

**INTERNATIONAL JOURNAL OF  
EDUCATION, PSYCHOLOGY  
AND COUNSELLING  
(IJEPC)**[www.ijepec.com](http://www.ijepec.com)**THE MODERATING ROLE OF GENDER IN THE INFLUENCE  
OF LEARNING MOTIVATION AND CLASSROOM  
ENVIRONMENT ON THE INNOVATIVE THINKING OF FINE  
ARTS STHDENTS IN CHINESE UNIVERSITIES**Yuan Yao<sup>1\*</sup>, Norliza Ghazali<sup>2\*</sup>, Rose Manisah Sulon<sup>3</sup>

1 Faculty of Education, Universiti Purta Malaysia (UPM)

Email: yuanyao2021@gmail.com

2 Faculty of Education, Universiti Purta Malaysia (UPM)

Email: alezg@upm.edu.my

3 Faculty of Education, Universiti Purta Malaysia (UPM)

Email: rosemanisah@upm.edu.my

\* Corresponding Author

**Article Info:****Article history:**

Received date: 24.04.2024

Revised date: 13.05.2024

Accepted date: 15.06.2024

Published date: 30.06.2024

**To cite this document:**

Yuan, Y., Ghazali, N., & Sulon, R. M. (2024). The Moderating Role Of Gender In The Influence Of Learning Motivation And Classroom Environment On The Innovative Thinking Of Fine Arts Sthdents In Chinese Universities. *International Journal of Education Psychology and Counseling*, 9 (54), 600-612.

DOI: 10.35631/IJEPC.954046

This work is licensed under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

In the twenty-first century, the cultivation of innovative thinking has become the theme of higher education. Governments are also gradually paying attention to the cultivation of innovative thinking. This study explores the status of research on innovative thinking of art majors in universities and tries to explore the relationship between innovative thinking of art majors and learning motivation and classroom environment, and whether gender as a moderating variable has an impact on it. Through the survey and empirical analysis of many art majors, it was found that there are gender differences in the influence of learning motivation and classroom environment on innovative thinking. The results suggest that gender plays an important role in the development of innovative thinking among art major college students. This study provides in-depth thinking from a gender perspective for the education of art majors and makes certain suggestions for educational practice. This study is a purely quantitative study. The study will use questionnaire survey method to investigate the art majors' university students.

**Keywords:**

Gender, Learning Motivation, Classroom Environment, Innovative Thinking

## Introduction

The importance of innovation, considered as a pioneer of competition and progress, is increasing (Sevinç & Uyangör, 2020). To adapt to the new situation, China has proposed an innovation-driven development strategy in recent years. It requires new ideas, new designs and new strategies, scientific and technological innovations, especially a group of innovative talents with innovative spirit, attitude, ability and knowledge. It puts higher demands on the innovation ability for society, enterprises and talents.

In February 2011, the U.S. National Economic Council, Council of Economic Advisers, and Office of Science and Technology Policy jointly released the U.S. National Innovation Strategy - Ensuring Our Economic Growth and Prosperity, a government report that highlights the importance of innovation in the 21st century (Zhao, 2012). Uzbek scholars J.G. Yuldashev, R.Y. Vilensky<sup>2</sup> believe that the essence of innovation in higher education is determined by the nature of innovation, the professionalism of educators, the innovative activity of innovators and participants (Istamovna & Rakhimovich, 2019). Educational measures in their countries revolve around innovative activity (Kholikova, 2021).

Higher education is one of the driving forces of national development. In the face of the increasingly competitive international society in the current economic era, it is urgent to strengthen the cultivation of talents, especially the cultivation of innovative talents. For the cultivation of innovation ability of students in colleges and universities, the cultivation of innovation consciousness of students is of great significance to researchers and professionals in higher education (Xu & Chen, 2010).

To cultivate students' innovative thinking ability is now facing educator's social challenges, to be imperative to stimulate students' innovative thinking cultivation (Sun, Yu, & Wang, 2014). University students have an active mind, professional knowledge, motivation and a good classroom environment. The art profession requires innovative thinking to express the inner world of students, therefore, innovative thinking is one of the indispensable factors for the creative role of art students (Mirzahamdamovna, Erkinovna, & Jumadillaevich, 2021).

The arts are excellent vehicles for fostering thinking because they provide a sensory anchor (one can focus on a physical object as one thinks), they are instantly accessible, they engage us and sustain our attention, and they encourage rich connections (Moga, Burger, Hetland, & Winner, 2000). In order to make innovative breakthroughs in the field of art, art students need to go beyond traditional ideas and methods and demand new ways of expression and artistic language. Creative thinking enables art students to provide unique ideas that allow them to communicate their artistic concepts through novel perspectives and viewpoints.

In recent years, social innovation has had an increasing impact in all aspects. Innovative talents have become indispensable competitiveness in society. The source of innovation is innovative thinking, and fostering innovative thinking among contemporary college students is more conducive to promoting the progress and development of society (Deng, Cao, & Luo, 2022).

Firstly, research on innovative thinking has focused on the age group of children and adolescents. There is less research on innovative thinking among university students specializing in fine arts, and the United Nations has advocated for a high-quality higher education system to prepare for innovation (Kholikova, 2021). Then, most of the researchers

studying innovative thinking have focused on other professions, and not much has been written about innovative thinking among art students. Relative to primary and secondary school students, the gender gap in innovative thinking of university-level art specialists is gradually narrowing, but there are significant differences (Ülger & Morsünbül, 2016). Finally, the researcher found that there is still a lack of information on this aspect of the relationship between art knowledge, motivation and classroom environment and creative thinking.

## Literature Review

Countries around the world attach great importance to the construction of higher education innovation system, countries are stepping up the deployment of innovation development strategy and higher education innovation promotion strategy, as a strong support for the construction of the national innovation system, to seize the first opportunity for the future economic and scientific and technological development (Zhang & Zheng, 2017).

Innovative education has become a central staple of the 21st century. Educators should not only develop students' creative abilities, but also use effective teaching models to inspire creative thinking (Xing, Diao, Han, & Jia, 2021). Artistic creation has a unique advantage in cultivating the creative ability and thinking of talents. Therefore, colleges and universities must strengthen the cultivation of creative ability of artistic creation of talents.

Innovative thinking is a way of thinking that enables a person to come up with new and original compositions, to find a new language for painting. Innovative thinking processes are present in all emotional and intellectual activities, as well as in all kinds of studies and professions. Innovative thinking is the basis of the fields of art, science, philosophy and technology, and it improves our ability to adapt to our environment and conditions (Avcı & Durak, 2023).

Innovative thinking is a non-traditional, unique way of thinking and problem solving that emphasizes going beyond traditional modes of thinking to find new perspectives, approaches and solutions to challenges and opportunities. Creative thinking is a mental process that stimulates the achievement of new results and a cognitive process that applies new or significantly improved ideas (Barak, Watted, & Haick, 2020; Cropley, 2015). The university level is the best stage for students to develop innovative thinking, and universities are in a position to produce students with strong innovative thinking (Barak, Watted, & Haick, 2020; Barak & Usher, 2019; Cropley, 2015). Creative thinking has become an important area of research in disciplines such as psychology, education, management, and computing.

It is well known that the fine arts have taught mankind to work, to think, to create, to pursue beauty and to create a beautiful, beautiful spiritual world within it. But fine art is not limited to this. Fine art knowledge refers to the body of knowledge related to art, including but not limited to art history, art theory, art techniques, art aesthetics, art education, etc. (Hirst, 1973). It provides a rich theoretical foundation for art creation. It covers all aspects of visual arts such as painting, sculpture, photography, architecture and so on (Li, 2004). Art knowledge helps people to understand the content and expression of art works, and to better appreciate and evaluate art works. For those who are engaged in art creation, art education and art history research, art knowledge is even more essential basic knowledge (Li, 2004). Today, it is well known that the fine arts have created a high level of wisdom, profound knowledge and thinking, a good life and faith for people and societies. Observations and scientific studies have also shown that the fine arts have not only given young people science and reflection and beautiful

aesthetic ideals but have also developed the most important aspects of human beings, i.e., observation, vision, perception, and reflection. It is proved to be the main and primary engine (Mukhiba, 2020).

In this study, the factor closely related to creative thinking was motivation to learn. Furthermore, motivation has been identified as a significant predictor of learning. Motivation is one of the important factors that show students' willingness, needs and desires in learning and personal processes (Bergin & Reilly, 2005).

Motivation for learning refers to the intrinsic drive and willingness of an individual to engage in the learning process. It involves the individual's desires, goals, expectations and interests that drive students to actively engage in learning activities and pursue the acquisition and application of knowledge and skills. Zimmerman (2008) states that the factors that drive and inhibit student learning are important to students. Learning motivation is the primary motivator to start learning and is the most powerful determinant of student success in school (Ariani, 2017). Urdan and Schoenfelder (2006) showed that the learning motivation is multiply determined and reflect the complex interaction of a few personal and situational factors.

Kim and Lee (2018) argued that motivation for innovative behavior leads to individual differences in innovative behavior. The motivation of art students is crucial to the development of innovative thinking. When students have a strong intrinsic motivation, they will get the initiative and enjoyment of the art system in art creation and are more likely to form innovative thinking. Students' motivation is more conducive to their creative works, which can promote them to actively participate in art creation, actively explore the language of painting and try new painting styles, to cultivate and develop innovative thinking.

Classroom environment refers to the physical and social environment inside and outside the classroom, including factors such as spatial layout, resources and facilities, teacher-student interactions, and inter-student interactions. The cultivation of creative thinking not only depends on students' individual abilities but is also closely related to the classroom environment. As an important place for students to learn, the classroom environment can actively promote creative thinking by creating an appropriate atmosphere and providing relevant instructional strategies. Fine arts students' perception of an innovative environment affects learning motivation and behavior, which in turn affects creativity and innovative thinking (Cai, Horng, Liu, & Hu, 2015). Therefore, establishing an innovative environment is very important for developing creativity.

While the classroom environment is a subtle concept, there are issues and factors that affect students' creative thinking (Ariani, 2017). The social context of the classroom environment includes teacher-student interactions and interactions between students. Teachers' roles, teaching styles, attitudes and behaviors are crucial in creating a positive social environment. Positive teacher-student interactions that encourage students to participate in discussions, ask questions and share can promote student motivation.

Gender is a term referring to the two sex categories of male and female. The concept is shaped by social and cultural factors, encompassing both psychological and sociocultural aspects of inherited sex. Gender is intricately linked to the way individuals think, act, and reason (Peretomode & Bello, 2018). Hong et al. (2013) emphasizes the significance of comprehending

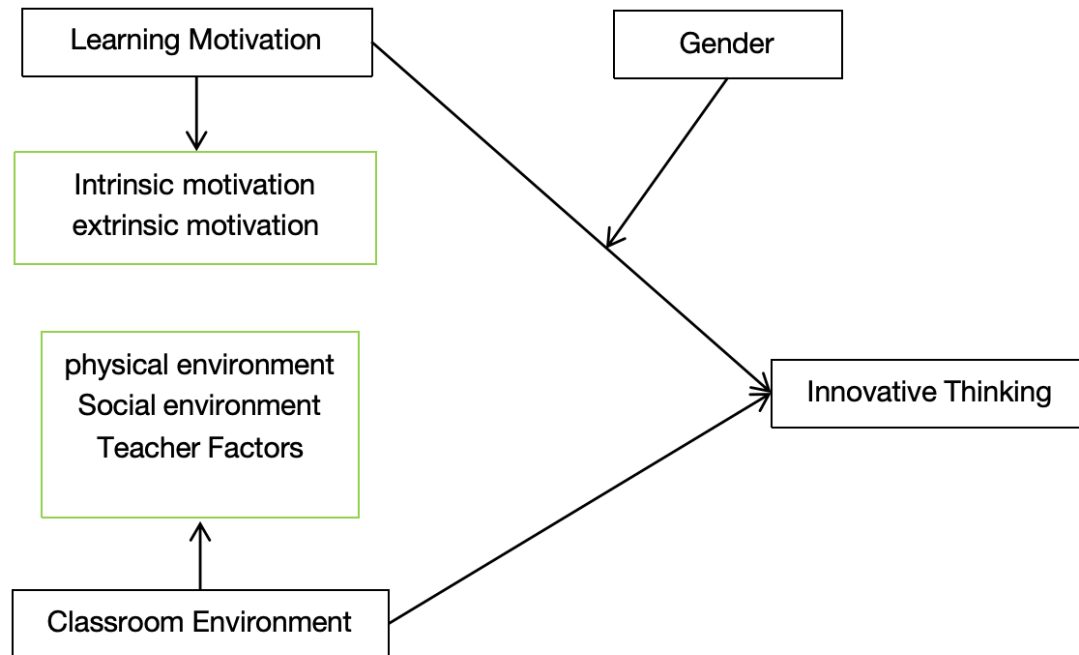
gender differences in innovative thinking skills for research. While the research on gender and innovation is not extensively covered, some influential studies in related fields have been conducted. Some studies have reported significant differences between men's and women's selves in terms of motivation and innovative thinking (Puspitaningrum, Prodjosantoso, & Pulungan, 2021 ; Ramdani & Yustiqvar, 2021; Simanjuntak, Hia, & Manurung, 2020; Spinath, Eckert, & Steinmayr, 2018), while others have failed to find any correlation between the two (Charyton, Basham, & Elliot, 2008).

It has been found that due to the differences in the educational styles and upbringing of boys and girls, boys and girls are motivated to learn differently (Simanjuntak, Hia, & Manurung, 2020). According to the research table there is a significant difference in intrinsic motivation between boys and girls (Spinath, Eckert, & Steinmayr, 2018). Researchers measuring male and female students' learning motivation for online learning have found significant differences, with the mean score for female students' learning motivation being significantly higher than the mean score for male students' learning motivation (Puspitaningrum, Prodjosantoso, & Pulungan, 2021). Ramdani et al.'s study showed differences in thinking between boys and girls (Ramdani & Yustiqvar, 2021). Conversely, Charyton, Basham, and Elliot (2008) reported that there were no notable gender differences among college students in general creativity assessments.

### ***Conceptual Framework***

The conceptual framework for this study was developed through an extensive literature review. Yamauchi et al. (2017) defined the map-led research enquiry process as a conceptual framework. The conceptual framework in research design is significant because it is the foundational element that ensures seamless execution of the research process (Kivunja, 2018). The literature review emphasized the importance of gender as a moderating variable in fostering innovative thinking as a key determinant of student progress. Students' learning motivation and the classroom environment together contribute significantly to the development of innovative thinking.

This study will use a quantitative approach to investigate whether learning motivation and classroom environment are related to innovative thinking; and whether gender, as a moderating variable of learning motivation and innovative thinking, moderates the relationship between them. The hypothesized model is based on the conceptual framework and addresses the relationship between the variables. The hypotheses have been presented in the first chapter of this study. The conceptual framework of this study is shown below:

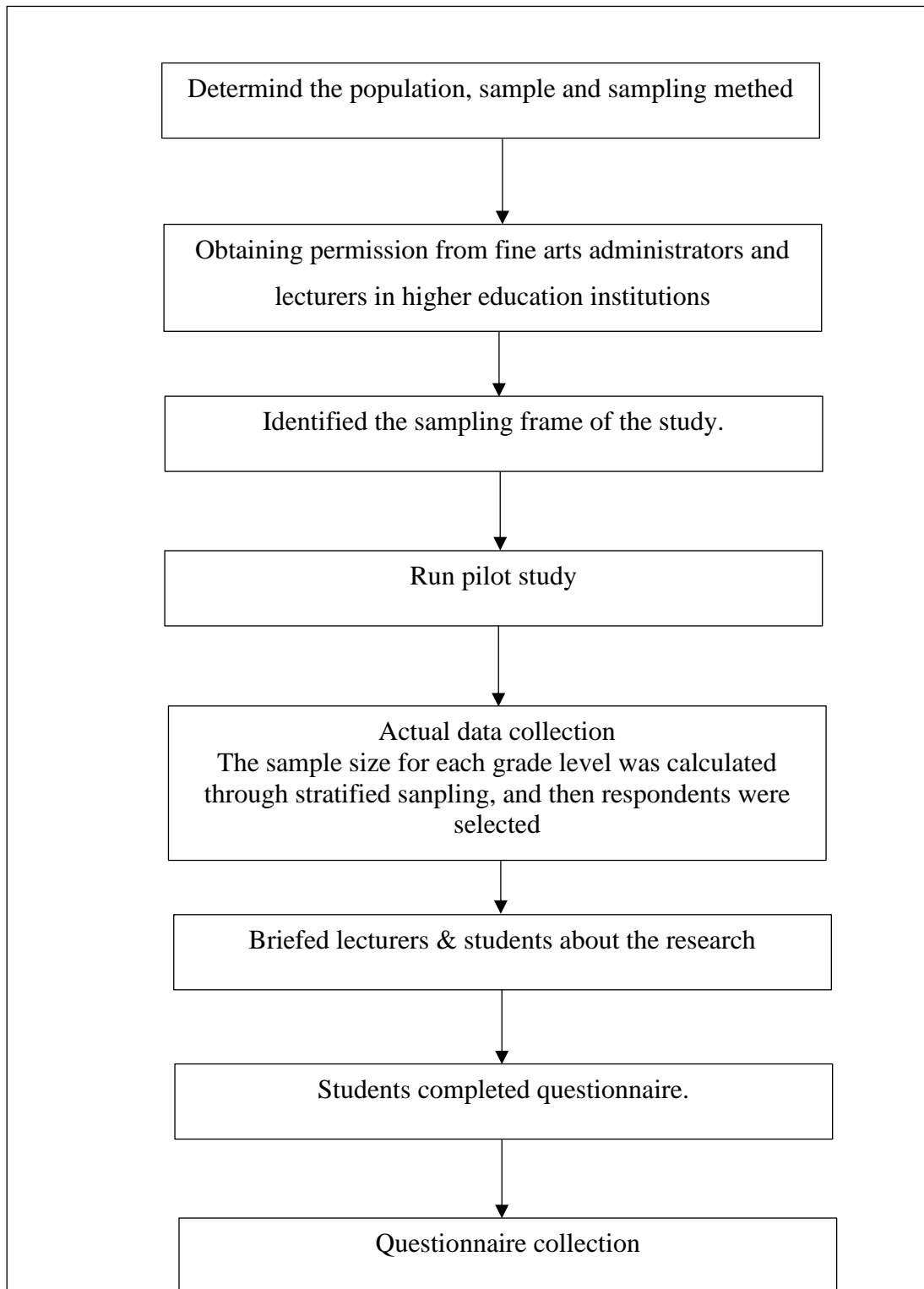


**Figure 1: Conceptual Framework**

### Methodology

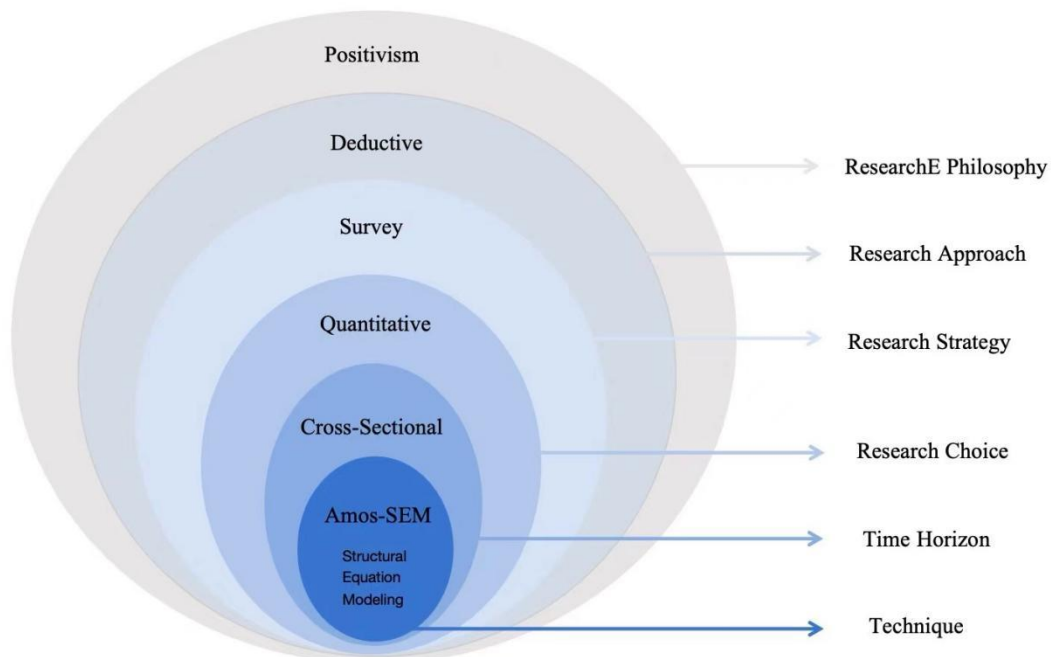
This method is well suited for collecting enough data from a large enough sample to test research hypotheses and generalize the sample results to the intended population. The research subjects in this study were students majoring in Fine Arts from a public university in Changzhi City, Shanxi Province, who volunteered to participate in the study. The scales for this study were taken from well-established questionnaires.





**Figure 2. Data Collection Procedure**

A research paradigm is a belief system, a worldview, which guides research and practice in a particular field (Willis, 2007). This study is based on positivism for research and its objectivity in collecting data through multiple cases. Positivism rejects empirical or universal concepts and believes that there is only one objective truth. This study tested the relationship between the independent and dependent variables by using a questionnaire and the researcher was limited to collecting data. In this study, data were collected through the distribution of questionnaires, which were converted into numerical form by the researcher after the completion of the questionnaire collection so that the data could be counted and analyzed.



**Figure Figure 3. The Overall Design of the esearch**

In this study, data will be collected at a university in Changzhi City, Shanxi Province, China. Changzhi City in Shanxi Province is a prefecture-level city in central China. The city has a total population of 3,142,000 and there are six higher education schools. Universities in China are divided into two categories: public universities and private universities. Changzhi University, as a public university, whose students are selected through a unified examination organised by the state, can basically represent the current situation of Chinese universities. At the same time, Changzhi University is a comprehensive university, representing the admission requirements, academic level and student quality of Chinese comprehensive universities.





**Figure 4. Area Map of Changzhi, Shanxi Province**

Population refers to individuals in a devoted group of people contributing to the assumptions of research findings (Ary et al., 2013). The population of this study was the fine arts students of Changzhi University, who entered higher education by taking the college entrance examination. Due to time and financial issues, the sub-study could not cover all fine arts students in higher education institutions. The study redefined the sample size of this study as students of the Fine Arts Department of Changzhi University in Changzhi City, Shanxi Province. There are four grades in the Fine Arts Department, which is divided into two majors, namely, no words education major and visual communication major.

$$n = \frac{n_0}{\left(1 + \frac{n_0}{N}\right)}$$

A formula will be used to derive the sample size needed for this study. Established rules in previous academic literature guide the estimation of minimum sample sizes to ensure adequate statistical power for data analysis. To this study, a margin of error of 5% and a confidence level of 95% were considered acceptable. According to Creswell (2012), a sample size is a small portion of the population that provides an adequate estimate of the population's characteristics. The sample size suggested by Cochran (1977) was used in this study and as stated by Salkind (2018), the sample size is sufficient to minimize the associated error and again helps to address the issue of non-returned questionnaires or incomplete responses.

## Conclusion

Studying the impact of students' motivation and classroom environment on innovative thinking can optimize educational reform, promote the optimization of the teaching system and teaching methods, and push educational reform to better meet students' needs. Based on the results of the study, teachers can adjust their teaching strategies to better stimulate students' innovative

thinking. Through this study, teachers can better understand that different students have different sensitivities to these factors, so that they can implement personalized education methods to meet the learning needs of different students.

Through an in-depth understanding of the formation process and influencing factors of innovative thinking, teachers can cultivate innovative talents in a more targeted manner to meet the social demand for talents with innovative thinking. At the same time, through this research to cultivate students with innovative thinking, to promote industrial innovation and economic development.

### Acknowledgements

I have received help and support from many people during the writing and research of this thesis. I would like to express my sincere gratitude to them. First of all, I would like to thank my supervisor, Norliza, for his selfless guidance and valuable advice throughout my research, from topic selection and research design to data analysis and thesis writing. Without his support and guidance, this thesis could not have been successfully completed. Secondly, I would like to express my special thanks to my family, whose understanding and support have been the solid backing for me to complete this study. Whether it was their encouragement when I encountered difficulties or their tolerance when I was busy with my research, they gave me the greatest support. In addition, I would like to thank my friends who provided countless help and encouragement during my research. Thanks to your dedication and support, I was able to successfully complete this study.

### References

- Ariani, D. W. (2017). Relationship model among learning environment, learning motivation, and self-regulated learning. *Asian Social Science*, 13(9), 63-81.
- Avcı, Ü., & Durak, H. Y. (2023). Innovative thinking skills and creative thinking dispositions in learning environments: Antecedents and consequences. *Thinking Skills and Creativity*, 47, 101225.
- Ary, D., Jacobs, L. C., & Sorensen, C. (2008). *Introduction to research in education*, 8th edition. USA: Wadsworth.
- Barek, M., & Usher, M. (2019). The innovation profile of nanotechnology team projects of face-to-face and online learners. *Computers & Education*, 137, 1-11.
- Barak, M., Watted, A., & Haick, H. (2020). Establishing the validity and reliability of a modified tool for assessing innovative thinking of engineering students. *Assessment and Evaluation in Higher Education*, 45(2), 212-223.
- Bergin, S., & Reilly, R. (2005). The influence of motivation and comfort-level on learning to program. In *Proceedings of the 17th Workshop of the Psychology of Programming Interest Group*. 05, 293-304.
- Cai, Y., Ma, J., & Chen, Q. (2020). Higher education in innovation ecosystems. *Sustainability*, 12(11), 4376.
- Charyton, C., Basham, K. M., & Elliot, J. O. (2008). Examining gender with general creativity and preferences for creative persons in college students within the sciences and the arts. *Journal of Creative Behavior*, 42 (3), 149-222.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson Education, Inc.

- Cropley, D. H. (2015). Creativity in Engineering. In G. Corazza & S. Agnoli (Eds.), *Multidisciplinary contributions to the science of creative thinking* (pp. 155-173). Springer. [https://doi.org/10.1007/978-981-287-618-8\\_10](https://doi.org/10.1007/978-981-287-618-8_10).
- Cochran, W. G. (1977). *Sampling techniques* (3 rd ed.). New York: John Wiley
- Deng Yan-Min, Cao Jia-Wen, & Luo Chun. (2022). On the importance of cultivating innovative and entrepreneurial thinking among contemporary college students. *Innovation and Entrepreneurship Theory and Practice*, 5(2), 99.
- Istamovna, I. N., & Rakhimovich, R. S. (2019). THE USE OF INNOVATIVE TECHNOLOGIES IN DEVELOPING THE CREATIVE POTENTIAL OF THE STUDENTS IN THE FINE ARTS. *European Journal of Research and Reflection in Educational Sciences*, 2019.
- Hirst, P. H. (1973). Literature and the fine arts as a unique form of knowledge. *Cambridge Journal of Education*, 3(3), 118-132.
- Hong, E, Peng, Y, ONeil, H. F. Jr., & Wu, J. (2013). Domain-General and domain-specific creative-thinking tests: Effects of gender and item content on test performance. *The Journal of Creative Behavior*, 47(2), 89-105. doi: 10.1002/jocb.26.
- Ji, Rongqin. (2009). Thesis writing innovation and innovative thinking skills of students in higher education. *Educational Academic Monthly*, 1, 67-69.
- Kim, D., & Lee, D. (2018). Impacts of metacognition on innovative behaviors: Focus on the mediating effects of entrepreneurship. *Journal of Open Innovation Technology Market and Complexity*, 4(2), Article 4.
- Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. *International journal of higher education*, 7(6), 44-53.
- Kholikova, D. M. (2021). THEORETICAL AND METHODOLOGICAL BASIS OF INCREASING INNOVATIVE THINKING IN STUDENTS. *Theoretical & Applied Science*, (5), 422-424.
- Lee, D. S., Lee, K. C., & Seo, Y. W. (2015). An analysis of shared leadership, diversity, and team creativity in an e-learning environment. *Computers in Human Behavior*, 42, 47-56.
- Li, X. S. (2004). On the Three Levels of Mastery of Art Knowledge and Skills. (*Art Education*), 6.
- Mirzahamdamovna, K. B., Erkinovna, A. N., & Jumadillaevich, S. R. (2021). Use of Innovative Educational Technologies in Fine ARTS Classes of Higher Education Institutions. *European Journal of Humanities and Educational Advancements*, 2(4), 25-27.
- Moga, E., Burger, K., Hetland, L., & Winner, E. (2000). Does studying the arts engender creative thinking? Evidence for near but not far transfer. *Journal of Aesthetic Education*, 34(3/4), 91-104.
- Moulaert, F., MacCallum, D., Mehmood, A., & Hamdouch, A. (2013). General introduction: the return of social innovation as a scientific concept and a social practice. *The international handbook on social innovation: Collective action, social learning and transdisciplinary research*, 1, 1-6.
- Mukhiba, S. (2020). The role and importance of fine arts in imparting knowledge and skills to students. *International Engineering Journal for Research & Development*, 5(7), 3-3.
- Peretomode, V. F., & Bello, S. O. (2018). Analysis of Teachers Commitment and Dimensions of Organizational Commitment in Edo State Public Secondary Schools. *Journal of Educational and Social Research*, 8(3), 87–92. <https://doi.org/10.2478/jesr-2018-0034>

- Puspitaningrum, N. P. D., Prodjosantoso, A. K., & Pulungan, D. A. (2021, March). Comparison of regarding students' learning motivation by gender during the online learning. In 6th International Seminar on Science Education (ISSE 2020) (pp. 296-301). Atlantis Press.
- Ramdani, A., Jufri, A. W., Gunawan, G., Fahrurrozi, M., & Yustiqvar, M. (2021). Analysis of Students' Critical Thinking Skills in terms of Gender Using Science Teaching Materials Based on The 5E Learning Cycle Integrated with Local Wisdom. *Jurnal Pendidikan IPA Indonesia*, 10(2), 187-199.
- Sevinç, Y. S., & Uyangör, N. (2020). İnovatif düşünme becerileri meslek liseleri öğrencilerine yönelik bir ölçek geliştirme çalışması.
- Simanjuntak, E., Hia, Y., & Manurung, N. (2020, February). The differences in students learning motivation based on gender using blended learning models of mathematics learning. In *Journal of Physics: Conference Series* (Vol. 1462, No. 1, p. 012040). IOP Publishing.
- Spinath, B., Eckert, C., & Steinmayr, R. (2018). Gender differences in school success: What are the roles of students' intelligence, personality and motivation? In *Gender and Educational Achievement* (pp. 126-139). Routledge.
- Sun, Y. L., Yu, T. R., & Wang, J. H. (2014). College students' innovative thinking ability training process and the observation result. *Applied Mechanics and Materials*, 672, 2241-2244.
- Taherdoost, H. (2017). Determining sample size; how to calculate survey sample size. *International Journal of Economics and Management IARAS*.hal-02557333. <https://hal.archives-ouvertes.fr/hal-02557333>
- Ülger, K., & Morsünbül, Ü. (2016). The Differences in Creative Thinking: The Comparison of Male and Female Students. *Online Journal of Counseling & Education*, 5(4).
- Urdan, T. & Schoenfelder, E. (2006). Classroom effects on student motivation: Goal structures, social relationships, and competence beliefs. *Journal of School Psychology*, 94, 331-349.
- Willis, J. (2011). Affiliation, autonomy and assessment for learning. *Assess. Educ.* 18, 399–415. doi: 10.1080/0969594X.2011.604305
- Xing, X., Xing, J., Wang, R., Diao, F., Han, Q., & Jia, Z. (2021, July). The Cultivation of Innovative Thinking in University Computer Course. In 2021 7th Annual International Conference on Network and Information Systems for Computers (ICNISC) (pp. 765-769). IEEE.
- Xu, Z., & Chen, H. (2010). Research and Practice on Basic Composition and Cultivation Pattern of College Students' Innovative Ability. *International Education Studies*, 3(2), 51-55.
- Xing, X., Xing, J., Wang, R., Diao, F., Han, Q., & Jia, Z. (2021, July). The Cultivation of Innovative Thinking in University Computer Course. In 2021 7th Annual International Conference on Network and Information Systems for Computers (ICNISC) (pp. 765-769). IEEE.
- Yamauchi, L. A., Ponte, E., Ratliffe, K. T., & Traynor, K. (2017). Theoretical and Conceptual Frameworks Used in Research on Family-School Partnerships. *School Community Journal*, 27(2), 9-34.
- Young, M. R. (2005). The motivational effects of the classroom environment in facilitating self-regulated learning. *Journal of Marketing Education*, 27(1), 25-40. DOI: 10.1177/0273475304273346
- Zhao CJ. (2012). Education for innovation. *China Education News*, 06-15.

- Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodologies developments, and future prospects. *American Educational Research Journal*, 44(1), 166-183.
- Zhang, Hui, & Zheng, Xiaoqi. (2017). The construction of China's higher education innovation system for 2030. *China University Science and Techno*