Design of Professional Basic Courses Based on Artificial Intelligence and Open Learning

Peiting Yu[1(✉)], Han Liu[2], and Xuan Zhu[2]

[1] Wuhan College of Arts and Science, Wuhan 430000, China
laure163@163.com
[2] College of Information and Communication, National University of Defense Technology, Wuhan 430010, China

Abstract. In response to the shortcomings of the current curriculum teaching design, based on artificial intelligence algorithms, an open teaching design was carried out using professional basic courses as an example to understand students' learning situation, clarify teaching objectives, summarize methods and strategies, and provide methods for dealing with teaching difficulties. Provided guidance and support for the instructional design of open learning in subsequent courses.

Keywords: Artificial Intelligence · Open Learning · Design

1 Introduction

The application of artificial intelligence technology [1] is ubiquitous, especially in the era of information intelligence. Its applications are becoming increasingly widespread, mainly including intelligent teaching systems, intelligent testing and evaluation, photo search, intelligent Q&A, intelligent homework modification, and other aspects [2]. The principle of artificial intelligence is to simulate the visual neural principles of the human brain, establish a multi-level nonlinear network, and achieve a targeted solution through network mapping, with a strong ability to learn the essential features of the dataset [3]. The artificial intelligence model is shown in Fig. 1. The application of it in curriculum design will be the research content of this article. The following is an example of open teaching design for basic courses [4].

The basic courses are arranged in the first semester of freshman year, mainly teaching knowledge [5] in phonetics, vocabulary, communication, and basic grammar. Through course learning, students can master certain basic knowledge and problem-solving skills, possess certain listening, speaking, reading, writing, and translation abilities, and be able to use dictionaries to read materials for simple written and oral communication, laying the foundation for further improving communication skills and exam taking abilities [6] in the professional CET-4 exam in the future.

This lesson teaches two basic knowledge [7]: basic knowledge of spelling and phonetics. By explaining the 26 letters, analyze and summarize the spelling skills [8] and phonetic characteristics. The focus of this lesson is on reading and writing 26 letters,

F. Huang et al. (Eds.): ICAIE 2023, AHCS 15, pp. 452–457, 2024.
https://doi.org/10.2991/978-94-6463-242-2_56

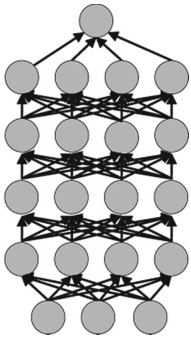

Fig. 1. Artificial Intelligence Model Diagram

and the difficulty is that beginners are always influenced by English language learning habits. Through the learning of this lesson, students will eventually be able to read and write 26 letters, laying a good language foundation [9].

2 Teaching Analysis

2.1 Analysis of Academic Situation

The teaching target of this course is Grade 22 students. Through pre class research, we have learned that: firstly, the class is all zero starting students, so it is necessary to focus on stimulating interest and integrating language and culture in teaching; Secondly, students have a certain foundation in English and have certain advantages in language learning, cultural comparison between East and West, which puts higher demands on teachers' teaching; Thirdly, students are able to think independently and have a certain level of knowledge reserves. During the teaching process, teachers need to consider the ideological nature of the teaching content, attach importance to culture and current affairs, and focus on cultivating students' ability to think, analyze, and solve problems.

2.2 Objective Analysis

Through the learning of this lesson, students will master the basic knowledge of spelling and phonetics, and understand the differences in language and culture through the explanation and analysis of 26 letters.

1) At the knowledge level, able to read and write 26 letters, master basic spelling skills and phonetic characteristics.
2) At the level of ability, students can utilize the learning in this lesson to spell and pronounce simple words and short sentences, and have the ability to acquire knowledge, apply knowledge, and analyze problems.
3) At the level of quality, grasp cultural differences, form good applied thinking, and establish a scientific worldview, outlook on life, and values.

3 Teaching Methods and Strategies

3.1 Teaching Methods

In order to implement teaching concepts, achieve teaching objectives, and comprehensively consider the characteristics of teaching objects and content, this lesson adopts the method of "combining the three" for teaching:

One is the combination of offline teaching and online teaching. Offline teaching, focusing on content knowledge, online teaching, and students' independent learning of relevant MOOC micro courses, supplement and expand classroom teaching content.

The second is the combination of teacher leadership and student exploration. In the teaching process, teachers lead the implementation of teaching, control the classroom as a whole, teach key and difficult content, and guide students to think, analyze and explore independently around high-level, innovative, and challenging issues, cultivating students' innovative thinking.

The third is the combination of case teaching and course ideological and political education. During the teaching process, case studies are introduced to supplement and confirm the teaching content, while incorporating ideological and political elements to stimulate students' interest in learning, enhance their language, cultural, and national confidence, and cultivate their sense of mission, responsibility, and patriotism that cannot be ignored.

3.2 Teaching Strategies

The teaching strategies adopted in this lesson are as follows:

One is to adopt the BOPPPS teaching mode in the classroom, combined with MOOCO, requiring students to conduct pre class previews and use the rain classroom for pre and post tests.

The second is cultural situational teaching, which brings audio-visual and cultural elements to the podium and combines them with multimedia to enable students to intuitively experience and think about culture.

The third is to enhance students' cognitive level through online self-learning and offline discussion, in order to achieve the goal of teaching in the emotional field, allowing students to discover the "beauty" of culture and the "fun" of language, and achieve the goal of ideological and political education in the curriculum.

4 Teaching Implementation

4.1 Ideological and Political Design

One is to explore ideological and political teaching cases related to teaching content. By closely adhering to the unit theme and text theme of the textbook, and utilizing the internet or school books and databases, we collect and screen resources on excellent Chinese and Western cultures, critical thinking, and other aspects, fully leveraging the educational function of this course.

The second is to carry out a comparison of Chinese and Western languages, cultures, and ideas, helping students comprehensively understand China and objectively and rationally view the external world. In the process of comparing China with other countries and regions, guide students to broaden their horizons, experience the differences between different cultures, absorb the essence of foreign cultures, and inject new vitality into Chinese culture; Guide students to cross ethnic and regional differences, understand different ideas and values, and form a sense of cross-cultural communication and exchange.

The third is to encourage students to actively participate in various competitions and practices at all levels, to exercise and improve their language expression skills. In addition to the existing "FLTRP Cup" National University Speech Competition and various competitions held in Hubei Province Translation Competition, schools can also carry out a series of rich and colorful practical activities, such as calligraphy, recitation, debate, etc.; Teachers can also assign various practical tasks such as posters, videos, presentations, role-playing, etc., such as asking students to introduce winter vacation life and their hometown in the form of posters, introduce Chinese literary classics in the form of videos, or tell anti epidemic stories.

4.2 Teaching Process

The design of an open teaching process based on artificial intelligence is shown in Fig. 2.

1) Online pre class preview stage

The teacher uploads the courseware, consisting of 26 letter text and audio recordings, to the Rain Classroom platform, allowing students to independently learn the language and cultural knowledge of this lesson and complete low-level learning tasks related to teaching difficulties. Students can mark difficult to understand knowledge points during the learning process, so that teachers can grasp the overall situation of pre class preview.

2) Offline classroom teaching stage

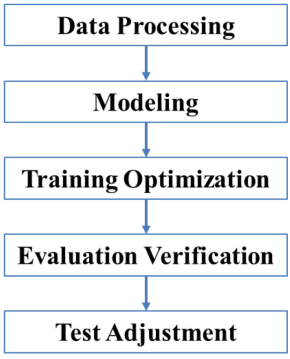

Fig. 2. The design of an open teaching process based on artificial intelligence

Mainly adopting the BOPPPS teaching mode. One is the introduction. Use 26 letters that are familiar to students and have the same form as the 26 English letters to attract their attention, allowing them to connect them with the key content of this lesson, spelling, and basic knowledge of phonetics. The second is to clarify the learning objectives. At the beginning, explain to the students that the course uses the "key" of 26 letters to open the doors of spelling and phonetics. The third is to make a thorough investigation before class. By setting note questions, understand students' knowledge background and learning abilities, and carry out teaching based on their actual situation. The fourth is to promote students' participatory learning. Taking students as the main body, when explaining spelling comparison, provide sufficient comparative cases, such as spelling the same words as taxi and sport, and similar words like people/people, so that students can intuitively feel the similarities and differences between the two; When explaining the small tongue sounds in phonetics, students can compare the pronunciation of small tongue sounds in two videos from different eras, and think and discuss to draw conclusions. The fifth is the after-school test. By assigning test questions in Rain Classroom, teachers can timely understand students' mastery of knowledge. Sixth, summary. Guide students to summarize the knowledge points of the course, clarify the knowledge context, solve the problems raised at the beginning of this lesson, and introduce the content of the next lesson.

3) Online after-school review stage

Students self-study MOOCs online and learn to sing letter songs to consolidate their classroom learning. Based on the specific requirements of the homework and their own actual situation, students choose to complete the homework through independent exploration or collaborative learning, and finally submit the learning results to the online platform.

5 Conclusions

Through the exploration and practice of artificial intelligence and open learning, the method and means of combining the three aspects in this course have shown significant effects in enhancing students' learning interest, improving learning effectiveness, and cultivating their international perspective.

Of course, there are still some immature and areas that need improvement in this course: One is to strengthen the deep integration of online and offline teaching. At present, online teaching only allows students to independently learn related MOOC micro courses, and the learning effect is unknown. In addition, some offline and online courses overlap. The next step is to further refine the classroom teaching design and effectively supplement and expand offline teaching with online content.

The second is to optimize the design of offline activities. Integrate the BOPPPS teaching model throughout, strengthen independent exploration and collaborative learning, and make offline activities more effective.

The third is to strengthen the tight coupling between classroom teaching and work life. Set up classroom knowledge and accurately align with work needs; Introduce cases from work and life into the classroom to supplement and confirm the classroom content.

Acknowledgment. Financial support from the National University of Defense Technology Outstanding Youth Talent Training Program is gratefully acknowledged.

References

1. Zhang, T., Zhang, W.: Research on improving digital ability in hybrid teaching process based on artificial intelligence. Computer Knowledge and Technology 19(11), 171–174 (2023).
2. Liu, Y.: Construction of teaching evaluation management model based on artificial intelligence. Teaching and Management (13), 67–70 (2023).
3. Li, Y., Wu, J., Tong, S.: Teaching reform of information and computing science in the context of artificial intelligence. Journal of Liaoning University of Technology (Social Science Edition) 25(2), 118–120 (2023).
4. Liu, S., Sun, Z.: The meaning of "open education" from the perspective of higher education – also on related terminology. Journal of Shandong Open University (2), 4–13 (2023).
5. Wang, H., Xu, X., Wang, Q.: Research problem and recommendations of foreign open learner models. Modern Educational Technology 32(12), 93–101 (2022).
6. Wang, J., An, F., Li, Z.: Progress and reflection on curriculum and teaching methodology research under the background of internet+. Educational Research (11), 105–116 (2017).
7. Duan, R., Feng, M.: Research on the construction of foreign language intelligence classroom in the background of internationalization. Theory and Practice of Education 39(3), 48–50 (2019).
8. Wang, H., Yu, S., Wang, Q.: Research of open learner model based on learning cognitive map. Modern Educational Technology 31(4), 97–104 (2021).
9. Yang, H. Li, D.: Design and practice of 'Virology' teaching based on rain classroom and the BOPPPS model. Science and Technology Information (9), 127–130 (2023).