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CREATIVE LEARNING AT THE UNIVERSITY: HOW DO PEDAGOGY STUDENTS ASSESS THEIR LEARNING?

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Abstract. Pedagogy students' assessment of their own learning allows for a better understanding of how creative learning is implemented during university studies. 143 university students of pedagogical studies participated in the questionnaire survey. The research revealed the academic and personal development of students and their progress: students acquire sufficient knowledge and successfully assimilate it; they are aware of the development of their creativity and skills; the students' strong point is the social and emotional competence. Challenges to creative learning emerged: students still lack the ability to motivate themselves; they do not sufficiently understand the interconnections between individual course units; students are not yet active enough participants in the educational process. Senior students assessed their creative learning better than junior students.

Keywords: assessment of one's learning, creative learning, creativity, pedagogical studies, students, university studies.

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1. Introduction

In today's context of globalization, creativity is highlighted as a phenomenon of the 21st century that creates conditions for personal success and self-realization as well as societal change and well-being. Creativity helps to adapt to a constantly changing environment, create innovative solutions and find new ways to solve various problems, it improves the quality of life, increases civic engagement, *etc*. (Chishti & Jehangir, 2014; Bousinakis & Halkos, 2021; Acomi et al., 2020) and is regarded a key element in the survival and progress of society (Hatamleh, 2015).

Creativity is inseparable from creative learning, as it creates conditions for a person's creativity to flourish, promotes motivation and self-realization (Mazeh, 2020; Lunevich, 2021). The foundations of creativity are laid from childhood (Kupers et al., 2019; Harold, 2024) and are developed during the years of study at the university (Matraeva et al., 2020; Stolz et al., 2022; Li, 2023). During university studies, it is important not only to acquire and expand academic knowledge and build one's understanding, but also to develop students' abilities to solve problems, think creatively, and apply knowledge in practice (McConnell Rogers, 2021; Yao-Ping Peng et al., 2021; Fergusson, 2022). Pedagogical studies are unique and specific, requiring not only professional preparation from the future educator, but also a creative approach to practical activities (Ulferts, 2021; Tusheva, 2021). Education is a dynamic and constantly changing process, thus, it is perceived as a continuous process of creativity, generation of

new ideas, problem solving, and self-expression, which allows creating new value for society (Burner, 2018; Salum Tome, 2023; Wedel, 2023). The teacher, as a creator, not only shares knowledge, but also creates a learning/teaching environment that encourages learners to seek new approaches and original solutions (Ulferts, 2021; Zamiri & Esmaeili, 2024). Therefore, the peculiarities of the educational process and the professional activity of the teacher determine the training of teachers (Munna & Md Kalam, 2021; Ventista & Brown, 2023) that is directed towards creative learning. Through creative learning, future teachers not only form an attitude towards the teaching/learning process, but also adopt a model of creative teaching/learning, which can become an important part of their professional activity.

The problematic question is raised: how do pedagogy students assess their creative learning at university?

Research object: assessment of pedagogical studies students' creative learning at university.

Research aim is to reveal pedagogy students' assessment of their own creative learning at university.

Research methods: analysis of scientific literature and documents, written survey (questionnaire), statistical data analysis.

2. Theoretical background

Scientific studies show that creativity and learning are closely related and complementary (Sawyer, 2012; Karwowski et al., 2020). The conception of creative learning adheres to standard definitions of creativity: it must be original (new, different, or unique in a given context or situation) and it must be useful (meaningful) (Beghetto, 2021).

Recent scientific studies (Gajda et al., 2017; Beghetto, 2019; Beghetto & Schuh, 2020) have helped to clarify the construct and process of creative learning. Beghetto (2021) notes that creative learning is a specific form of learning that involves creative expression in the context of academic learning. This meaningful understanding emerges from combining what was previously known with the newly encountered learning stimuli (Rothenberg, 2015).

Creative learning is particularly important in teacher training. According to many authors (Gajda et al., 2017; Beghetto, 2019, 2021; Beghetto & Schuh, 2020; Elisondo, 2025), learning contexts that promote creative learning create a flexible learning environment that encourages exploration, generation, creation, assessment, and reflection (E-tar.lt, 2025). It is possible to distinguish the main aspects of the importance of creative learning in the training of teachers: ability to solve complex problems (Liu et al., 2024), creative thinking (Kimhi & Geronik, 2020), development of students' creativity competence (Lamb & Dekelaita-Mullet, 2022).

Creativity researchers have identified three interrelated factors of creative learning: 1) creative confidence; 2) valuing creativity; and 3) intellectual risk-taking (Beghetto, 2021). Ellis (2009), however, provided a broader list of factors of creative learning. Taking into account the continuum of creative learning, which includes learning programmes, different age-related dimensions of learning, the author distinguished a structure of creative learning to reflect progress: confidence, independence, learning; communication and collaboration creativity; strategies and skills; knowledge and understanding; reflection and assessment.

In conclusion, creativity is essential in teacher training, developing innovative teaching methods, promoting student creativity, and preparing teachers for the challenges of the 21st century. Teacher training programs must prioritize creativity and provide the necessary support and resources to effectively develop it. The factors of creative learning include both the beliefs and abilities of the learner, as well as social interaction and reflection. Researchers distinguish creative confidence, creativity appreciation, and intellectual risk-taking as essential elements of creative learning. However, creative learning is a multidimensional process, determined by the interaction of various social, cultural, and emotional factors.

3. Research methodology

The research aimed to determine how students assess their creative learning. To achieve the following goal, a quantitative research strategy was chosen, using a written survey (questionnaire).

3.1. Research instrument and its reliability indicators

The questionnaire was prepared based on the creative learning assessment system developed by Ellis (2009). The following system was adapted for university pedagogy students. On the basis of the creative learning assessment system, six groups of questions were created (Table 1).

Table 1. Question groups, number of questions, and reliability assessment results of ordinal subscales (source: created by authors)

No.	Question group	Number of questions	Cronbach's alpha
1.	Confidence, independence, learning	4	0.778
2.	Communication and collaboration	5	0.825
3.	Creativity	4	0.904
4.	Strategies and skills	3	0.818
5.	Knowledge and understanding	3	0.788
6.	Reflection and assessment	4	0.860
		Total: 23	Total score of the entire questionnaire: 0.828

The questionnaire consisted of 23 questions in total. Students were asked to mark their answers on a 10-point rating scale, where 1 means that it is not at all typical for the respondent and 10 means that it is especially and always typical for one. Having assessed the reliability of the entire questionnaire and its subscales using the Cronbach's alpha coefficient, the obtained indicator for the entire questionnaire was 0.828; indicators of individual subscales ranged from 0.778 to 0.904. The reliability of all subscales is considered good, when their Cronbach's alpha is higher than 0.70 (Rupšienė & Rutkienė, 2016). The obtained results (Cronbach's alpha 0.828) show that the instrument used to measure students' creative learning is reliable.

3.2. Research sample and characteristics of subjects

The research sample was formed using a non-probability criterion method. The selection criteria of the subjects: students of pedagogical study programmes of Klaipėda University, Lithuania, who agreed to participate in the research and filled out the provided questionnaire electronically. 143 respondents participated in the research. Scientific literature (Kardelis, 2002) recommends to determine the size of a representative sample by taking into account a 5% error, using the Paniotto formula: n (sample size) = 1/(Δ (allowable margin of error) 2 + 1/N (population size)) = 140.68. Hence, the research sample is sufficient, and increasing it would not be meaningful from the point of view of effectiveness (Kardelis, 2002).

Distribution of subjects by study year: first-year students accounted for 52.5% (75), second-year students for 18.0% (26), third-year students for 11.5% (16), and fourth-year students for 18.0% (26) (Table 2).

Table 2. Characteristics of the study sample by year of study (source: created by authors)

Year	Number of participants	Number of participants, %
1	75	52.5
2	26	18.0
3	16	11.5
4	26	18.0
Total	143	100

The distribution of the respondents by age was as follows: 30.5% (44) of the respondents were under 20 years of age, 35.6% (51) were between 21 and 35 years of age, and 33.9% (48) were 36 years and older. The age range of the respondents was from 19 to 47 years. In terms of gender, 95.8% (137) of the respondents were women and 4.2% (6) were men. Research participants were students of the first-cycle Childhood Pedagogy study programme and of vocational training programme in Pedagogy.

3.3. Research organization

The written survey (questionnaire) was conducted in April–May, 2024. Students were introduced to the aim and process of the research and invited to fill out the questionnaire on the *Google Forms* platform.

3.4. Data analysis methods

The obtained data were analysed using the *SPSS* program (version 22). The following statistical methods were applied: parametric and non-parametric criteria for evaluating group differences, and descriptive statistics. The one-sample Kolmogorov–Smirnov test criterion was used to check the normality of the distributions. The independent student *t* criteria (Student's *t*-test) criterion was applied for variables that were distributed according to the normal law (p (p-value) > α (significance level) = 0.05). For variables that are not normally distributed ($p < \alpha = 0.05$), the Mann–Whitney *U* test criterion was applied. To determine the

differences, rank averages (average ranks) were analysed. The values of rank averages were compared by size (Rupšienė & Rutkienė, 2016). When assessing the respondents' attitudes, the significance coefficient was calculated, while the chi-squared test criterion was applied to determine the differences in the indices. The chi-squared test statistics, difference degrees of freedom and significance level (p-value) were analysed. If the significance level is less than 0.05, it is concluded that the differences between the groups are significant from the research point of view.

3.5. Research ethics

Research participants were fully informed about the aim, course, and time costs of the research, emphasizing their right to withdraw from the research at any time (Vaičekauskaitė, 2023). The main principles of research ethics were followed throughout the research: the principles of confidentiality and anonymity, the principle of researcher integrity (Moher et al., 2020), and the principle of non-maleficence (Resnik, 2018).

4. Research results

4.1. Results of students' assessment of their own creative learning

After surveying pedagogy students and analysing the data, the average score estimates obtained are presented in Table 3.

The study results indicate that students rated the knowledge and understanding dimension highest (8.29), identifying it as the strongest area of creative learning. The highest score (8.51) was attributed to identifying personally suitable learning methods, reflecting enhanced self-reflection and effective teaching and learning strategies. A slightly lower rating for understanding connections between different study subjects (8.16) suggests that integrating knowledge in professional contexts remains a challenge. Students successfully construct knowledge, but interdisciplinary understanding still requires development.

The strategies and skills dimension received a similar evaluation (8.28). High scores for creativity development and acquisition of new skills (8.62) indicate students' ability to generate ideas and adapt to novel situations. The project planning score (8.00) signals limited confidence in practical implementation, highlighting the need to strengthen experiential and project-based learning. Practical application of ideas remains an area for growth.

The communication and collaboration dimension (8.24) shows strong social and emotional competence, particularly listening and responding appropriately (8.63). Lower ratings for initiating discussions (7.58) and justifying ideas (7.67) indicate restricted academic engagement. Empathy is more pronounced than active participation.

The reflection and assessment dimension was rated 7.92. Students understand others' learning experiences well (8.33), but skills in constructive criticism and reasoned evaluation (7.53) are less developed. Systematic cultivation of critical thinking remains necessary.

The creativity dimension received 7.80. Students perceive themselves as creative and playful (8.09), important for applying innovative teaching methods and creating inclusive learning environments. Lower scores for expressing ideas in diverse ways (7.59) suggest that creative

potential is not fully transformed into effective self-expression. Creative expression requires further practical support.

The lowest-rated dimension was confidence, independence, and learning (M (mean) = 7.30). Emotional engagement is relatively high (7.64), but self-motivation remains problematic (6.47). This highlights an imbalance between engagement and self-regulation and the need for targeted motivational support in pedagogical studies.

Table 3. Average scores of students' creative learning self-assessment (source: created by authors)

Questionnaire statement groups	Statements	Average scores	
Confidence, independence, and learning	"I like studying, I experience pleasure when I learn".	7.4576	7.2966
	"I find it interesting to learn, I am attentive during lectures and practical trainings".	7.6271	
	"The learning process is emotionally involving".	7.6355	
	"I can easily motivate myself to learn".	6.4661	
Communication and collaboration	"I find that I am useful when working in a team".	8.2881	8.2436
	"I participate in discussions, I make suggestions".	7.5762	
	"I know how to listen to others and respond appropriately".	8.6271	
	"When problems arise, I persistently try to solve them".	8.4830	
	"I am able to express ideas and present them in a reasoned manner".	7.6694	
Creativity	"I have a vivid imagination, I am creative and playful".	8.0932	7.7944
	"I can raise questions, generate ideas".	7.8474	
	"I am not afraid of innovations and risks, I experiment".	7.6440	
	"I can express my ideas in various ways".	7.5932	
Strategies and skills	"When problems arise, I look for different ways to solve them".	8.2627	8.2796
	"I propose ideas for a project and can plan it".	7.9576	
	"My creativity is expanding, I am acquiring new skills".	8.6186	
Knowledge and understanding	"I better understand which learning methods are most suitable for me".	8.5084	8.2909
	"I constantly learn new things and am able to use particular terms specific to my chosen profession".	8.1949	
	"I clearly understand interrelationships between phenomena related to professional activity (individual course units)".	8.1694	
Reflection and assessment	"During learning, I assess my own and others' work and make suggestions for its improvement".	7.5847	7.9152
	"I understand and can take into account other people's learning experiences".	8.3389	
	"I reasonably assess the work done and provide constructive criticism".	7.5254	
	"I constantly monitor my progress and can assess my achievements".	8.2118	

4.2. Significant differences in the research data on students' creative learning

The one-sample Kolmogorov–Smirnov test indicated that some data were normally distributed ($p > \alpha = 0.05$), while others were not ($p < \alpha = 0.05$). Independent Student's *t*-test on normally distributed data showed no significant differences by study programme (181.52, $t = -0.452$, df (difference) = 116, $p = 0.652$). The comparison of student responses by year of study showed statistically significant differences in the data provided by the first–second and third–fourth year students. The estimates are presented in Table 4. The analysis of the data that were not normally distributed and the application of the Mann–Whitney *U* test criterion established statistically significant differences in the estimates by the year of study, when $t = -2.399$, df = 116, $p = 0.018$ (Table 4).

Table 4. Differences in creative learning scores by study year (source: created by authors)

Subscales	Year	Average ranks	Mann–Whitney *U* Test		
			Unbiased statistics	Standard score	*p*-value
Confidence, independence, and learning	1 and 2	55.58	1181.000	–1.846	0.065
	3 and 4	68.08			
Communication and collaboration	1 and 2	55.73	1193.500	–1.772	0.076
	3 and 4	67.74			
Creativity	1 and 2	55.51	1175.500	–1.878	0.060
	3 and 4	68.23			
Strategies and skills	1 and 2	55.48	1172.500	–1.901	0.057
	3 and 4	68.31			
Knowledge and understanding	1 and 2	54.91	1127.000	–2.166	0.030
	3 and 4	69.54			
Reflection and assessment	1 and 2	55.06	1139.000	–2.090	0.037
	3 and 4	69.22			

Table 4 shows that all average rank estimates are higher for third- and fourth-year students than for first- and second-year students (55.58 < 68.08, 55.73 < 67.74, *etc.*). Notably, the *p*-values for knowledge and understanding and reflection and assessment are 0.030 and 0.037, indicating significant differences. Based on the results obtained, it can be stated that senior students assess their creative learning better than junior students. The following is confirmed by the statement found in the scientific literature that personally meaningful understanding arises from combining what was previously known with the newly encountered learning stimuli. The results show that university studies help to significantly develop certain creative learning abilities.

5. Discussion and conclusions

The obtained research results confirm the findings of other researchers (Kimhi & Geronik, 2020; Lamb & Dekelaita-Mullet, 2022; Liu et al., 2024; Elisondo, 2025) that emphasize creative learning and its development during the years of study at the university (Matraeva et al.,

2020; Stolz et al., 2022; Li, 2023), as a condition for the preparation of creative teachers.The validity of Ellis' (2009) creative learning framework was confirmed, and the adapted research instrument was characterized by high reliability.

The study data revealed consistent academic and personal growth of students during their studies – their knowledge deepened, reflection, evaluation, and social and emotional competences strengthened. Although students perceive themselves as creative and emotionally engaged, challenges related to lack of self-motivation, limited integration of study subjects, lack of practical experience, and insufficient activity in discussions and assessment processes emerged. Older students evaluated creative learning more favorably, and deepening of knowledge and reflection skills developed most statistically significantly.

5.1. Research limitations

The study was conducted at one Lithuanian university, analyzing the opinions of students of pedagogical study programs, therefore the results obtained reflect only the experience of a specific sample and cannot be directly generalized to the entire student population.

5.2. Possibilities for future research

Considering the multifaceted and dynamic nature of creative learning, it is appropriate to study the sustainability of creative learning in the future, its links with long-term personal and professional growth and the ability to adapt to changing educational contexts. It is also promising to develop sustainable creative learning models by identifying effective teaching/learning methods and educational environment elements that ensure the consistent implementation of creative learning.

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