



Research on College English MOOC System Based on Artificial Intelligence Algorithm

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Abstract. With the progress of science and technology, the artificial intelligence with big data has developed so fast. Human life has experienced profound changes. In the process of teaching college English, the artificial intelligence technology, especially the development and application of college English MOOC system, is a new attempt, an opportunity and challenge faced by students in language learning. From the angle of artificial intelligence algorithm, the paper tries to enhance the effect of MOOC from the instructing and learning aspects of college English MOOC.

Keywords: Artificial Intelligence · MOOC · College English

1 Introduction

Artificial intelligence is considered as the most disruptive technology yet [1]. It is accelerating its landing, profoundly changing the world and the way people produce and live [2]. In 1956, in the seminar held at Dartmouth University, the researchers presented an idea of artificial intelligence. At present, in the education field, artificial intelligence is widely used in these areas: emotional computing, big data, intelligent education, deep learning, human-computer interaction, robot learning etc. Researchers have explored the AI MOOC from different perspectives. Liu thinks the MOOC based on AI can help students understand the abstract knowledge [3]. Goel integrates cognitive principles with practice, introduces curriculum design, implementation and evaluation, explores how to expand artificial intelligence teaching [4]. In addition, artificial intelligence enables personalized teaching resources. The development of the integration, development, design, application, management and evaluation of AI and English courses will usher in different choices and changes in technology and foreign language teaching. The classroom based on artificial intelligence will reflect network, digitalization and intelligence which cultivates students' innovative ability through personalized teaching, based on project learning, creates independent, cooperative and inquiry classroom, and realizes the seamless hybrid and offline online and flipped classroom [5]. As a special form of online education, MOOC is a kind of unicom theory and information learning open teaching method. Through large-scale network education courses, to a large extent, it realizes the integration of learning resources, meets the needs of students' diversified and personalized learning and makes the whole learning process more three-dimensional and

diversified [6]. With the assistance of big data, teachers analyze such learning needs for each student through artificial intelligence algorithm, and push more appropriate learning content to students according to different needs. MOOC is not only a platform for learners to learn, but also an important way for teachers to constantly learn teaching experience, learn cutting-edge information and update educational concepts [7].

2 Challenges Facing the Development of College English MOOC

In the traditional teaching mode, teachers input vocabulary, grammar, text structure, translation and writing skills, ignoring the application and output of knowledge, and students take a passive participation. MOOC uses their openness and interactivity, combining virtual classroom with real classroom, and such effective use of flipped classroom, to achieve the active learning state in which students play a main role and teachers act as the assistant and supervisor. However, at the present stage, many teachers lag behind in their understanding of the development and application of college English MOOC, and cannot keep up with the changes of informationized instructing concept in present world. The ways to teach and the contents to convey lack creativity in traditional teaching pattern. Therefore, teachers can't make an active communication with students. Teachers believe that MOOC is simply the combination of traditional classroom and Internet, ignoring the requirements of the state and society for college English under the new situation.

MOOC is recorded before class, teachers cannot make a real-time interaction with students in the process of teaching, so they can't know the learners' learning state, learning effect, etc., so as to play the role of the guide and regulators. Therefore, the student's thinking can't get effective exercise, while learning focus and continuity, studying results are going to be discounted.

Chen Ning (2019) pointed out that during this "micro-times" of the fast popularity of internet use and the wide application of a lot of moving intelligent interfaces, students must be able to learn how to adapt to the new learning surroundings, which will indicate whether students have mental health or not [8]. These internal factors affecting the adaptability of English learning include: concentration, self-discipline, independent acquiring competence, language foundation and the capacity to manage time; the outside affecting indexes include: studying surroundings and feeling, monitoring strength, instructing arrangement with method, and difficulty of learning content. Due to the lack of technical support and design, students have poor self-control and time management ability, vulnerable to the surrounding environment and learning atmosphere, attention is easy to distract. Some students lack independent learning ability and poor English foundation in the absence of effective supervision.

3 Construction of College English MOOC Under the Artificial Intelligence Algorithm

At the present stage, the college English MOOC courses are recorded and broadcast in advance. In the teaching process, teachers and students cannot interact face to face in real

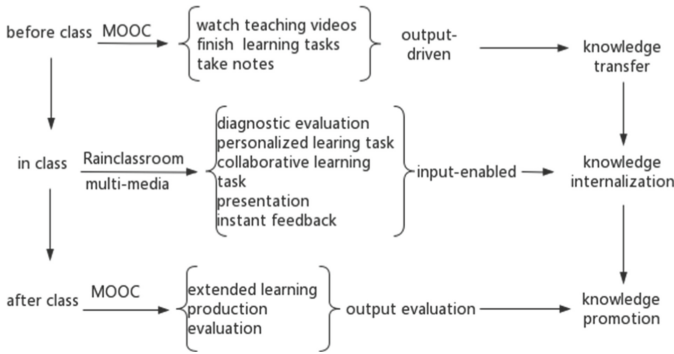


Fig. 1. College English MOOC Based on AI [Owner-draw]

time, and teachers cannot effectively guide and supervise the learners’ learning status and learning effect. Supported by AI technology, image recognition technology is used to identify learners’ eyes and facial expressions, and replace teachers’ timely reminders when learners have poor attention, poor learning state and low learning efficiency. On the basis of speech recognition and semantic analysis of learners, human-computer interaction, intelligent question and answer and discussion, intelligent auxiliary teachers can provide timely help to learners when they have some troubles in study, actively set puzzles during the period of studying, and arouse their interest while learning in such multi-modal way, so as to improve the learning adaptability of English MOOC learners. Based on the supervised learning model, the the artificial intelligence algorithm includes artificial neural network, Bayesin, decision tree, linear classifier.

$$P(Y|X) = \frac{P(Y) * P(X|Y)}{P(X)} \dots\dots\dots \text{Naive Bayes}$$

$$S = \begin{matrix} f_{A1} & f_{B1} & f_{C1} & C_1 \\ \vdots & \vdots & \vdots & \vdots \\ f_{AN} & f_{BN} & f_{CN} & C_N \end{matrix} \dots\dots\dots \text{Random Forest}$$

$$b = (x_1y_1 + x_2y_2 + \dots + x_ny_n - nXY) / (x_1 + x_2 + \dots + x_n - nX) \dots\dots \text{Linear Regression}$$

In short, face recognition, emotion detection and behavior analysis technologies based on AI technology can easily monitor and analyze students’ online learning behavior, enable teachers to effectively guide and supervise students’ MOOC learning, and achieve a seamless connection between online and offline classes (Fig. 1).

At present, most colleges and universities will choose some college English courses on the MOOC platform or make MOOC on their own. The teaching mode is often the simple combination of offline multimedia teaching and offline MOOC learning, so the teaching effect has not been significantly improved. Based on artificial intelligence algorithm, college English MOOC can be targeted to provide personalized teaching. An AI platform based on big data, with the assistance of identification method, cerebrum vibration device, e-wristbands, is able to collect and store learners’ online learning status, learning environment, learning validity, understanding level and digestion of

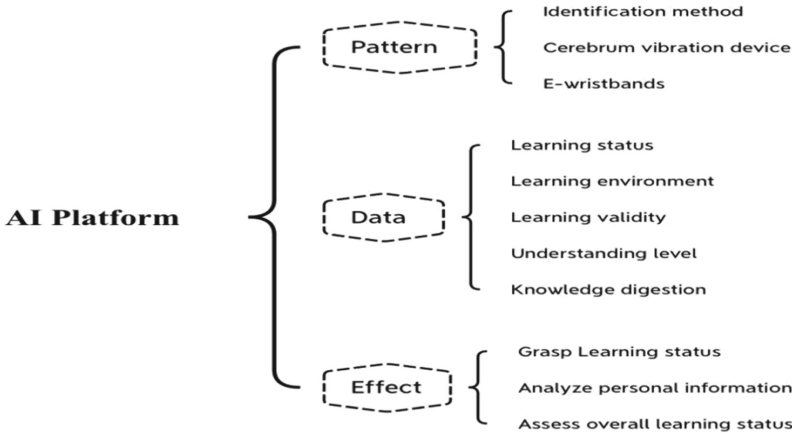


Fig. 2. AI Platform [Owner-draw]

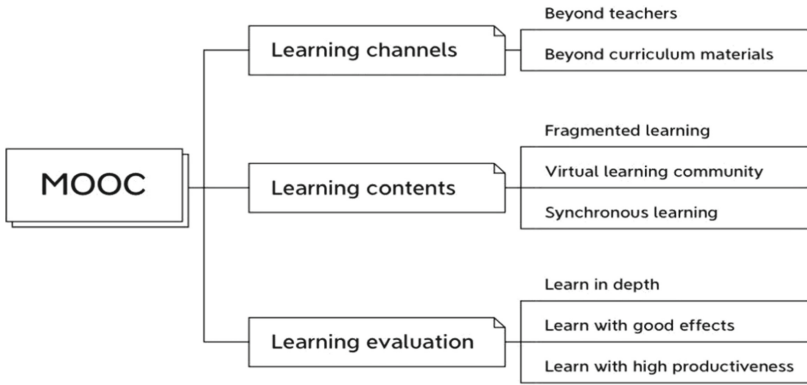


Fig. 3. MOOC [Owner-draw]

knowledge points and other information, accurately grasp the students' online learning status, comprehensively analyze the personal information in the database and assess the overall learning status of the students. Based on each individual's language level and acceptance ability, the AI MOOC platform can design a personalized teaching program, effectively make the instructing effect better at the same time integrate the instructing universality and personalization into an organic unity (Fig. 2).

Based on the AI algorithm, MOOC education in college, broadens students' learning channels. Students can obtain knowledge beyond the limitation of teachers and curriculum materials. Personalized learning contents make fragmented learning a reality and create a chance to form a virtual learning community, synchronous learning, promote each other. Research has shown that if teachers can teach students with personalized methods, students will learn in depth, with good effects and high productiveness [9] (Fig. 3).

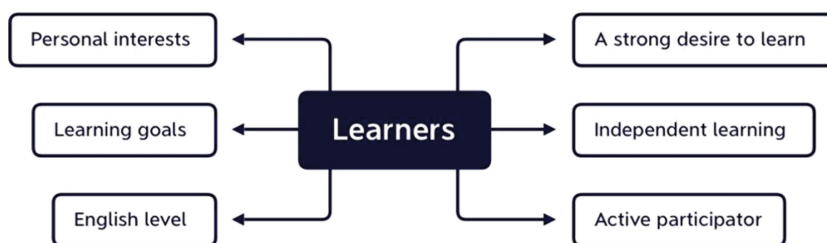


Fig. 4. Learners [Owner-draw]

Based on artificial intelligence algorithm, college English MOOC platform can collect massive data of learners, analyze learners' English level, interests and learning goals, put forward fragmented, situational, visualized English knowledge. Through associated recommendation and customized way, personalized learning resources would be provided. It will make learners have a strong desire to learn, achieve the purpose of independent learning. In the whole learning process, students change from the passive subject to the active participator, and learners' initiative and inner drive are stimulated (Fig. 4).

To sum up, college English MOOC platforms based on AI algorithms can use learner models and learning scenarios to provide learners with personalized resources and convenient learning tools, making effective learning possible.

4 Conclusion

Based on the construction of college English MOOC platform under artificial intelligence algorithm, we will create a networked, digital and intelligent classroom, cultivate students' innovative ability by providing personalized teaching. This autonomous, cooperative and inquiry classroom based on project-based learning is a hybrid and flipped classroom seamlessly connected online and offline. It is an efficient classroom with equal interaction, adaptive learning, happiness and the pursuit of comprehensive and harmonious development of personality [4]. The deep combination of modern AI technology with foreign language MOOC has been developing into an up-to-date educating means, and the present instruction is going to be more personalized, more independent at the same time more ecological [10].

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