ISSN: 2345-0479 / eISSN: 2345-0487

VILNIUS TECH
Vilnius Gediminas Technical University

CREATIVITY STUDIES

2025
Volume 18
Issue 1
Pages 185–196
https://doi.org/10.3846/cs.2025.20230

# CREATIVITY IN CONTEMPORARY HIGHER EDUCATION IN THE CONTEXT OF THE ARTIFICIAL INTELLIGENCE EXPANSION

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**Article History:**
- received 23 October 2023
- accepted 7 March 2024

**Abstract.** In the paper it is discussed what are the potential possibilities to foster creativity in contemporary higher education in the context of the artificial intelligence expansion based on theoretical analysis of sources and the findings of a pilot empiric study. The aim of this paper is to discuss aspects for potential development of creativity in higher education in the context of the artificial intelligence expansion. The objectives are organized around the research question: what are the aspects of studies in the context the artificial intelligence expansion that students in higher education experience and note today as relevant for their studies (potentially – for professional activity)? Methods of critical analyses of references, theoretical considerations, reflections on authors' personal experiences, and a pilot empiric study, involving respondents/students, were employed for the development of the paper. Results of an empiric study are presented together with the conclusions that students in higher education conceptualise expansion of the artificial intelligence quite broadly and to a major degree – optimistically, with some attention on creativity and quite extensive attention to changes in culture.

**Keywords:** aspects of studies in the context the artificial intelligence expansion, creativity, expansion of the artificial intelligence, expectations for the learning, higher education studies, intercultural competence.

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## 1. Introduction

The authors of this paper discussed the possible consequences of expansion of the artificial intelligence, the robotisation for several years now (see, *e.g.*: Zuzeviciute, 2018; Zuzeviciute & Butrime, 2019), though attention to diverse, sometimes adverse consequences were analysed even earlier (see, *e.g.*: Butrimė & Zuzevičiūtė, 2014; Zuzeviciute & Butrime, 2016). Back then – we must admit – we emphasized predominantly negative consequences; yet in our defense it may be pointed out that the dominance of extremely positive prognoses dominated the educational and even research discourse back then. Though even then there were several dissenting voices, indicating, for example, needs for specific education in the face of Fourth Industrial Revolution (Peters, 2017), or warning about the wave of unemployment (Sommer, 2015).

But still – the positivity dominated, thus we felt obliged as researches to take a step back towards the objectivity for the totality of the picture. We noted thus such possible negative consequences: threat to be made redundant in many professions, thus the threat of

unemployment, also the threat of disappearance of professions, the changing as in disrupting economic – and may be even political and social fabric of life (Zuzevičiūtė & Krzywosz-Rynkiewicz, 2023). Though our respondents in several studies back then noted the positive aspects, such as opportunities to delegate the routine parts of the professional activities for the information technology software, but we thought that to be dangerous and short sighted at the time in the context of previous industrial revolutions. If history teaches us anything – that is the fact that if technological revolution unfolds without the accompanying specific attention to the totality of individual circumstances and – ideally – compensating and supporting services, then unemployment, social disruptions raise their ugly heads among the results (Humphries, 2010; Gallardo-Albarrán & de Jong, 2021). Still, among the positive aspects also the potential to be more creative in professionals' activities was noted by our respondents. For some time, after the still looming aftershocks of COVID-19 pandemic, we did not follow through along this line of possible consequences, yet, after the launch of *ChatGPT* (generative pre-trained transformer, GPT) in late 2022 and the explosion of discussions of what the new product may mean for a variety of professional activities, we felt the need to investigate the potential (actually, already experienced by the time of working for this paper) impact on educational setting: experiences of higher education students.

The aim of this paper is to discuss aspects for potential development of creativity in higher education in the context of the artificial intelligence expansion.

The objectives are organized around the research question: what are the aspects of studies in the context the artificial intelligence expansion that students in higher education experience and note today as relevant for their studies (potentially – for professional activity)?

Methods of critical analyses of references, theoretical considerations, reflections on personal experiences of authors, and a pilot empiric study, involving respondents. Students were employed for the development of the paper.

## 2. Creativity: concepts, interpretation, critique

For the authors of this paper, especially, one of them, the attention and analysis, contextualization of creativity were among the research interests for more than two decades (see, *e.g.*: Bižys & Zuzevičiūtė, 2002).

While the creativity by numerous esteemed researchers deserved extensive attention in educational discourse regarding the practice, the mission, the process of education, however, the interaction in the context of the artificial intelligence expansion remains to be re-examined.

We will organize this discussion based on three main claims/hypothesis. Firstly, the aspects of creativity remain and maybe even increase in their importance in the context of the artificial intelligence expansion. Secondly, while the nature of creativity does not change, but the manifestations of creativity may change in this new context. Thirdly, the tasks and expectations for the learning, including studying in higher education (and – most probably – other settings) is ever increasing (and, likely, will continue to increase).

Creativity and fostering creativity have been at the forefront of discussions among educational professional, researchers, and practitioners for decades. For example, ideas of Gardner

(2011), de Bono (2008), in Lithuania – Valiuškevičiūtė (2000) and numerous other studies and recommendations helped shaping the practices at various levels of education.

While in everyday discourse everybody seems to agree about the essence of creativity, however, which is reflective to its complexity and overarching nature, for researchers it is difficult to finalize the term of the concept. Some authors (*e.g.*, Gross, 2023) suggest importance of special cognitive process while integrating posing challenging questions and formulating unconventional answers. Other researchers, while acknowledge novelty and usefulness, also emphasize the need for creativity as maximization, creativity as balance, and creativity as integration in specific life/economy circumstances (Harvey & Berry, 2023), as well as usefulness in synergy with the purpose is emphasized by several contemporary researchers (Arici & Uysal, 2022). Some authors remind us that creativity is as a social phenomenon, as it is an individual one (Yuan et al., 2022), which logically integrates another set of ideas, specifically, importance of environment (both social, and even physical) (Blomberg & Kallio, 2022), with other researchers giving specific, simple recipes for fostering creativity (Jacobs, 2022).

While the detailed analysis of cognitive stimuli, processes, and then – preferably – creative outcomes spans decades, for the purpose of the discussion in this paper, while summarizing numerous ideas on the matter, it is sufficing to state the following observations.

Firstly, while creativity is innate characteristics of any individual (hence, humanity's progress and history have been possible), but also creativity may be learnt, or at least it is possible to expand and develop individual's creativity.

Thus, secondly, there are many methods and practices to expand and develop individual creativity, with some being more effective than the others.

Thirdly, environment is of crucial importance for expansion and development of creativity. While, even if under adverse circumstances, people demonstrate evident ingenuity solving problems and finding solutions in seemingly impossible situations, this is not the pathway in education (or any other setting in a civilized society for that matter). On the contrary – in education the atmosphere, processes for creative thinking and production, that is producing creative ideas and then translating ideas into activities or products has to be specifically and consistently built and exercised.

The application of the artificial intelligence in education (Kaplan-Rakowski et al., 2023; Schiff, 2021), in comparison to the other spheres, such as business, military, health care or finances, is a bit slower (Celik et al., 2022; Chen et al., 2023; Luckin & Cukurova, 2019; Schiff, 2021). Though historically, the artificial intelligence tools are being applied for some time already: predominantly for learning management systems, also for transcription and evaluation services and for grammar checking, and also the artificial intelligence tools are used as plagiarism detectors.

However, while the technology developed, and the interrelated body of information in Internet increased dramatically, a new form of the artificial intelligence emerged. Namely: strong or artificial general intelligence, which worries researchers and employees in many fields (Goertzel, 2014; Pham & Sampson, 2022; Popenici & Kerr, 2017; Kaplan-Rakowski et al., 2023). According to some authors (Kaplan-Rakowski et al., 2023), though the artificial intelligence has been a part of our everyday life for decades, but the introduction of *ChatGPT* by the end of 2022 prompted many researchers' renewed interest in its possible role for education.

*ChatGPT* is the model of processing language, the most advanced model of this kind to date. This language model is "a type of neural network that has been trained on lots and lots of text" (Heaven, 2023). In order to rein in the toxic tendencies of the *GPT-3*, the *OpenAI* faced some challenges. It was aimed to harmonized *GPT-3* with *InstructGPT*, which is the model based on human inclination to receive the preferred answers (Lowe & Leike, 2022); the model provided the basis for *ChatGPT* (Walker Rettberg, 2022). According to Walker Rettberg (2022), "ChatGPT is multilingual but monocultural – but that by using it, we're all helping to train it to align its values with our own". After its launch, *ChatGPT* saw immediate and widespread adoption. In its debut week, the chatbot amassed a staggering 1 million users. Less than 2 months later, the number of active users increased to over 100 million (Mollman, 2022; Trust et al., 2023). The latter authors note that *ChatGPT* may be useful in education, because it can provide support for teaching, provide support for student assessment, help support student learning and support communication of the participants in interactions in education. *ChatGPT* may be useful for students, because it can provide personalized learning support, creative thinking support, assessment support, and reading and writing comprehension support (Trust et al., 2023). According to Baidoo-Anu and Owusu Ansah (2023, p. 52),

> "the extraordinary abilities of ChatGPT to perform complex tasks within the field of education has caused mixed feelings among educators, as this advancement in AI seems to revolutionize existing educational praxis".

In higher education the advent – of *ChatGPT* (or similar tools) in relation to creativity and fostering creativity may be analyzed, by linking it to the second and the third observations. On the one hand, the artificial intelligence tools may be regarded in education as a method, or rather, a pre-requisite for employment of methods for development of creativity. While the concerns of teachers regarding artificial intelligence tools as windows for potential cheating or at least cutting corners in studies are valid, but also it is possible to view artificial intelligence tools as any other educational/learning aid (as teachers used blackboard and chalk hundreds of years ago, instructional cards, then videos started to be used decades ago). That is, in essence, it depends on the conceptualization and the employment of this tool in the totality of educational processes that are organized during studies. As any other tool it may be used in a variety of ways, some of them may be detrimental for learning during studies, some of them may be extremely useful. We side in this regard with several other authors working in the field (Biondi Situmorang et al., 2023; Strzelecki, 2024). What is important in this discussion, is to link it to the third observation on creativity, that is the need to create an atmosphere, the environment, where the artificial intelligence tools are regarded as additional opportunity for teaching and learning during studies, thus the emphasis on accountability, responsibility, ethics becomes even more important than it ever was. But, also the necessity to foster and emphasize discussions on the future at individual's level: *what is it that I will be able to contribute to others? What is the purpose of what I do, including – professionally? What am I good at? What do others consider me to be good at? What do I value about what I do?*

And, similarly, at a societal level: *what does it take for this society to have a future?*

Because the dependence on the artificial intelligence tools is becoming evident, while still not overwhelming at the moment, but at the same time there are clear signs that in many spheres (medicine, transport, justice, finances, agriculture), increasingly so – to the

degree that the artists organized a strike in 2023 – in arts (Pulver & Shoard, 2023) artificial intelligence will take over an ever increasing part of the activities and professions. Thus, to reflect on one's role in these new "normal" circumstances and get ready to navigate one's life – social, economic, political, and even private – is as crucial a task while studying in higher education, as it is to build one's competencies. Previously, several years ago, we (the authors of this paper) thought that in order to get ready for the possible unemployment in the new reality, or, at least, reduced workload, people should get engaged into sports, artistic activities (Zuzeviciute, 2018, p. 10). While the idea still stands at least for those who are at the end of professional careers or just choose the path of partial economic participation, but in general it is also important for people to participate in technological advancements. Thus professional withdrawal is not an answer at all, as it was noted even then, several years ago, because of the inevitable threat for societal stagnation (European Commission, 2009). The contrary argument may be posited, namely, the need to work on one's competencies even more diligently, in order to stay on the frontier of all the changes and, also, for the personal actualization. For staying on the frontier, one the dimensions to be emphasized in higher education (we highlight higher education because of the focus of this paper, but, surely, the similar logics applies for other settings) is fostering creativity, as creativity is the source for the trajectories not yet known, and where people may find themselves relevant.

That is, we feel we have provided sufficient argumentation for substantiating the third hypothesis: the role of learning, including studying in higher education and in other settings increases, most likely will continue to increase.

## 3. Pilot study on conceptualisation of the artificial intelligence in higher education

In order to compare the theoretical considerations and also the results of analysis of personal experiences as teachers in higher education and the results of extensive discussions in the field on the possible concepts that our students have regarding the matter, a pilot study was designed and implemented in autumn semester, 2023. An anonymous approach was taken in order to provide for the safe environment to share ideas. The general question/theme was formulated in order to eliminate the restrictions of point of view posed by inherent point of view that any researcher has. Students (n = 37) in first study cycle participated, the age varied from 18 to 34; the variation is explained by the fact that 22 participants studied at full time studies, but 15 students study in part time studies, where majority of students have some professional experience and tend to join university later in their lives. In the sample men and women were represented almost equally, students in the field of social sciences, such as in law and business participated in the study.

### 3.1. Procedure

Students were asked to discuss their opinions on the role of artificial intelligence one their studies and on their professional activities (if they had such experience) and provide an anonymous feedback on the results of the discussion (researchers did not participate in either

stage). Thus, the results are reflective of the genuinely authentic approach, and that fact to some degree mitigates the evident limitation of the study, which derives from a relatively small number of participants. The feedback was analyzed; the contributions were grouped into certain categories.

### 3.2. Results

The opinions, description, contribution items were grouped, headings were applied as they are presented in Figure 1.

Interestingly, while the focus of this pilot study is on creativity in the context of the artificial intelligence expansion, but, when asked just a general question, respondents unexpectedly indicated one (cultural aspect) being more at the forefront of their thinking than the other (creativity). Results contradicted to some degree with the initial thinking of researchers, and thus the choice for having open discussion on the issue turned out to be useful in terms of nuancing the representation of social reality. While we as researchers, teachers in higher education though artificial intelligence being useful for creating creativity-fostering environment as a dominant advantage, however, our respondents/students thought that artificial intelligence eliminates cultural differences (which serves as one of the prerequisites for intercultural cooperation).

Only one participant directly noted the potential of artificial intelligence to add to creativity in studies or professional activities, however, one more indicated role of the artificial intelligence expansion for innovation, thus these contributions were grouped into one category (C1, Figure 1). Two more respondents noted the usefulness of the artificial intelligence for some routine tasks to be done faster, thus they were grouped in another group, because these answers may be construed as at least a premise for more creative attitude towards studies or – potentially – professional activities (C2, Figure 1).

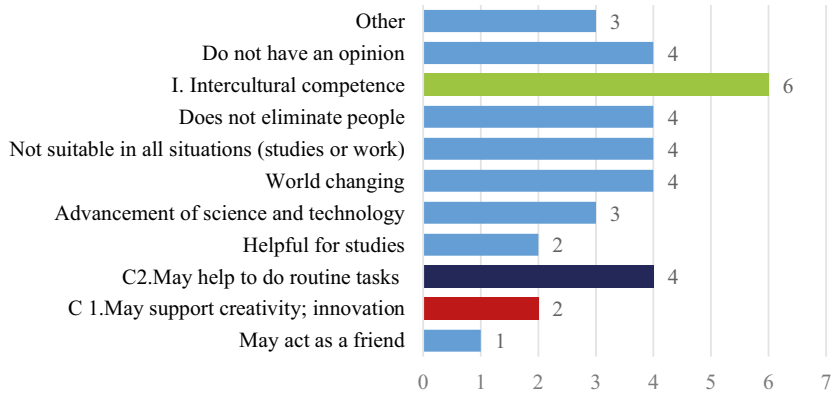


**Figure 1.** Respondents of the role of the expansion of the artificial intelligence on studies (and – potentially – professional activities) (source: created by authors)

Analysis of contributions yielded interesting insights, such as artificial intelligence serving as a friend (which – we think – is a warning on danger towards withdrawal from living one's life, and only adds to the importance of fostering supportive, engaging atmosphere in higher education studies).

Three contributions linked the artificial intelligence with the advancements in science and technology, four contributions were generalized and grouped under the heading world changing, three were generalized and grouped under the heading.

Also, it was interesting that students themselves discussed the issue of learning and cheating. As the theme for discussion was intentionally general, resulting in variety of the insights, thus it was instructive to note that students emphasized that having artificial intelligence in a toolkit allows for accessing data that teachers recommend to get acquainted with, to "stay attuned with what is going on"; these contributions were grouped under the heading helpful for learning.

The contributions on potential cheating were grouped under the heading "other": two people noted that if a person (student) was going to cheat, she or he would cheat with the artificial intelligence in the toolkit or without, the same way as there were people who had been cheating before artificial intelligence was available, and some never had done that. One person (heading "other") noted the threat of artificial intelligence for prompting unemployment or even taking over the society.

Interestingly, there were contributions, which noted: "AI will completely eliminate cultural differences in social situations" (3 contributions); "AI eliminates cultural, other differences in studies" (2 contributions); "AI eliminates differences in international cooperation" (1 contribution) were grouped under the heading intercultural competence (I, Figure 1). The findings, even if the limitations of the pilot study are taken into consideration, modifies the thinking at least for the authors of this paper. Specifically, we as teachers, are concerned that the artificial intelligence tools may impede the creativity in studies, we worry that artificial intelligence will impede ethics in studies, but students emphasize another dimension. For young people the artificial intelligence already contributes to expanding the culture and color-blind community of professionals, which Martin Luther King Jr. called for decades ago.

The fact that opinions of respondents if not completely changed, but – surely – modified our thinking on the issue, explains the unusual structure of the paper. Prompted by results the additional efforts were invested into analysis of cultural aspect, such analysis of the role of developing intercultural competence in higher education, presented further in the paper in the section (intercultural competence in higher education: models and re-modelling).

## 4. Intercultural competence in higher education: models and re-modelling

Prompted by significant portion of contributions on culture, rather – eliminating cultural differences, we dedicate the next section for revisiting the concept of intercultural issues. Interestingly enough, while fostering creativity may have been overshadowed in contemporary higher education in recent years because of other challenges (which explains the initial focus of this study), such as COVID-19 pandemic, invasion of artificial intelligence, but the

attention for intercultural competence was at the forefront on educational discourse. Simply put: creativity was pushed aside to some degree due to high expectations for immediate competencies, necessary for labor market, while intercultural competence gained the spotlight because of the realities almost universal in contemporary higher education. Contemporary higher education participates in globalization as any other business does, may be even to a higher degree (Zuzevičiūtė et al., 2017).

The importance of developing and fostering intercultural competence among future professionals is analyzed in a number of theories and studies completed during at least the last twenty years, though in the last decade also Lithuanian researchers joined the efforts (*e.g.*, Ross & Zuzevičiūtė, 2011). Several influential models of intercultural competence were offered, with the one offered by Deardorff (2008) almost twenty years ago having gained the place among the most frequently used (though the model was first introduced for academic community few years earlier).

In the model three dimensions – knowledge and comprehension, skills, and attitudes – are identified. Knowledge and comprehension include cultural self-awareness, deep cultural knowledge sociolinguistic awareness; skills encompass ability to listen, observe and evaluate, analyze, interpret, and relate; attitudes encompass respect (valuing other cultures), openness (withholding judgment), curiosity and discovery (tolerating ambiguity).

Another influential model was offered by Bennett (2008). The model also identifies three aspects: cognitive dimension (here cultural self-awareness, culture-general knowledge, culture-specific knowledge, and cultural adaptation process are enumerated); behavioral dimension encompass ability to empathize, to listen and gather appropriate information, ability to manage relationships, and to manage social interactions and anxiety; affective dimension encompass curiosity, initiative, risk-taking, suspension of judgment, cognitive flexibility, tolerance of ambiguity, cultural humility.

There are evident differences, such as an emphasis on linguistic competence in Deardorff's model, while in Bennett's model emphases is on relations. However, the two models have many similarities: the knowledge about and the competence to do may clearly be identified as similar, also, for both authors withholding judgements, tolerating ambiguity are important.

It is important to note that the subsequent analysis of the models, and their translation into the professional's life in Lithuanian context (in the case of teacher's professional) revealed that the most demanding and the least automatic is the behavioral aspect of intercultural competence. That is, even if we learn about other people and their cultures, and even if we consciously understand certain characteristics of their culture that we make us wonder, but to behave in an adequate and contextual way, may be most demanding (Norvilienė & Zuzevičiūtė, 2011).

While importance of linguistic competence is extensively discussed by other authors, emphasizing the crucial role of linguistic (whether it is contemporary *lingua franca*: English, or other language(s) used in communities) competencies for effective police work (Pielmuş, 2019; Shalfrooshan et al., 2019), other authors note the importance of other factors for building authentic, genuine intercultural competence.

Importance of longer interactions (Guillén-Yparrea & Ramírez-Montoya, 2023), also immersion into another culture (Chédru & Delhoume, 2023), attention, and analyses of personal attitudes (Barrow, 2023) are identified among those factors.

The very idea of analyzing the concept, the attempts to construct and deconstruct intercultural competence is a huge social innovation. These attempts denote humanity's efforts to distance itself from colonialist ambitions and to re-orientate itself towards global denizenship and universality of human rights (Bea, 2022).

Intercultural competence, or at least admitting its place and importance among the professional's competencies – we will argue – may serve as a strong marker regarding society's genuine maturity. While these aspects seem to illustrate straightforwardly positive and desirable role, intercultural competence plays in professional's or any other citizen's activities, however, recent events prompt further analysis.

The problem is, we barely started learning to exercise intercultural competence as a countermeasure for the egocentric cultural instincts, which are inherent for any person; and yet, after not more than two decades we have to re-evaluate its role and potential hazards for relying on it in the face of current geopolitical events and the artificial intelligence expansion. Though we do not believe that we may just discard the importance of intercultural competence and its development in higher education, merely, that we have to re-conceptualize the concept and the process, or – rather – embed it in other processes. Such, as further emphasis on critical thinking, on research competencies, including development of certain degree of skeptical thinking, and certainly – the diligence and discipline to always check and re-check information.

## 5. Conclusions

The concept of creativity is a complex one, and while creativity was at the focus of educational theoreticians and practitioners some decades ago, at the moment it seems to be overshadowed by immediate threats (such as geopolitical realities, COVID-19 pandemic) or innovations (such as the expansion of the artificial intelligence). Yet, education in higher education at the levels of policy documents, stating the mission of education and the theory and tradition on what is the role of education for each individual, requires constant attention to fostering creativity. Expansion of the artificial intelligence adds a new layer to the context and the realities in higher education, which may either diminish the potential for developing creativity in higher education studies, or expand it.

The authors of the paper find more arguments for the artificial intelligence serving as potentially enriching factor in the environment for fostering creativity, rather than impeding it.

The pilot empiric study was designed and implemented in order to identify the opinions of students on the role of the expansion of the artificial intelligence. Notwithstanding the limitation of the study, it was found that students note some positive potential possibilities for fostering creativity, though students also noted other issues related with the artificial intelligence expansion. Participants shared that the expansion noted accomplishments in science and technology, participants indicated its world changing potential, and the potential to enrich learning in studies. The aspect of possible cheating was addressed without too much (or any) anxiety about that being a specific issue in the context of the artificial intelligence.

Additionally, several contributions indicated that the artificial intelligence leads or at least may be associated to cultural changes, also building culture-differences blind society.

While the young people's positivity is not readily shared by the authors of this paper, but it may be concluded that:

- The open-ended (qualitative research methodology based) study is productive in yielding unplanned, previously un-thought of concept, relations. In this case, the cultural changes, possibly – further development of intercultural competence was brought to the forefront of discussion due to the results of the study;
- While critical analysis of sources reveals that aspects and role of intercultural competence, or at least admitting its place among the professional's competencies may serve as a strong marker regarding society's genuine maturity, also the level of respect for human rights, but its linking to the expansion of the artificial intelligence is not yet sufficiently explored, and thus it helps formulating potentially interesting direction for further investigations.

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