Education

The impact of the learning environment on students' creative competence: A study at Thai Nguyen University of Education

Thu Dam Thi Kim[1*] and Nguyen Thi Lan Anh[1]

[1] Thai Nguyen University of Education, Viet Nam

*Corresponding author: Thu Dam Thi Kim

Received 17 March 2026; Accepted 4 May 2026; Published 15 May 2026

DOI: https://doi.org/10.64171/JAES.6.3.47-52

Abstract

This study examines the impact of the learning environment on the creative competence of pre-service teachers using a quantitative approach with a sample of 240 students. The findings indicate that the learning environment has a positive influence on students' creativity, with teaching methods and experiential learning activities identified as the most influential factors in enhancing flexibility, problem-solving ability, and willingness to experiment with new approaches. Psychological and social elements, including teacher encouragement, openness, and peer collaboration, also play a significant role in fostering a supportive climate for creative engagement. In contrast, structural factors such as physical facilities and institutional policies show relatively weaker effects, suggesting that creativity is more strongly shaped by pedagogical practices and interactive learning processes than by material conditions. Furthermore, the results reveal that students demonstrate stronger creativity in terms of processes rather than outcomes, indicating a gap between idea generation and the production of original and valuable products. These findings highlight the importance of promoting learner-centered pedagogy, experiential learning, and supportive classroom environments to effectively develop creative competence in teacher education.

Keywords: Learning environment, Creative competence, Pre-service teachers, Experiential learning, Teaching methods

1. Introduction

In the context of rapid global educational transformation driven by the Fourth Industrial Revolution, creative competence has increasingly been recognized as a key capacity for learners, particularly for pre-service teachers who will play a central role in educational innovation. International frameworks highlight creativity as an essential competence for the 21st century, contributing to adaptability, problem-solving, and innovation in complex and rapidly changing societies (OECD, 2019; UNESCO, 2015) [5, 7].

From a contemporary theoretical perspective, creativity is widely understood as the ability to generate ideas that are both novel and useful, but recent studies emphasize its dynamic, context-dependent, and developable nature (Glăveanu, 2018) [3]. Rather than being an innate trait, creativity is increasingly viewed as a competence shaped through interactions between individuals and their learning environments, including social, cultural, and pedagogical factors (Beghetto & Kaufman, 2018; Henriksen *et al*., 2016) [4].

Within higher education, and particularly in teacher education, the learning environment has been identified as a critical factor influencing students' cognitive, motivational, and creative development. Recent research suggests that learning environments characterized by student-centered pedagogy, collaboration, and active engagement significantly enhance creative thinking and performance (Richardson & Mishra, 2018) [6]. In addition, innovative and flexible learning environments that integrate experiential learning, interdisciplinary approaches, and digital technologies have been shown to foster creativity by encouraging exploration, reflection, and knowledge construction (Henriksen *et al*., 2016; OECD, 2019) [4, 5].

Empirical studies further confirm the positive relationship between learning environments and creative competence. For example, a systematic review by Davies *et al*. (2013) [2] highlights that environments promoting autonomy, flexibility, and interaction are strongly associated with students' creative development. More recent research also indicates that teacher support, classroom openness, and collaborative learning play essential roles in enhancing creativity, particularly in higher education contexts (Richardson & Mishra, 2018) [6]. These findings suggest that creativity can be effectively nurtured through pedagogical innovation and supportive learning climates.

However, in the context of higher education in Vietnam, especially in teacher training institutions, empirical research examining the impact of learning environments on creative competence remains limited. Existing studies often lack a comprehensive approach to understanding the multidimensional nature of learning environments and their differentiated effects on various aspects of creativity.

Based on these considerations, this study aims to investigate the influence of learning environment factors on the creative competence of pre-service teachers. The findings are expected to contribute to the theoretical understanding of the relationship between learning environments and creativity, while also

providing practical implications for designing effective learning environments and improving teacher education in the current educational context.

2. Literature review

In recent years, research on creative competence and learning environments has undergone a significant conceptual shift from an individual-centered perspective to a more systemic and contextualized approach. Rather than viewing creativity as an inherent trait or isolated cognitive ability, contemporary scholars emphasize its situated and relational nature, emerging from the dynamic interaction between learners and their environments (Glăveanu, 2018) [3]. This shift reflects a broader movement in educational research toward understanding learning as a socially constructed and context-dependent process.

Within higher education, and particularly in teacher education, the learning environment is increasingly recognized as a core determinant of creative development. The OECD (2019) [5] conceptualizes effective learning environments as those that enable learners to "explore, imagine, act, and reflect," highlighting that creativity is not only shaped by what is learned but also by how learning is structured and experienced. This perspective suggests that pedagogical design, rather than content alone, plays a decisive role in fostering creativity.

Empirical evidence further supports the multidimensional influence of learning environments. For instance, Fan *et al*. (2022) [8] demonstrate that the impact of creative learning environments on students' creativity operates through mediating mechanisms, including learning orientation, social interaction, and knowledge sharing. This finding is particularly important as it indicates that the relationship between environment and creativity is not linear but indirect and process-based, involving psychological and social pathways. In other words, learning environments shape creativity by influencing how students engage, interact, and construct knowledge.

In the context of teacher education, recent studies highlight the role of learning environments in developing professional creativity, which extends beyond general creative thinking to include the ability to design innovative teaching practices. Zhong *et al*. (2024) [11] show that teaching methods and curriculum design significantly affect pre-service teachers' creative competence, suggesting that creativity development is closely tied to pedagogical training and disciplinary context. Similarly, Pazin *et al*. (2022) [10] emphasize that organizational and environmental support are critical in enabling creative teaching behaviors, pointing to the importance of institutional conditions.

Moreover, the role of teachers as key agents in constructing creativity-supportive environments has been strongly emphasized in recent literature. Brauer *et al*. (2025) [12] identify specific teaching behaviors such as encouraging experimentation, tolerating risk-taking, and creating open learning spaces—as crucial for fostering creativity. This aligns with the broader transition from traditional, teacher-centered instruction to learner-centered pedagogies, where students are positioned as active participants in knowledge creation.

However, despite these advances, several limitations persist in current educational environments. Davies *et al*. (2013) [2] note that many learning settings remain relatively rigid, with limited opportunities for experimentation and risk-taking. This rigidity may contribute to a disconnect between creative potential and creative performance, where students are able to generate ideas but struggle to develop them into meaningful or innovative products. This issue is particularly relevant in contexts where assessment systems and instructional practices prioritize correctness over originality.

Taken together, the literature suggests that learning environments influence creative competence through a complex, multidimensional system of factors, including pedagogical practices, social interaction, motivation, and experiential learning opportunities (Richardson & Mishra, 2018) [6]. However, a critical gap remains in understanding how these factors interact in specific educational contexts, particularly in developing countries such as Vietnam. Existing studies are often limited in scope, either focusing on single factors or lacking robust quantitative evidence.

Therefore, this study seeks to address these gaps by adopting a multidimensional and empirical approach to examine the impact of learning environment factors on the creative competence of pre-service teachers. By doing so, it aims not only to contribute to the theoretical understanding of creativity as a context-dependent competence but also to provide context-specific insights for improving teacher education practices.

3. Research gap

Although previous studies highlight the importance of learning environments in fostering creativity, several gaps remain. First, research focusing specifically on pre-service teachers is still limited. Second, most studies examine environmental factors separately rather than adopting a multidimensional approach. Third, the differential impact of learning environments on process-oriented and product-oriented creativity has not been clearly explored. Finally, in the context of Vietnamese higher education, empirical evidence on this issue remains scarce. This study addresses these gaps by examining the influence of multiple learning environment factors on the creative competence of pre-service teachers.

4. Research method

This study employed a quantitative approach using a cross-sectional survey design to examine the impact of the learning environment on the creative competence of pre-service teachers. The research framework was developed based on learning environment theory, the 3P model, and creativity theory, which collectively emphasize the role of environmental, pedagogical, and individual factors in shaping learning outcomes.

The participants consisted of 240 pre-service teachers selected through convenience sampling. Data were collected using a

structured questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire included two main sections: (1) learning environment factors (physical conditions, psychological–social aspects, teaching methods, and organizational factors) and (2) students' creative competence.

The collected data were analyzed using SPSS software with basic descriptive statistical techniques. The results were used to evaluate the extent to which learning environment factors influence the creative competence of pre-service teachers.

5. Research results

5.1. The current situation of the impact of the learning environment on the creative competence of students at Thai Nguyen University of Education

To assess the current impact of the learning environment on the creative competence of students at Thai Nguyen University of Education, this study conducted a survey to examine students' perceptions of learning environment factors through specific indicators, measured using a five-point Likert scale. The results are presented in Table 1.

Table 1: Descriptive statistics of learning environment factors influencing the creative competence of students at Thai Nguyen University of Education

Content	Level					M	SD	Rank
	1	2	3	4	5			
Adequate facilities enable me to easily implement creative ideas	12	20	40	95	73	3.82	1.108	19
Access to diverse learning resources helps me develop new ideas	8	18	36	100	78	3.93	1.036	16
The use of technology in teaching enhances my creativity	6	15	34	108	77	3.98	0.970	14
A flexible learning space allows me to experiment with new ideas	10	22	43	95	70	3.80	1.086	20
Teacher encouragement helps me feel confident in proposing creative ideas	5	12	29	105	89	4.09	0.935	7
An open classroom environment encourages me to try out new ideas	7	15	31	103	84	4.01	0.998	12
Respect for individual opinions helps me develop creative thinking	5	12	27	108	88	4.09	0.928	7
Collaboration with peers helps me expand and refine my ideas	6	14	29	103	88	4.05	0.973	10
Active teaching methods help me develop my creative abilities	3	10	24	110	93	4.17	0.861	4
Experiential learning activities help me generate new ideas	5	12	27	105	91	4.10	0.934	6
Solving real-life problems enhances my creative thinking	3	10	22	108	97	4.19	0.861	2
Open forms of assessment (encouraging new ideas) promote my creativity	7	15	34	102	82	3.99	1.000	13
Institutional support policies encourage me to participate in creative activities	10	20	43	95	72	3.83	1.079	18
School culture motivates me to innovate and be creative	8	17	36	102	77	3.93	1.026	16
Extracurricular activities (clubs, research activities) help me develop creativity	6	15	31	105	83	4.02	0.977	11
Flexible learning organization helps me easily experiment with new ideas	7	17	34	101	81	3.97	1.014	15
The current learning environment positively influences my creative competence	3	8	22	110	97	4.21	0.837	1
I develop creative thinking better thanks to the learning environment	3	10	24	108	95	4.18	0.865	3
The learning environment helps me develop habits of creative thinking	5	12	29	105	89	4.09	0.935	7
The learning environment motivates me to innovate in my learning	3	10	26	108	93	4.16	0.868	5

The results in Table 4.1 indicate that pre-service teachers generally perceive the learning environment as having a positive influence on their creative competence, with mean scores ranging from 3.80 to 4.21. This overall high level suggests that the current learning environment at Thai Nguyen University of Education is conducive to creativity development. However, the variation across items reveals that the influence of different environmental factors is not uniform. The highest-rated item, *"The current learning environment positively influences my creative competence"* (M = 4.21), reflects a strong overall acknowledgment of the importance of the learning environment. More specifically, items related to experiential learning and real-life problem-solving also received high evaluations, such as *"Solving real-life problems enhances my creative thinking"* (M = 4.19) and *"I develop creative thinking better thanks to the learning environment"* (M = 4.18). These findings suggest that students associate creativity not merely with idea generation but with the ability to apply knowledge in practical contexts. This aligns with contemporary perspectives that view creativity as a context-dependent and application-oriented competence (OECD, 2019; Fan *et al*., 2022) [5, 8].

Moreover, active teaching methods and motivational factors emerge as key drivers of creativity. The high ratings for items such as *"Active teaching methods help me develop my creative abilities"* (M = 4.17) and *"The learning environment motivates me to innovate in my learning"* (M = 4.16) indicate that student-centered pedagogies play a crucial role in promoting creative engagement. This supports constructivist assumptions that emphasize the importance of active participation and intrinsic motivation in the learning process (Henriksen *et al*., 2016) [4].

In addition, psychological–social factors are shown to significantly contribute to creativity development. The strong agreement with statements related to teacher encouragement, respect for individual opinions, and peer collaboration highlights the importance of a supportive and open classroom climate. Such conditions not only foster students' confidence in expressing ideas but also facilitate the refinement of those ideas through interaction. This finding reinforces the socio-cultural perspective that creativity is co-constructed through social processes (Glăveanu, 2018; Richardson & Mishra, 2018) [3, 6].

In contrast, physical and organizational factors appear to have a comparatively weaker influence. Lower mean scores for items related to facilities, flexible learning spaces, and institutional support policies suggest that these aspects are not yet fully optimized to support creative activities. This indicates that while material and structural conditions are necessary, they are not sufficient to foster creativity without effective pedagogical implementation. Similar limitations have been noted in prior studies, which highlight the persistence of relatively rigid educational environments (Davies *et al*., 2013) [2].

Regarding technology and learning resources, the results show a moderate level of influence. Although students recognize their usefulness, these factors are not among the most impactful. This may imply that technology is currently used primarily as a supporting tool rather than as a transformative element in fostering creativity. As emphasized by OECD (2019) [5], the effectiveness of technology depends largely on how it is pedagogically integrated.

Overall, the findings suggest that creativity is more strongly influenced by pedagogical practices and social interaction than by physical or structural conditions. This highlights the central role of how learning is organized and experienced, rather than simply the availability of resources. Consequently, enhancing creative competence in teacher education requires not only improving infrastructure but, more importantly, fostering innovative teaching practices and supportive learning environments.

The findings confirm that the learning environment plays a significant role in fostering pre-service teachers' creative competence, with overall mean scores indicating a positive impact. However, the results reveal differences in the influence of specific environmental factors.

Notably, pedagogical and experiential factors (e.g., active teaching methods and real-life problem-solving) show the strongest influence. This suggests that creativity is primarily developed through active engagement and meaningful learning processes, rather than passive knowledge acquisition, which is consistent with constructivist perspectives (Henriksen *et al*., 2016; OECD, 2019) [4, 5]. The prominence of real-world problem-solving further indicates that creativity is perceived as application-oriented competence, aligning with recent studies emphasizing practical and contextualized creativity (Fan *et al*., 2022) [8].

In addition, psychological–social factors, such as teacher encouragement, respect for individual opinions, and peer collaboration, play an important enabling role. These factors contribute to an open and supportive learning climate that reduces barriers to idea expression and enhances creative thinking. This finding supports the socio-cultural view that creativity is socially constructed through interaction (Glăveanu, 2018; Richardson & Mishra, 2018) [3, 6].

In contrast, physical and institutional factors (e.g., facilities, flexible spaces, and policies) show relatively weaker influence. This suggests that material conditions alone are insufficient to foster creativity, and highlights the more critical role of pedagogical practices. Similar limitations in traditional or rigid learning environments have been reported in previous studies (Davies *et al*., 2013) [2].

Furthermore, the moderate impact of technology and learning resources indicates that digital tools may not yet be fully utilized to promote creativity, but are instead used primarily for supporting content delivery. This finding is consistent with OECD (2019) [5], which emphasizes that technology enhances creativity only when effectively integrated into innovative pedagogical practices.

Overall, the results suggest a multidimensional structure of influence, in which pedagogical and social factors act as core drivers, while physical and organizational conditions function as supporting or constraining elements. This highlights the need for a balanced approach that prioritizes teaching innovation alongside improvements in infrastructure and institutional support.

5.2. The creative competence of students at Thai Nguyen University of Education

To assess the creative competence of students at Thai Nguyen University of Education, the study conducted a survey on specific manifestations of students' creative competence. The results are presented in Table 2.

Table 2: Students' creative competence at Thai Nguyen University of Education

Content	Level					M	SD	Rank
	1	2	3	4	5			
I often generate multiple ideas when solving problems	4	10	28	110	88	4.12	0.889	6
I am able to find new approaches in my learning	3	9	25	108	95	4.18	0.856	2
I can apply knowledge flexibly	3	8	26	110	93	4.18	0.845	2
I often produce original ideas	5	12	30	105	88	4.08	0.936	7
I am able to develop and refine my ideas	4	10	28	108	90	4.13	0.892	5
I actively participate in creative activities	3	9	27	110	91	4.15	0.856	4
I am willing to experiment with new approaches in my learning	3	8	25	109	95	4.19	0.845	1
I create learning products that are novel and valuable	5	12	30	105	88	4.08	0.936	7

The results indicate that students at Thai Nguyen University of Education demonstrate a relatively high level of creative competence, with mean scores ranging from 4.08 to 4.19. This suggests that students generally perceive themselves as possessing well-developed creative abilities across multiple dimensions, including idea generation, flexibility, experimentation, and product creation.

Among the observed indicators, the highest-rated item is "I am willing to experiment with new approaches in my learning" (M = 4.19, Rank = 1), followed closely by "I am able to find new approaches in my learning" and "I can apply knowledge flexibly" (both M = 4.18, Rank = 2). These results highlight that students' creative competence is particularly strong in terms of adaptability and openness to innovation. This finding suggests that creativity is manifested not only through generating ideas but also through the willingness to explore, test, and implement new ways of learning. Such a pattern aligns with contemporary views of creativity as a dynamic and process-oriented competence, closely linked to flexibility and problem-solving ability.

In addition, relatively high scores are observed in items related to active engagement and idea development, such as "I actively participate in creative activities" (M = 4.15, Rank = 4) and "I am able to develop and refine my ideas" (M = 4.13, Rank = 5). These results indicate that students are not only capable of generating ideas but also of elaborating and improving them through participation and practice. This reflects a more advanced level of creative competence, where creativity is understood as an iterative process involving both ideation and refinement.

However, items related to originality and product outcomes receive comparatively lower scores. Specifically, "I often produce original ideas" and "I create learning products that are novel and valuable" (both M = 4.08, Rank = 7) are ranked lowest among the indicators, although still at a relatively high level. This suggests that while students are confident in their ability to engage in creative processes, they may face challenges in producing truly original ideas or tangible creative products with high value. This gap between creative process and creative output has been noted in previous research, indicating that generating ideas does not always translate into the creation of innovative products.

Similarly, although "I often generate multiple ideas when solving problems" (M = 4.12, Rank = 6) is rated positively, it does not rank among the highest indicators. This may imply that students' divergent thinking abilities, while present, are not as strongly developed as their abilities related to flexibility and application. In other words, students appear to be more comfortable adapting existing knowledge than generating a wide range of novel ideas.

Overall, the findings suggest that students' creative competence is characterized by strengths in flexibility, experimentation, and active engagement, but relatively weaker performance in originality and product-oriented creativity. This indicates that current learning experiences may be more effective in fostering adaptive and process-based aspects of creativity than in promoting breakthrough ideas or innovative outputs.

From an educational perspective, these results imply the need to further strengthen learning activities that encourage originality and the production of creative products. While maintaining the existing strengths in active and experiential learning, greater emphasis should be placed on tasks that require students to generate unique ideas, develop innovative solutions, and create products with real value. This would help bridge the gap between creative potential and creative performance, thereby enhancing the overall level of creative competence among pre-service teachers.

6. Conclusion

The study shows that the learning environment has a positive impact on the creative competence of pre-service teachers, with factors related to teaching methods and experiential learning activities playing the most significant role. Psychological–social conditions, particularly teacher encouragement and student collaboration, also contribute to fostering creativity, while physical and organizational factors have a relatively weaker influence.

The results further indicate that students demonstrate creative competence more strongly in terms of behaviors and processes (e.g., experimentation and flexibility), but remain limited in producing creative outputs with real value. Therefore, developing creative competence should focus on innovating teaching methods, enhancing experiential learning, and creating a positive learning environment that supports students in transforming ideas into meaningful creative products.

References

1. Cansino JM, Román R, Expósito A. Does student proactivity guarantee positive academic results? Education Sciences. 2018;8(2):62. doi:10.3390/educsci8020062.
2. Davies D, Jindal-Snape D, Collier C, Digby R, Hay P, Howe A. Creative learning environments in education: A systematic literature review. Thinking Skills and Creativity. 2013;8:80-91. doi:10.1016/j.tsc.2012.07.004.
3. Glăveanu VP. Educating which creativity? Thinking Skills and Creativity. 2018;27:25-32. doi:10.1016/j.tsc.2017.11.006.
4. Henriksen D, Mishra P, Fisser P. Infusing creativity and technology in 21st-century education: A systemic view for change. Educational Technology & Society. 2016;19(3):27-37. Available from: JSTOR
5. OECD. OECD learning compass 2030. Paris: OECD Publishing; 2019. Available from: OECD
6. Richardson C, Mishra P. Learning environments that support student creativity: Developing the SCALE. Thinking Skills and Creativity. 2018;27:45-54. doi:10.1016/j.tsc.2017.11.004.
7. UNESCO. Rethinking education: Towards a global common good? Paris: UNESCO Publishing; 2015. Available from: UNESCO Digital Library
8. Fan M, *et al*. How does a creative learning environment foster student creativity? An examination on multiple explanatory mechanisms. Current Psychology. 2022. doi:10.1007/s12144-020-00974-z.
9. OECD. Fostering students' creativity and critical thinking. Paris: OECD Publishing; 2019. doi:10.1787/62212c37-en.

10. Pazin AH, Maat SM, Mahmud MS. Factors influencing teachers' creative teaching: A systematic review. Cypriot Journal of Educational Sciences. 2022;17(1):240-254. doi:10.18844/cjes.v17i1.6696.
11. Zhong X, Qu K, Zhang D. Examining influencing factors of teacher education students' creativity in Chongqing Municipality. Cogent Education. 2024;11(1). doi:10.1080/2331186X.2024.2351268.
12. Brauer R, Ormiston J, Beausaert S. Creativity-fostering teacher behaviors in higher education: A transdisciplinary systematic literature review. Review of Educational Research. 2025;95(5):899-928. doi:10.3102/00346543241258226.