Exploring Intelligent Higher Education of Law: Moot Court Based on VR and AI Technology

Shan Ouyang
Law School
Yunnan University of Finance
and Economics
Kunming, China

Peng Nai
Law School
Yunnan University of Finance
and Economics
Kunming, China

Abstract—The world is now at a critical juncture of deep evolution towards the age of intelligence. But the higher education mode of law in China still belongs to the education mode of industrial society which cultivates standardized persons on a large scale. The intelligent age has put forward the intelligent upgrade request to the traditional higher education mode of law. Colleges and universities should make active use of intelligent technology to carry out the intelligent construction of higher education of law and cultivate creative and applied legal talents. The higher education of law should build the intelligent laboratory of moot court. The intelligent laboratory of moot court will use an integrated system of software and hardware developed by virtual reality and artificial intelligence technologies for law students to conduct moot court training at a low cost and with high efficiency.

Keywords—higher education of law, artificial intelligence, virtual reality technology, intelligent moot court, legal robot

I. THE CHARACTERISTICS AND DEVELOPMENT TREND OF THE INTELLIGENT AGE

Science and technology are powerful driving forces of the rapid development of human society. Starting from the 1990s, the Third Industrial Revolution, marked by computer technology and communication technology, pushed the society from the electrical age into the information age. After more than 20 years of development, the world is currently at a critical juncture of deep evolution toward the intelligent age. The intelligent age is characterized by computer algorithms imitating human brain intelligence. The representative applications of intelligent technologies of the intelligent age are artificial intelligence robots, the 3D printing and self-driving autonomous cars and so on.

Many countries around the world, including the United States, China, Japan, and Germany, have developed their own artificial intelligence development strategies, striving to seize the commanding heights of the intelligent age in a new round of international competition. The age of intelligence will continue to bring real, huge and far-reaching changes to society and individuals, certainly to the higher education of law.

Corresponding Author: Peng Nai, Law School, Yunnan University of Finance and Economics, Kunming, China.

II. ANALYSIS OF INTELLIGENT CHALLENGES AND COUNTERMEASURES FACED BY CHINESE HIGHER EDUCATION OF LAW

A. *Challenge I: The Chinese judicial system has been intelligently transformed, while legal education has remained on traditional teaching with lantern slide*

The Chinese judicial organs, including courts, procuratorates, and public security sectors, have actively carried out "intelligent construction", and have replaced the traditional way of working by using a large number of language auto-input systems, legal service robots, case network management systems, and remote monitoring systems, etc. The construction of the rule of law in the new era puts forward higher requirements for Chinese law education, however, the existing education mechanism cannot meet the needs of the times for the cultivation of talents under the rule of law [1]. China's higher legal education is relatively traditional passive. The main places for higher legal education are still the classrooms with blackboard, projector and computer. The main way for higher legal education is still teacher's lectures with lantern slide. Legal application training and interactive exchange account for a quite small proportion in the legal education process. As the educational products, the undergraduate and graduate students of law have the risk of insufficient competitiveness. Students of law have difficulties in meeting the requirements in legal services of the intelligent age. Correspondingly, the overall employment rate of law graduates in China is inadequate.

The intelligent challenges faced by higher education of law are the intelligentization of educational mode. At present, Chinese higher education of law still belongs to the educational mode of large-scale standardization of industrial society in essence [2]. Chinese higher education of law attaches importance to legal knowledge storage and basic theoretical research. Its educational tools are still in the slide and projector stage. Its main legal training mode is still the traditional reading, writing, examination. Traditional Chinese higher education of law lack the training on the logical analysis ability to legal regulations, the skills of oral expression, the abilities to analyze and solve legal problems.

The traditional educational mode of large-scale

standardization of industrial society can not meet the intelligent age and the ever-changing intelligent society. Most of the legal talents graduated from colleges and universities still can't provide intelligent legal services. The following weaknesses existed in the traditional higher legal education mode are:

First, legal education now mainly exports the legal concepts and law provisions to students. It lacks the cultivation of students' independent spirit, critical thinking and logical thinking, so it is difficult to cultivate independent thinkers.

Second, the teacher-student ratio is out of balance, unable to take care of individualized education, and cannot teach students in accordance with their aptitudes. Take the Law School of Yunnan University of Finance and Economics as an example. There are normally 50 students in a teaching class with only one class teacher. If you rely solely on a large number of introduced teachers to solve this problem, you will face high financial costs and inefficient operation [3].

B. Challenge II: Intelligent Legal Robots Threaten the Employment opportunities for law graduates

Legal intelligent robots have been put into use in China. Legal intelligent robot can complete the calculation of litigation cost, writing of simple legal instruments, retrieval of cases and laws and regulations, record of voice and pictures and so on.

Compared with the law graduates trained under the traditional legal education model, the absolute advantages of legal intelligence robots are the storage of legal information, the retrieval of legal provisions, the analysis of legal big data and the rapid self-renewal evolution. Legal graduates in the above skills in any cases can not compete with the legal intelligent robot. The use of legal intelligent robot will objectively bring about the reduction of legal person's jobs, especially those students with less creative abilities are more likely to be replaced by Legal intelligent robots.

C. Analysis on the Countermeasures for Legal Higher Education to the Challenge of Intelligence Age

The View of education is the basic theory on the phenomenon and questions of Education [4]. How to change the disadvantages of higher education of law? This question belongs to the view of higher law education theoretically. Absorbing the concept of intelligent into the view of higher legal education is a direction to develop higher education of law. The general principle is: make up the weakness and bring out the strengths. The function of legal intelligent robots could be the tool that higher legal education needs to introduce and teach to her students. What legal robots can't do is the area where higher legal education needs to train students to be the specialists. So the educational breakthrough points of higher education of law should include critical thinking, innovative thinking, language skills and emotional expression. In the intelligent era, higher education of law should focus on training legal students with those abilities that artificial intelligence still can not master. These abilities includes: critical thinking, creativity ability and humanistic spirit. Meantime, higher education of law should make good use of legal intelligence tools. So the main countermeasures are to actively use intelligent technology for the intelligent construction of law high-energy education, and to train creative and applied legal talents.

III. CREATE MOOT COURT INTELLIGENT LABORATORY BASED ON AI AND VR TECHNOLOGY

Legal higher education should create an intelligent education laboratory that specializes in law. The idea of the moot court intelligent laboratory could be discussed. Law as a practical and technical discipline, students not only understand and master the regulations, but also need a strong practice and operating ability. The main place for law students to try cases and develop hands-on ability is the moot court [5]. The Moot Court Intelligence Lab should be an integration system with software and hardware which allows users to use the system to perform simulated court training at a low cost and efficiency. Its direct users could be legal educators, researchers, law students, judges, prosecutors, lawyers and other legal practitioners.

A. Module Structure of the Moot Court Intelligent Laboratory

Case Module: the intelligent laboratory should establish a court case database, including criminal lawsuit cases, civil lawsuit cases, administrative lawsuit cases and court mediation cases. The court case database should be able to interface with the legal and regulatory database, so that it is convenient to search for laws and regulations according to the court situation.

Role Visualization Module: this module requires the use of Virtual Reality technology to make the entire court environment realistically present to the trainer. In addition to the trainer himself, the court, the judge, the clerk, the plaintiff, the accused, the bailiff, and the audience can all be virtual. This module also requires the use of AI technology to enable virtual litigants to interact with the trainer in a variety of interactive conversations, debates, and more.

Information Input-output Module: this module requires language input and touch screen technology. Voice input system and artificial intelligence function should be planted in the virtual reality environment. The voices recognized in the VR system could be synchronously transmitted to the AI system and fed back. The student's oral presentation will be recorded by a virtual clerk in the virtual reality, forming a court record for reviewing. At the end of the court, the student may choose to save or delete the moot court, which can only be seen by participating students.

Analysis module: this module requires artificial intelligence and data analysis technology. The anthropomorphic computer back-end will record and

analyze the performance of the trainer in court. The indexes settings for the analysis include: speaking speed, speech clarity, speech duration, debate logic, content legitimacy and so on. After the moot court ended, students can generate analytical papers and score points for students to constantly improve.

Equipment module: this module consists of a number of closed simulation cabins that can be networked to each other. The simulated cabin area can accommodate two to five persons, for the different kind of court. The simulation cabin is equipped with earphones, microphones, computer monitors, 3D glasses, tables and chairs, etc., for independent training.

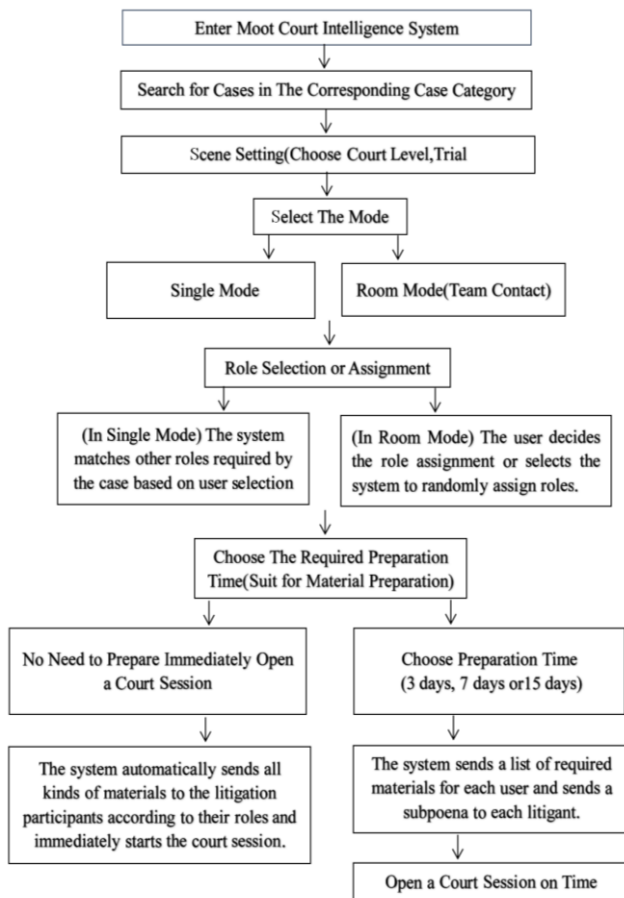*B. Moot Court Intelligent Laboratory Operation Process*

Fig. 1. Moot Court Intelligent System Operation Process

Students should register their own account and then login in the moot court laboratory integrated system first. The integrated system can send case details to the virtual reality interface for law students. Students can choose to run a moot court alone or with others to conduct a moot court. If several students want to choose to run a moot court together, they can connect via the virtual reality system. All roles are played by artificial intelligence system, except for the roles which being chosen by the students. After the student is familiar with the case, the room can be

created by voice command in the virtual system, and the virtual trial scenario is generated by the integrated system according to the real court trial site. In the virtual reality system, each role controlled by the artificial Intelligence can receives and digitizes the student's voice, and interacts with the student in combination with the role, the case, the actual trial situation, laws and regulations. The specific process is shown in the figure below.

IV. COST AND BENEFIT ANALYSIS OF THE MOOT COURT INTELLIGENT LABORATORY

The cost items of the intelligent moot court lab includes: the cost of designing and developing software, network construction and usage fees, the cost of developing and building database of legal cases, the cost of designing and building moot court modules and the cost of purchasing equipment.

Although the development of intelligent legal education tools means a lot of costs, it also brings objective benefits. Firstly, the use of the moot court lab can cut down the cost of transportation, time and labor power for the traditional moot courts. Besides, the trial cases of the moot court intelligent lab is available to be reused in a large scale, which means the cost will reducing as the number of users increases. Secondly, the intelligent moot court lab works better than the traditional moot court. Practicing in a closed mock cabin, students can get rid of their shyness, without the fear of making mistakes. Though a lot of mock session practices, students can practice repeatedly and compare with each other to improve their ability of opening a court session. Repeated simulations of the same case can help students to strengthen their ability to open courts. Thirdly, a large amount of court data will be generated and accumulated by the moot court intelligence laboratory. These valuable data could be used for research and generate research reports and other valuable scientific research materials which contains intellectual property rights.

V. CONCLUSION

The information campus is an organic, networked, digitalized and intelligent new campus platform for education, learning and research. It will put forward new challenges to the work of law education in colleges and universities. In order to keep pace with the intelligent age, the moot court intelligent laboratory is valuable for higher education of law. At present, only a few colleges and universities have started the moot court intelligent laboratory based on virtual reality and artificial intelligence technology. The intelligent teaching feedback system is in the stage of development, the technology is not mature enough and the system needs to be improved, which will be the directions for our future research.

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