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Journalism and communication professional personnel training and precise teaching methods based on artificial intelligence

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Abstract: With the rapid development of media technology, the role of journalism and communication education in higher institutions has become increasingly critical. This study investigates how artificial intelligence (AI) and big data technologies can enhance the accuracy and effectiveness of journalism and communication teaching. Focusing on four universities in Jiangsu Province, the research evaluates key factors influencing teaching quality and explores AI-driven precise teaching methods. Results show an average score of 79.55, indicating significant improvement in classroom instruction and talent training. The findings provide valuable references for optimising journalism education and offer new insights into integrating AI into teaching practices, ultimately supporting more efficient and targeted communication professional development.

Keywords: big data; artificial intelligence; college journalism communication course; precise teaching method.

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Ziwen Wang graduated from the Chinese Academy of Arts with a Doctorate in Drama and Film Studies, mainly engaged in art history research. Also, was Doctoral Supervisor, Vice Chairman of the Nanchang Folk Literature and Art Association, member of the Youth Committee of the China Folk Literature and Art Association, an expert in the Research and Protection of Intangible Cultural Heritage in Jiangxi, and Nanchang Aesthetic Education Expert.

1 Introduction

With the modernisation of the news industry, the shortage of journalism and communication skills has become increasingly apparent. Although journalism and communication majors have gradually become popular in institutions of higher learning in various provinces, the students of journalism and communication majors still have problems such as disconnection between theory and practice, weak professional skills, and lack of stamina. Journalism and communication courses in colleges and universities urgently need to apply emerging technologies to change teaching methods, teaching environments, practice platforms, and teaching methods, to meet the development of the times and the needs of the market, and cultivate application-oriented comprehensive talents in journalism communication. The resource support and policy background of universities for the application of big data and artificial intelligence (AI) technology have a profound impact on the implementation effect of teaching reform (Kedra et al., 2019; Zheng and Hu, 2019). In terms of resource allocation, the implementation of technology needs to rely on high-performance computing equipment and cloud service platforms to ensure the efficiency of data processing and intelligent systems. At the policy level, school-level management needs to promote the systematic integration of technology and teaching by establishing special technology funds, teacher training plans, and course approval optimisation. These factors constitute important external conditions for improving the effectiveness of precision teaching, and this article analyses them accordingly. Therefore, this paper uses big data and AI technology to better the classroom teaching of journalism and communication in colleges and universities, and uses questionnaires to discuss and analyse the effect of this method on the teaching methods of journalism and communication courses (Rakšnys et al., 2021; Roa-Perez and Ortiz-Ospino, 2021).

The journalism and communication course is a professional course closely related to the development of the times. The application of precise teaching methods in this course can improve the teaching effect. Lots of scholars have done various researches on this topic. Yu (2018) first analysed the advantages of the flipped classroom teaching method, and then discussed the positive significance of the flipped classroom teaching method to the precision teaching of journalism and communication courses in institutions of higher learning. Finally, he summarised the practice of flipped classroom teaching in the precise teaching of journalism and communication courses in institutions of higher learning (Yu, 2018). Zhong found that the current widespread application of information technology not only changed the learning mode of students, but also challenged the teaching ways of journalism and communication courses in institutions of higher learning. Starting from the changes brought by information technology to journalism and communication courses, he discussed how to use information technology to improve the innovative teaching methods and approaches of journalism and communication courses in institutions of higher learning (Zhong et al., 2018). The above scholars have studied the effectiveness of precision teaching of journalism and communication courses in institutions of higher learning, but they have not used actual data to show the effectiveness and lack credibility.

This study is based on big data and AI technology to construct a precise teaching model for news communication courses. By integrating students' psychological status, cognitive level, and industry demand data, personalised learning profiles are established, and dynamic adjustment algorithms are designed to optimise teaching content and

progress. The study selected four universities in Jiangxi Province for empirical analysis and used a combination of questionnaire surveys and classroom observations to construct an evaluation index system from four dimensions: teaching material environment, classroom interaction, curriculum design, and teaching practice. The effectiveness of the technology driven teaching model in cultivating core competencies of students majoring in journalism and communication was systematically verified. After various analysis articles, it is found that, on the whole, with the support of big data technology and AI technology, the material environment of classroom teaching of journalism and communication is relatively satisfactory, and the teaching environment has been significantly improved. The average score of the classroom teaching material environment of these four colleges and universities is 21.1 points, and the maximum score of Jingdezhen College is 29 points.

2 Related work

In the context of the rapid development of digitalisation and intelligence in education, the application of AI in teaching is attracting more and more attention from scholars, and its research continues to expand the boundaries of educational methods and teaching practices. Lan (2021) explored the different effects of big data and AI technology on teachers' teaching, educators' management, and students' learning by mining public data and personal data, paying equal attention to process and result, and combining task learning with autonomous learning. The deep integration of AI and big data in the field of education is reshaping the logical relationship and operating mechanism of teaching and learning, and making teaching activities more in line with individual differences and development needs (Li and Han, 2024; Silva et al., 2024). Vinay (2023) explored the various applications of AI in the process of teaching and learning in schools and its potential impact, pointing out that AI can provide students with personalised and efficient learning experiences, but also emphasised the need to pay attention to the balance of ethical responsibilities and teaching interactions during use. In this process, the paradigm shift in teaching caused by AI not only promotes the continuous evolution of educational practice, but also prompts researchers to examine its profound impact on the educational ecology from a system level (Azevedo et al., 2024; Katsamakas et al., 2024). Awasthi and Soni (2023) analysed how AI empowers the education system by exploring the application methods of AI in the education system, such as customised educational content, innovative teaching methods, and technology-enhanced evaluation, and pointed out the new opportunities and challenges it brings. With the continuous expansion of research perspectives, the academic community has formed a more systematic understanding of the mechanisms and paths of AI-enabled education, especially focusing on its practical role in the reconstruction of teaching models and the improvement of learning effects (Ali et al., 2024; Ogunleye et al., 2024). Tang (2024) deeply explored the application of AI in teaching and learning, the new opportunities it brings, and the challenges it faces, showing how AI promotes the transformation of education models, and pointed out that related problems need to be solved to optimise its educational application effects. Based on the rich perspectives of the above studies, the current research on AI teaching is still insufficient in the systematic discussion of differences in technology adaptability, teaching fairness, and the reconstruction of teachers' roles.

In recent years, a series of cross-national studies have been conducted in the field of journalism education around digital transformation and the integration of AI. These studies reveal the common challenges and development trends facing current journalism education. Hossain and Wenger (2024) explored how journalism education copes with digital transformation by conducting a questionnaire survey of accredited journalism education programs in the USA. They found that technologies such as AI are being incorporated into the curriculum, but face challenges such as funding, faculty, and predicting future needs (Hossain and Wenger, 2024). In the global context, the path of integrating AI into journalism education is diverse and contextualised, reflecting the differences in education policies and resource allocation among countries (Imran, 2025; Ncube et al., 2025). Babacan et al. (2025) used qualitative research methods, combined with literature analysis and thematic content analysis to study the course catalogues, syllabi and institutional reports of 72 universities in Turkey, explored the integration of AI in undergraduate and master's courses in journalism and new media in Turkey, analysed the course structure and content, and found that AI education in these projects is mainly theoretical, with few practical application courses, and there are significant differences in the setting of AI-related courses among different institutions. Finally, a systematic distribution map of AI courses in various institutions was drawn, providing empirical insights into the gaps and imbalances in AI education (Babacan et al., 2025). The above research focuses on changes in course content and structure, while the discussion of educators' own role cognition and career development paths further expands the research dimension of the adaptation mechanism of journalism education in the era of AI (Tan et al., 2024; Yadav, 2024). Hollings et al. (2024) analysed responses from Australia and New Zealand to the 2021 World Journalism Education Commission survey, exploring the impact of educational qualifications, age and other factors on the role perception of journalism educators. They found that doctoral degrees and age had specific effects on role support and that the two were independent of each other, pointing out the need to further study the role of continuing education on journalism teachers' professional concepts and teaching strategies (Hollings et al., 2024). Based on the focus on the impact of educators' characteristics on teaching concepts, related research has also begun to turn to examining the ability and limitations of the journalism education system in responding to structural industry crises. Finneman et al. (2024) conducted in-depth semi-structured interviews with 32 journalism educators in Europe, Australia, North America and the South Pacific, exploring the shortcomings of journalism education in solving the 'news desert' crisis, and found that although educators were aware of the importance of the problem, the lack of systematic solutions in the curriculum led to the failure of journalism education to effectively respond to the decline of local journalism (Finneman et al., 2024). The limitation of existing research is that most of the results focus on describing the current situation and identifying problems, and no feasible path has been proposed on how to achieve precision teaching through specific intervention measures such as cross-institutional collaboration, teacher retraining and dynamic curriculum development.

3 Big data, AI and precise teaching of journalism and communication courses in institutions of higher learning

3.1 Precision teaching of journalism and communication courses in institutions of higher learning

Precision teaching refers to a specific and targeted teaching activity, which mainly focuses on the students' professional ability and quality to carry out teaching. The main purpose of precision teaching is to improve the adaptability and effectiveness of teaching. The teaching objectives and content need to be targeted and specific. Teaching methods need to be inspiring, guiding and arousing, to better the effective development of students' practical ability. The essential characteristics of precision teaching are optimisation and selection. The former is a necessary means to improve the accuracy of teaching links, and the latter is the basic guarantee for improving the practicability of teaching content. Precision teaching further incorporates interdisciplinary pedagogical approaches to enhance the multidimensional competencies of journalism and communication students. By integrating domain knowledge from sociology, data science, and cognitive psychology, course design systematically bridges theoretical frameworks and practical applications. Big data analytics identify complementary skill sets across disciplines, while AI models map cross-domain knowledge nodes to journalism workflows (Li et al., 2020; Luechtefeld et al., 2019). This integration cultivates students' ability to synthesise heterogeneous information, address complex communication challenges through interdisciplinary lenses, and adapt to emerging hybrid roles in media industries. The methodology emphasises collaborative learning modules that embed technical skills from computer science, ethical reasoning from philosophy, and narrative techniques from literary studies, fostering a holistic educational paradigm aligned with the evolving demands of globalised communication ecosystems. The guiding foundation of precision teaching is the concept of quality education, the concept of educating people is people-oriented, and the teaching form is practical and effective. Therefore, its application value and popularisation significance are extremely important in the current environment. Precision teaching can improve the teaching efficiency of journalism and communication courses to a certain extent, and can also improve students' enthusiasm for journalism and communication courses. The use of big data and AI technology to better precision teaching is mainly reflected in the following two dimensions, namely real and comprehensive data information collection and scientific data analysis (Chen et al., 2021; Qiao and Zhang, 2021). The precise teaching model based on big data technology and AI technology is shown in Figure 1.

Figure 1 Precision teaching model based on big data and AI

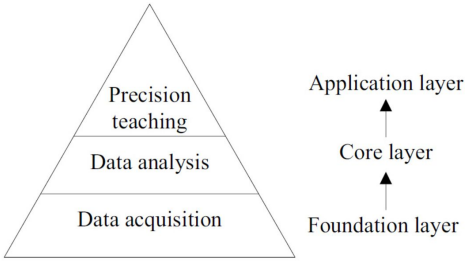


Table 1 The relationship between journalism and communication and big data technology and AI technology

Major name	*Main representative experimental courses*	*Basic training*
Journalism	Electronic editing	Production of electronic publications
	Planning and editing of network media	Fundamentals of graphic design
Radio and television journalism	Fundamentals of television photography and production	Acquisition and processing of digital audio
	Film and television post-production	Digital video acquisition and nonlinear editing
Advertising	Computer-aided advertising design	Fundamentals of graphic design
	Film and television advertising production	Acquisition and nonlinear editing of digital audio and video
Editing and publishing	Electronic editing publishing	Production of electronic publications
		Fundamentals of graphic design

As far as the reality is concerned, the precision teaching of journalism and communication courses in institutions of higher learning mainly consists of four aspects. First, the design of lesson preparation is precise. In the process of preparing lessons, teachers should take into account the actual situation of students in journalism and communication courses, pay attention to individual differences and the characteristics of journalism and communication courses, to formulate the objectives of the course. To improve the practicality and pertinence of teaching, course objectives need to be closely aligned with students' career plans and future industry needs. Through big data analysis technology, emerging trends in the field of journalism communication, such as digital media, AI-driven content creation and cross-platform communication can be accurately identified, so that course content can be updated synchronously with industry dynamics (Xl et al. 2021). AI tools can deeply explore graduate employment data, current job market demand and industry feedback to provide a basis for dynamic adjustment of course content. When the demand for multimedia news skills increases, video editing, social media operations and data visualisation training will be strengthened accordingly to ensure that course design is consistent with actual market needs. Personalised career development modules are integrated simultaneously to match students' learning trajectories with potential career paths, so that students can master core capabilities that are highly consistent with future job requirements while completing their studies, truly achieving seamless integration between classroom teaching and industry standards. Second, the precision of classroom teaching. Journalism and communication courses are boring for some students, so they are more difficult to learn. This requires teachers to teach students according to their aptitude, to stimulate students' enthusiasm and initiative in learning, to implement teaching accurately, and to promote the precision of classroom teaching effects of journalism communication. Third, extracurricular Kung Fu precision. First of all, teachers need to strengthen their own journalism communication literacy, make precise efforts, and strive to achieve the basic goal of effective teaching and even efficient teaching. Secondly, it is essential to use advanced technology to upgrade teaching concepts and precise teaching methods, to better students' professional quality of journalism and communication, as shown in Table 1.

3.2 Implementation process of precision teaching based on big data and AI

Firstly, teachers must first understand the students' psychological state, pre-cognitive level of journalism communication courses, news common sense, etc. and input these into their files, which can be expressed as:

$$A = func(W, D, R) \tag{1}$$

$$R_y = \sqrt{\sum \frac{\left(y_j - \hat{y}_j\right)^2}{K - J}} \tag{2}$$

Among them, W refers to the psychological state of the students, D refers to the students' pre-cognitive level of journalism and communication courses, R refers to the students' understanding of news common sense, and R_y refers to the changes in the students' files. After collecting this data, their personality data is formed, which can help them customise appropriate learning plans and help teachers form accurate teaching plans, which can be expressed as:

$$X = Y \hat{} t_2 u \tag{3}$$

$$w_h^{j+1} = w_h^j + u_h^{j+1} \tag{4}$$

Among them, X refers to each student's personality database, Y refers to the learning plan, t_2u refers to the teacher's preliminary precise teaching plan, and w_h^{j+1} refers to the effect of implementing the formulated teaching plan and learning plan. Next, use AI technology to generate an intelligent platform, which can scan students' homework and automatically collect and analyse data, so that teachers can understand the situation of students. This makes teaching activities more precise and effective, which can be expressed as:

$$\mathcal{E}(B, Y) = \sqrt{\sum\nolimits_{j=1}^{m} \left(b_j - y_j\right)^2} \tag{5}$$

$$e(w) = \sum\nolimits_{h=1}^{h} z_h j\left(w_h, w_i\right) + a \tag{6}$$

Among them, $\mathcal{E}(B, Y)$ refers to the data information of the intelligent platform, $(b_j - y_j)$ refers to the progress of students and the mastery of news communication knowledge, a refers to the weight coefficient, and $e(w)$ refers to the plan of teaching activities. Moreover, the focus of data analysis lies in the analysis of differences in the teaching of journalism and communication courses in different universities, which can be expressed as:

$$H(b, \lambda) = \neq \sum\nolimits_{h=1}^{l} \left\| l^{(h)} - h_{l^{(h)}} \right\|^2 \tag{7}$$

$$\phi_{u,v}(p) = \frac{1}{\sqrt{u}} \phi\left(\frac{p - v}{u}\right) \tag{8}$$

Among them, b refers to the effect of listening to the previous class, h refers to the pre-class preview and basic test, $H(b, h)$ refers to the precise selection of teaching starting

points, and $\phi_{u,v}(p)$ refers to the differences in teaching methods in different universities. In addition, an internship is added, and AI technology is used to identify the individual differences of each student and match them with positions of different natures, thereby increasing the practical knowledge and skills of students, which can be expressed as:

$$o_{e-1,i} = \sum\nolimits_i o_{e-1} g(z-2u) + \sum\nolimits_i r_{e,i} h(z-2u) \tag{9}$$

$$\alpha = G^S \left(\frac{1}{C} + GG^S \right)^{-1} S \tag{10}$$

Among them, $o_{e-1,i}$ refers to the practice link, $z - 2u$ refers to the identification of individual differences of students, and G^S refers to the matching process of news communication positions.

Teachers implementing precise teaching in classroom practice need to rely on big data platforms to regularly collect students' learning data, analyse and generate personalised learning reports through AI systems, adjust teaching progress and content depth based on the reports, and use intelligent simulation tools to design news gathering and editing tasks that match students' ability levels, supplemented by real-time feedback mechanisms, to ensure the pertinence and effectiveness of practical training. To address the dynamic evolution of journalism and communication practices, a rapid response mechanism is integrated into the precision teaching framework. This mechanism employs real-time big data analytics to monitor industry trends, emerging skill demands, and technological advancements. AI algorithms process these inputs to generate actionable insights, triggering periodic updates in course content and pedagogical strategies. The system synchronises curriculum adjustments with validated industry benchmarks, ensuring alignment between academic training and professional requirements. Continuous data streams from media platforms, employer feedback, and graduate performance metrics are systematically analysed to refine learning objectives and competency frameworks. The closed-loop design of this mechanism guarantees that teaching materials and methods remain adaptive to the fluid landscape of journalism and communication.

The application of big data technology provides a rich source of data and accurate data analysis support for journalism and communication courses (Antonio, 2020). After collecting students' learning behaviour data, big data technology is used to deeply explore students' learning habits and interests. These analysis results help teachers understand students' learning status and needs more comprehensively, to develop more targeted teaching plans and strategies. AI technology further enhances the personalisation and interactivity of teaching. The intelligent teaching system can adjust the teaching difficulty and rhythm in real-time according to students' learning progress and feedback, ensuring that each student can learn at a level suitable for them. AI technology also simulates real news interviews and editing scenes to provide students with an immersive, practical experience. The combination of big data and AI technology also provides intelligent evaluation methods for journalism and communication courses. Through intelligent analysis of students' homework and tests, teachers can quickly and accurately understand students' learning outcomes and existing problems, to provide timely guidance and help. This intelligent evaluation method improves the efficiency and accuracy of evaluation and promotes students' learning reflection and self-improvement.

4 Effective deconstruction of the precision teaching methods of journalism and communication courses in four universities

This paper selects four indicators as the basis for the effectiveness evaluation of the precision teaching method of college journalism and communication courses based on big data and AI, including the teaching material environment, classroom interaction, curriculum setting and teaching, and teaching practice. At the same time, to make the experimental data more authentic and reliable, we screened four universities in Jiangxi Province with journalism and communication courses to conduct a questionnaire survey. Let them make full use of the advantages of big data technology and AI technology in the process of classroom teaching of journalism and communication. These four universities include Jiangxi Normal University, Jingdezhen University, Jiangxi Agricultural University, and Jinggangshan University. These schools are all undergraduate colleges with certain influence in Jiangxi Province, each with its own background and educational characteristics, and the curriculum settings of journalism and communication are also different. Jiangxi Normal University, as a provincial key normal university, has a long history and emphasises the integration of teacher education and disciplines. Its journalism and communication courses focus on theoretical depth and teacher training. Jingdezhen University relies on local cultural resources, integrates ceramic art and modern communication practice, and its course design tends to be cultural creativity and media application. Jiangxi Agricultural University is based on agricultural disciplines. The journalism and communication courses combine rural communication and technology promotion, highlighting the practicality of serving the local area. Jinggangshan University is located in the old revolutionary base area. The courses integrate red cultural communication and regional characteristics, focusing on ideological education and practical training. The diversity of these four universities in terms of geographical distribution, disciplinary foundation, and teaching direction ensures that the research objects cover different aspects of journalism and communication education in Jiangxi Province, enhancing the representativeness and persuasiveness of the research. For the convenience of expression, we replace them with the abbreviations of their school names, namely JXNU, JDZU, JXAU, and JGSU. A total of 50 questionnaires were distributed by the four universities. The details of the recovery are shown in Table 2. In addition, students who participated in the experiment were asked to rate specific factors in these indicators, with a full score of 30 points, to obtain the highest value, lowest value, and average value, which was the reference data for the experiment.

Table 2 Recovery of 50 questionnaires

Name of university	*Number of valid questionnaires withdrawn*
Jiangxi Normal University	16
Jingdezhen University	13
Jiangxi Agricultural University	10
Jinggangshan University	11

The questionnaire design follows the structured principle. Based on the four evaluation indicators of teaching material environment, classroom interaction, curriculum setting and teaching, and teaching practice, the questionnaire contains quantitative scoring and open feedback. The number of items for each indicator is balanced. The five-level Likert

scale is used to quantify students' perceptions, and open questions are used to collect subjective opinions to fully capture the multi-dimensional characteristics of teaching effectiveness. The content of the items is optimised through pre-survey and expert review to ensure clear language, clear measurement objectives, and consistency with the research hypothesis. The sampling method adopts stratified random sampling to extract samples from students majoring in journalism and communication at four universities. The sampling ratio is determined according to the scale of each university's major. The total sample size is set at 200 people, and 50 copies are finally effectively recovered, with a recovery rate of 25%, which meets the statistical requirements of small-scale samples in educational research. The sampling process takes into account the grade distribution and course participation of students, reduces selection bias, and ensures the balance of samples in terms of gender, grade, and regional background, thereby enhancing the data's ability to reflect the actual situation of university journalism and communication course teaching.

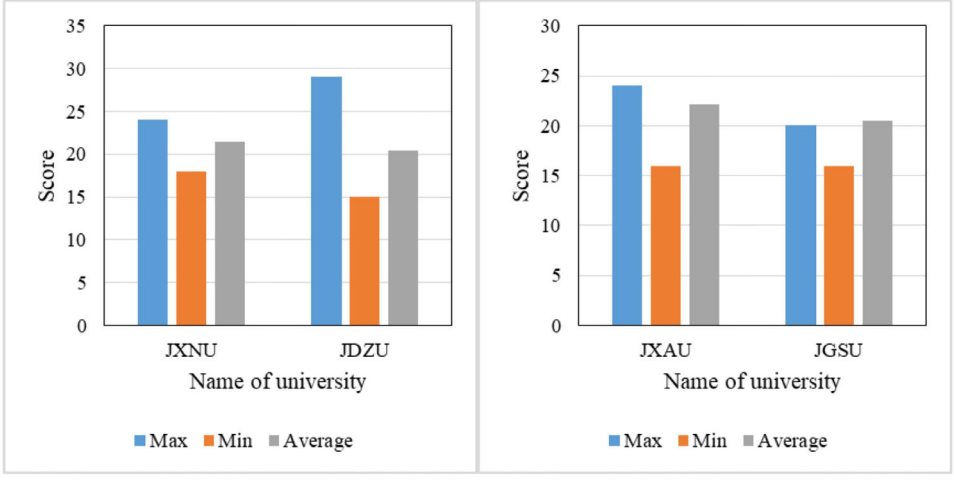
This paper obtains data through questionnaire surveys to evaluate the effectiveness of precision teaching methods for journalism and communication courses. To ensure that the sample data fully represents the classroom situation of journalism and communication majors in four universities, interviews and classroom observation methods are integrated simultaneously in addition to the questionnaire design. The study incorporates a structured student feedback mechanism to evaluate the application of big data and AI in teaching (Peña et al., 2019; Trujillo et al., 2021). Quantitative feedback is collected through Likert-scale items in the questionnaire, focusing on students' perceived usability of AI tools, satisfaction with data-driven personalised learning plans, and perceived alignment between technological interventions and career readiness. Qualitative feedback is extracted from open-ended responses in the survey and semi-structured interviews, capturing students' subjective experiences regarding the adaptability of AI-generated teaching materials, the impact of real-time analytics on engagement, and challenges encountered in technology-integrated learning. The integration of quantitative and qualitative feedback provides a dual-layered analysis of student perspectives, enabling a nuanced understanding of how technological applications influence learning outcomes and pedagogical effectiveness. This feedback mechanism serves as a critical component for the iterative improvement of teaching methods, ensuring that technological implementations remain responsive to learner needs. The interviews were conducted with 50 students and ten teachers to deeply explore their perception and feedback on the teaching environment to supplement the limitations of the questionnaire in subjective experience. Classroom observations were conducted by sampling three courses in each university, systematically recording teaching interactions, student participation, and technology applications, and obtaining dynamic data to verify the comprehensiveness of the questionnaire results. The combination of these methods enhances the sample's ability to reflect the actual classroom situation and ensures the scientificity and reliability of the research conclusions.

4.1 Physical environment

As people all know, a good classroom teaching environment allows teachers and students to learn with peace of mind. In addition, it is necessary for students majoring in journalism to understand some current affairs by reading newspapers, browsing online information, etc. to better write and edit news. Therefore, according to the AI technology,

it can judge the adaptability of students' body temperature and adjust the temperature of teachers to the most comfortable state. At the same time, people use big data technology and the internet to collect books, newspapers, publications, etc. about journalism and communication, to form a material environment for journalism and communication classroom teaching. Figure 2 shows the scoring results of the material environment of the journalism and communication classroom teaching.

Figure 2 Analysis of the material environment of journalism and communication classroom teaching in four universities (see online version for colours)



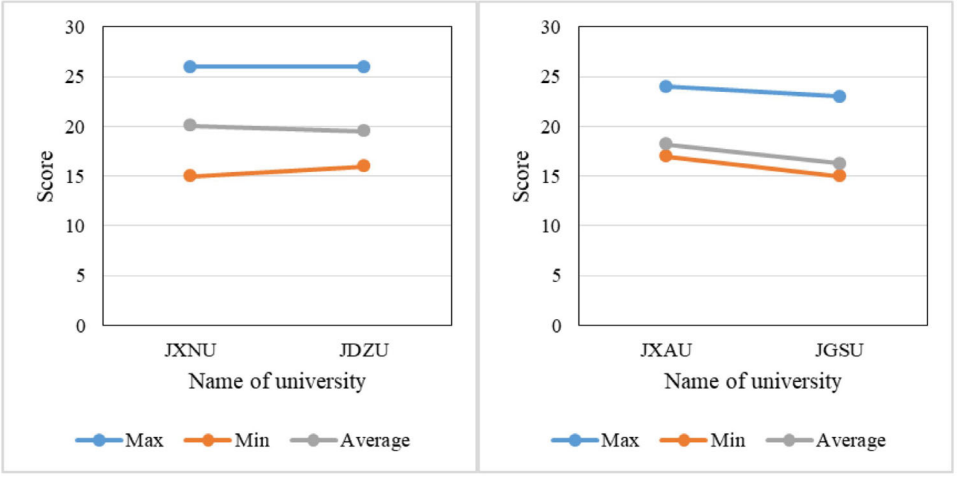
According to the experimental data in Figure 2, it can be concluded that, on the whole, with the support of big data technology and AI technology, the material environment of classroom teaching in journalism and communication is relatively satisfactory, and the teaching environment has been significantly improved. The average score of the classroom teaching material environment of these four colleges and universities is 21.1 points, and the maximum score of Jingdezhen College is 29 points.

4.2 Classroom interaction

The lively and novel teaching methods can attract students' attention and interest, thereby improving the teaching efficiency of teachers and the learning effect of students. Therefore, let the teachers of journalism and communication makes full use of the advantages of big data and AI to improve the form of teaching, such as multimedia equipment, slideshow teaching, and so on. Figure 3 shows the scoring results on the interaction of classroom teaching in journalism and communication.

Based on the experimental data in Figure 3, people can conclude that the average score of teaching interaction in these four universities is 20.52 points, and the maximum score of Jiangxi Normal University and Jingdezhen University is 26 points. It can be seen that the students' satisfaction with the classroom teaching interaction of journalism communication improved by big data and AI technology is relatively high, which proves the reliability of the method in this paper.

Figure 3 Analysis of the interaction of journalism and communication classroom teaching in four universities (see online version for colours)



4.3 Course setting and teaching situation

As people all know, the content of the courses set by journalism and communication will have a significant impact on the acceptance of students' knowledge, and some theoretical things are relatively boring. Therefore, whether the teaching is vivid and specific, and whether the learning effect is good or bad, will have a decisive effect on the solidity of the basic skills of the journalism and communication major. Therefore, according to the students' knowledge, acceptance ability, and characteristics, the AI algorithm is used to optimise the course settings and some excellent journalism and communication classroom teaching videos are also combined. The optimisation of course settings for journalism and communication courses using big data and AI involves leveraging data-driven insights and automated systems to align curriculum design with student needs and industry demands (Li et al., 2021a, 2021b; Trujillo et al., 2021). Data collected from student performance metrics, learning behaviour patterns, and professional skill requirements is analysed through big data technologies to identify gaps between current course offerings and desired outcomes. AI processes this data to generate tailored curriculum adjustments, ensuring content relevance and skill applicability. Historical academic records, real-time feedback from students, and trends in media industry practices are integrated into a dynamic model that refines course topics, teaching materials, and assessment methods. Machine learning algorithms predict student learning trajectories, adjusting the depth and pace of course modules to match individual and cohort proficiency levels. Natural language processing tools evaluate textual data from journalism practices, updating course content with contemporary vocabulary, ethical considerations, and technological advancements. Predictive analytics forecasts emerging communication trends, embedding forward-looking competencies into the syllabus. Automated systems monitor student engagement and comprehension through digital platforms, feeding results back into the curriculum design loop to maintain alignment with educational goals. This continuous, iterative process ensures the course settings remain responsive to both learner profiles

and the evolving landscape of journalism and communication. Figure 4 shows the scoring results on the setting and teaching of journalism communication courses.

Figure 4 Analysis of the setting and teaching of journalism and communication courses in four universities (see online version for colours)

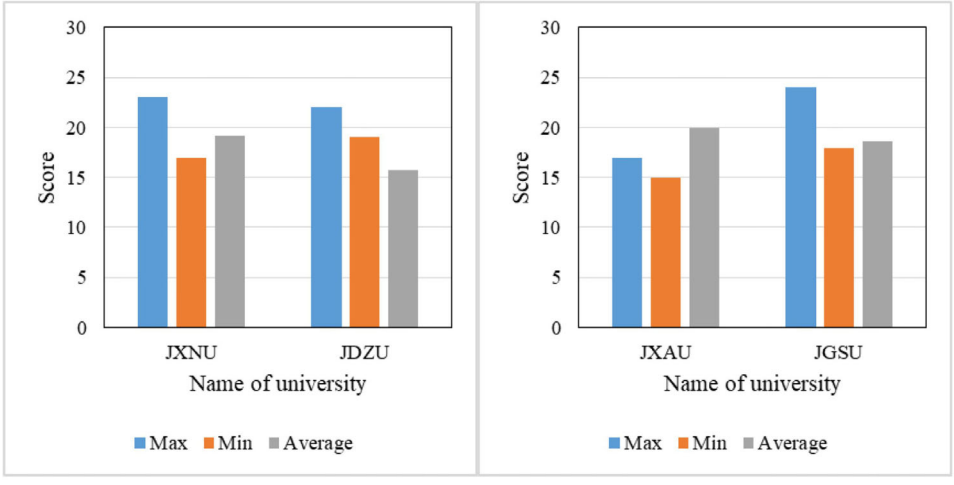
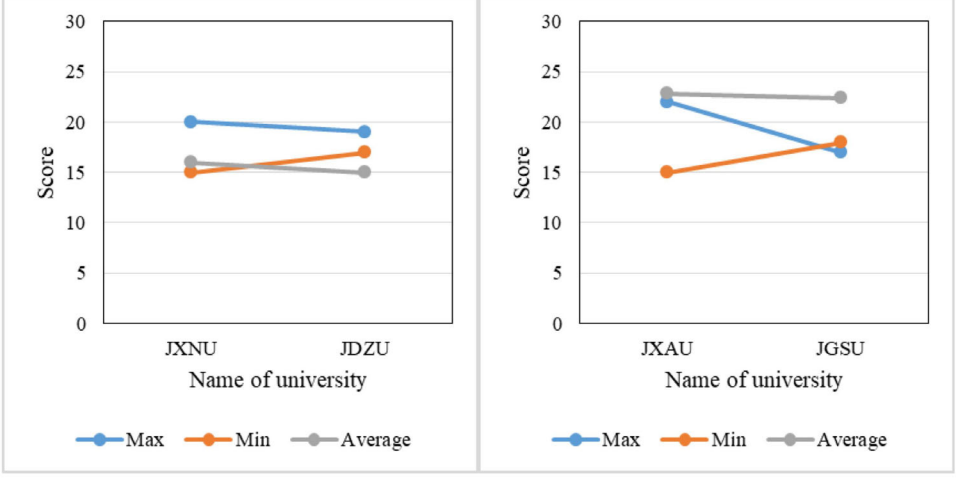
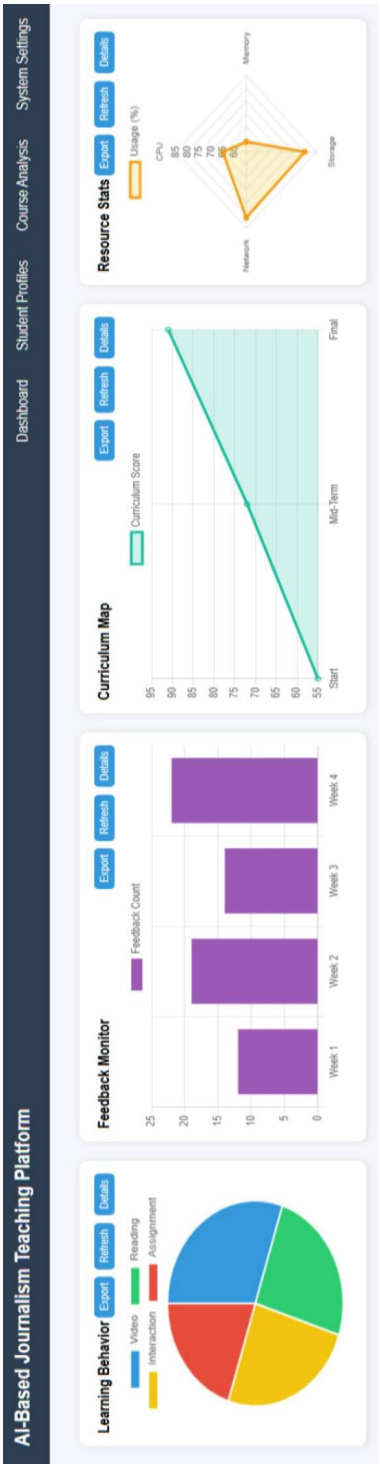


Figure 5 Analysis of the teaching practice of journalism and communication courses in four universities (see online version for colours)



Based on the experimental data in Figure 4, it can be concluded that Jiangxi Agricultural University has reached the highest value of 19.92 in terms of satisfaction with the curriculum. In general, after the optimisation of the curriculum, the effectiveness of the curriculum and teaching of journalism and communication in these four institutions of higher learning is relatively good, and the students' satisfaction is relatively high.

Figure 6 System interface diagram (see online version for colours)



4.4 Teaching practice

Journalism and communication courses are more practical, which is mainly reflected in news interviews and writing, newspaper editing, and so on. Before entering society, students of this major often need to go to newspapers and TV stations for internships. Therefore, the characteristics of students majoring in journalism and communication were analysed by using big data technology, and they were placed in different journalism units for internships. Then, the basic situation of journalism and communication teaching practice in these four institutions of higher learning is investigated and analysed, and the results are shown in Figure 5.

Based on the data in Figure 5, people can conclude that after optimising the teaching practice of journalism and communication by the method in this paper, students are generally satisfied with their practice situation, with a maximum of 22. This shows that they have received all-round learning and practice during the internship, and there are more opportunities for internships.

4.5 System interface display

In order to more intuitively present the architecture of the precision teaching system based on big data and AI technology and its key module functions, this study constructed a schematic diagram of the main interface of the teaching platform shown in Figure 6.

This interface focuses on the common teaching data dimensions and operation logic in journalism and communication courses, and integrates functional modules such as learning behaviours analysis, real-time feedback monitoring, course structure adaptation, and system resource statistics, reflecting the structured and interactive design logic of information processing and the visual expression of results. The interface design fits the data characteristics and task requirements of the university classroom teaching environment, and shows the overall framework of AI technology intervention in teaching decision-making and management processes, laying an operational system foundation for subsequent method verification and teaching effect analysis.

4.6 Discussion

This study verified the improvement effect of precision teaching in the teaching environment, interactivity, curriculum setting, and practice of the journalism and communication course through experimental data. To further confirm the effectiveness of the method, it is necessary to compare it with related studies. Yu (2018) emphasised that the flipped classroom method enhances the precision of teaching, pays attention to student participation and practice orientation; Zhong et al. (2018) pointed out that information technology optimises teaching methods, improves student satisfaction, and course adaptability. This paper integrates big data and AI technology to achieve comprehensive optimisation of the teaching process, especially in the pertinence of the practice link and the real-time nature of student feedback. Compared with the above studies, this method is more systematic and dynamic under the support of technology. In the future, it is necessary to verify its universality in different educational environments through a larger range of comparative analysis.

5 Conclusions

Nowadays, the teaching methods of journalism and communication courses in colleges and universities have been vigorously developed, but there are also a series of problems, which have adversely affected the accuracy and effectiveness of teaching to a certain extent. Precision teaching can help students form correct concepts of journalism communication, acquire relevant knowledge of journalism communication, improve their professional skills in journalism communication, and cultivate their professional quality in journalism communication. This paper uses big data technology and AI technology to better the precise teaching of journalism and communication courses in institutions of higher learning, which greatly improves the teaching effect of journalism and communication courses. In actual teaching, overcoming the technical and financial barriers to the implementation of big data and AI requires integrating existing resources and optimising their use efficiency, obtaining technical support and funding through school-enterprise cooperation, using open source platforms to reduce software development costs, relying on cloud computing services to reduce hardware investment, and training teachers to master the necessary skills to adapt to technical needs. The difficulty of implementation is reflected in the heavy initial investment in infrastructure construction, the complexity of data integration, the rapid iteration of technology updates, and the need to improve the technical literacy of personnel. It is recommended to balance costs and benefits by deploying technical solutions in stages, giving priority to the use of mature tools, establishing a cross-departmental collaboration mechanism, and continuously evaluating the implementation effect to ensure a steady improvement in teaching quality. Although big data and AI technologies have significantly improved teaching effectiveness, their application is still limited by problems such as high infrastructure investment, complex data integration, rapid technological updates and iterations, and insufficient technical literacy of teachers. These problems need to be gradually resolved through phased deployment and school-enterprise cooperation. There are some other shortcomings in this paper. For example, the number of questionnaires is not large enough and is limited to colleges and universities in Jiangxi Province, and the scientific nature of evaluation indicators needs to be discussed. In the future, the effectiveness of this method will be analysed from the perspective of teachers of journalism and communication courses, and the evaluation indicators will be refined to improve its reliability. In addition, if conditions permit, the scope of the questionnaire will be expanded to other provinces.

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Declarations

All authors declare that they have no conflicts of interest.

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