International Journal of Innovation and Research in Educational Sciences
Volume 10, Issue 1, ISSN (Online) : 2349–5219

Research on the Construction of Intelligent Education for Application-Oriented Universities under AI Environment

Jia-Qing Song[1], Jing Lei[2*] and Rong-Quan Zhang[1]
[1]Office of Educational Administration, Taishan University, Tai'an 271000, China.
[2]School of Mathematics and Statistics, Taishan University, Tai'an 271000, China.
*Corresponding author email id: elizabethia@126.com

Date of publication (dd/mm/yyyy): 19/01/2023

Abstract **– The arrival of the AI era is promoting the development of all walks of life. With the in-depth development of education informatization and the change of social needs, the talent training of application-oriented undergraduate colleges and universities is also facing huge challenges. From training objectives to training means, intelligent technology gives people a lot of imagination. On the one hand, the intelligence education in application-oriented undergraduate colleges and universities is the intellectualization of teaching means, and on the other hand, the teaching goal is to cultivate intelligent application-oriented talents. This paper analyzes the current problems and influencing factors of intelligent teaching in application-oriented undergraduate colleges under the artificial intelligence environment, discusses the ideas and platform construction of intelligent education in application-oriented undergraduate, puts forward suggestions for intelligent teaching in application-oriented undergraduate, and provides a valuable reference for the development of intelligent education.**

Keywords **– Application-Oriented Universities, Artificial Intelligence, Intelligent Education.**

I. INTRODUCTION

The vigorous development of cloud computing, big data, Internet of Things and other technologies has promoted the process of digitalization, informatization and intelligence in society. Artificial intelligence benefits from the support of large data volume, large storage and large applications. Its application scope has also gone from the laboratory to ordinary applications, such as common floor sweeping robots, intelligent customer service, intelligent manufacturing, etc., and people have entered the "era of artificial intelligence". In such an environment, information education has progressed from traditional education process and data informatization to deep integration of new technology and education, and cultivated intelligent talents under the support of intelligent technology.

The application-oriented undergraduate university is a new type of education, which is different from the undergraduate universities with the purpose of scientific research. It is mainly oriented to the regional economic society, relying on disciplines, based on the application-oriented professional education, and oriented by the needs of social talents, to cultivate high-level application-oriented talents. In the wisdom education of application-oriented undergraduate colleges and universities, emphasis is placed on the use of intelligence education to cultivate a new generation of application-oriented and intelligent talents who meet social needs. This paper discusses the construction scheme and application strategy of the intelligent education support platform for application-oriented undergraduate universities under the "AI+" environment, and provides solutions for the training of application-oriented talents.

II. THE MAIN PROBLEMS OF SMART TEACHING IN APPLICATION-ORIENTED UNIVERSITIES

A. *Relatively Insufficient Theoretical and Practical Teaching Resources*

There is a shortage of teachers in application-oriented undergraduate colleges, and there is a shortage of teachers who understand high-end modern informatization such as 5G, virtual simulation and innovative teachers. The teaching facilities of application-oriented undergraduate colleges are backward, 5G base stations have not been fully covered, and the cost of multimedia and intelligent teaching facilities and teaching tools is high. Practical teaching bases in application-oriented universities are also limited.

B. *Theory Teaching is Bound by Traditional Teaching Mode*

The traditional teaching mode is characterized by “spoon feeding” and “full room irrigation”. Students digest and absorb knowledge slowly, resulting in less thinking and innovation, less exploration and communication between teachers and students, less mastery of students' tacit knowledge and other objective problems. At present, online and offline hybrid teaching models are multimedia teaching tools that can only be used based on the Internet. Sometimes, affected by memory and network speed, courseware and other teaching content cannot be presented to students directly, which has certain drawbacks.

C. *Single Practical Teaching Mode*

In terms of practical teaching, the practice base is limited, and the practical teaching mode is limited to the operation guidance of the practical teachers in the school. There is a lack of deep integration between the school and the enterprise. At the same time, it is limited by the region. Even if the cross regional school enterprise cooperation is established, there are many objective unfavorable factors, such as long distance, high cost, and high risk coefficient, which affect and limit the effective use of the enterprise's practical teaching site.

III. Analysis on the Influencing Factors of Intelligent Teaching in Application-Oriented Universities

A. *College's Own Factors*

The construction of the management team and teaching faculty team of the application-oriented undergraduate colleges in the AI era cannot meet the teaching needs of the talent training goals, lacks the AI modern information technology related industry university research collaborative education mechanism, and some local industrial organizations are reluctant to participate in school enterprise cooperation due to the restrictions of the industry characteristics, business scale, enterprise resources and other objective conditions. Some participate in school enterprise cooperation, but the cooperation mode is single and the cooperation content is not in-depth, as a result, the talent training direction, training program, specialty setting, curriculum setting, teaching mode, etc. do not match the talent demand of new industry development.

B. *Government Factors*

With the rapid development of modern information technology, such as artificial intelligence and the Internet, information technology has become the key technology affecting the development of various industries. The teaching mode of application-oriented undergraduate colleges also faces the impact of modern information technology. The general requirements of the reform of national application-oriented undergraduate colleges and universities should be changed from government sponsored to the pattern of government overall management and social pluralism; From pursuing scale expansion to improving quality; The transformation from the mode of reference to general education to the type of education with corporate social participation and distinctive

professional characteristics will deepen the cooperation between schools and enterprises and promote the integration of schools and enterprises. Although the reform of application-oriented undergraduate colleges is imperative, it is still in the primary stage of reform and the government lacks experience, resulting in the lack of support from AI modern information technology, systems and other educational resources.

IV. Intelligent Education in Application-Oriented Undergraduate Universities

A. *Concept of Smart Education*

Smart education originated from the Smart Earth Program of IBM in the United States. In 2008, S.J. Palmisano, CEO of IBM, first mentioned the concept of Smarter Planet in his report. Its purpose is to find a reasonable support point through technology and the new world: to realize mutual perception and interconnection between people, people and environment, and environment and environment with the help of advanced technologies such as the Internet of Things, big data, cloud computing. South Korea was the first to put forward the concept of SMART, and believed that smart education should improve students' interest and ability level by guiding students to conduct self-directed learning based on certain intelligent technologies and rich learning resources. Chin, a Malaysian scholar, believes that smart education is a personalized support for learners' learning styles and abilities through technology.

The research of smart education emphasizes the subjectivity of students in teaching and clarifies the integration of technology. At present, in the field of higher education, there are many effective support platforms for online courses for teachers and students. In the education function supported by artificial intelligence, students' learning process recording, learning resource application, academic achievement export and other aspects have been improved and supported to varying degrees. Especially during the epidemic, online teaching has become an alternative to traditional teaching. In terms of hardware, recording and broadcasting classrooms and mobile smart classrooms are also under active construction. The addition of Internet of Things technology also makes smart classrooms more intelligent and better user experience.

B. *Intelligent Education Ideas for Application-Oriented Undergraduate Colleges*

Supported by the concept of smart education, the talent cultivation of application-oriented undergraduate colleges and universities should mainly start from two aspects: first, the construction of the smart education support platform. Years of experience in education informatization has proved that information technology for education can improve teaching efficiency, improve teaching efficiency, and turn the past education into a reality, but all this should benefit from the informatization construction of teaching equipment and teaching environment. Therefore, we should increase the construction of modern teaching software and hardware equipment, set up a good stage for wisdom education, and let teachers become directors of the entire educational activity. Second, the research of intelligent teaching model. Under the support of intelligent technology, teaching is endowed with unlimited possibilities. However, the characteristics of each discipline are different, and the personalized needs are different. Therefore, it is necessary to find corresponding integration strategies according to the characteristics of the discipline to form a smart teaching model. At the same time, it is necessary to form new smart education technology needs, and promote the improvement and development of the support platform.

V. Construction of Smart Education Platform for Application-Oriented Undergraduate Universities

The effective operation of the smart education model needs the support of the corresponding smart education platform, and the student group targeted by the smart education platform of application-oriented undergraduate colleges and universities has more particularity: the students of application-oriented undergraduate colleges and universities have the ability to learn independently, but their learning interests and habits are not mature; Knowledge needs are more specialized and practical; The evaluation of learning results is not only the learning results, but also the control and tracking of the learning process; Students have more practical knowledge and higher requirements for the practical environment. With the support of the smart education platform, they can provide teachers and students with an intelligent virtual practice environment, practical skills teaching process management that combines virtual with real, and so on.

A. *Software System Framework of Intelligent Education Platform*

According to the teaching characteristics and teaching needs of application-oriented undergraduate universities, the preliminary system design of the smart education platform is carried out to provide a reference for the development of the smart education platform. The platform is mainly composed of three levels: data center, control center and application center.

1. *Control Center*

The control center mainly includes algorithm engine, process management, unified authentication and data coordination. The algorithm engine is a data driven algorithm set, which provides data sets for teaching assistants and academic analysis through association analysis, recommendation algorithm and other support; Process management is to record and manage the teaching process data, which provides a basis for later algorithm analysis; The unified authentication is mainly responsible for user account and authority management. It can log in with other platforms jointly to reduce account data; Data coordination function refers to the unified coordination of various functions and system data, and the processing of heterogeneous data.

2. *Data Center*

The data center is composed of basic database, resource database and teaching business database. The basic database is used to store the basic information of the system; The resource database is used to store resources serving teaching, including electronic teaching materials, courseware, web pages, micro classes, homework, exercises, films, pictures, sounds, animation, executable programs and other media resources required by various majors and disciplines; The teaching business database is used to store teaching process data, including student attendance data, interactive communication data, homework situation, examination situation, system application, etc.

3. *Application Center*

The application center provides classroom teaching interactive tools, subject teaching tools, virtual simulation experimental environment, etc. according to the needs of teachers and students. The virtual simulation experiment environment is a virtual experiment place provided for different disciplines, such as the flight attendants' simulation cabin to simulate the boarding process; Virtual printing laboratory for editing and

publishing; Automobile professional virtual engine virtual laboratory, etc. The academic analysis function is to summarize students' learning process data, analyze students' learning achievements and learning defects, and provide comparative analysis with yourself and classmates, so that students can find personal differences and set learning goals; The intelligent recommendation function combines teacher recommendation to recommend relevant learning resources, learning courses, learning information and employment information for students; The teaching assistant provides class reminder, homework reminder, examination reminder, academic warning, knowledge discovery and other functions based on the previous teaching process data to provide friendly help services for students and teachers.

B. *Platform Application Environment*

The application of the smart education platform should support the synchronization of personal computers, tablets and smartphones. The account should be unified. The teaching service should be provided synchronously according to the different application scenarios of teachers and students. It should support the readily accessible teaching service, regardless of time and region.

At the same time, a smart classroom is established to support teachers and students to teach in the smart classroom. Smart classrooms generally need to provide smart location sign in, remote control, online recording and broadcasting, classroom interaction and other functions. In terms of classroom configuration, first, in a smart environment, break the unified to multiple classroom layout, configure movable tables and chairs, and support open teaching link arrangement; the second is to support students who cannot attend school to participate in teaching activities and provide online live interactive learning services; the third is to access the Internet of Things environment. It supports one button on/off, and prepares the environment for teachers in advance, such as lighting, equipment startup, remote shutdown, intelligent recording and broadcasting, etc.

VI. Suggestions on Smart Teaching Reform in Applied Undergraduate Colleges

A. *At the Level of Application-Oriented Undergraduate Institutions*

① It is suggested that qualified application-oriented undergraduate colleges and universities should set up the smart teaching specialty, jointly build the smart teaching experiment and training base of application-oriented undergraduate colleges and universities through school enterprise cooperation with industry industries, build an innovative and collaborative education mechanism with the organic integration of education chain and industry chain, and build a high-level professional smart teaching talent training base.

② It is suggested that application-oriented undergraduate colleges should strengthen the construction of school culture, cultivate the spirit of reform and innovation of teachers and students, and maintain vitality for the sustainable development of the school.

③ It is suggested that application-oriented undergraduate colleges establish sound teaching management, talent promotion mechanism and teacher training mechanism to ensure that the construction of school management team and teaching teacher team meets the needs of talent training objectives.

④ It is suggested that application-oriented undergraduate colleges and universities should further carry out the cooperative education mechanism between industry, university and research institutions and enterprises, an-

-d determine the talent training direction, training program, specialty setting, curriculum setting, teaching mode, etc., in line with the needs of industrial development.

B. *Government Level*

① It is suggested that relevant departments accelerate the construction of infrastructure such as 5G base station coverage to meet the demand of intelligent teaching technology for computing power and data transmission speed.

② It is suggested to cultivate and support some application-oriented undergraduate colleges to try first and use first, provide early and practical scenarios for the development of new technologies through pilot areas, so that smart teaching technologies can be implemented and tested, and become increasingly mature.

③ It is suggested that the government, centering on the objective problems of insufficient technology in the smart teaching industry, lack of product development content and service education, and imperfect innovation support system, issue corresponding policies at key points of the industrial chain such as technology, standards, products, and applications to strengthen industrial linkage and promote the development of smart teaching industry.

④ It is suggested that the government should take a long-term view of the orientation of application-oriented undergraduate colleges and universities and make overall planning. Give different levels of policy support to the main body of application-oriented undergraduate colleges at different levels, and establish a municipal overall management mechanism. We will increase government support for the main funds, talents, teaching equipment and other aspects of application-oriented undergraduate institutions.

VII. CONCLUSION

Aiming at the teaching needs of application-oriented undergraduate universities, this paper studies and discusses the model design and application scenarios of intelligent education platform under the background of artificial intelligence. Based on the analysis of the transformation goal, transformation mode and transformation process of application-oriented undergraduate colleges and universities, and the characteristics of education and teaching in application-oriented undergraduate colleges and universities, this paper proposes the corresponding smart education model and support platform, hoping to achieve the goal of smart education more effectively.

At present, the form of smart education is greater than the reality. Although there are many excellent cases, there are relatively few courses to truly realize smart education. Most college classrooms are still difficult to achieve real intelligence. On the one hand, it is the design of teaching strategies and teaching ideas, and more importantly, it is the surface of the smart teaching platform. Its intelligence, interactivity, and relevance need to further start from the teaching application of teachers and students, In particular, the smart education platform of application-oriented undergraduate colleges and universities should pay more attention to individuality, professionalism and practicality, which is corresponding to the smart education itself.

ACKNOWLEDGMENT

This work was supported by Teaching Reform and Research Project of Taishan University (JG202156).

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AUTHOR'S PROFILE

First Author
Jia-Qing Song, received the Bachelor from Shanghai University of International Business and Economics in 1991. He is an experimenter at Taishan University. His research interests include educational administration, teaching management. email id: jiaqing_song@126.com

Second Author
Jing Lei, Corresponding author, received the B.S., M.S., and Ph.D. degrees from Ocean University of China, in 2003, 2007, and 2010, respectively. She is a professor at Taishan University. Her research interests include educational administration, teaching management.
email id: elizabethia@126.com

Third Author
Rong-Quan Zhang, received the Master of Education in English major from Shandong Normal University in 2009. He is an experimenter at Taishan University. His research interests include educational administration, teaching management.
email id: 492449131@qq.com