

Article

Research on the Integration Path of Ideological and Political Education in Specialized Courses under the Digital Intelligence Background—A Case Study of “Design and Guidance of Science Play Performance Activities”

Ying-Yi Zhou

Department of Science Education, School of Physics, Lingnan Normal University, Zhanjiang 524048, China;
zhouyy@lingnan.edu.cn; Tel.: +86-18316886411

How To Cite: Zhou, Y.-Y. (2025). Research on the Integration Path of Ideological and Political Education in Specialized Courses under the Digital Intelligence Background—A Case Study of “Design and Guidance of Science Play Performance Activities”. *Journal of Educational Technology and Innovation*, 7(3), 35–43. <https://doi.org/10.61414/0eyk9w59>

Received: 10 April 2025

Revised: 28 June 2025

Accepted: 22 July 2025

Published: 30 September 2025

Abstract: The digital-intelligent era presents both opportunities and challenges for specialized course education in universities. Based on the fundamental task of fostering virtue through education, this study takes the course “Design and Guidance of Science Play Performance Activities” as an example to explore practical pathways for integrating ideological and political education into specialized courses within a digital-intelligent context. Employing literature review and action research methodologies, the study constructs a digital-intelligent teaching model, develops digital ideological and political resources, innovates teaching methods, and systematically identifies and deeply integrates ideological and political elements into the curriculum. Through practical validation, the research summarizes a curriculum design framework grounded in Tyler’s principles and a digital-intelligent teaching model based on BOPPPS, providing transferable pathways for ideological and political education in specialized courses. Furthermore, it offers theoretical support and practical references for the deep integration and innovative application of digital-intelligent technologies in education.

Keywords: digital-intelligence; specialized courses; ideological and political education; pathway research

1. Introduction

The report of the 20th National Congress of the Communist Party of China emphasized the acceleration of building a strong education system. The Outline of the Plan for Building a Leading Education Nation (2024–2035) further specifies the goal of establishing China as a leading education nation by 2035. It highlights the need to implement a new-era initiative for fostering virtue through education, promote the integrated reform of ideological and political education across primary, secondary, and tertiary institutions, and develop a “Big Ideological and Political Education” brand (Ministry of Education, 2025). Simultaneously, the Outline (Ministry of Education, 2025) proposes the implementation of a national education digitalization strategy to advance digital, intelligent, and international dimensions of education, and to facilitate educational transformation empowered by artificial intelligence. These measures aim to construct a modernized education ecosystem that keeps pace with the times, underscoring the central role of educational digitalization in modernization efforts. This not only enhances the quality of education but also lays a solid ideological and political foundation for building a leading education nation. It represents a comprehensive transformation beyond technological innovation—encompassing educational philosophy, teaching models, and evaluation systems—to achieve precise, personalized, and intelligent educational development through human-machine collaboration.



Copyright: © 2025 by the authors. This is an open access article under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Publisher’s Note: Scilight stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

However, three major research gaps remain in current studies and practices:

- (1) **Fragmented Integration:** Digital-intelligent tools are often limited to an “auxiliary teaching” role and lack systematic integration with ideological and political education.
- (2) **Unclear Pathways:** There is a lack of systematic exploration of ideological and political elements in science popularization specialized courses, and no tailored digital-intelligent ideological education pathway has been established for such curricula.
- (3) **Theoretical Disconnection:** Insufficient synergy exists between curriculum design frameworks and teaching models, hindering the practical implementation of the “Three-Wide Education” principle in the digital-intelligent context.

Therefore, grounded in Tyler’s principles and the BOPPPS model, this study moves beyond the limitation of using digital-intelligent tools merely as aids. It aims to explore the deep integration of digital-intelligent technologies with ideological and political education in specialized courses, establish a systematic practical pathway for such education within a digital-intelligent framework, and address national strategic needs through teaching practices. Additionally, it seeks to bridge the current gap in digitally intelligent driven pedagogy and provide a replicable “technology + theory” dual-driven approach for ideological and political education in science popularization specialized courses.

2. Research Status

2.1. Research Progress and Limitations of Digital-Intelligent Education

Significant progress has been made in digital-intelligent education research in recent years, forming two main directions: “efficiency enhancement” and “personalized empowerment”. Xu & Lai (2024) demonstrated that LLM-generated instructional designs, tailored to diverse learner profiles, improved both instructional efficiency and student engagement. Zhao (2024) examined the application of AI tools in higher education assessment and concluded that such tools can deliver high-quality, real-time personalized feedback, while also cultivating positive learning emotions. Liu et al. (2024) incorporated multi-modal large models into each phase of the BOPPPS model. Zeng et al. (2025), in order to address the lack of relevant knowledge among non-computer science students and the complexity of the material—which leads to low interest and high difficulty in learning—proposed a three-pronged teaching design model: “BOPPPS model + large language models (LLMs) + mind maps with 3w2h.” These studies provide valuable insights for digital-intelligent education. However, existing research has certain limitations in terms of ideological and political integration, with most studies focusing on the efficiency of knowledge delivery without integrating digital-intelligent tools with the “value guidance” goals of ideological and political education.

2.2. Research Trends in Curriculum Ideology and Politics and “Three-Wide Education”

The Ministry of Education (2018) proposed that “curriculum ideology and politics” is key to constructing a “Three-Wide Education” system, emphasizing the exploration of ideological and political educational resources within specialized courses and focusing on macro-level mechanisms. Many scholars stress that its core lies in the deep integration of specialized courses with ideological and political elements to achieve value guidance. Ma and Su (2025) convincingly demonstrate that a broad consensus on the concept of curriculum ideology and politics has been formed. The current core contradiction, however, lies in the coexistence of strong external impetus alongside weak internal motivation, and rigorous policy requirements paired with low operational effectiveness. Research by Qiao (2024) emphasizes the deep integration of ideological and political education with the characteristics of type-based education. In summary, the key constraints to enhancing the quality and effectiveness of curriculum ideology and politics in China are no longer policy and guiding Principle but rather the capacity of “people” and the support of “systems”.

From an international perspective, Qi (2018) found that the mixed moral education model in the United States shares common ground with China’s “Three-Wide Education” concept, though the U.S. model places greater emphasis on “student autonomous exploration”. Civic and moral education in France emphasizes top-level design at the national level and the continuity of the educational process, focusing on the integration of guiding Principle, systematic frameworks, and diverse practical pathways (Zhang & Gao, 2020). Civic moral education in Germany places greater emphasis on cultivating critical reflection skills and democratic practice abilities (Ren & He, 2021), guided by real-world issues, with a clear competency framework, adherence to the famous “Beutelsbach Consensus”, and Multi-stakeholder Collaborative Support System. International research indicates that effective

values education is a systematic project requiring the synergistic interaction of national top-level design, scientific curriculum frameworks, diverse teaching methods, and robust support systems.

Overall, existing research predominantly focuses on theoretical elaboration, lacking empirical data and the perspective of students as the educated subjects, which considerably limits the depth and persuasiveness of the studies.

2.3. Research Gaps in Ideological and Political Education in Science Popularization Courses

Ji and Huang (2019) proposed that science drama serves as a vehicle for integrating science and art, can stimulate audiences' scientific interest, but their ideological and political potential has not been systematically explored. The revised "Science and Technology Popularization Law" (Ministry of Science and Technology, 2024) requires science popularization work to "promote the spirit of scientists", providing a policy basis for ideological and political education through science plays. However, most existing studies focus on the science popularization value of science drama and have not yet connected it with relevant curricula. As a result, research on teaching practice pathways that integrate science drama with digital-intelligent tools and Tyler's principles remains a gap.

3. Methods

This study employed literature review and action research methods, targeting students enrolled in the course "Design and Guidance of Science Play Performance Activities". A continuous three-academic-year study was conducted with a total of 187 science education majors, including 76 from the class A, 70 from the class B, and 41 from the class C. Through literature analysis, the theoretical frameworks of Tyler's principles, the BOPPPS model, and digital-intelligence-enabled ideological education were systematically reviewed, informing the design of an ideological education pathway for the course.

A blended "online + offline" teaching approach was adopted: online platforms such as Superstar Learning were used to deliver ideological case studies, while offline activities included scenario simulations and collaborative group creation. Digital-intelligent tools were utilized to support teaching implementation, data collection, and assignment grading.

The integration effectiveness of ideological elements and teaching outcomes were evaluated through multiple methods, including teaching supervision feedback and student teaching evaluations. Finally, the pathway was refined based on course outcomes, resulting in an optimized framework.

4. Practical Pathways for Integrating Ideological and Political Education in Specialized Courses under the Digital-Intelligence Context

Education consistently influences individuals in a subtle yet profound manner. Integrating ideological and political education into specialized courses plays an irreplaceable role in enhancing students' comprehensive competencies, promoting educational reform and development, and increasing social impact through long-term and holistic cultivation. Digital-intelligent education, by understanding students' learning conditions and supporting the creation of personalized curricula, represents the optimal embodiment of tailored education under the demands of improved educational quality and efficiency. Below, taking the specialized course Design and Guidance of Science Play Performance Activities in the Science Education program as an example, this section explores the practical pathways for integrating ideological and political education in specialized courses within a digital-intelligent context from the perspective of course implementation.

4.1. Course Introduction

A science play is an innovative form of science popularization education or activity. With the growing societal demand for science outreach, the derived course Design and Guidance of Science Play Performance Activities has become a specialized offering in science education programs at normal universities. This course combines practical experience in creating science plays and provides systematic learning in both the creation and performance of such plays. In terms of scriptwriting, it explores themes and subjects, scientific principles, plot and story design, language use, and structure. Regarding performer training, it focuses on developing actors' qualities, emotional expression, performance techniques, character analysis, and scene creation. Through the performance of science plays that integrate science and art, the course aims to promote scientific concepts and knowledge among youth, enabling children and adolescents to experience science in an enjoyable atmosphere, form a correct understanding of science, and thereby stimulate their interest and enthusiasm in learning and applying science. Additionally, the course incorporates extensive practical activities, allowing students to gradually improve their ability to design and guide science play performances through hands-on practice and study.

4.2. Implementation Pathway

As an undergraduate course in science education, Design and Guidance of Science Play Performance Activities employs Tyler's principles as its overarching framework in curriculum design. It is systematically constructed across four dimensions: “defining educational objectives”, “selecting educational experiences”, “organizing educational experiences,” and “evaluating educational experiences.” Driven by the dual forces of “digital intelligence + ideological-political education,” it forms an iterative and replicable pedagogical technical pathway, as Figure 1.

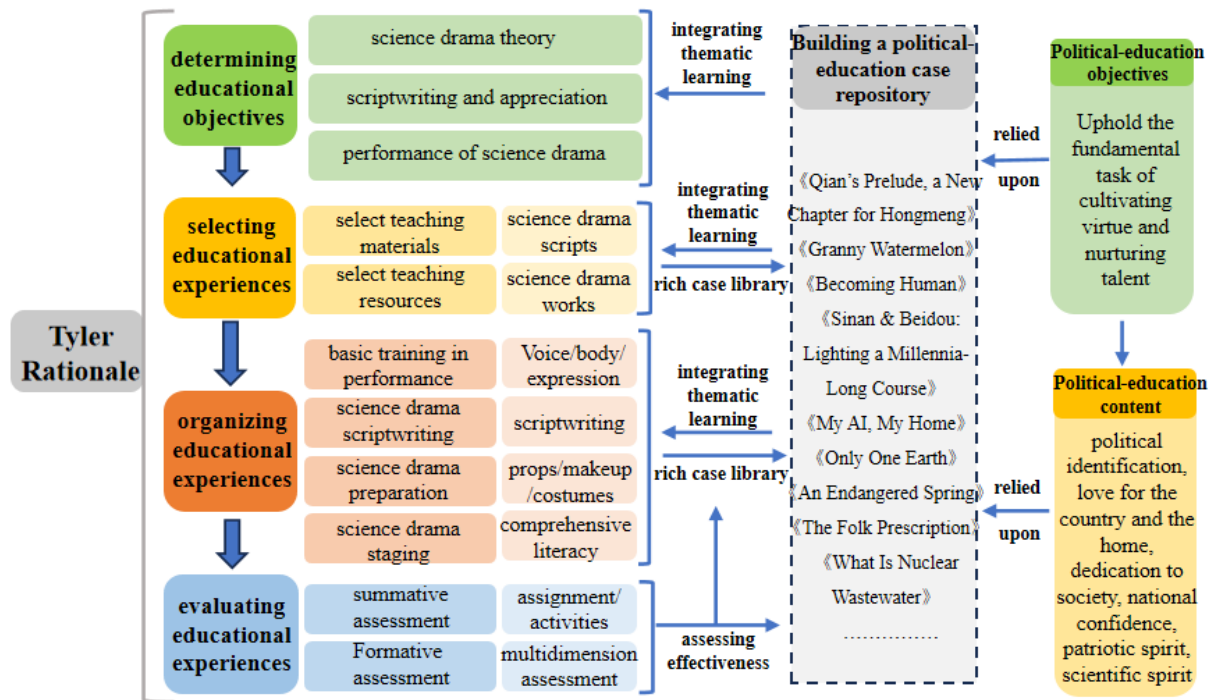


Figure 1. Design Concept for Curriculum-Based Political Education in the Course “Design and Direction of Science Drama Performance Activities”.

(1) Objective Layer: Forming a Dual-Core Oriented Value Anchoring

The ideological and political objectives are guided by the fundamental task of “fostering virtue through education”. Elements of political identity and national spirit, which are often difficult to observe directly, are naturally integrated with disciplinary goals through an ideological case database and the learning process of science plays. This forms a “Science-Humanities” double-helix objective system, achieving synergy between ideological education and professional growth.

(2) Content Layer: Guided by Tyler's Principles

Following the sequence of defining educational objectives, selecting educational experiences, organizing educational experiences, and evaluating educational experiences—and aligned with Bruner's concept of a “spiral curriculum”—a progressive competency ladder of “theory-creation-performance” is designed. When teaching knowledge of science plays, elements such as political identity and national spirit are incorporated to enhance students' sense of national pride and social responsibility. During the appreciation of science plays, students analyze outstanding scripts and performances to understand their ideological connotations, fostering a spirit of dedication and national confidence. In the creation and performance of science plays, students engage in role-playing and plot interpretation to deeply experience teamwork, socialist core values, patriotism, and scientific spirit. The ideological case database, built upon these objectives and content, permeates each thematic study session, while outcomes from thematic learning conversely contribute to the expansion of the case database. The database primarily consists of science play scripts and performances, incorporating contemporary characteristics to form a multi-thematic repository that establishes a “scientific issue–social value” mapping, addressing the disconnection between ideological elements and disciplinary knowledge.

(3) Implementation Layer: Forming a Blended Online-Offline Teaching Model

A hybrid approach is adopted, combining “online platforms (micro-lectures/quizzes) + offline workshops (performance training/script reading).” Online components focus on knowledge input and diagnostic evaluation, while offline activities emphasize higher-order thinking and embodied practice. Based on the constructivist principle of “situated cognition,” implicit ideological education is realized through thematic learning. Ideological elements are organically integrated into all aspects of the course. In the preliminary preparation phase, instructors select appropriate themes for classroom discussion, conduct in-depth analysis to extract ideological elements, and integrate them into teaching objectives, content, and activities. During classroom instruction, various teaching methods and activities are used to integrated ideological concepts, such as guiding students to analyze characters in scripts during appreciation sessions or allowing them to experience roles and scenarios through simulations and role-playing, thereby cultivating scientific spirit and responsibility.

(4) Evaluation Layer: Designing a Multi-Dimensional Evidence Chain

Formative assessment incorporates activities such as iterative script development, with online platforms collecting process data like collaborative contributions. For summative assessment, student groups complete the creation and performance of a science play, integrating scientific knowledge with ideological concepts. Performances and reflective reports serve as summative materials, guiding students to summarize and internalize ideological concepts. Additionally, a dual-dimensional evaluation of “science popularization effectiveness + ideological internalization” can be conducted using scales, achieving the closed-loop validation of objective attainment as emphasized in Tyler’s principles.

A diversified evaluation system is established, including self-assessment, peer assessment, and instructor assessment to evaluate learning outcomes and ideological education effectiveness. Teaching quality is assessed through student participation, peer and leadership observations, and random class checks, providing comprehensive feedback from multiple perspectives. Such evaluations help understand course implementation effects and continuously optimize course design to improve teaching quality and educational outcomes.

The entire course model is supported by the ideological case database, transforming grand narratives into performable “science-society” conflict scenarios to address the issue of ideological education being perceived as detached. Simultaneously, with Tyler’s principles as the framework, the model can incorporate generative AI for functions such as collaborative script creation and audience emotion feedback analysis, aligning with the evolving needs of future educational technology and forming a replicable, transferable practical course.

4.3. Teaching Model

The teaching process as Figure 2 is designed using the BOPPPS instructional model, leveraging generative artificial intelligence and digital-intelligent technologies. By combining the advantages of online learning and offline classroom instruction, it employs progressive and multi-level teaching activities to enhance students’ deep learning and reduce learning barriers.

In terms of teacher activities, instructors use online learning platforms to distribute materials, assign tasks, and administer pre-class tests. Through teaching assessment systems such as Superstar Learning, multimodal and personalized student data are collected, enabling a more intuitive evaluation of students’ competency performance in science play activities. This provides a basis and guidance for designing subsequent personalized learning plans. Offline classroom sessions focus on addressing key and challenging concepts, utilizing smart platform interactions to systematically organize whole-class thematic discussions, intra-group collaborative discussion, and AI teaching assistant demonstrations of performance skills, making classes richer, more dynamic, and diverse (Shi et al., 2025). After class, teachers conduct post-class tests and reflective summaries via online platforms and use abundant MOOC resources available on platforms such as the National Smart Education Platform to extend teaching activities and provide AI-assisted Q&A sessions, fully realizing personalized and adaptive instruction.

For student activities, learners complete pre-class tasks such as micro-lecture viewing, tiered learning, and pre-class assessments on online platforms. Through these platforms and assessment systems, they communicate their learning characteristics and needs to the instructor. During offline classes, students engage in skill training and collaborative alignment within groups. With teachers and AI teaching assistants serving as dual mentors, they construct scenarios, simulate performances, conduct in-depth discussions, and broaden their perspectives, thereby enhancing their practical abilities in science play performance. After class, with the support of AI assistants or agents, students receive optimized suggestions for script writing, expanded ideas for performance, and personalized learning guidance and professional tutoring.

This teaching model achieves blended online-offline instruction by utilizing assessment systems, smart platforms, AI agents, and even knowledge graphs to immersively integrate specialized courses and ideological education into daily teaching activities and post-class extracurricular practices. It enhances teaching interaction

and personalized learning experiences, thereby realizing a “Three-Wide Education” model that encompasses all individuals, the entire process, and all dimensions. Furthermore, it empowers the transmission of professional knowledge, competency cultivation, and value guidance in the digital-intelligent era.

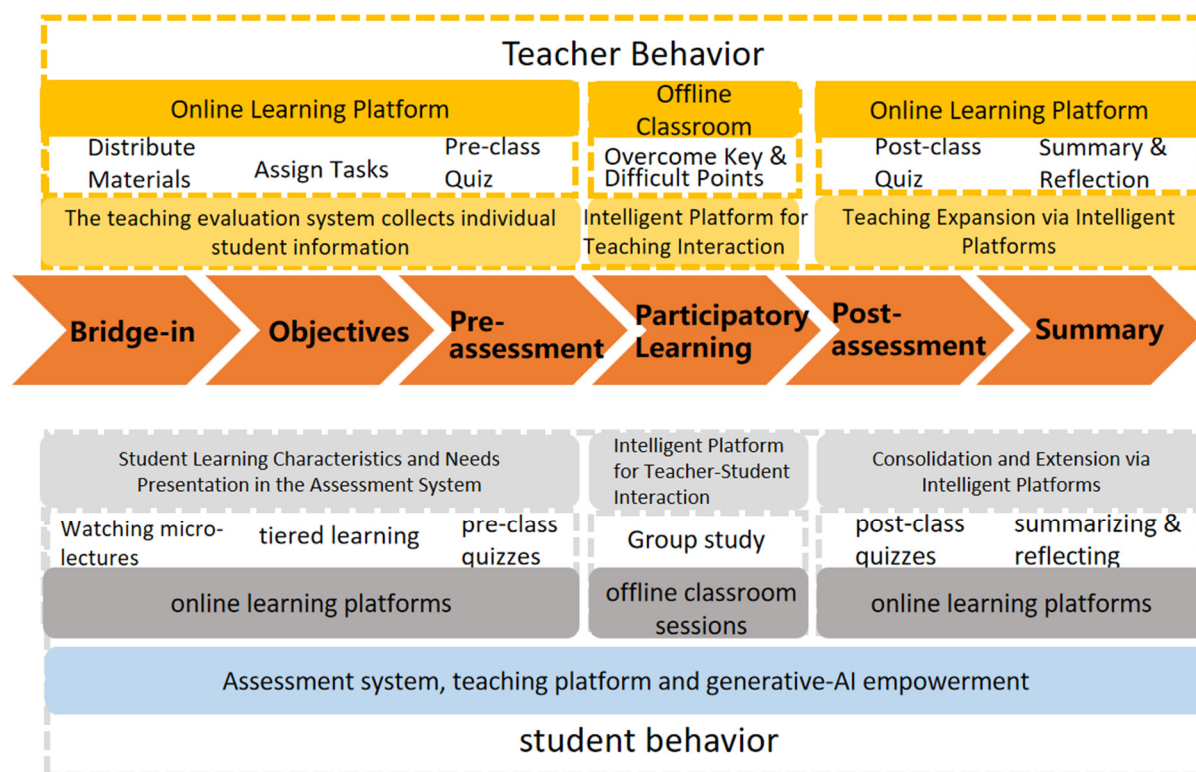


Figure 2. Instructional Model Diagram.

5. Effectiveness Analysis

5.1. Teaching Effectiveness

Over the past three years, this course has received excellent teaching evaluations, with ratings from supervisors and students all exceeding 88 points, as Table 1 and Figure 3. 83.96% of students were willing to recommend the course. Student feedback highlighted the course’s strong engagement and positive classroom atmosphere, noting that although challenging, it was highly rewarding. The blended teaching model effectively enhanced critical thinking and collaboration skills. Additionally, the integration of ideological and political elements was perceived as natural and effectively conveyed positive values.

The course construction has achieved remarkable results. It was recognized as a University-Level Curriculum Ideology and Politics Demonstration Course. The teaching team was approved for a University-Level Party Building and Ideological-Political Education Research Project and established a Curriculum Ideology and Politics Teaching Demonstration Center. These efforts contributed to the school’s designation as a Provincial and Municipal Science Popularization Education Base and China Science Communication E-Station. It also supported the program’s recognition as a University-Level First-Class Major.

Table 1. Teaching Evaluation by Supervisors in the Teaching Quality System.

Subject \ Evaluation Content	Teaching Attitude	Teaching Objectives	Teaching Content	Teaching Methods	Professional Competence	Teaching Effectiveness	Total Score
Supervision 1	9	13	27	13	9	19	90
Supervision 2	9	14	28	14	10	20	95
Supervision 3	10	13	25	13	9	18	88
Average	9.33	13.33	26.67	13.33	9.33	19	91

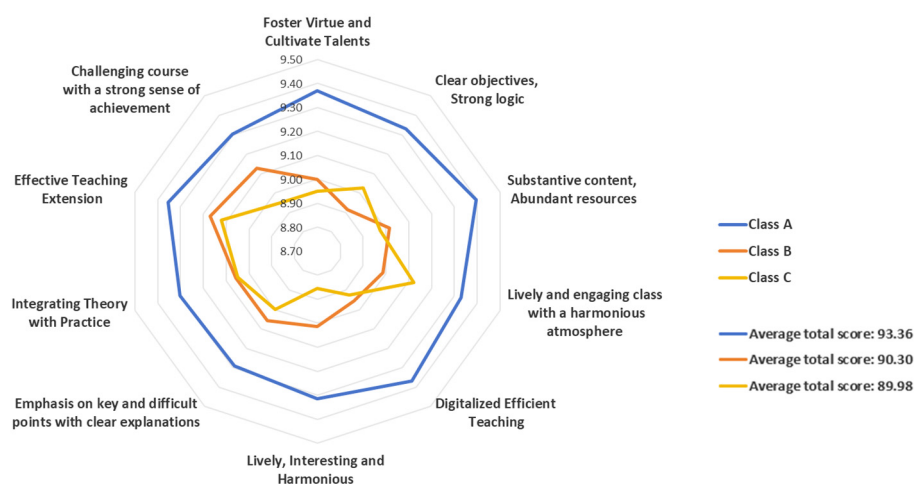


Figure 3. Student Teaching Evaluations of the Course Over the Past Three Years.

5.2. Student Learning Outcomes

Through the implementation of the course, teachers and students have collaboratively created over 30 high-quality science plays (as Figure 4), which are invited for annual performances in primary and secondary schools as well as municipal science popularization institutions (as Figure 5). Student works have received multiple awards, including the Silver Award in the China Regional Finals of the International Science Performance Competition, second and third prizes in provincial science play competitions, one first prize, two second prizes, and three third prizes in provincial science innovation contests, as well as the first prize in the adult category of a municipal science play competition. Since 2017, one to two students from the program have participated in the Tibet Aid Program each year, embodying the spirit of “lacking oxygen but not spirit, facing hardship without fear of suffering,” demonstrating a strong sense of dedication and mission among youth.



Figure 4. The Team Participating in the Provincial Science Play Competition.



Figure 5. The Team Invited to Perform at a Municipal Science Popularization Event.

6. Discussion

This study focuses on specialized science popularization courses, using the Design and Guidance of Science Play Performance Activities course as a case study. It integrates Tyler's principles with the BOPPPS model to address the theoretical gap in curriculum ideology and politics within a digital-intelligent context. By leveraging large language models for data analysis and platform functionalities for teaching interactions, along with a “digital-intelligent case library + AI teaching assistant,” the course enhances collaborative learning and co-creation between teachers and students. It achieves contextualized integration of ideological and political elements, enabling a deep fusion of course content and ideological education, thereby overcoming the limitations of traditional “ideological preaching” and providing a replicable model for similar specialized courses.

The findings of this study align with national policies and are supported by theoretical foundations, with practical evidence demonstrating significant effectiveness. It not only enriches the educational function of the course but also provides strong support for achieving the fundamental task of fostering virtue through education in higher institutions. However, due to the limitations of the research sample and the short-term nature of outcome measurements, the scope and pathways for broader implementation remain constrained.

7. Conclusions

This study, using the Design and Guidance of Science Play Performance Activities course as an example, constructs a synergistic pathway of “Tyler's Principles + BOPPPS” for integrating ideological and political education into specialized courses in a digital-intelligent context. The research shows that this approach effectively addresses issues such as “fragmented integration and superficial application of digital intelligence,” achieving dual enhancement of professional competence and ideological literacy. Digital-intelligent tools serve as critical enablers for implementing the “Three-Wide Education” principle, enhancing the contextualization and personalization of ideological and political education. Science popularization courses contain rich ideological and political elements, which, through systematic design, can become important vehicles for the “Macro Ideological and Political Education” framework. This study provides a comprehensive “theory + technology + practice” solution for ideological and political education in specialized university courses, contributing to the realization of the fundamental task of fostering virtue through education in building a leading education nation.

Funding

This research was funded by the Scientific Research Project of Lingnan Normal University. This study is an outcome of the following projects and centers at Lingnan Normal University: the Special Project on Party Building and Ideological-Political Education—“Practical Research on ‘Curriculum Ideology and Politics’ in Universities under the Concept of ‘Three-Wide Education’” (WD2424); the Science Education Special Project—“Research on Implementation Strategies for High-Quality Development of Science Popularization Education Based on Scientific Activities” (KX2404); and the Ideological-Political Education Teaching Demonstration Center of the School of Physics (PX-4825706).

Institutional Review Board Statement

This paper is a teaching reform research study and does not involve sensitive topics. The data in the paper consist of evaluations of the course effectiveness after the reform, submitted by supervisors and students. All evaluations were submitted anonymously, making it impossible to identify individuals. Moreover, the study was conducted within the scope of routine teaching management and does not impose psychological pressure or social risks on participants. Therefore, ethical review and approval have been waived.

Informed Consent Statement

This study is a teaching reform research project and does not involve sensitive topics. The data presented consist of evaluations of course effectiveness after the reform, provided by supervisors and students. All evaluations were submitted anonymously, ensuring that individual identities cannot be identified. Furthermore, the research was conducted within the scope of routine teaching management and imposes no psychological pressure or social risks on participants. Therefore, the requirement for an informed consent statement has been waived.

Data Availability Statement

The raw data has been submitted and is available on request.

Conflicts of Interest

The authors declare no conflict of interest.

References

- Ji, L. G., & Huang, R. G. (2019). The realization and innovation of the educational function of science plays. *Science Education and Museums*, 5(6), 396–400.
- Liu, D., Lian, W., & Jin, X. (2024, October 18–20). *Research on the construction of incorporating multimodal large models into the BOPPPS teaching model* [Conference session]. 4th International Conference on New Media Development and Modernized Education (NMDME 2024) (pp. 82–91). Xi'an, China. https://doi.org/10.2991/978-94-6463-600-0_11
- Ma, F. Y., & Su, M. (2025). Ideological and political education in university curricula in the new era: Effectiveness, problems, and countermeasures—Based on a survey of 10,432 university major courses teachers nationwide. *Ideological Education Research*, (3), 107–114.
- Ministry of Education of the People's Republic of China. (2018, May 29). *Notice of the General Office of the Ministry of Education on carrying out the pilot work of the “Three Alls Education” comprehensive reform*. http://www.moe.gov.cn/srcsite/A12/moe_1407/s253/201805/t20180528_337433.html
- Ministry of Education of the People's Republic of China. (2025, January 19). *Central Committee of the Communist Party of China and State Council issue “Education Power Construction Plan Outline (2024–2035)”*. http://www.moe.gov.cn/jyb_xxgk/moe_1777/moe_1778/202501/t20250119_1176193.html
- Ministry of Science and Technology of the People's Republic of China. (2024, December 25). *Science and Technology Popularization Law of the People's Republic of China (2024 Revision)*. https://www.most.gov.cn/xxgk/xinxifenlei/fdzdgknr/fgzc/flfg/202412/t20241226_192778.html
- Qi, X. Y. (2018). Research on the implementation of the all-member, whole-process, and all-round education model in universities. *Modern Communication*, 17, 1–2.
- Qiao, L. C. (2024, March 9). The integration of ideological and political education and professional education in vocational colleges in the new era—A review of “Research on the methods, paths, and effectiveness evaluation system of implementing ‘curriculum ideology and politics’ in professional courses in higher vocational colleges”. *Education Theory and Practice*, 44(12), 1. <https://link.cnki.net/urlid/14.1027.G4.20240306.1722.064>
- Ren, P., & He, Y. (2021). Civic and moral education curriculum in German primary and secondary schools: Concepts, characteristics, and dilemmas. *Comparative Education Research*, (11), 80–87.
- Shi, W. Y., Guo, X. L., Fu, Y., Zhou, X. L., & Wang, Y. Z. (2025). Analysis of the path of ideological and political construction in biology majors empowered by digital intelligence—Taking “Immunology” as an example. *Chinese Journal of Biochemistry and Molecular Biology*, 41, 914–923. <https://doi.org/10.13865/j.cnki.cjbmb.2025.05.1528>
- Xu, Y., & Lai, C. (2024). The application of ChatGPT in Chinese as a second language teaching: A case study of instructional design for non-Chinese-speaking students in Hong Kong. *Journal of Educational Technology and Innovation*, 6(4), 21–38. <https://doi.org/10.61414/jeti.v6i4.205>
- Zeng, X., Xu, W., & Wang, T. (2025). The “Three Boards” empower the teaching design of general artificial intelligence education. *Journal of Educational Technology and Innovation*, 7(2), 81–87. <https://doi.org/10.61414/hmfzwy28>
- Zhang, M. Q., & Gao, M. (2020). Integration of civic and moral education curriculum in France: Concepts, framework, and practical paths. *Comparative Education Research*, (11), 69–77.
- Zhao, C. (2024). AI-assisted assessment in higher education: A systematic review. *Journal of Educational Technology and Innovation*, 6(4), 39–58. <https://doi.org/10.61414/jeti.v6i4.209>