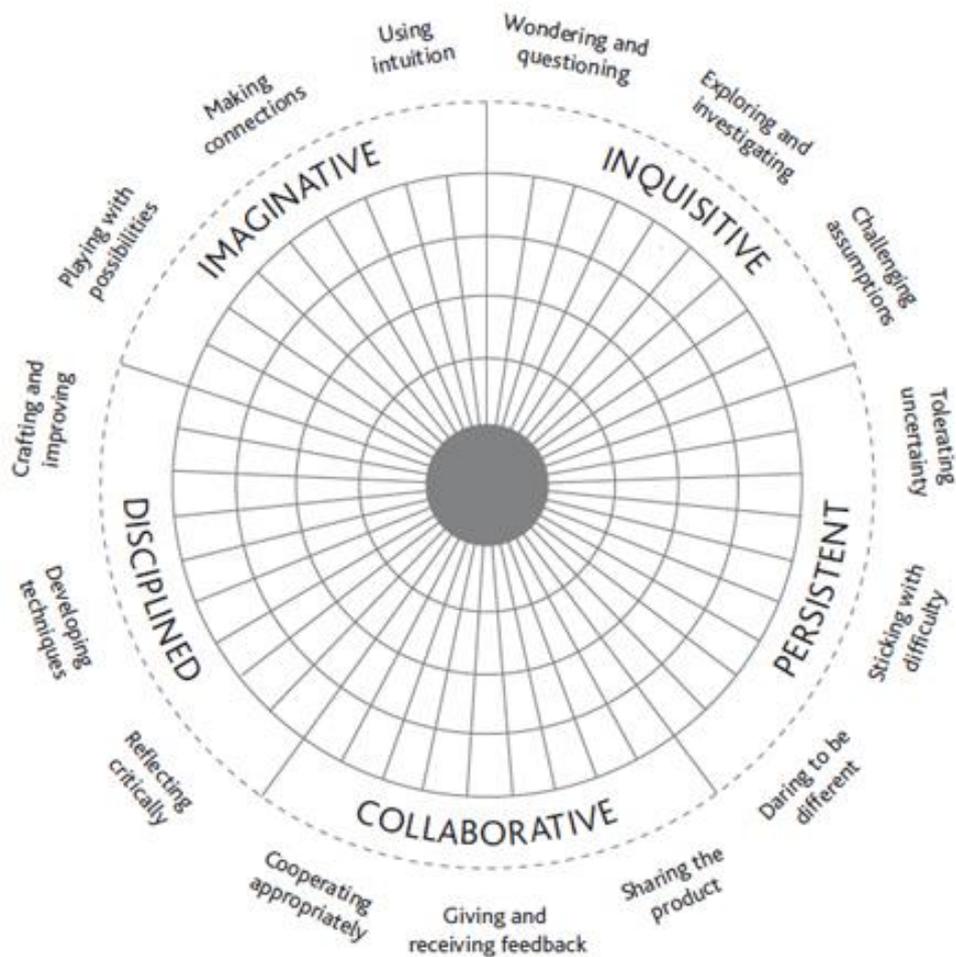


Figure 1: Five-dimensional model of creative thinking  
(Source: The Center for Real-World Learning)

The five dimensions are: inquisitiveness (wondering and questioning, exploring and investigating, challenging assumptions); persistence (daring to be different, sticking with difficulty, tolerating uncertainty); collaboration (cooperating appropriately, giving and receiving feedback, sharing the product); discipline (crafting and improving, developing techniques, reflecting critically); imagination (playing with possibilities, making connections, using intuition). (Lucas and Spencer, 2017) Obviously, this is a more complex view of creativity than Guilford's model. The five-dimensional model is a matrix or a wheel in order to indicate the detailed structure and overlapped items between the dimensions. Basically, there are two pillars in this model, critical thinking and problem-solving.

Lucas and Spencer give some examples of the five dimensions at the primary and secondary school levels (Lucas and Spencer, 2017). Let us see some examples of the dimensions in higher education. At the inquisitive dimension, students can pose open-questions (Why?, How?), which are based on their curiosity, questioning and intrinsic motivation in order to think critically about the topic. Dimension of persistence is based on debating, arguing, listening and tolerating the other point of view using for instance place mat and mind map. This dimension of collaboration is related to project-method and problem-based learning. Working in teams requires the previous dimension (see overlapped items) and gives evidence about the social context of creativity. Collaboration prefers continuous feedback and sharing different ideas, debating and critical views. Parallel to collaborative work, assessment is based on cooperative quality standards and evaluation indicators. The dimension of discipline requires a lot of reflections and comments in order to create the most qualitative product, learning from mistakes and experience. The dimension of imagination is *'the heart of creative thinking'* and requires analysis and synthesis in order to imagine different solutions, scenarios and possibilities.

### **3. PRIMARY RESEARCH**

The following section explores some of these theoretical notions in context from the perspective of students from a higher education institution in Budapest.

#### **3.1. Research aim**

Our research aim is to map students' prior knowledge on creativity and creative thinking.

#### **3.2. Research methodology: Student Focus Group Interviews and data analysis**

Focus groups were undertaken with students in the researchers' own institution in order to gain some insights into what students understand by creative education. Three student focus groups were undertaken with groups of Masters students at Budapest Metropolitan University between 2018-2020 who were studying a course entitled Creative Industries which runs yearly in the Spring semester. This cohort of students was chosen deliberately, as they were studying subjects relating to creative thinking, creative education as well as creative industries management. It was important that the students understood these concepts at a relatively high level in order to be able to discuss the issues in depth. Each focus group was undertaken for 80 minutes during the students' usual class time. The first two (2018, 2019) were undertaken face-to-face, whereas the third (2020) took place on Zoom during the Covid-19 lockdown period (however, the students had already experienced three classes face-to-face before the lockdown, so they had met each other and the teachers). The groups consisted of mixed nationalities (at least 7-8 nationalities each time) which reflect the internationalization of the authors' institution. Both female and male students took part and the gender balance was more or less equal.

#### **3.3. Research Results**

Students discussed how some teachers tried to develop students' creative thinking and skills more than others. It very much depended on the personality and technique of the teacher. Interactive, friendly teachers who created a good atmosphere and involved students were the most creative. Overall, they agreed that creative education needs to be based on interactive classes where students are encouraged to ask questions and give their opinions. The importance of using examples in context was also emphasized, as well as applying activities to real-life situations. One example of this was writing a business plan as well as project-based learning. It was not thought that creative thinking was more present in arts-related subjects, but could also be brought to business or marketing subjects quite easily. On the other hand, it was said that numerical subjects were not taught in a very creative way and that more technological tools could be used in future (by 2020, this issue had been addressed and was intensified during

Covid-19 lockdown). When asked how much co-creativity had been present in their higher education experience, many students were somewhat confused about the term. It was explained as a combination of freedom to choose and interactivity. Students felt that they had not had much freedom in choosing subjects (the national curriculum in Hungary is rather rigid), but they had had some choices in course content, assessment or presentation subjects. Interaction was rated positively on the whole, not only with certain teachers but also between students. Groupwork was valued, but it was not always preferred, especially when grades were given for it. It was noted that during the Coronavirus lockdown period, it was much harder to do groupwork which was also deemed an important part of creative education. The students also felt overloaded by individual tasks, which compromised their time rather than their creativity. Some students felt that being locked in their small room was not conducive to creativity as it was thought that inspiration also needs to come from the outside world, including social contacts and the natural environment. They found it harder and less motivating to manage their own time and to work alone. On the other hand, some students stated that it had given them time to learn new skills and methods. It had removed the stress and time needed for commuting, for example. However, it was agreed that regular feedback from teachers was needed for both motivation and full engagement.

#### 4. CONCLUSIONS AND IMPLICATIONS

Turning back to Csikszentmihalyi's fundamental statement: *'Changing the existing domain is a key factor understanding creative thinking.'* On the basis of our study and experience in higher education, creativity, in fact, is a domain-specific skill. But as we see from the Five-dimensional model of creative thinking, complexity is growing. This more complex, multi-dimensional view of creative thinking has affected the process of *'changing the existing domain'* especially in higher education. It requires a high-quality transferable and non-cognitive skills and inter- or transdisciplinary mindset. In practice, this is the flexible process, which is based on teaching professionalism and strong students' intrinsic motivation. As the global knowledge economy has been expanding and research data on creative thinking has been growing, the basic, a relevant definition of creative thinking has been changing. *'Creative thinking is both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking.'*<sup>8</sup> This creativity-based synthesis and original expertise can promote students to be able to apply their knowledge to real-life situations in higher education. Application of knowledge and creative thinking has strong coherency. In other words, creativity *'is a combination of several key factors'*, for instance deep knowledge, creative thinking skills, motivation, curiosity and metacognition. (Stewart, 2012) This growing complexity has resulted in some changes in higher education in order to revise thinking about learning and teaching in higher education. On the one hand, our findings suggest that the personality of a teacher in higher education plays an important role: interactive, friendly teachers who created a good atmosphere and involved students were the most creative, which has an impact on student expectations of creative thinking. On the other hand, the responses indicated a strong coherency between effective interaction and high-quality creative thinking. Finally, we raise some questions and pose dilemmas. How can higher education transfer and adapt these above-mentioned processes into practice? How can higher education put greater emphasis on the development of creative thinking turning to a student-centered approach (problem-solving learning, project-based education)? How can higher education recognize that high-quality education is a key factor to future economic growth?

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<sup>8</sup> Creative Thinking VALUE Rubric <https://www.aacu.org/value/rubrics/creative-thinking>

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