

Design and Research of English Teaching Activities Based on Artificial Intelligence

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Keywords: Man-machine Cooperation, Artificial Intelligence, English Teaching, Activity Design and Application

Abstract: In view of the artificial intelligence technology is used in English teaching, and coordination problems in classroom teaching, according to the man-machine synergy theory and teaching theory, the study of technology and the integration of English teaching theory, the exploration practice, build the model of English teaching activity process based on man-machine coordinated, human-machine collaborative design English teaching activities, design and implementation of application methods. Three kinds of human-computer cooperative teaching activities are designed, which are "click to read text and read aloud evaluation", "play speech and distinguish sound selection" and "present text and understand choice", which improve the teaching effect of teachers and learners and provide reference significance for general English teaching activities.

1. Introduction

The integration of artificial intelligence technology and English teaching has greatly promoted the improvement of teaching mode, but there are many shortcomings, which need to be improved. According to teaching objectives, teaching theories and artificial intelligence technology, it is necessary to design teaching activities reasonably and make full use of artificial intelligence technology to improve English teaching level and teaching efficiency.

Linjing Wu 2015^[1], Modern educational technology makes English classroom teaching more interesting, vivid and vivid, easy to understand, and improves the ability of autonomous learning. Xiangna Luo.2010^[2], It has brought revolutionary changes to English classroom teaching. Man Deng 2019^[3], Intelligent automated processes make English classroom teaching standardized and accurate, reduce the dependence on teachers, and solve complex problems in class more effectively. Yonghai Zhu,2019^[4], The application of artificial intelligence technology extends and expands the teaching ability of teachers, with simple and convenient teaching, high efficiency of classroom teaching, convenience for autonomous learning, enhancement of learners' autonomous learning ability and improvement of classroom learning efficiency. Qiang Sun. 2010^[5],Students are not confined in a traditional English classroom with only teachers, but roam in a colorful world. lizhu li. 2012^[6], Plenty of learning resources and information, enough language materials and a wider range of foreign cultures, open horizons, close to the real world.

There are some problems: the lack of organic coordination between technology and teachers and students in English classroom teaching, comprehensive English teaching software, all functions are used, not strong pertinence. Teachers appear to be dispensable, their status is severely impacted and it is difficult for them to play their main role in classroom teaching.Bo Yang. 2011^[7],Students are forced to receive knowledge information and ignore understanding, feeling and reaction. Kitay J F,2000^[8], Lack of interaction and emotional communication between teachers and students makes classroom teaching become mechanized technology.

This paper studies artificial intelligence technology, the role of students and teachers in

classroom teaching, and designs human-computer cooperative English teaching activities to improve the quality of English classroom teaching and optimize the teaching effect.

2. The Development Course of Human-computer Cooperative Teaching

2.1. The Integration of Auditory Media Technology and English Teaching

The United States adopted the model of combining phonics laboratory with foreign language teaching, which opened the prelude of the application of language laboratory in English teaching. Many colleges and universities in Our country have also established phonetic laboratories, using records, recordings, radio and other listening activities, using film projectors, tape recorders and so on, providing new teaching tools for English teaching.

The continuous development of electronic communication technology provides more advanced material conditions for the integration of modern educational technology and English subject. During the rapid development of audio-visual teaching and communication in the United States, television, teaching machines and multimedia presentation technologies have appeared successively, providing a lot of technical support for English teaching. Japan also proposes using projectors or color video systems to help learners improve reading speed, using projectors or color video systems to teach writing, using video systems to help oral English and pronunciation.

2.2. The Integration of Multimedia Internet Technology and English Teaching

Multimedia and Internet technology bring great advantages to English classroom teaching, but there are still some problems. Most English teachers regard intelligent blackboard, all-in-one computer and other interactive devices as traditional classroom blackboards and excessively rely on modern education technology. They put pictures, videos, audio and exercise answers downloaded from the Internet into computers, and teachers can present teaching content with a click in class. In actual teaching, it is easy to have an emergency and change the teaching process that the teacher has designed. If the teachers rely too much on the computer, they cannot change their minds at any time according to the teaching process, complete the teaching smoothly and achieve the teaching purpose in advance. In order to pursue the fun of class, teachers excessively apply beautiful pictures, vivid plots and pleasant music, and perfect visual and auditory effects attract learners' great attention. Instead, they ignore the course knowledge and do not make clear the key points of teaching, which makes it difficult to achieve good learning effect.

In short, during the integration stage of multimedia Internet technology and English teaching, teachers ignored the information teaching design and method theory, and simply applied technology in classroom teaching. They failed to realize the integration of modern educational technology and English teaching by using technology for technology's sake. Multimedia Internet technology brings comprehensive resources such as sight, listening and speaking to English teaching, so that learners can feel the full range of voice input and output.

2.3. Integration of Artificial Intelligence Technology and English teaching

Artificial intelligence is the realization of intelligence on machines (computers) using artificial methods. This includes machine learning, pattern recognition, analysis and recognition of patterns that can be signals, images or ordinary data. Expert system: An intelligent computer program that solves complex problems that only experts can solve. Artificial neural network is devoted to the simulation of human image thinking, insight thinking..

The popularization application of artificial intelligence, natural language processing, such as bot technology application in English teaching is more and more popular, such as Beijing university jia product has a design and development of intelligent learning English system, the system of bot, teaching platform and software for learners memorizing words created a good command of English in dialogue situation, It can allow learners to practice vocabulary, listening, speaking and other aspects and give timely evaluation, so that learners can actively participate in classroom learning to improve the learning effect. In English teaching, more and more attention is paid to the

intelligentization of evaluation, and the correcting net is often seen in English writing to reduce the burden of teachers.

2.4. Multidimensional Linear Space Description

Description of multi-dimensional linear Space Traditional mechanical design space is three-dimensional Euclid space, measured by distance or Angle. Generally speaking, there is no measurement for a multidimensional space, only the introduction of norms, making it a normed space. To measure by norm, the concepts of open set, closed set, convergence and continuity can be introduced accordingly. In order to solve the problem of functional analysis of multidimensional variables, a normed space is defined.

Definition Let X be a vector space over the number field K (real number field R or complex number field C). If, for each, a real number $\|X\|$ is specified, it is called the norm of X , which satisfies the following norm axioms:

homogeneity: $\|\alpha x\| = |\alpha|\|x\|$; Triangle inequality: $\|x + y\| \leq \|x\| + \|y\|$;

Positive characterization: $\|x\| \geq 0$ $\|x\| = 0$

The above $x, y \in X, \alpha \in K$ is called the normed vector space on K , referred to as normed space; If $K = R$ (or C), a normed space on K is called a real normed space.

Norms can be defined in a variety of ways. The norm can be defined according to the physical meaning, for example: $x(t)$ is the linear space x formed by all continuous differentiable functions defined on $[a, b]$, and the norm is assigned to each one in $x \in X$

$$\|x\| = \max_{a \leq t \leq b} |x(t)| \quad \text{or} \quad \|x\| = \max_{a \leq t \leq b} |x(t)| + \max_{a \leq t \leq b} |\dot{x}(t)| \quad \text{or} \quad \|x\| = \int |x(t)| dt$$

3. Study on the Cooperative Mode of Human-Computer Collaborative Teaching

3.1. The Connotation of Man-machine Collaboration

Synergy is to coordinate two or more than two individuals, cooperate with each other, coordinated and consistent to complete a goal of the process. In the modern society with the rapid development of technology, the concept of synergy will be expanded. Synergy no longer refers to the synergy between human beings, but also refers to the synergy between human beings and technology, tradition and modernity, software and hardware, design and application, and so on.

There are several differences between humans and machines. First, humans find problems while machines solve them. People will encounter a variety of problems in real life. In order to solve these problems and meet the needs of human beings, machines as the extension and amplification of human thinking organs need to solve these problems. Second, machines are material and have no social attributes. Third, human beings belong to society and have spiritual attributes. They can feel happiness, pain and various emotions through various sensory systems, such as vision, hearing and taste, and can express them through vivid and colorful natural languages, forming a rich and colorful human culture. Machines, on the other hand, have to do everything in a monotonous, unambiguous binary language, performing mechanical calculations and processing to achieve desired results.

3.2. New Roles for Teachers, Students and Technology in Human-computer Collaboration

Paulo Blikstein, a professor at Stanford University, argues that AI is about exploiting the needs of teaching and providing learners with demand-driven learning environments, rather than simply passively applying them to teaching situations. Therefore, the organic combination of technology and education is still the fundamental policy for the integration of artificial intelligence and education. In order for intelligence to embody the organic integration of artificial intelligence and education, teachers must make scientific and accurate decisions through comprehensive and accurate data, and technology should provide teachers with accurate decisions. Only when the two cooperate with each other, can the advantages of artificial intelligence in education be maximized.

English human-machine collaborative teaching significance and value, realizing learners between rationality and sensibility with artificial intelligence technology can assign a English teacher, make up for the teachers themselves, support teachers achieve the teaching goal, in this process, teachers are users of technology, and the feeling of the learners as technology application, will feel the value of technology as a tool in the English classroom. The application of artificial intelligence technology in the English classroom, English subject knowledge base as the foundation, collecting a large number of learners data, using induction, sorting, analysis, prediction algorithm models such as training, through the powerful computation ability of pure rational data processing, and repetitive, logical, regularity of the present method to express the data processing results.

Artificial intelligence technology will promote the functional differentiation of teachers. In the man-machine collaborative teaching environment, teachers will develop to the all-round and professional type. Teachers should master not only professional knowledge, but also knowledge of learning methods, techniques, cognition, learners' physical and mental development, and understand various social attributes. Generally speaking, teachers do not have strong leadership and cooperation skills. However, artificial intelligence technology can help teachers to develop comprehensively. In addition, professionalism will also become the future development direction, education and training field will emerge a variety of sophisticated professionals. Teachers are no longer the dominant force of classroom teaching, but equal collaborators and guides.

4. Study on the Cooperative Mode of Human-computer Collaborative Teaching

4.1. Design of English Human-computer Cooperative Teaching Model

The teaching activity is the teaching form of the basic process of teacher's teaching and learner's learning. In the process of teaching activities based on human-machine collaboration, teachers, learners and technology can cooperate with each other to improve the teaching effect. Theory is the basis of model building, man-machine coordinated theory of process model based on the teaching of English, including nine teaching events and human-machine collaborative concept, Gagne the essence of teaching is put forward based on communication, a series of events, he analyzes the practical process of student's study, and according to the study of phase teaching events can be divided into nine steps, 1. Attract attention; 2. Tell the students about their goals. 3. The acquisition performance of stimulus recall predisposition; 4. Present stimulus materials; 5. Provide learning guidance; 6. Elicit behavior; 7. Provide feedback; 8. Assessment work; Facilitate retention and migration. Gagne's nine teaching events have certain reference value for the process model of English human-computer collaborative teaching activities. Based on the analysis of the above nine teaching events and the concept of human-machine collaboration, the process model of human-machine collaboration English teaching activity is constructed.

English curriculum standards are based on five dimensions: language skills, language knowledge, emotional attitude, learning strategies and cultural awareness. The teaching objectives of the activity process model of English teaching based on man-machine collaboration are as follows: First, language skills include basic skills such as listening, speaking, reading and writing, and can be used comprehensively. Second, language knowledge includes phonetics, vocabulary, grammar and other knowledge, and the knowledge system can be used for daily expression. Thirdly, maintaining a positive learning attitude is the key to success in English learning. To be specific, learners can experience the fun of learning English in English learning. Fourth, in order to enable learners to better carry out English learning. Fifth, in order to make it easier for learners to understand and use English.

In order to ensure the effective development of English teaching activities, the following requirements are put forward: first, the purpose, significance and process of the activities are clear, and the opportunities for learners to show their learning results are provided. Second, the content and form of activities should conform to the actual life of learners, so that learners can easily understand and master the true meaning and usage of the language. Third, learners need to gradually internalize language knowledge through contact, understanding, practice, application and

other links in activities. In addition, learners need to be allowed to acquire, process and transfer knowledge in the English language, and express their personal views and feelings. Fourthly, the activities should be conducive to the interpenetration and connection between English and other subjects, and promote the comprehensive development of learners' cognitive ability and creativity. Fifthly, the creative use of modern educational technology provides a context for learners to observe, imitate, try and experience real language, so that learners' English learning can better reflect authenticity and communication.

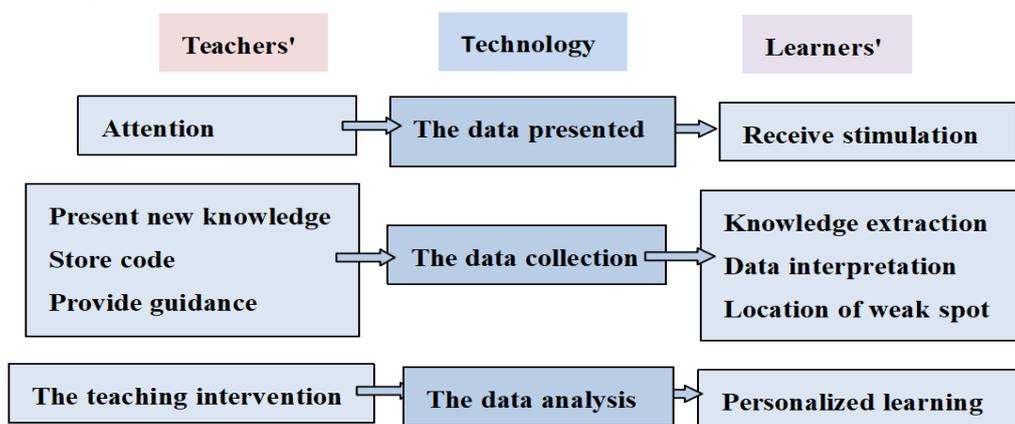


Figure 1 The relationship between teaching, technology and learning activities.

The relationship between teaching, technology and learning activities is shown in Figure 1. The human-machine collaboration is the main part of the model.

4.2. Design and Application of Human-computer Cooperative Teaching Activities

According to the process model of English teaching activities based on human-machine collaboration, English teaching activities are designed and applied to actual English teaching using the mature wisdom language teaching system as the technical platform. Classroom observation tables and interview records are used to test the effect of the application of activities.

In English teaching activities based on man-machine coordinated process model as the basic framework, English curriculum standard as the teaching goal, combined with the four basic class type, design human-machine collaborative teaching activities, the following three kinds of English are "point to read text - read reviews" teaching activities, "broadcast speech distinguishes the sound choice" teaching activities and "rendering text - understand choice" teaching activities.

The Design of "Reading text aloud - Reading Aloud Evaluation" English teaching Activity. English teaching lack of oral English practice environment, lack of oral English learning evaluation, resulting in poor learning effect. This paper designs a teaching activity of "reading text and reading evaluation" based on intelligent English learning system. Use of intelligent English learning system of intelligent voice synthesis function, some read the key words, statements, learners through speech perception, voice response to voice input, intelligent English learning system to evaluate the learner input voice, teachers according to the evaluation results, put forward Suggestions for improvement, so as to improve the accuracy of the learner's pronunciation, intonation and accuracy.

5. Conclusion

In order to realize the effective cooperation among teachers, learners and ARTIFICIAL intelligence, the design and implementation of English human-computer cooperative teaching activities based on intelligent English learning system are carried out from the perspective of human-computer cooperative teaching. The following research conclusions are drawn:

First, the process model of English teaching activity based on human-machine collaboration is beneficial to human-machine collaboration and provides reference for English teaching. English human-machine collaborative teaching activity process model, in order to add basic process of teaching activities, and starting from the concept of man-machine coordinated, design the teaching

activities, teachers, and students three activity main body of the respective roles and activities throughout the process, strengthen man-machine coordinated process, the application of the activity, so as to realize human-machine coordination in the process of English teaching activities. According to the application and implementation of teaching activities in English classroom, it is proved that the process model of learning English teaching activities based on human-computer collaboration has certain feasibility and rationality.

Second, human-computer collaboration can be realized by three activities: "click to read text - read aloud evaluation", "play speech - distinguish sound selection" and "present text - understand choice". Teachers can not only complete the teaching process with technology, but also ensure their teaching status and realize the collaboration between teachers and technology. Learners use technology to complete classroom interaction, increasing two-way interaction with technology, and can use technology to improve the learning effect, realize the synergy between technology and learners.

Thirdly, through classroom observation and analysis of the three teaching activities and in-depth interviews with teachers and students, it can be found that with the support of technology, teachers can speed up teaching efficiency, make up for their own pronunciation deficiency, and create a standard and authentic English language environment for learners. Through the perception of standard and authentic English language, learners can exercise their Sense of English language. Through the interaction with technology, learners can enhance their understanding and application of English knowledge. Meanwhile, learners' learning initiative and information literacy will also be improved.

Acknowledgements

The authors greatly appreciate the following sponsors for their support to the study: Soft Science Project of Science and Technology Department of Sichuan Province, "Intelligent NUMERICAL control system based on physical motion control principle"22RCYJ0005.

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