

# *Research on the Application of Artificial Intelligence Technology in Accounting Teaching of Colleges*

Wenshuang Bao  
School of Accounting  
Shandong Management University  
Jinan, China

**Abstract**—With the continuous development of artificial intelligence technology, college education merges together intelligence elements much more than before. As the last teaching stage of professional talent cultivation in the college, how to combine with modern technology has become the hot topic. This essay explores the process of applying artificial intelligence technology to accounting teaching in universities and it is found that AR and VR technology can not only optimize teaching methods, improve classroom design and enhance teacher-student interaction, but also analyze the status of students and provide data for teachers to study the knowledge acceptance. Through the effective combination of intelligent technology and college education, it takes the new mode for accounting teaching in universities in order to make the accounting training keep pace with modern technology.

**Keywords**—AI; Accounting Teaching; College; PAD

## I. INTRODUCTION

Nowadays, with the rapid development of science and technology, the combination of education development and science and technology development has become a common topic to educators. At present, the integration of artificial intelligence technology into education and teaching has become one of the hotspots of college education exploration. The gradual improvement of artificial intelligence technology can make up for many disadvantages in current teaching. Integrating artificial intelligence and accounting simulation in classroom can effectively improve the quality of teaching and create more conditions for students to understand and master new knowledge. The Lough Borough University of England applies artificial intelligence technology to the teaching process, uses artificial intelligence technology to carry on the Omni-directional and systematic examination and evaluation of teachers' teaching and students' learning, which greatly improves the classroom efficiency; Duke University of the United States applies artificial intelligence technology to analyze the teaching level of basketball classes, and transforms students' physical fitness, training level and teachers' teaching arrangements into data transmission. Intelligent analysis system can effectively improve the teaching level of basketball class. There are also some related explorations in the combination of teaching and artificial intelligence in Chinese universities, but most of them is low level of intelligence. The collected data cannot be analyzed accurately and effectively,

Research on the teaching model of professional courses in ACCA major based on PAD (JG2018-14)

which reduces the effectiveness of AI-assisted education and teaching.

## II. APPLICATION OF ARTIFICIAL INTELLIGENCE IN PAD CLASS TEACHING

The PAD class includes three processes that are Presentation, Assimilation and Discussion. The first aim of the PAD class is to make the students enjoy learning. By giving students rights and free time, we can stimulate their learning enthusiasm in order to achieve the ultimate goal that is self-education and lifelong learning. In the process of presentation, the integrating artificial could help teacher analysis of teaching effect to optimize the schedule. For example, the teachers can master the training effect in time through the micro-expression recognition and analysis function of artificial intelligence, so that the presenter could improve the teaching design and quality timely. In addition, in the process of assimilation, AI has the ability of image recognition and semantics analysis, and intellectualized collection and sorting of problems and integration of resources. Scanning the corresponding textbook pictures to get the 3D display, the imaging effect obtained by mobile phone scanning on site can help students understand the subject knowledge points more intuitively, which is very helpful for the query of knowledge points in classroom teaching, the retrieval of articles and the automatic generation of relevant recommendations. Massive database resources to answer questions, help students solve personal learning problems. Besides, the computer's high-speed computing ability and the ability to constantly evolve and update the state, the computer in the era of artificial intelligence has more self-learning ability. Faced with the same number of teaching objects, artificial intelligence can more quickly analyze and classify the students' staged knowledge learning results, customize and push knowledge points for students' weak links, so as to help students learn efficiently and effectively.

### A. Artificial Intelligence Teaching System

The AI teaching system consists of three parts: student module, teaching module and evaluation module. Student module is mainly used for students' autonomous learning. Under the background of the current "sub-classroom" teaching innovation, students discuss independently after the teacher's classroom explanation, exchange knowledge points with

classmates and discuss key and difficult points. During this period, students' module will grasp the level which students understand of knowledge through students' communication and discussion. Intelligent simulation is carried out to evaluate the degree of students' acceptance for new knowledge and their understanding of the important and difficult contents in the classroom, and feedback the students' learning situation to the teacher, so as to help the teacher understand the weak links in students' learning and then replenish the missing points in the classroom in time. The teaching module is the system which is helpful for the teachers. It can show the teaching contents to the students in a specific way according to the logical order of the teachers' teaching. For example, it can show the theoretical knowledge in the books in a diversified way. This effectively enriches the classroom contents and deepens the students' understanding of the new knowledge. The module also provides a channel for information exchange between students and the system, analyses the relevant data of students' acquisition of knowledge provided by the student module, makes analysis and judgment, and provides appropriate reference for teachers' next teaching. Assessment module can make accurate intelligent evaluation for students' classroom learning and teachers' teaching. Computer intelligent assessment module is introduced into accounting training classroom, and a large number of professional knowledges of expert system is used to evaluate teaching activities and evaluate teaching quality. It inputs the indicators into the appropriate evaluation model and obtains the evaluation results. This module can timely evaluate students' current knowledge mastery and provide reference for teachers' follow-up teaching work.

#### *B. Construction of Analytical Model of Students' Classroom Behavior Characteristics*

Using artificial intelligence technology, a model of students' classroom behavior characteristics is constructed, which can automatically identify the various behavior differences between excellent students and ordinary students in class, and provide guidance for teachers' teaching.

The model consists of three parts: feature recognition, feature extraction and feature interpretation.

- Feature recognition. The monitoring camera installed in the classroom is used to take real-time pictures of each student's learning status in the classroom, and the captured images are stored in the database. Feature recognition is to extract target students from captured videos. The feature recognition can accurately recognize the student's feature contour and recognize it from the background noise of the video.
- Feature extraction. All the students' contours are located accurately after feature recognition. At this time, feature extraction algorithm can be used to extract students' classroom behavior characteristics. In feature extraction, students' behavior can be transformed into using binary image or gray image to save to the database. By extracting the feature outline of students with better academic performance, we can check their behavior in class and compare with other students' classroom

performance, and then we can get the difference of learning behavior between students in class.

- Characteristic interpretation. By constructing a student model based on the extracted characteristics of students' classroom behavior, this paper summarizes the reasons why students learn well or badly. In the specific implementation of feature interpretation, we can construct the model of excellent students' characteristics and the model of excellent practical students' characteristics, and use the results of the model to help teachers obtain data related to students' classroom learning, assist teachers to teach and manage students, so as to further improve students' learning efficiency. At the same time, the feature model can also analyze students' practical ability, innovative ability and so on, and objectively evaluate students' behavior, find out the advantages and disadvantages of students' various abilities, so as to teach students in accordance with their aptitude and promote students' better development.

#### *C. Integrating Artificial Intelligence Technology with PAD class*

##### *1) The process of Presentation*

This process is the powerful assurance of systematization, accuracy and effectiveness in knowledge transportation. In this process, in terms of highlighting the important and difficult knowledges, teachers help students structure the correlation among knowledges and guide them to engage in deep thinking about the knowledges. On one hand, taking advantages of the teaching module of artificial intelligence teaching system, it can optimize teaching content and proceedings by assessing the result of students' learning characteristics. On the other hand, integrating the scattered knowledge points by the diversified intelligence frame, it can make the learners see visually a particular project in different backgrounds. The rapid formation and transformation of intelligence frame saves teachers a lot of energy which used to spend on describing. This will make the learning content three-dimensional and promote students' comprehension for abstract concepts, in order to make the teaching more convenient and effective.

##### *2) The process of Assimilation.*

In this phase, students start to learn by themselves on the basis of the knowledges from teachers' presentation. And the most important is that students try not to communicate with their partners and teachers. The key aim is to absorb all the knowledge of this lesson as independent as possible. In the process of students' independently learning, the advantages of knowledge storage and virtual model are shown clearly. On one hand, students search for the interesting learning materials via AI technology on their own, in order to comprehend and master the knowledge systematically. On the other hand, by using AR technology, students could learn visually and interactively. It deepens the practical knowledges in series so to help learners transport from one scene to the other scene in virtual reality. In this process, it should emphasize that the 'the method of AI' is much more important than 'the classroom of AI'. Tapping the potential of students, it could achieve the training target that is to make the 'innovative' thinking model throughout the growth of students.

### 3) *In the process of Discussion*

Cooperative learning model starts to be carried out in this process. Teachers cannot participate in the group discussion but encourage students to solve the problems from each other, to accomplish the teaching process through dialog mode. The dominant right for classroom returns to teachers again after the group discussion. Teachers make a summary and solve the common problems. In the dialog mode teaching, teachers cannot join in the discussion directly but they can use the assessment module of AI system to control and judge the students' discussion behaviors. Instead of the method that teachers catch the details in group discussion by standing up, the feature recognition, feature extraction and feature interpretation decrease the impact on group discussion. At the same time, it can as well as help teachers analyze the data related to students' learning in a more comprehensive and objective way. This could assist teachers to manage students, improve the pertinence of common problems and the efficiency of learning in PAD.

## III. THE APPLICATION OF AI IN GAME-BASED TEACHING

### A. *Game-based teaching model*

In order to accomplish the goal 'lifetime study', teaching needs to be designed by being study-centered rather than teaching-centered. 'Scene, cooperation' should be highlighted and the capacity of integrating knowledge and thinking should be focused on. Game-based teaching is a rapid and effective way to encourage learners to join in the scene and practice. With the gradually mature technology of VR and AR, the teaching with VR and AR could provide the learners with a rich three-dimensional virtual environment, which can break through the time limitation and physical space of courses, and create a game process for training without any risk.

### B. *Game-based accounting training teaching*

College students spend most of their time on class or self-study in campus. Even for practical training course, the textbooks or the specialized training software are usually recognized as the primary teaching materials. However, the accounting is a subject with strong practical ability and excellent practical operation. Pure study on the theory and the simple software application cannot meet the demand for informatization nowadays. It is necessary to combine theory with operation and analysis in order to achieve the goal of integrating knowledge with practice.

By using VR and AR technology, we can simulate various actual scenes of company business and management in the form of games. It can effectively improve students' ability to deal with emergencies in future work and exercise students' calm thinking and quick response in the face of problems by properly setting up emergencies. The application of artificial intelligence technology in accounting training can solve the problem of monotonous training courses and boring practical contents. The diversified setting enables students to fully integrate theory with practice and experience better teaching effects. This method can not only stimulate students' interests and enhance their practice ability, but also can effectively solve the problems of poor practical ability and team cooperation

ability, which promotes the change of enterprises' cognition of college students' negative learning effect.

In the game-based training teaching process, students need to schedule regular time every day to participate in the work environment including enterprise management, accounting process and human relationship which simulates the real enterprise, in order to fulfill the training target of multi-role thinking, problems solving, information management, team cooperation, flexibility, civic participation, multi-culture fusion. AI greatly decreases the differences between the training and working, enables students to have access to the real account and financial circumstances and experience the characteristics of them in campus practical training, which is helpful for them to adapt to the future jobs and strengthens their confidence. At the same time, it can make students identify themselves clearly and have a reasonable planning for their career and life. It also effectively increases the high-quality employment rate of students majoring in finance and accounting and succeeds in helping college students transfer from campus to work.

## IV. CONCLUSION

Introducing artificial intelligence into accounting teaching in colleges and universities can make the presentation of teaching content more suitable for cognitive characteristics of students and enhance students' understanding and mastery of the content of textbooks. It can not only realize the communication between teachers and students, but also stimulate students' interest of learning independently in the way of AR and VR gamification. Through the student model established in AI classroom, the characteristics of students can be analyzed, teaching students in accordance with their aptitude can be effectively realized, and personalized education can be embodied. In the future, AI classes will also meet the demand of multi-terminal and large data analysis, and provide data support for accounting teaching design and student evaluation. The combination of AI technology and accounting teaching conforms to the current trend of development.

## REFERENCES

- [1] A. Patel, Kinshuk, "Applied artificial intelligence for teaching numeric topics in engineering disciplines," International Conference on Computer Aided Learning, 1996, 1108: 132-140.
- [2] Borrego Maura, Bemhard Jonte."The Emergence of Engineering Education Research as a Globally Connected Field of Inquiry". Journal of Engineering Education, Vol.100, pp. 14-47, 2011.
- [3] Deyi Li, "Opportunities and challenges of running education based on artificial intelligence," Journal of Beijing union university, 2016, 30(3): 1-4. In Chinese.
- [4] Geoff Mulgan, "Artificial intelligence and collective intelligence: the emergence of a new field," AI & SOCIETY, Vol. 33, 2018, No.4:631-632.
- [5] Lu Wang and Ning Wei, "Big data of classroom teaching behavior: building a bridge between theory and practice," China information technology education, 2017, 13(12): 9-1. In Chinese.
- [6] Maud Chassignol, Aleksandr Khoroshavin, Alexandra Klimova and Anna Bilyatdinova, "Artificial Intelligence trends in education: a narrative overview," Procedia Computer Science, Vol. 136, 2018: 16-24, doi: 10. 1016/ j.procs.2018.08.233.

- [7] Patric Willin, Tom Adawi, Julie Gold. "Linking teaching and research in an undergraduate course and exploring student learning experiences", *European Journal of Engineering Education*. Vol.42, pp. 58-74, 2017.
- [8] Stefan A. D. Popenici Sharon Kerr, "Exploring the impact of artificial intelligence on teaching and learning in higher education," *Research and Practice in Technology Enhanced Learning*, Vol. 12, 2017, No.1 doi:10.1186/s41039-017-0062-8.
- [9] Shun Wu and Yan Cai, "Innovative Education in the Teaching of Molecular Biology Theory," *Anhui Agricultural Science Bulletin*, 2018, 24 (05): 111-118. In Chinese.