

The Construction of a Virtual Teaching and Research Department Platform for University Advertising under the Artificial Intelligence Model

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ABSTRACT

In the era of artificial intelligence (AI) and digital transformation, universities are actively seeking innovative educational models to meet the evolving demands of advertising education. The construction of a virtual teaching and research department platform for university advertising education emerges as a pivotal approach to address the challenges faced by traditional educational paradigms. This platform leverages AI technologies to integrate online teaching, resource sharing, project collaboration, and academic exchanges, thereby breaking the spatial and temporal constraints of traditional classrooms. By doing so, it significantly optimizes the allocation of teaching resources, enhances teaching quality, and fosters students' autonomous learning and practical abilities..

KEYWORDS

Artificial Intelligence (AI); Advertising education; Virtual teaching and research department platform; Teaching resource allocation; Teaching quality; Autonomous learning

1 Introduction

At present, artificial intelligence (AI) has become an important embodiment of a technological power and industrial competitiveness, and has become one of the important criteria for measuring a country or region's technological and industrial competitiveness. In particular, the emergence and change of artificial intelligence language models represented by ChatGPT has aroused great excitement and attention. AI technology is showing an accelerated penetration trend in manufacturing, finance, medical care, education, scientific research and other major fields, which in turn has huge and far-reaching social, economic and ethical impacts. Since the concept of AI was proposed, the shortage of AI talents has become increasingly serious worldwide, especially the demand gap for high-end applied AI talents in related vertical fields. With the penetration of AI in various vertical fields, the teaching concept of "AI +" has begun to spread widely in various universities. AI itself, as an interdisciplinary subject integrating psychology, mathematics, statistics, computer science and other disciplines, requires professionals from multiple disciplines, and urgently needs a platform for interdisciplinary communication as a carrier to improve the quality of talent training in specific vertical fields. Therefore, in order to promote the cross-integration of multi-disciplinary personnel and the seamless connection between domains, schools and disciplines, the construction of "AI +" virtual teaching and research section came into being. As an important form of teaching grass-roots organization in colleges and universities in China, teaching and research section is the cornerstone of promoting the connotative development of college education. In today's "smart +" digital era, the digital economy is rapidly changing the way of global production, life and governance. It not only plays a key role in reshaping the global economic structure and reallocating global resources, but also is changing the global competitive landscape. Under this background, education and teaching must keep up with the pace of the times and adapt to this profound change trend. Traditional teaching research often requires teachers to concentrate on specific time and place for communication and cooperation, which is limited by space and time. The emergence of virtual teaching and research sections can break through the limitation of time and space, enable educational practitioners to communicate and cooperate at any time and anywhere, and meet the needs of flexibility and convenience in the field of education. In addition, the sharing and integration of educational and teaching resources is very important to improve teaching quality and efficiency. The virtual teaching and research section provides a platform for educational practitioners to share teaching resources, so that teaching resources can be more widely used and shared. "Key Points of the Work of the Department of Higher Education of the Ministry of Education in 2020" proposes to "explore and promote the 'Virtual Teaching and Research Section' project and promote the construction of teaching organizations with modern information technology". In 2021, the Department of Higher Education of the Ministry of Education issued the "Notice on Carrying out the Pilot Construction of Virtual Teaching and Research Sections", and the first batch of about 400 virtual teaching and research sections is planned to be recommended for pilot construction. Subsequently, "Promoting the Pilot Construction of Virtual Teaching and Research Sections" was included in the "Work Points of the Ministry of Education in 2022". It can be seen that with the increasing attention of the national education department, the construction of virtual teaching and research sections will penetrate into all colleges and universities day by day, and the construction will be carried out with the granularity of grass-roots teaching organizations.

2 Research status

The concept of virtual teaching and research section comes from foreign virtual communities. In 1990s, the United States, Canada and other countries began to integrate resources through information technology. It started late in China, but it has been favored by more and more universities. For example, Zhang Suofei and others of the Army Military Medical University constructed cross-school courses for nursing postgraduates based on virtual teaching and research sections. SWOT analysis can provide reference for the construction of cross-school curriculum for nursing postgraduates. Xie Jin of Tsinghua University and others took the virtual teaching and research section of "Circuit Principles" course in Tsinghua University as an example to discuss the construction process of teaching and research section in the era of "intelligence + ". Wang Xuefei and others of Dalian University of Technology built a virtual teaching and research section of engineering graphics course based on the national first-class undergraduate course platform of "Modern Engineering Drawing", and realized cross-school cooperation to build a national excellent teaching resource library through "weekly drawing", "discussion area" discussion and "knowledge map" construction of the course. Du Yiming and others of Shenyang University of Aeronautics and Astronautics, guided by the construction of the "Virtual Teaching and Research Section" of the Ministry of Education, explored the operation mechanism of the virtual teaching and research section of aircraft design and engineering specialty suitable for our school. Wang Yuzhi and others of Hunan University put forward the general idea of building a virtual teaching and research section of analytical chemistry course, established a course sharing platform for universities in the central, eastern and western regions, and built an academic community of "analytical chemistry course". In addition to the above research, the construction of virtual teaching and research section also covers many aspects, such as construction and implementation, teaching reform, technical support and innovation, effect evaluation and practical exploration, teaching management and development trend, etc., which provides theoretical support and practical guidance for the development of virtual teaching and research section.

3 Content construction

Building an "AI +" virtual teaching and research section needs to cover the teaching of artificial intelligence in multiple vertical fields. As a curriculum virtual teaching and research section that meets the teaching needs of specific vertical fields, it should at least include the construction of high-quality teaching staff, interdisciplinary teaching resources, all-round and multi-angle teaching evaluation and management mechanism, and online interactive communication platform.

3.1 Teaching staff construction

The virtual teaching and research section is constructed on the basis of the original physical teaching and research section, which does not subvert the mode of the traditional physical teaching and research section, nor will it affect the original teaching team and members. It is composed of a group of cross-regional and interdisciplinary teachers, forming an unofficial "cloud teaching and research section" or "cloud teaching and academic community". This virtual teaching and research section can undertake teaching tasks and provide services for teaching practice, which is essentially a connotative expansion of the traditional entity teaching and research section. Therefore, the basic principle of "teacher" construction is to dynamically construct it according to personal interests, discipline frontiers and the needs of the times, without being influenced by real personnel arrangements. The "individual" in the above refers to an individual who has a strong interest in the field of artificial intelligence, has certain academic accumulation and professional skills, and is willing to contribute to the teaching of artificial intelligence. These individuals are not limited to the teaching profession, but also include individuals in other professional fields. They may even be enterprises or organizations with certain influence in the field of artificial intelligence, or "virtual digital teachers" focusing on the field of artificial intelligence. Among them, "digital virtual teacher", as an innovative teaching mode, has more and more potential. Through literature investigation, this paper summarizes the construction ways of "digital virtual teachers".

(1) Data-driven instructional design: Use big data and machine learning technology to analyze students' learning data and behavior patterns, and provide personalized instructional design and guidance for "digital virtual teachers", thereby improving the teaching effect.

(2) Natural language processing and intelligent dialogue system: Through natural language processing technology and intelligent dialogue system, intelligent interaction with students is realized, students' problems and needs can be understood, timely answers and feedback can be provided, and the efficiency and quality of learning can be improved.

(3) Virtual reality and augmented reality technology: Use virtual reality and augmented reality technology to create an immersive learning environment, provide students with a more intuitive and vivid learning experience, and enhance their learning interest and participation.

(4) Multi-modal perception and emotional computing: Combining multi-modal perception technology and emotional

computing methods, the recognition and understanding of students' emotional states are realized, and more intelligent emotional communication and teaching services are provided for "digital virtual teachers".

(5) Deep learning and knowledge representation: Using deep learning technology and knowledge representation method, the knowledge map and reasoning engine of "digital virtual teacher" are constructed to realize in-depth understanding and processing of complex knowledge and problems.

In addition to the one-way implementation of the above methods, the above methods can also be effectively integrated to implement comprehensive applications, so as to effectively build a "digital virtual teacher" with intelligent, personalized and interactive characteristics, and provide important support and guarantee for the teaching reform of virtual teaching and research sections.

3.2 Construction of interdisciplinary teaching resources

Supported by the knowledge system of "AI +", interdisciplinary attributes are highlighted. As an information storage and query tool, knowledge graph can not only store a large amount of knowledge point information, but also quickly retrieve nodes and show complex connections between entities. It can be used as a carrier for the construction of interdisciplinary knowledge systems. During the construction process of "AI +" virtual teaching and research section, aiming at the goal of cultivating students' understanding ability, analysis ability and creativity ability, the corresponding curriculum knowledge map is constructed for the core courses of artificial intelligence. We store the information of disciplines, courses and knowledge points in a structured database. Use the top-level logic of knowledge graph to provide a unified knowledge system construction standard for interdisciplinary fields. At the same time, we can realize the real-time dynamic update of knowledge points, and flexibly carry out knowledge fusion and processing. This process is not only to simply store knowledge, but more importantly, to forge students' abilities through the construction of knowledge system, logic system and ability system. This method aims to cultivate students' interdisciplinary comprehensive ability, so that they can have stronger application ability and innovation ability.

3.3 Teaching evaluation and management mechanism

The virtual teaching and research section platform needs innovative teaching evaluation and management mechanism. Specifically, a data-driven evaluation system can be adopted, and big data technology and machine learning algorithms can be used to objectively evaluate the teaching effect and provide teachers with personalized improvement suggestions by analyzing students' learning behavior, performance and utilization of teaching resources. In addition, it is not only limited to the traditional test results, but also combined with the evaluation indicators of students' participation, thinking ability, innovation ability and other dimensions to build a more comprehensive and objective multi-dimensional evaluation system to better reflect students' learning situation and ability level. Establish a participatory evaluation mechanism for students, so that students can participate in the process of teaching evaluation. Through students' self-evaluation, mutual evaluation and feedback on teaching, we can better understand students' learning needs and opinions, and provide useful reference for teaching improvement. Using interdisciplinary knowledge map, the knowledge points and teaching resources of different disciplines are integrated and related, which provides a more comprehensive and in-depth analysis basis for teaching evaluation and management, and promotes the development and innovation of interdisciplinary teaching.

4 Ideas for the construction of a virtual teaching and research section of advertising under the artificial intelligence platform

4.1 Clarify the construction objectives and positioning

With the help of artificial intelligence technology, we can realize the co-construction and sharing of high-quality advertising courses, teaching cases, data sets and other resources, and improve the teaching quality. Use the artificial intelligence platform to explore new teaching modes and methods, such as intelligent lesson preparation and personalized tutoring, to meet the diversified needs of advertising education. Build a cross-school and cross-regional advertising academic exchange platform, promote the cooperation and interaction among teachers, and jointly promote the development of advertising education.

4.2 Building an intelligent information platform

According to the actual needs of advertising teachers, integrate and optimize the functions of information platform to improve user experience. Develop integrated intelligent teaching and research tools, such as intelligent lesson preparation system, teaching case library, online collaboration platform, etc., to assist teachers in completing daily teaching and research activities efficiently and with high quality. Using artificial intelligence technology, the teaching research situation of members of the teaching and research section is tracked and analyzed in real time, forming a portrait

of teachers' teaching development and teaching and research potential, and providing teachers with personalized teaching improvement suggestions.

4.3 Optimize the organizational structure of virtual teaching and research section

Based on the discipline of advertising, set up a discipline cooperation group, strengthen the communication and cooperation among virtual teaching and research sections within the discipline, and promote the co-construction and sharing of discipline resources. Establish a clear management mechanism of the teaching and research section, including the selection of the person in charge of the teaching and research section, the division of responsibilities of members, the organization process of activities, etc., to ensure the orderly development of the work of the teaching and research section. Break down school barriers, encourage advertising teaching and research sections among different universities to carry out cross-school cooperation, jointly apply for the construction project of virtual teaching and research sections, and jointly promote the innovation and development of advertising education.

4.4 Carry out diversified teaching and research activities

Use artificial intelligence technology to carry out online teaching seminars, trial lectures of new courses, supervised lectures and other activities to improve teachers' teaching ability and level. Establish an intelligent counseling and Q&A system to provide students with personalized learning support and counseling, and improve students' learning effect. Combined with the characteristics of advertising major, build a virtual laboratory to provide students with virtual advertising creation, market research and other practical opportunities, and enhance students' practical ability and innovative spirit.

4.5 Strengthen publicity and promotion

Relying on information platform, internal magazine, WeChat official account and other channels, formulate a clear publicity plan and strengthen the publicity and promotion of virtual teaching and research sections. Regularly hold exchange activities of virtual teaching and research sections, such as teaching seminars and academic lectures, to attract more teachers to pay attention to and participate in the construction and development of virtual teaching and research sections. Summarize the construction experience and achievements of virtual teaching and research sections in time, select a number of virtual teaching and research sections with exemplary functions, and provide reference experiences and models for other teaching and research sections.

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References

- [1] Peng Ling. Ideological and political construction of innovation and entrepreneurship practice courses based on virtual teaching and research sections-- Taking rural e-commerce innovation and entrepreneurship social practice courses as an example [J]. Modern Commerce and Industry, 2024, (08): 46-48.
- [2] Hong Zhang; Cheng Li; Li Qifang. A preliminary discussion on promoting the construction of Sino-foreign cooperative teachers in running schools with virtual teaching and research sections [J]. Beijing Education (Higher Education), 2024, (03) : 39-43.
- [3] Yu Lihua. The value of virtual teaching and research section construction under digital transformation and the practice of private colleges [J]. Qin Zhi, 2024 , (02) :74-80.
- [4] Wang Kaiyan; Chen, K.; Gao Feng. Research on the construction of virtual teaching and research section of vehicle engineering for modern industrial college [J]. Equipment Manufacturing Technology, 2023, (12) : 22-27.
- [5] Yanmin Wu; Xianghong Cao; Liu Min Luo; Bai Zhenpeng. Construction and practice of multi-school collaborative online open course based on virtual teaching and research section--Taking the construction public safety technology course as an example [J]. China Modern Educational Equipment, 2023, (21) : 96-99.