

Research on the AI-Empowered Practice-Oriented Training Mechanism for Postgraduate Students in Police Colleges

Mengsheng Cai*

Jiangsu Police Institute, Nanjing 210031, Jiangsu, China

**Author to whom correspondence should be addressed.*

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Artificial intelligence (AI) provides an innovative direction for the development of postgraduate education in police colleges. This study investigates the integration of AI with postgraduate education in police colleges, analyzing its role in enhancing teaching quality. Specifically, AI facilitates the reconfiguration of policing pedagogy, AI promotes multidimensional synergy in practical competency development, and AI drives deep integration of “Police Colleges + Public Security Bureau” ecosystems. Based on these findings, the intrinsic mechanisms through which AI empowers postgraduate teaching quality are systematically elucidated. Furthermore, a comprehensive development pathway for the training mechanism is proposed, encompassing seven dimensions: upholding the concept of AI-driven teaching reform, leveraging AI for teaching resource development, building AI-enhanced teaching platforms, implementing AI-optimized policing curriculum systems, strengthening the deep integration of AI and policing operations, strengthening the construction of AI teaching effectiveness evaluation system strengthening the construction of AI teaching effectiveness evaluation system, enhancing faculty competence in AI utilization.

Keywords: Artificial intelligence; Police colleges; Postgraduate education

Online publication: May 2, 2025

1. Introduction

This study discusses the AI-driven paradigm innovation in higher education. Since the 21st century, China’s postgraduate education has achieved unprecedented scale through extraordinary and leapfrog growth, reaching historic heights ^[1]. Propelled by the rapid iteration of AI technologies, cognitive revolutions represented by generative artificial intelligence, machine learning, and knowledge graphs are profoundly reconstructing the educational ecosystem, catalyzing novel educational paradigms characterized by self-adaptive, predictive, and cognition-enhancing capabilities. China’s Education Modernization 2035 explicitly advocates “leveraging information technology to vigorously implement intelligent education, forging a distinctive development path

for educational informatization with Chinese characteristics.” Currently, overseas academia (exemplified by the United States, Japan, and Israel) and domestic researchers engage in bidirectional interactions, conducting in-depth explorations of core issues such as the conceptual dimensions, technological frameworks, and implementation pathways of AI-integrated education. Under the tripartite drivers of deepened national AI strategic planning, accelerated educational “new infrastructure” initiatives, and breakthroughs in cognitive computing technologies, China’s postgraduate smart education is undergoing a paradigm shift from Informatization 1.0 to Cognitive Transformation 2.0. This AI-enabled cognitive revolution imposes transformative demands: it necessitates the reconstruction of intelligent literacy among faculty and the development of metacognitive capabilities among learners.

2. The role of AI in enhancing postgraduate teaching quality

2.1. AI facilitates the reconfiguration of policing pedagogy

By transcending disciplinary boundaries between traditional policing studies and educational technology, a convergent theoretical framework of “AI + Policing Education” is being constructed, providing methodological support for intelligent policing education. AI technologies should not merely serve as auxiliary tools but be deeply embedded throughout the entire Master of Policing curriculum. Generative artificial intelligence leverages its formidable computational power to preprocess massive online datasets, enabling researchers to significantly reduce time and effort in information retrieval ^[2]. Through AI-driven intelligent analysis, traditional pedagogical resources are optimized and integrated to deliver targeted, time-sensitive learning content, thereby realizing personalized instruction.

2.2. AI promotes multidimensional synergy in practical competency development

The practical competencies of policing graduate students encompass multiple dimensions, including law enforcement, emergency management, data-driven decision-making, and interdisciplinary collaboration. AI-based pedagogical reforms should immerse students in simulated and real-world policing scenarios, requiring them to synthesize multidimensional knowledge and skills to resolve complex practical problems, thereby fostering the synergistic development of cross-domain competencies. Categorical evaluation mechanisms prove instrumental in elevating the educational quality of AI-focused professional degree programs ^[3]. To refine competency assessment systems, machine learning algorithms are introduced to establish dynamic, multidimensional evaluation models that address the limitations of traditional subjective assessments.

2.3. AI drives deep integration of “Police Colleges + Public Security Bureau” ecosystems

Police academies and public security bureaus must establish robust collaborative mechanisms to co-create AI-enhanced pedagogical ecosystems. Postgraduate training necessitates breaking conventional organizational silos by forming collaborative innovation networks with industry partners and stakeholders ^[4]. While practical departments contribute authentic case studies and application scenarios, academic institutions focus on AI technology integration and pedagogical transformation. Deep collaboration in faculty exchanges, curriculum co-development, and practice platform construction ensures alignment between instructional content and operational demands.

3. The intrinsic mechanisms of AI in empowering postgraduate teaching quality

3.1. Elevating practical pedagogy through innovative instructional models

By integrating AI technologies into the Master of Policing curriculum, the problem-solving competence, decision-making proficiency, and emergency response capabilities of graduate students in real-world policing scenarios are significantly enhanced. The pedagogical objective is to equip students with the expertise to adeptly utilize AI tools for crime data analysis, criminal trend prediction, and effective application in both simulated and operational policing environments, thereby aligning with the intelligent demands of modern law enforcement.

3.2. Cultivating AI-policing interdisciplinary professionals via “Technology-Augmented Pedagogy”

The program ensures that policing graduate students not only acquire robust disciplinary knowledge but also develop the capacity to empower policing operations through AI technologies. However, the rapid advancement of generative artificial intelligence, with its formidable computational power and human-like interactivity, has increasingly positioned AI as a critical tool for scientific research topic selection ^[5]. The curriculum prioritizes cultivating professional competencies in AI algorithm interpretation, data security, privacy protection, and intelligent policing system applications. This approach aims to produce interdisciplinary professionals proficient in both operational expertise and technological applications, thereby accelerating the intelligent transformation of law enforcement practices.

4. Strategies for AI-enabled practical training of postgraduates in public security institutions

4.1. Upholding the concept of AI-driven teaching reform

The integration of postgraduate education and digital-intelligent technologies is not a mere developmental or tactical issue, but a holistic and strategic challenge that influences—even determines—the high-quality development of postgraduate education ^[6]. This study advocates renewing AI-oriented educational concepts to guide ecological learning. Rooted in the impacts and opportunities brought by AI to traditional Master of Police Studies teaching, it takes “fostering virtue and cultivating talent” as its fundamental mission, centers on student development, and aims to nurture outstanding professionals who are politically steadfast, morally sound, proficient in both theoretical knowledge and practical skills, and equipped with superior competencies.

4.2. Leveraging AI for teaching resource development

This study proposes constructing an AI-driven teaching resource development system characterized by “data-empowered instruction, technology-supported practical combat, and dynamically optimized evaluation.” This involves collecting and organizing various police-related data to develop an intelligent teaching case database. Close collaboration with on-campus instructors will refine teaching strategies, emphasizing data-driven, tiered, and information-based instructional design. Through case-based teaching and other methods, educators will integrate AIGC tools into learning and research to enhance students’ innovative thinking and comprehensive capabilities, ensuring emerging technologies meaningfully support academic and research activities ^[7]. Intelligent tutoring systems will provide 24/7 AI-powered online Q&A services to students, enabling personalized academic support.

4.3. Building AI-enhanced teaching platforms

Harnessing high-tech solutions such as the Internet, big data, and deep learning, the study aims to address the limitations of traditional police education, which relies heavily on “classroom lectures + base training.” AI technologies, through virtual simulation, data analysis, and intelligent feedback, enable capability cultivation with the advantages of “low cost, high immersion, and precision.” Efforts will focus on developing a police simulation practice platform integrating VR/AR technologies to replicate complex scenarios such as counter-terrorism operations and criminal investigations. By using AI algorithms to enable dynamic scene adaptation and intelligent role interaction, the platform will immerse students in realistic environments, enhancing their practical skills through hands-on experience.

4.4. Implementing AI-optimized policing curriculum systems

The existing Master of Policing curriculum should be augmented with AI-related courses, leveraging knowledge graph technology to construct case logic chains. This framework enables students to utilize AI-assisted case analysis and generate strategies. A flexible blended learning model is adopted, supported by virtual simulation training platforms tailored for policing scenarios. These platforms create immersive training environments to enhance postgraduate competency development. Pedagogical designs intentionally incorporate graded complexity, cultivating students’ comprehensive capabilities and advanced cognitive skills for handling intricate criminal cases under risk-intensive policing conditions. By deeply integrating AI technologies into traditional policing courses, a systematic AI-policing curriculum architecture is established.

4.5. Strengthening the deep integration of AI and policing operations

AI technologies must be precisely embedded across all phases of practical policing education. To revitalize classroom dynamics, AI tools are deployed to facilitate pre-class preparation and self-directed learning, thereby reinforcing the central role of classroom instruction. A phased strategy is implemented to systematically elevate the “challenge quotient” of pedagogical content. The widespread application of policing big data infrastructures facilitates resource sharing between police academies and public security bureaus. Pedagogical environments are designed to foster a culture of intellectual challenge, encouraging students to achieve competency benchmarks through rigorous engagement. This approach cultivates postgraduate students’ implicit internalization of strict legal compliance during active learning processes. Collaborative empirical research with operational policing units further refines AI applications in real-world law enforcement contexts.

4.6. Strengthening the construction of the AI teaching effectiveness evaluation system

A scientific and rational teaching effectiveness evaluation system should be established, incorporating multidimensional indicators such as students’ mastery of theoretical knowledge, practical operational capabilities, and proficiency in AI technology applications. A diversified assessment framework should be developed, integrating routine evaluations, assignment assessments, midterm tests, and final examinations. Big data analytics and machine learning algorithms should be employed to monitor and evaluate teaching processes and student learning outcomes in real time. Given the exceptional performance of large language models (LLMs) in comprehending and generating natural language texts, they have emerged as novel aids in academic writing^[8]. Consequently, instructors must provide scientifically grounded guidance and support to students during academic paper assessments.

4.7. Enhancing faculty competence in AI utilization

Strengthen AI technical training for supervisors of policing master's students to continuously improve their AI knowledge and pedagogical capabilities. Leverage interdisciplinary teams as a “binding agent” across academic disciplines to foster collaborative research and address complex scientific and societal challenges that transcend single-discipline approaches ^[9]. Encourage faculty participation in AI-related policing research projects to promote the deep integration of teaching and research, thereby cultivating a high-caliber faculty team proficient in both policing and AI technologies.

5. Conclusion

With the continuous evolution and innovation of artificial intelligence technology, its applications in education are becoming increasingly extensive and profound ^[10]. This study focuses on enhancing the practical competencies of policing master's students, exploring viable pathways for integrating AI technologies into teaching through dimensions such as educational resources, teaching platforms, and curriculum design. However, limitations persist due to the insufficient application of AI technologies in higher education and the people's lack of deep understanding of AI. Future directions include: Collaborating with public security operational departments to incorporate authentic policing cases into the curriculum, enabling students to strengthen their problem-solving skills in real-world contexts; Continuously monitoring student feedback on learning outcomes and optimizing pedagogical strategies using assessment data to ensure the scientific validity and effectiveness of enhancement measures.

Acknowledgments

The author would like to thank the teachers who helped in the research process, as well as the students and other personnel who actively cooperated with the author.

Funding

This research was supported by the “Qinglan Project” (Project No: [2022] No. 29) for Jiangsu Province.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Wang XQ, Zhang J, 2023, Theoretical Implications and Practical Approaches for High-Quality Development of Higher Education. *Journal of Higher Education Management*, 2023(3): 21–31.
- [2] Hu AN, Zhou S, 2024, Beginners Standing on the Shoulders of Giants: Generative Artificial Intelligence in Social Science Research. *Jiangsu Social Sciences*, 2024(1): 57–65.
- [3] Dai W, Xu M, 2025, Exploration and Practice for Cultivation Mechanism of Professional Degree Postgraduates from Artificial Intelligence Interdiscipline: Taking China University of Mining and Technology as an Example. *Control*

Engineering of China, 32(1): 185–192.

- [4] Lu GS, Liang R, 2023, Reform of Doctoral Training Models Under the Transformation of Knowledge Production Modes: International Experiences and Local Explorations. *Research in Higher Education of Engineering*, 2023(6): 173–178.
- [5] Lu Y, 2023, Educational Applications and Prospects of Generative Artificial Intelligence: A Case Study of ChatGPT System. *Chinese Journal of Distance Education*, 43(4): 24–31.
- [6] Ma YH, Yu Y, 2025, Innovative Choices for High-quality Development of Graduate Education in the Era of Digital Intelligence. *Tsinghua Journal of Education*, 2025(42): 40–47.
- [7] Wan YJ, Gu LP, 2024, Behavioral Motivation and Influencing Factors of Graduate Students Using AIGC Tool: An Empirical Analysis Based on Questionnaire Survey. *Journal of Library and Information Science in Agriculture*, 2024(10): 4–22.
- [8] Wang L, 2024, Reshaping Postgraduate Thesis Evaluation and Guidance in the Context of Large Language Model Technology. *Academic Degrees & Graduate Education*, 2024(12): 30–37.
- [9] Stokols D, 2008, The Ecology of Team Science: Understanding Contextual Influences on Transdisciplinary Collaboration. *American Journal of Preventive Medicine*, 35(2): 96–115.
- [10] You BY, 2025, Opportunities, Challenges, and Countermeasures of Generative AI Assisting Social Science Postgraduates in Academic Writing. *Journal of Chongqing University of Science and Technology (Social Science Edition)*, <https://link.cnki.net/urlid/50.1231.C.20250408.1603.002>

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.