

Research on Innovation of Artificial Intelligence General-Education Teaching Empowered by Digital Teaching Resources

Hao Shi, Hanhui He

Hangzhou Medical College, Hangzhou 310053, Zhejiang, China

Copyright: © 2026 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: With the in-depth advancement of higher-education reform, educational digitalization has gradually become an important direction for teaching reform in colleges and universities. Against this background, digital teaching resources have been widely applied and shown great vitality in improving the teaching quality of artificial-intelligence general-education courses and promoting the comprehensive-quality development of students. Based on the general background of higher-education digital reform, this paper discusses the value significance and practical paths for the innovation of artificial-intelligence general-education teaching empowered by digital teaching resources. It aims to provide new references for teachers and jointly contribute to the modernization reform of artificial-intelligence general-education teaching.

Keywords: Digital teaching resources; Artificial-intelligence general-education courses; Teaching innovation; Value significance; Practical paths

Online publication: October 26, 2026

1. Introduction

We have now stepped into the digital age. While digital technologies such as big data and artificial intelligence bring convenience to various fields of people's lives, they also create new opportunities for higher-education reform^[1]. Born against the background of the digital era, artificial-intelligence general-education courses are key courses designed to popularize basic artificial-intelligence knowledge, improve students' ability to apply artificial-intelligence technologies and cultivate their digital literacy. In previous teaching practice, problems such as over-reliance on textbooks and single teaching modes have adversely affected actual teaching outcomes^[2]. The application of digital teaching resources can effectively improve the interest and effectiveness of this course, drive the updating of course content systems and the innovation of teaching modes, and substantially enhance talent-cultivation quality. Therefore, it is imperative and timely to conduct in-depth research on the value significance and practical paths for the innovation of artificial-intelligence general-education teaching empowered by digital teaching resources.

2. Value significance of artificial-intelligence general-education teaching empowered by digital teaching resources

2.1. Enrich resources and innovate teaching content

Artificial-intelligence technologies feature strong cutting-edge properties and rapid iteration speeds. Traditional artificial-intelligence general-education courses mainly adopt paper-based textbooks and suffer from prominent problems of solidified and outdated teaching content, which leads to a disconnection between the knowledge learned by students and the development and application of artificial-intelligence technologies. Meanwhile, traditional artificial-intelligence general-education courses show obvious homogenization in teaching content, can hardly meet the personalized learning demands of students from different majors, and impair talent-cultivation effects to a certain extent. Digital teaching resources can well solve these difficulties. They contain diversified resource content and support dynamic updating, which further strengthens the matching degree between teaching content of artificial-intelligence general-education courses and real-world development and application of artificial-intelligence technologies. In addition, with such resources as assistance, teachers can build characteristic teaching resources for artificial-intelligence general-education courses according to the characteristics and demands of different majors and break the barrier of homogenized teaching. For example, for medical-major students, digital teaching resources themed on “AI + Medicine” can be introduced to construct professional scenarios, so as to comprehensively innovate teaching content, stimulate students’ learning interest and help them acquire more useful knowledge and skills ^[3].

2.2. Innovate teaching modes and improve teaching quality

Judging from past practice of artificial-intelligence general-education teaching, teaching was mainly carried out via traditional lecture-based approaches. There was little interaction between teachers and students as well as among students, which easily gave rise to low learning interest, low participation and insufficient knowledge mastery among students. Moreover, limited by offline classroom space, students often lacked channels for autonomous learning and practical practice, their personalized learning needs could not be satisfied, and overall teaching quality was unsatisfactory. Supported by digital resources, teaching modes for artificial-intelligence general-education courses will be comprehensively innovated. For instance, teachers can leverage digital resources to introduce online teaching for in-depth student learning, and consolidate students’ cognition through offline lectures ^[4]. Meanwhile, resources such as virtual simulations can be adopted to provide students with immersive and personalized experiences, improve classroom interaction, and further elevate teaching quality ^[5].

2.3. Strengthen practical training and advance talent cultivation

The core objective of artificial-intelligence general-education education is not merely to popularize basic artificial-intelligence knowledge, but also to implement the concept of “applying what one has learned” and foster students’ artificial-intelligence application capabilities, digital thinking and literacy. Nevertheless, past teaching of this course had the problem of “valuing theories over practice”. Especially restricted by factors such as insufficient equipment and limited practical venues, students could not obtain sufficient opportunities to practice artificial-intelligence technologies, which impaired their mastery of relevant knowledge and improvement of digital literacy. The application of digital resources can provide students with abundant theoretical-learning resources and practical-operation resources. For example, students can conduct practical operations for artificial-intelligence-technology application via virtual-simulation resources,

which will definitely enhance their comprehensive qualities ^[6]. At the same time, the application of digital teaching resources can build real-world application scenarios, empower the development of students' practical-application capabilities, innovation capabilities and professional abilities, and facilitate their growth toward compound-type talents.

3. Innovation paths for artificial-intelligence general-education teaching empowered by digital teaching resources

3.1. Integrate digital resources and build a characteristic teaching-content system

Teaching content serves as the core carrier for general-education-course teaching. Faced with outdated and homogenized content in current artificial-intelligence general-education teaching, we shall reconstruct teaching content based on digital resources and focus on constructing a new hierarchical, classified, and characteristic content system for general-education courses to lay a foundation for better learning and growth of students ^[7]. First of all, build a basic general-purpose resource module. Integrate various general-purpose digital resources, including the development history of artificial intelligence, basic algorithms, and ethical norms of artificial intelligence, and facilitate students' learning of relevant basic knowledge via digital courseware, micro-lectures, high-quality open-access courses, and other resources. Secondly, integrate cutting-edge resources such as large-model AI, digital twins, and AI applications to ensure that teaching content keeps pace with real-world development and application of artificial intelligence, so that students can acquire more practical artificial-intelligence knowledge and technologies ^[8]. Furthermore, we shall base on the university's disciplinary characteristics, introduce digital-resource modules for artificial-intelligence courses targeting specific majors, and promote the collaborative cultivation of students' artificial-intelligence practical-application capabilities, digital literacy and comprehensive professional abilities. For instance, in response to talent-cultivation demands of medical universities and relevant majors, various medical-featured artificial-intelligence digital teaching resources, including smart healthcare, AI-assisted therapy, medical big data and intelligent medical image analysis, can be introduced to build a digital-resource library themed on "AI + Medical Features", enabling students to acquire more major-relevant artificial-intelligence-application knowledge and skills ^[9]. In addition, hierarchical educational resources can be designed according to students' prior artificial-intelligence knowledge and learning status. For students with weak foundations, introductory digital resources can be provided; for students with solid foundations, application-expansion-oriented digital resources can be offered. In this way, the goal of teaching students in accordance with their aptitude can be better fulfilled to support students' growth and development.

3.2. Innovate teaching modes and build human-machine collaborative smart classrooms

Mode innovation acts as an important foundation for guaranteeing the teaching quality of artificial-intelligence general-education courses. In view of the single and traditional modes in past teaching, this course shall make full use of digital teaching resources to innovate teaching modes and build human-machine collaborative smart classrooms for immersive learning experiences. Specifically, blended teaching can be carried out on digital-teaching-resource platforms to leverage the advantages of digital teaching resources fully. First, before class, send preview resources such as micro-lectures for knowledge points of artificial-intelligence general-education courses, industry cases and basic exercises to students through the platform, and guide students to finish preview tasks autonomously on the platform. Meanwhile, the platform automatically records

students' preview data and accurately analyzes their learning difficulties and weak points, laying a data foundation for targeted offline classroom teaching ^[10]. Second, during class, on the one hand, teachers shall focus on explaining confusing knowledge points according to feedback from preview data obtained before class to improve students' listening efficiency; on the other hand, interactive teaching shall be conducted by virtue of digital teaching resources. For example, virtual-simulation resources, artificial-intelligence digital cases and other resources can be adopted to create audio-visual-integrated classrooms, converting abstract theories under traditional textbook teaching into dynamically presented intuitive content, so as to lower students' learning difficulty and stimulate their learning interest. Meanwhile, functions on digital-teaching platforms such as intelligent Q&A and in-class quizzes can be utilized to boost student interaction and further improve classroom interest and effectiveness ^[11]. Besides, AI can be introduced to generate teaching cases or answer students' questions, so as to build human-machine collaborative smart classrooms, arouse students' learning interest and promote their in-depth learning and all-round development. Moreover, in the after-class stage, digital review materials, personalized expansion resources and practical-training tasks can be timely pushed to students based on digital resources and artificial-intelligence technologies to encourage students' autonomous after-class learning and practical exercises. On this basis, learning communities can be built on digital-teaching platforms to guide student interaction and communication. Teachers can also give timely comments and guidance to further guarantee interactivity and efficiency of course teaching.

3.3. Build practical platforms and improve scenario-oriented practical-teaching systems

In response to problems of insufficient practical training, high practical-operation thresholds and inadequate scenarios in past artificial-intelligence general-education teaching, scenario-oriented and personalized practical-teaching platforms can be built based on digital resources to strengthen students' practical-operation capabilities and improve course education outcomes. First of all, lightweight AI tools and online basic-experiment systems can be integrated to build a digital basic-practice platform for students to conduct simple basic-experiment operations, consolidate their theoretical cognition and enhance their practical-operation capabilities ^[12]. Secondly, practical-simulation scenarios with professional characteristics can be developed. For medical universities and majors, practical platforms related to artificial-intelligence medical-image recognition, medical-big-data analysis and intelligent-nursing simulation can be developed, allowing students to practice artificial-intelligence-technology operations within professional scenarios. This strengthens the connection between general-education and professional education and lays a foundation for improvement of students' comprehensive qualities ^[13]. Furthermore, resources including artificial-intelligence application cases, scientific-research-innovation resources and innovation-competition question banks can be integrated to build innovation-practice platforms, guiding students to carry out characteristic artificial-intelligence-innovation inquiries, so as to cultivate their practical-operation capabilities, innovation capabilities and scientific-research capabilities.

3.4. Reconstruct evaluation systems and realize whole-process diversified education evaluation

As the "baton" of teaching reform, evaluation exerts direct influences on teaching quality and outcomes. In past artificial-intelligence general-education teaching, teaching evaluation showed obvious traditional and one-sided features, and ignored evaluation and guidance for students' learning processes and practical capabilities. Against this backdrop, evaluation systems can be reconstructed with the background of applying

digital teaching resources^[14]. First of all, transform the past result-oriented evaluation mode and introduce process-oriented evaluation to collect and analyze students' learning data from digital resources throughout the whole process, so as to better grasp their learning status and competence-growth conditions. For example, information including students' pre-class preview, in-class interaction, assignment quality, practical-operation performance and learning duration can be integrated via digital-teaching platforms to quantify their daily learning behaviors and improve evaluation accuracy. Meanwhile, in summative assessments, assessment items such as case analysis, application design and practical innovation shall be introduced to promote the development of students' practical-application capabilities and innovation capabilities. Secondly, innovate evaluation modes. On the basis of traditional teacher evaluation, diversify evaluation subjects and carry out multiple evaluation activities, including self-evaluation, peer evaluation, group evaluation, and intelligent evaluation. For instance, organize students to comment on and analyze their own learning and practical performance in artificial-intelligence general-education courses to cultivate their awareness of self-reflection and self-improvement; guide peer or group mutual evaluation to create an atmosphere of mutual communication and learning for overall student improvement; leverage artificial-intelligence technologies to comment on students' in-class learning and practical-operation performance, give targeted learning suggestions and push personalized learning resources to facilitate students' better growth and development.

3.5. Empower teacher development and consolidate the core support for teaching innovation

Teachers constitute the foundation of education, and teaching staff serves as the core carrier for teaching innovation as well as the mainstay for improving university talent-cultivation quality. At present, some teachers of artificial-intelligence general-education courses have deficiencies in applying digital technologies and designing and producing digital resources, which hinders teaching reform and innovation of this course^[15]. In this regard, colleges and universities can cooperate with relevant experts and excellent teachers to regularly organize training activities covering the design and application of digital teaching resources, digital teaching design, virtual-simulation teaching, and artificial-intelligence application, helping teachers update their knowledge systems and improve digital teaching capabilities. Secondly, teachers can be actively organized to form teaching-research teams to discuss and analyze practical problems in applying digital teaching resources for artificial-intelligence general-education teaching, explore effective countermeasures and paths, and enhance teachers' comprehensive abilities. Furthermore, teacher assessment and incentive mechanisms can be optimized. Encourage teachers to actively develop characteristic digital teaching resources, carry out digital-teaching-reform practices and apply for teaching-innovation projects. Incorporate digital-teaching achievements into teacher assessment, evaluation and reward systems, so as to mobilize teachers' enthusiasm. Finally, build a high-quality general-education teaching team with AI professional literacy, digital-teaching capabilities and interdisciplinary-integration thinking, and consolidate the core support for innovation and quality improvement of artificial-intelligence general-education teaching.

4. Conclusion

To sum up, in the digital era, the innovative application of digital teaching resources has become an important direction for the reform of artificial-intelligence general-education teaching. Therefore, we shall deeply grasp its value and significance, and actively explore countermeasure paths for artificial-intelligence

general-education-teaching innovation empowered by digital teaching resources. Thereby, we can comprehensively improve teaching outcomes and talent-cultivation quality of this course, give full play to the educational value of general-education courses, and contribute to the digital-reform of higher education and the cultivation of high-quality digital-oriented talents and interdisciplinary professional talents in the new era.

Disclosure statement

The authors declare no conflict of interest.

References

- [1] Yin Z, Zhong Q, Xu R, et al., 2025, Construction and Implementation Guarantee of Artificial-Intelligence General-Education Curriculum System in the Digital-Intelligence Era. *Journal of Shanghai University of Sport*, 49(12): 24–36 + 48.
- [2] Dong M, Xu W, Li B, et al., 2025, Paradigm Revolution of General-Education Under the Impact of AI. *Educational Research Monthly*, (12): 20–27.
- [3] Sun F, Sun H, 2025, Artificial-Intelligence General-Education in Colleges and Universities: Theoretical Basis, Curriculum Design and Implementation Strategies. *China Education Informationization*, 31(11): 12–22.
- [4] Cai X, Hu Z, Cheng B, 2026, Construction of Artificial-Intelligence General-Education System in Application-Oriented Undergraduate Universities. 3: 526–532.
- [5] Fan W, Zhao L, Zhou X, et al., 2025, Measures for Improving Students' Information Literacy Through the Reform of Artificial-Intelligence General-Education Courses in Colleges and Universities. *Education Progress*, 15(11): 116–121.
- [6] Liu Y, Yang L, Zhang H, 2025, Research on the Construction of Artificial-Intelligence General-Education Courses in Colleges and Universities Under Digital-Intelligence Background. *Journal of Tangshan University*, 38(4): 79–85.
- [7] Chu H, Tian Z, Sun Y, et al., 2025, Exploration and Practice of “Artificial-Intelligence +” Talent-Cultivation Mode. *Journal of Qiqihar Junior Teachers' College*, (5): 27–30.
- [8] Quan L, Zhang X, Chen Z, 2022, General-Education of Artificial Intelligence in Colleges and Universities: Value Implication, Core Essence and Realization Path. *Public Relations World*, (24): 148–149.
- [9] Liu S, 2025, Research on the Current Situation and Countermeasures of Digital-Resource Construction for General-Education Courses in Colleges and Universities Under the Emerging-Engineering Background. *Jiangsu Science & Technology Information*, 42(13): 76–80.
- [10] Yang Y, 2025, Reform and Practice of Personalized General-Education Courses in Colleges and Universities Empowered by Digitalization. *University*, (20): 15–18.
- [11] Ding H, Jiang C, 2025, Teaching Reform of Integrating Artificial-Intelligence General-Education Courses Into Cutting-Edge Fields — A Case Study of Economics-and-Management Majors in Guangxi University of Finance and Economics. *Journal of Beibu Gulf University*, 40(3): 99–107.
- [12] Yuan J, Sun L, Wu F, et al., 2025, Differentiated Teaching of Artificial-Intelligence General-Education Courses in Colleges and Universities: Mode Construction and Implementation Effects. *Journal of Distance Education*, 43(3): 87–95+105.
- [13] Xu S, Li E, 2025, Research on Innovative Practice of General-Education MOOC Construction Empowered by Digitalization — Taking the MOOC “Appreciation of Chinese Painting” as an Example. *Research in Art Education*,

(8): 105–107.

- [14] Li C, 2023, Discussion on Teaching Management of General-Education Courses in Application-Oriented Universities in the Information Era — A Case Study of Minnan University of Science and Technology. *Journal of Heihe University*, 14(7): 103–106.
- [15] Liang Y, 2022, Research on Training Mode of Artificial-Intelligence General-Education in Colleges and Universities in the Intelligent Era. *Scientific Consult (Technology & Management)*, (1): 102–104.

Publisher's note

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