*Corresponding Author's Email: leiyanyu@upc.edu.cn
Proceedings of the Global Conference on Education
Vol. 2, Issue. 1, 2025, pp. 1-11
DOI: https://doi.org/10.33422/gcedu.v2i1.1184

ISSN: 3030-0053 online

Pathways to Empowering Student Mental Health Education and Enhancing Innovation Capability Through Positive Psychology Approaches

Leiyan Yu* and Yongjun Shi
China University of Petroleum (East China), China

Abstract

In response to the mental health issues caused by diverse factors such as rapid societal development, including higher psychological pressure but limited stress management abilities among many students especially graduate students, as well as the demands of the rapid advancement of artificial intelligence (AI) for enhancing students' innovation capabilities, this study delves into the pathways of applying positive psychology approaches to empower student mental health education, consequently, to foster the improvement of students' innovation abilities with the ecosystem composed of the school, mentors and graduate students in high collaboration. First, the mechanisms through which positive psychology approaches empower mental health education and enhance innovation capabilities are analyzed. Next, a positive and pleasant learning and living environment is created to enable students to gain positive emotional experiences, develop positive personalities, achieve wise management of stress and emotions, and enhance intrinsic motivation and efficiency for learning. Finally, students are guided to efficiently utilize AI tools to raise high-quality and relevant questions, analyze questions thereby solve complex questions, therefore their innovation capabilities are improved. The effectiveness of the proposed methods has been validated through course teaching, guidance in research projects, and participation in scientific innovation competitions etc. Research results over the past 20 years involving more than 2,000 graduate students in China University of Petroleum (East China) demonstrate that the proposed methods have effectively improved the outcomes of students mental health education, improved the mental health level and sense of happiness of students, and significantly promoted the development of their innovation capabilities.

Keywords: artificial intelligence, intrinsic motivation, innovation capability, positive psychology approaches, student mental health education

1. Introduction

As the core force of the national reserve of high-level, top-notch innovative talents, graduate students play an important role in the national strategic technological development, industrial upgrading, and the construction of national soft power.

1.1 Research Status of Mental Health Education for Graduate Students

Diversified factors including rapid development of society and improper use of the Internet lead to greater psychological pressure among many college students, especially graduate students, inducing various mental health problems such as anxiety, sensitivity in interpersonal relationships, academic burnout, sleep problems even depression at different levels.

1.1.1 Analysis of the Main Causes of Graduate Students' Mental Health Problems

Through diversified research methods including extensive and in-depth literature research, questionnaires, in-depth interviews with graduate students, parents and mentors, it has been found that the main causes of graduate students' mental health problems are as follows.

(1) Exposure to Significant Multi-Source Pressure

Career development pressure: The rapid development of new technologies, especially Artificial Intelligence (AI), has brought greater pressure due to the uncertainty of future career prospects. The increasingly fierce job competition and the intensification of involution have exacerbated the career anxiety. Some graduate students in certain majors face the dilemma of educational credential overqualification, with potentially narrower job prospects compared to undergraduates, falling into the trap of "over-qualification for employment".

Academic pressure: Some graduate students experience anxiety related to the production of innovative academic achievements and the possibility of delayed graduation; feel academically isolated, having no one to discuss their research topics or collaborate on problem-solving.

Economic and social pressure: The financial support received by some graduate students is in conflict with the relatively high cost of living. Comparing themselves with peers can easily create hidden pressure. Some older graduate students face difficulties in marriage and childbearing, caught between the conflict of marrying without a solid economic foundation and academic prime period.

(2) Tense Interpersonal Relationships and Insufficient Social Support

Some graduate students overly rely on smartphones, the Internet, and virtual social interactions, etc., but lacking face-to-face, genuine emotional communication. Factors such as the high intensity of scientific research result in a relatively narrow social circle. Tense relationships with mentors, implicit competition, and laboratory politics might lead to a certain degree of emotional support deficiency for them, with psychological pressure potentially increasing day by day. In some cases, the power imbalance between graduate students and their mentors, combined with the fact that some mentors use their decision-making power over graduation and paper publication to belittle or excessively exploit graduate students, might lead to a psychological breakdown among graduate students.

(3) Insufficient Individual Psychological Capital Reserves

Due to limited stress management capabilities, chronic stress, the erosion of the sense of purpose in pursuing a graduate degree, and perfectionist tendencies can lead to lack of psychological capital such as self-efficacy, optimism, hope, resilience, happiness, and interest; therefore, they are more susceptible to negative and pessimistic emotions.

1.1.2 Research Status of Mental Health Education for Graduate Students

Some scholars have paid attention to mental health education for graduate students and conducted extensive research on their mental health problems and influencing factors. They have pointed out that there are many problems in current mental health education, such as marginalization of education, niche target groups, insufficient early warning mechanisms and environmental education. In response to the above problems, countermeasures have been proposed, including improving the educational and teaching system, expanding educational support models, strengthening the responsibilities of mentors, and consolidating the early warning and support system (Lei & Pan, 2025; Zhao, 2022; Liu, 2019). However, the current mental health education still lacks systematicness and specificity, making it difficult to meet the diverse needs of mental health education for graduate students in the new era of AI.

1.2 Research Status of Cultivation of Graduate Students' Innovation Ability

The rapid development of technologies such as AI has put forward higher requirements for the innovation capability of graduate students. Since the quality of graduate students' innovation capability cultivation directly affects the national innovation capacity and comprehensive competitiveness, domestic and international scholars have conducted certain research on methods to enhance graduate students' innovation capability. For example, diversified methods such as subject competitions have been proposed (Hao & Yang,2025; Zhu et al.,2011).

At present, further in-depth research is needed on the relationship between mental health education methods for graduate students and innovation capability enhancement, as well as the empowerment of mental health education for graduate students and innovation capability cultivation through positive psychology approaches.

1.3 Framework of the Paper

The study is dedicated to addressing the efficiency of both mental health education and innovation capability cultivation for graduate students. In Section 2, first, the pathways to empower mental health education for graduate students with positive psychology approaches to achieve wise management of stress and emotions and enhance the internal driving force for learning were analyzed. Second, the relationship between graduate students' mental health and innovation capability enhancement were explored from the perspective of positive psychology. Then, thereby the pathways to empower graduate students innovation capability cultivation through positive psychology approaches were deeply investigated. In Section 3, the experimental results of the proposed methods were presented, verified in the processes of daily management, course teaching, guiding scientific research projects, and participating in technological innovation competitions. In Section 4, a discussion of the research methods and experimental results were conducted. In Section 5, relevant conclusions were drawn regarding the research methods, the experimental results, and the discussions thereof.

2. Methods

2.1 Analysis of the Main Relevant Theories of Positive Psychology

2.1.1 Overview of Development of Positive Psychology

The research on positive psychology can be traced back to the 1930s, but its true foundation was laid in the study of the humanistic psychology and human potential in the 1960s. In 1997, Martin Seligman proposed the concept of positive psychology, advocating the study of human positive qualities and potential to promote personal and social development (Seligman, 2012). Since then, positive psychology has rapidly developed into an important branch of psychology. In China, since 2003, scholars have intensified their research on the theory and application of

positive psychology, for example, in 2020, the Positive Psychology Professional Committee of the Chinese Psychological Society was established.

2.1.2 Analysis of the Main Relevant Theories of Positive Psychology

The research in positive psychology mainly focuses on positive emotional experiences at the subjective level (such as well-being and optimism), positive personality traits at the individual level (such as psychological resilience and creativity), and positive organizational systems at the group level, which provides a new perspective for the mental health education for graduate students, enhancing their mental health levels by positive emotions and individual strengths.

2.2 Pathways of Empowering Mental Health Education for Graduate Students Through Positive Psychology Approaches

As shown in Figure 1, the graduate students mental health ecosystem composed of the school, mentors and graduate students is constructed based on the relevant theories of the psychological ecosystem. The interconnections and mutual influences among the school, mentors and graduate students are explored. For instance, the school can sustainably optimize working, learning, and living platforms for graduate students and mentors. In return, the mental health status, academic development outcomes, innovation capabilities of graduate students, as well as the mental health and career development of mentors, provide effective feedback to the school. Therefore, based the above ecosystem, a pathway for empowering mental health education for graduate students through positive psychology approaches is constructed, applying from the school level to the graduate mentors level, and then to the micro-level of graduate students, while feedback from graduate students to mentors, then to the school.

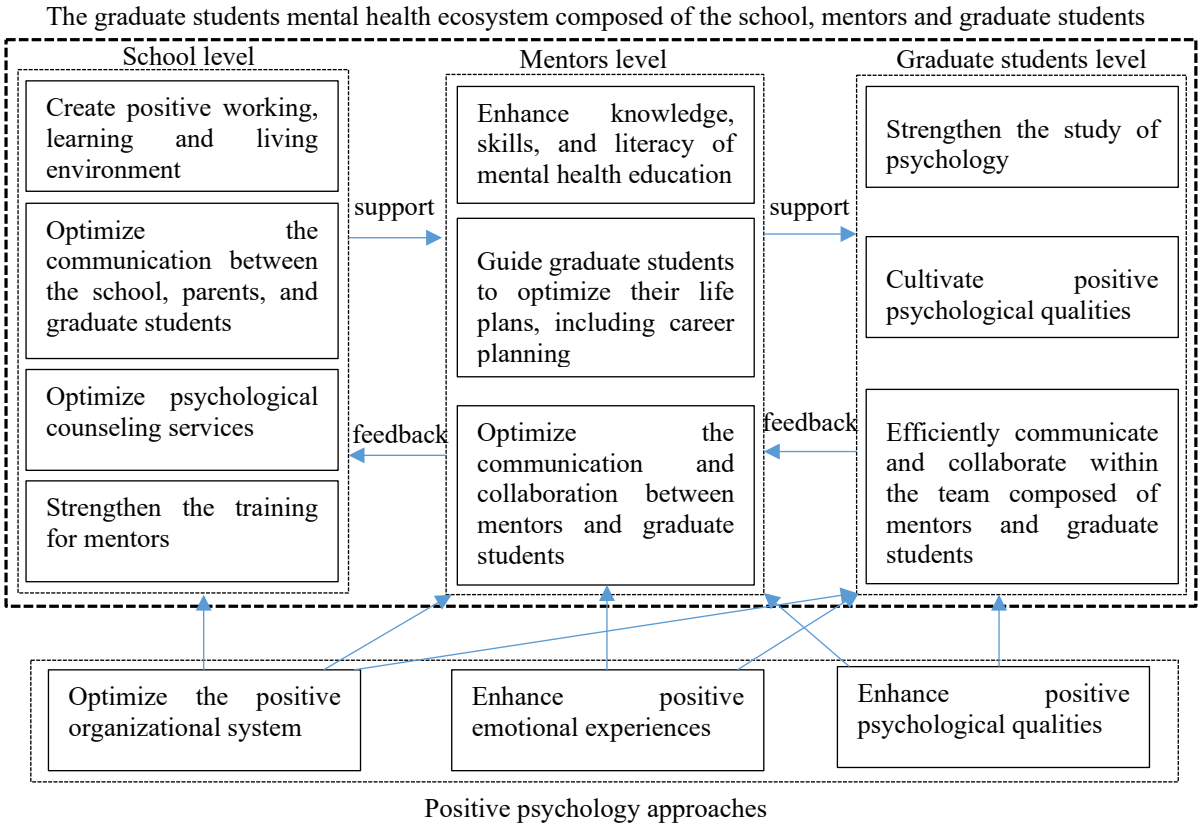

Figure 1: The pathways of empowering mental health education for graduate students through positive psychology approaches

2.2.1 At the School Level

At the school level of the graduate students mental health ecosystem, based on "optimize the positive organizational systems at the group level" theory of positive psychology, the methods to empower mental health education for graduate students are as follows. From a systemic perspective, the top-level design of the school's mental health education system is optimized, the mental health education goals for teachers and students are clarified and the school-level mental health governance is improved. With the clear and explicit mental health education goals as the driving force, mental health education is implemented orderly and efficiently.

The school is dedicated to creating positive and pleasant working, learning, and living environment for graduate students and mentors, and advocates a positive and healthy lifestyle, such as engaging in physical exercise scientifically, ensuring adequate sleep and healthy diet.

The connection between the school, families and society is optimized to enable the school, families, and society work together to form a strong synergy for mental health education for graduate students. The combined online and offline mental health education model for graduate students enhances interaction and communication between school counselors, mental health workers, and other relevant managers with graduate students and their parents, which increases the coverage and effectiveness of mental health education, improves the mental health literacy of graduate students' parents, and promotes positive interaction between parents and students. If graduate students encounter problems, they can obtain timely and enhanced social support through the social network composed of school, families and mentors.

High-quality psychological counseling services are provided for mentors, graduate students and their families to effectively prevent the occurrence and development of prominent psychological problems.

The mental health education training is systematically strengthened for mentors. National and school-level mental health education platforms and resources are utilized to improve mentors' mental health levels and educational literacy in a planned and sustainable manner, enhance the sense of responsibility, passion, and professional competence of mentors in the mental health education for graduate students, so that mentors can promptly, efficiently, and accurately identify mental health issues among graduate students and provide corresponding preventive and remedial measures to prevent the escalation of these issues.

2.2.2 At the Mentors Level

Graduate students spend a significant amount of time with their mentors, who play an important role in their mental health education. At mentors level of the graduate students mental health ecosystem, based on theory of positive psychology "optimize the positive organizational systems at the group level", "enhance the positive emotional experiences", "enhance the positive psychological personality", the methods to empower mental health education for graduate students are as follows.

Since mentors may face various pressures, including work competition, career development, and life stress, they use positive psychology approaches to enhance their own mental health literacy, helping them maintain a positive and peaceful state of mind, increase their work initiative, show love for their work, and set an excellent example of mental health management for graduate students.

Mentors guide graduate students to optimize their life plans, including career planning and development guidance, to establish good life goals and psychological development objectives, plan for employment and job preparation to reduce career anxiety.

To optimize the positive organizational systems at the group level, the team (community of mental health education) composed of domestic supervisors, foreign supervisors, graduate students, and the parents of graduate students is optimized. Mentors regularly communicate with graduate students, understand, accept, and guide them to understand their psychological state. Some students may have an introverted and sensitive personality and weaker psychological resilience, making them more prone to anxiety and depression when facing pressure, so mentors provide more humanistic care for these students. Through diverse activities such as group meetings and team-building exercises, mentors promote positive communication and cooperation among graduate students and enhance the influence and appeal of students with excellent positive psychological qualities. Domestic mentors enhance their international and diversified perspectives, strengthen communication and collaboration with foreign mentors, and broaden their horizons in the field of mental health education.

Using their own mental health education experience and AI tools, mentors establish a rich case library for mental health education for graduate students, including "Cultivating positive psychological qualities to solve graduate students' academic burnout", "Personalized graduate student interviews to alleviate employment pressure", "Optimizing psychological mechanisms to overcome academic procrastination", "Saying goodbye to a lying-flat mindset and pursuing excellence", "Experiencing innovative flow to stimulate innovative potential" ,"Accepting imperfection and saying goodbye to anxiety", etc., which are continuously iterated and optimized. Regularly cases of outstanding graduate students with strong psychological health management abilities are shared to serve as good examples.

2.2.3 At the Graduate Students Level

At graduate students level of the graduate students mental health ecosystem, based on theory of positive psychology “enhance the positive emotional experiences”, “enhance the positive psychological personality”, the methods to empower mental health education for graduate students are as follows.

Under the scientific guidance of the school and mentors and with scientific utilization of AI tools, graduate students systematically strengthen learning of psychology, especially positive psychology, to improve their mental health literacy, which helps them better accept their imperfections, optimize their psychological mechanisms, reduce negative emotions such as anxiety, and achieve proactive and wise stress management.

Graduate students enhance positive psychological qualities such as self-confidence. They actively improve relationships with teachers and classmates, optimize social networks, and strengthen interactions with the world, others, and oneself (Carnegie, 1936). According to the self-actualization theory of the renowned American psychologist Abraham Harold Maslow, they tap into individuals' intrinsic potential and motivation for growth to meet their psychological needs (Maslow, 1954).

Graduate students increase positive emotional experiences during study and life, using corresponding strategies, such as breaking down goals into smaller ones. Whenever a small goal is achieved, they experience a sense of capability, care, and autonomy.

To optimize the positive organizational system, graduate students efficiently communicate and collaborate within the team composed of many mentors and graduate students.

2.3 The Relationship Between Mental Health Education for Graduate Students and Innovation Capability Enhancement

Figure 2 illustrates the close relationship between mental health education and innovation capability enhancement in three aspects. Mental health education based on positive psychology

promotes the enhancement of innovation capability; in turn, the enhancement of innovation capability further promotes mental health education, creating a virtuous cycle between them.

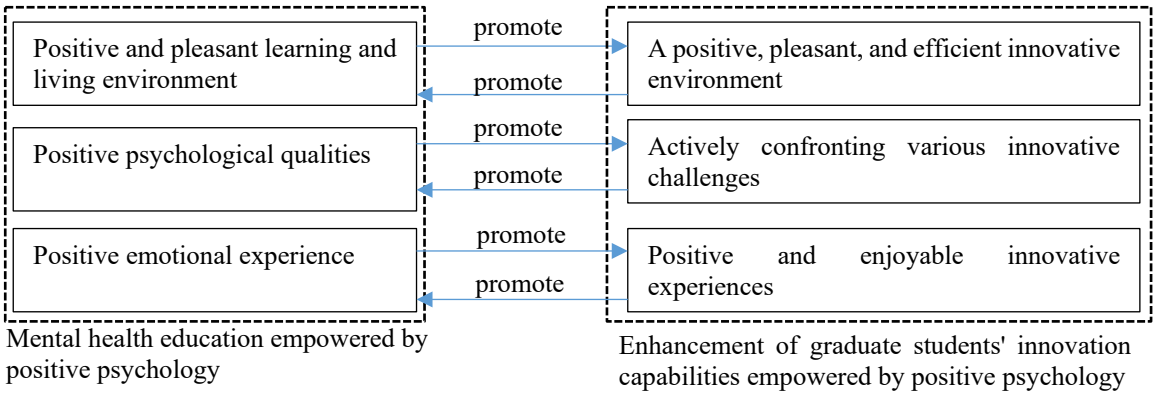

Figure 2: The relationship between mental health education and innovation capability enhancement for graduate students

First, positive and pleasant learning and living environment, which is helpful for mental health, promotes deep learning, deep thinking, efficient innovation, and contributes to a better experience of innovative flow. Second, the positive psychological qualities such as optimism, confidence, perseverance, open-mindedness, adaptability promote actively confronting the diverse challenges that may be encountered in participating in innovative activities. Third, if students have positive emotional experience, they can have positive innovative experience more easily in participating in innovative activities. For example, enhanced sense of efficacy and happiness in mental health education strongly promotes sense of efficacy and happiness in innovative activities leading to the exploration of innovative potential to the greatest extent.

2.4 The Pathways for Empowering Graduate Students' Innovation Capability Enhancement Through Positive Psychology Approaches

Based on the relevant theories of ecosystems, the innovation ecosystem for graduate students, which are mainly composed of the school, mentors, and graduate students, are optimized. The respective responsibilities in promoting the cultivation of innovative abilities among graduate students are explored. Therefore, pathways for empowering graduate students' innovation capability enhancement through positive psychology approaches are constructed, ranging from the school level to the mentors level, and then to the individual graduate students level (shown in Figure 3).

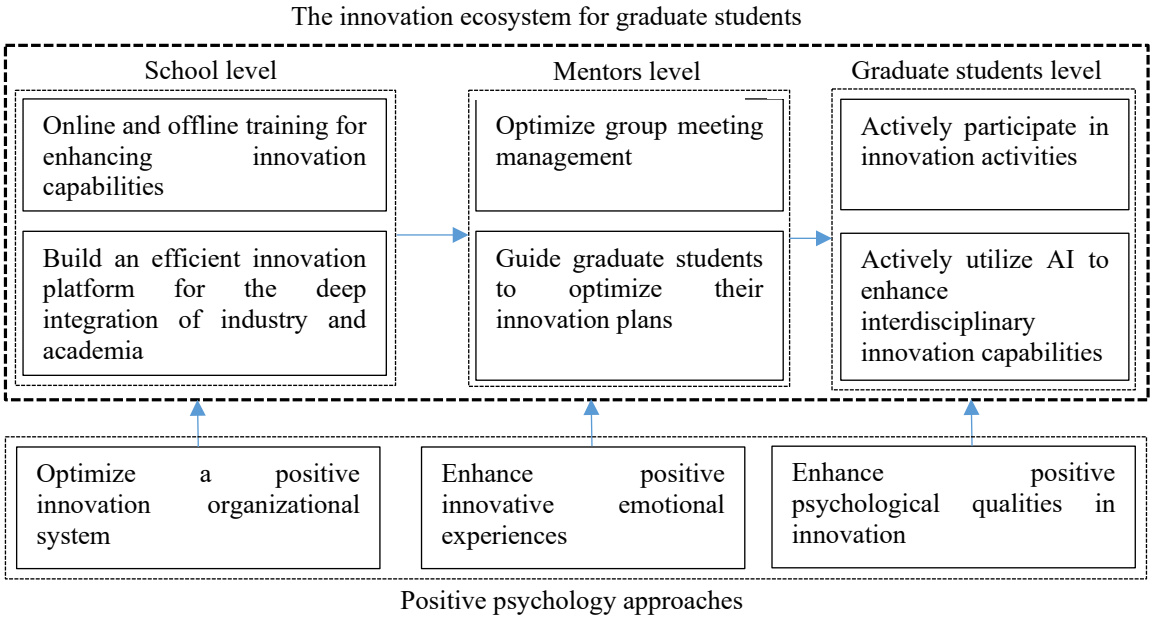

Figure 3: The pathways for empowering graduate students' innovation capability enhancement through positive psychology approaches

2.4.1 At the School Level

At the school level of innovation ecosystem for graduate students, based on "optimize the positive organizational systems at the group level" theory of positive psychology, the methods to empower graduate students' innovation capability are mainly as follows.

The school optimizes the top-level design for the cultivation of innovative abilities, including the design of innovation training programs, management of the mentor team, construction and sustainable optimization of innovation platforms, creating pleasant and efficient innovative environment, etc. Graduate students are provided with systematic training on innovation capability through a combination of online and offline sessions, which help them optimize the understanding of innovative activities, have clear innovation goals, enhance reflective capabilities, understand the psychological qualities required for innovative activities, how to proactively collaborate with others in innovation, how to engage in deep thinking, and how to scientifically utilize AI tools to enhance innovation efficiency. They are provided with abundant literature resources to keep up-to-date and gain in-depth understanding of innovative activities in the fields of their interest; and they are supported by a diverse team of innovation mentors, consisting of both domestic and international mentors, to enhance their international perspective on innovation.

An efficient innovation platform integrating industry, academia, and research, which makes full use of the platforms and innovative intellectual resources provided by international organizations, national initiatives, universities, and teachers, is established to foster a positive and enjoyable atmosphere for multidisciplinary collaborative innovation among all graduate students across the university.

2.4.2 At the Mentors Level

At the mentors level, the methods to empower graduate students' innovation capability enhancement are as follows.

Graduate students are guided to optimize their life plans, including career planning and innovation planning, to clarify innovation goals and engage in targeted innovation activities.

The management of graduate student group meetings is optimized to create an atmosphere of collaborative innovation among graduate students.

Graduate students are guided to efficiently manage their research work, minimizing unnecessary distractions and experience the flow of innovation (Csikszentmihalyi, 1996), thereby their innovation efficiency is enhanced.

2.4.3 At the Graduate Students Level

Based on theory of positive psychology, graduate students enhance the positive emotional experiences and the positive psychological personality through inspiring stories of outstanding scientists and other such means. Under the guidance of the school and mentors, graduate students actively participate in innovation activities such as science and technology innovation competitions based on their own interests and strengths. The positive experience of innovation flow stimulates them to engage in in-depth thinking and drives innovation. Additionally, AI tools are utilized to enhance problem-solving ability, interdisciplinary innovation capability and collaborative innovation capability, among other innovation skills.

3. Results

Over the past 20 years, explorations, reforms, and practices in mental health education and innovation capability cultivation have been carried out in a planned and sustained manner among more than 2,000 graduate students at China University of Petroleum (East China). Feedback on the effectiveness of the proposed methods is obtained through observation, questionnaires, in-depth interviews with graduate students, parents, mentors and employers. In terms of mental health education, the mental health and academic performance of graduate students have been significantly improved. In terms of the innovation capability of graduate students, they actively participate in in-depth interactions in various aspects such as course teaching and group meetings ,scientific and technological competitions, winning lots of awards such as the second prize in the National Finals of the National College Students' Transportation Science and Technology Competition, the Special Prize in the Shandong Province Division of the National 3D Digital Innovation Design Competition, and the second prize in the China Graduate Energy Equipment Innovation Design Competition. They have produced lots of high-level innovation outcomes, including academic papers, patents, and software copyrights.

4. Discussion

(1) In response to the continuously emerging new issues of graduate students mental health in the new age of AI, universities, mentors, and graduate students work together to enhance the effectiveness of mental health education for graduate students.
(2) In response to the issue of innovation capability cultivation for graduate students in the new age of AI, universities, mentors, and graduate students collaborate to promote the sustainable improvement of graduate students' innovation capabilities.

5. Conclusion

The above research addresses the issues of graduate students' mental health and the enhancement of their innovative abilities brought about by the rapid development of society. It has made certain theoretical innovations and practical verifications. The main conclusions are as follows:

(1) Mental health education for graduate students can effectively promote the improvement of their innovation capabilities, with the two being complementary to each other.
(2) The proposed pathways empower mental health education for graduate students through positive psychology approaches from the perspective of optimizing the graduate students mental health ecosystem composed of the school, mentors and graduate students, have significantly enhanced the effectiveness of mental health education for graduate students, improved their mental health levels, and increased their sense of well-being.
(3) The proposed pathways empower graduate students' innovation capability enhancement through positive psychology approaches, from the perspective of optimizing the innovation ecosystem for graduate students have substantially boosted the innovation capabilities of graduate students, promoted high-quality development of graduate education, driven the development of new productive forces, and aligned with the national strategic needs as well as the urgent demand for top-notch innovative talents in the new age of AI.

Acknowledgment

This paper is an output of the science projects including Qingdao Science and Technology Innovation Strategy Research Program Project 'Research on the Reform Path of Comprehensive Services for Foreign Talents in Qingdao' (Project No.: 25-1-4-zlyj-17-zhc), Shandong Province Graduate Quality Professional Degree Teaching Case Library Project (Project No.: SDYAL2023026), University-Level Graduate Courses in Ideological and Political Education Demonstration Course Construction Project 'Automotive Dynamics and Control Technology' (Project No.: UPCYKS-2023-02), Shandong Province Graduate Education Teaching Reform Research Project 'Research and Practice on the High-Level Cultivation Path of Mechanical Engineering Professionals with Deep Integration of Undergraduate and Graduate Knowledge' (Project No.: SDYJSJGC2023013), Provincial Model Courses for Ideological and Political Education 'Automotive Dynamics and Control Technology', and University-Level Graduate Education Teaching Reform Project 'Research on Mental Health Education Methods for Graduate Students from the Perspective of Advisors' (Project No.: YJG2022036).

References

Carnegie, D. (1936). *How to Win Friends and Influence People*. Simon & Schuster, U.S.: New York.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the Psychology of Discovery and Invention*. HarperCollins Publishers, U.S.: New York.

Hao, G. W., Yang, N. J. (2025). “Research on the cultivation of graduate students' innovation ability through academic competitions,” *The Theory and Practice of Innovation and Entrepreneurship*, vol. 8, no. 2, pp. 193-195.

Lei, Y., Pan, Z. H. (2025). “Graduate students' mental health education from the perspective of positive psychology,” *Journal of Science and Education*, no. 1, pp. 55-59. Available: https://doi.org/10.16871/j.cnki.kjwh.2025.01.014

Liu, B., Hao, X. W., Sun, M. M., et al. (2019). “Exploration of graduate students' mental health education under positive psychology,” *Education Modernization*, vol. 9, no. 56, pp. 182-184. Available: https://doi.org/10.16541/j.cnki.2095-8420.2019.56.075

Maslow, A. H. (1954). *Motivation and Personality*. Harper & Row, U.S.: New York.

Seligman, M. E. P. (2012). *Flourish*: *A Visionary New Understanding of Happiness and Wellbeing*. Simon and Schuster, U.S.: New York.

Zhao, X. F. (2022). “The path of positive psychology to promote the development of graduate students' mental health education,” *Northwest Higher Education Review*, vol. 9, no. 1, pp. 295-303.

Zhu, H., Li, W. L., Zuo, Z. J. (2011). “The current situation and influencing mechanism of graduate students' innovation ability in China,” *Journal of Higher Education*, vol. 32, no. 2, pp. 74-82.