



College English Teaching Ecosystem Based on ML Algorithm

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Abstract. Mega data application has become the main factor affecting CET, which breaks the balance of the traditional CET ecosystem. Using mega data technology to build an CET ecological environment is the main means to improve the quality of CET. ML is an important way to acquire knowledge and the key to realize artificial intelligence. In modern instructional technology, the rational use of ML can develop an intelligent teaching system. To study the ecological environment of College English is to study the relationship between individual behavior and English learning environment and the relationship between various factors in learning environment. We should make full use of the flexibility, fragmentation and autonomy of mobile learning mode to carry out appropriate flipped classroom teaching. Teachers should adopt various evaluation methods to improve their own quality, such as correcting the network, official account of WeChat, etc., to cultivate students' awareness of mobile learning strategy, information literacy of learning resources, language practice ability and autonomous learning ability, so as to achieve the goal of CET and promote the sustainable and harmonious development of CET ecosystem.

Keyword: ML algorithm · CET ecosystem · modern education

1 Introduction

Educational ecology mainly studies the rules and mechanisms of the interaction between various elements of education and learners' learning ecology [1]. Continuously improve the quality of education, promote the harmony between people and the environment in the process of education and teaching, and embody the idea of sustainable development in English learning [2]. Building an ecological College English Teaching (CET) environment and realizing the ecological balance of CET is of great significance to continuously improve the quality of CET [3]. To study the ecological environment of College English is to study the relationship between individual behavior and English learning environment and the relationship between various factors in learning environment. Its purpose is to balance various factors of CET [4]. The development and application of IT have changed the way of teaching and learning in traditional CET [5]. Chen Jianlin and

others believe that the application of IT constitutes an Internet-based education ecosystem, which enriches educational factors. Each factor is interdependent and restricts each other, forming an organic whole of the system in constant balance [6]. The application of mega data technology has broken the ecological balance of CET. Building and rebalancing the ecological environment of CET under the mega data environment has become an important research direction of Modern CET. Among them, Machine learning (ML) is an important way to acquire knowledge and the key to realize artificial intelligence [7]. The research of ML is of great significance to optimize human learning. It has important applications in intelligent teaching system [8]. Modern instructional technology is “research and ethical practice to promote learning and optimize performance”, and its definition should include the research on ML technology and its application. ML should be a research field of instructional technology. Through the research of ML, we can improve the theory of modern instructional technology and develop an intelligent teaching system [9].

There are still a series of problems to be solved in CET, such as the single college English teaching mode, the way of teaching without jumping out of the traditional mode, and the weak innovation ability of College English teachers [10]. There are many imbalances in the CET ecosystem, such as the imbalance of English classroom ecosystem, the imbalance between teaching subject factors, the imbalance of evaluation system, the imbalance between language knowledge and practical application, etc. [11]. If these problems are not solved, the quality of CET cannot be improved. Teachers and students will feel frustrated in the whole college English teaching system, which hinders the harmonious and effective growth of ecological factors in the whole system [12]. In view of this situation, in order to build a Harmonious CET ecosystem, based on the College English mobile learning model, College English teachers should strive to overcome all biased, one-sided, extreme and unbalanced states in the practice of classroom teaching. By improving their own quality, adopting different teaching modes and methods, making full use of multimedia means such as network, helping students flexibly use mobile devices, cultivating students’ positive learning strategies and information literacy, so as to realize a virtuous cycle of the whole college English teaching ecosystem. Focusing on mega data technology and aiming at the sustainable development of English learning, this paper studies the interdependence and mutual restriction of various factors in CET, in order to build a CET ecosystem under the mega data environment.

2 ML Algorithm

2.1 Meaning of ML Algorithm

At present, there is no unified definition of ML. ML is not only the fundamental way to realize artificial intelligence, but also an important feature of machine intelligence. The process of ML is a knowledge acquisition process with a specific purpose. Computers with learning ability will be able to do the following things: automatically acquire new declarative knowledge; Develop cognitive ability through practice; Organize new knowledge into a common and effective form; Discover new facts and new theories with the help of observation and experiment.

As a discipline, the research work in the field of ML mainly focuses on the following three aspects, as shown in Fig. 1:

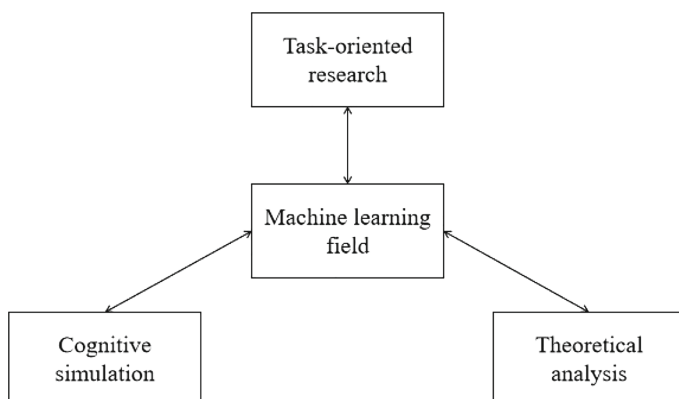


Fig. 1. ML domain

One is task-oriented research, that is, facing practical applications, developing and perfecting a learning system that can perform a set of predetermined tasks in applications. The second is theoretical analysis, which theoretically explores various possible learning methods and algorithms independent of application fields. ML is the core of artificial intelligence and the integration of multi fields and interdisciplinary subjects. It can use self-learning algorithms to simulate human learning behavior or realize human learning behavior. ML can reorganize the original knowledge structure through self-learning algorithm, so as to obtain new knowledge and new performance. ML is to understand the existing knowledge and acquire new knowledge and skills through the research of machine simulating human learning activities. The data volume is getting larger and larger, and the original stand-alone computer system can no longer meet the demand for data analysis of mega data. Therefore, cloud computing technology came into being. It can realize the storage requirements of mega data on the cloud infrastructure, but the excessive resource consumption leads to the reduction of the overall performance of the system.

2.2 Significance of ML Research

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2.2.1 Paper Title

ML can make up for the lack of human learning. The human brain has a high ability of self-organization and self-learning, and can continuously accumulate experience and adapt to the requirements of the new environment, which is beyond the reach of the current computer. However, human brain learning has some obvious defects: first, human brain learning is a long process. Moreover, the learning process is also affected by various

factors such as learners' physical development, interest, will and intelligence. Secondly, the result of human brain learning is easy to forget, and it can not be copied. After being informed of the learning purpose, ML can keep learning, with high learning efficiency, good quality, learning results are not easy to forget, and easy to save, copy and spread. In addition, the research on ML can make the machine smart, can complete some things that need intelligence, and make people don't have to do some complicated things in person. The mechanism of human thinking and learning has always been a problem perplexing cognitive psychologists and educators.

This is mainly due to the immeasurability of human thinking and learning process. Before ML, the research on learning and thinking adopted indirect research methods. Through computer simulation of human learning, ML helps to reveal the mechanism of human learning and the essence of human intelligence. ML research will also theoretically explore various possible learning methods, learning models and application independent algorithms. Various possible learning methods, models and algorithms on the machine can provide practical help for the psychological research of human learning, and can "reflect" some laws of human learning by throwing away the means of ML. Intelligence includes human intelligence and computer intelligence. Using artificial intelligence can transform human intelligence into computer intelligence; The use of computer-aided instruction or computer intelligent teaching can transform computer intelligence into human intelligence. Intelligence is one of the most important directions of machine development. Only by applying artificial intelligence technology to education can Cai really teach students according to their aptitude. The use of Intelligent CAI courseware has transformed the computer courseware from an auxiliary teaching tool into a new teaching form.

3 Construction of Ecological Environment for CET

3.1 Collection and Collation of College English Environmental Data and Other Materials

The construction of CET ecological environment in the mega data environment is a complex and multi domain subject. Starting from the traditional theoretical framework and education and teaching model, creating a dynamic and systematic foreign language education ecological environment is facing severe challenges. It is mainly reflected in three aspects: first, there is a lack of perfect ecological theory of CET; Second, there is a lack of systematic ecological teaching methods of College English; Third, the relationships in the University applied education environment are too complex. Education mega data is the information asset of education. From the diversified trend and growing trend of these huge amounts of education materials, we can explore the law of education. The use of a large amount of accumulated various materials can not only improve the quality of education and teaching, but also enhance students' initiative and enthusiasm in learning and enhance their sense of participation in learning, so as to improve the quality of education and teaching, so as to form an ecological system of foreign language education and teaching with mutual compatibility, harmonious coexistence and dynamic development of various subsystems. Figure 2 shows the association diagram of CET:

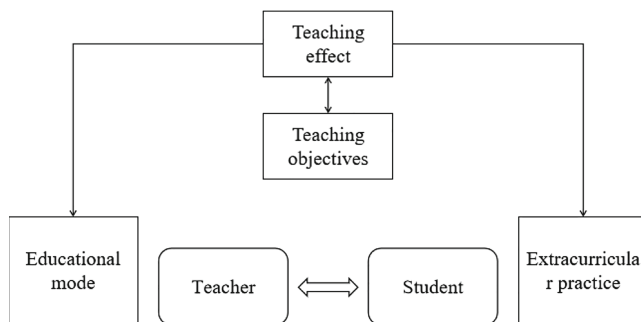


Fig. 2. Schematic diagram of CET

At present, mega data has the characteristics of huge volume, high-speed production and diverse formats, which is consistent with the large and diverse accumulated data in CET. Mega data analysis avoids the complexity of the theoretical framework of educational ecology and various education and teaching modes. The core of College English ecological environment research is to analyze the interaction mechanism of various CET factors. The premise of this research is the collection and sorting of relevant data. Based on the mega data model, the main content of data collection and sorting is to collect and sort out the data of classroom environment, extracurricular environment and practice environment; Collect data, various learning systems and multimedia data and sort them out. CET environment data mainly includes three types: classroom teaching environment data, extracurricular environment data and practice environment data, as shown in Fig. 3:

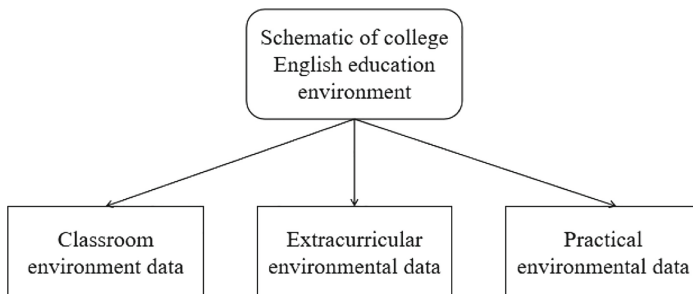


Fig. 3. Data of CET environment

A large amount of College English materials include: various English learning materials from the Internet, data from various English teaching systems, various audio and video English learning materials, various English learning materials, English micro class learning materials, corpus, etc.

3.2 Teaching Mode of CET

With the application of the Internet and mega data, the traditional teacher-student relationship has changed. Traditionally, teachers are the leader of classroom teaching and represent the authority of knowledge teaching. It is difficult to accept students' questions and easy to stifle students' new and different views; Students are the passive recipients of knowledge. Their consciousness of classroom subject is generally weak, they are more used to passively accepting teachers' views, lack the ability of independent thinking and problem-solving, and lack skeptical spirit and critical thinking. With the rapid development of IT, a large number of high-quality educational resources continue to enrich and enrich students' learning life through the Internet. Figure 4 shows the teaching mode of CET:

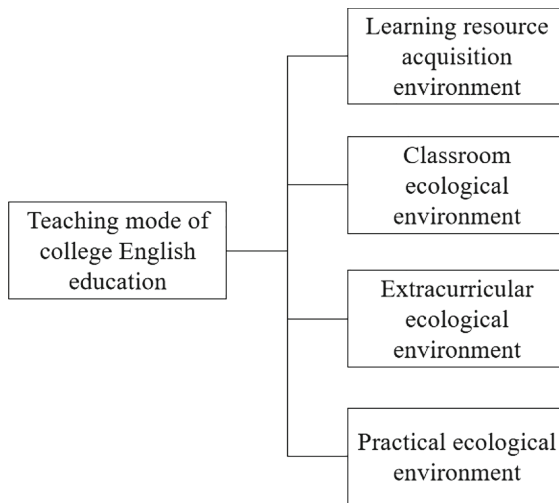


Fig. 4. CET and teaching model

Taking teachers and students as the center, in CET, we should fully consider the individual differences of teachers and students, form learning resource acquisition environment, classroom ecological environment, extracurricular ecological environment and practice ecological environment, and then construct CET ecological environment. Learning resource acquisition environment. Under the background of mega data, the dominant influencing factor of foreign language teaching ecosystem is to build a learning resource acquisition environment. With the development of the Internet, a large number of teaching resources have realized cross network and cross system integration, and foreign language teaching will break through the limitation of time and space. Using mega data technology can effectively optimize the organization and use a large amount of learning resources; Classroom ecological environment, College English classroom is the most basic ecological environment of teaching activities, which has the characteristics of system, dynamics, balance and harmony. The ecological view of CET is to take computers, the Internet and mega data as an important part of the ecosystem. In this ecosystem,

teachers and students need to use computers and deal with the relationship with computers. Mega data technology can effectively optimize and improve learning methods and customize differentiated learning modes according to the actual situation of different learners. In stimulating students' subjective initiative in learning, modern classroom teaching can provide rich learning resources and more flexible discussion methods.

Extracurricular ecological environment: the education ecology based on mega data focuses on the connection between in class and out of class, and creates a diversified learning space and learning cognitive environment with the help of social networks. The main body of the educational ecological environment should build a digital, networked, intelligent and interactive three-dimensional classroom with the help of Internet, mega data, artificial intelligence and other technologies, so as to fully improve the learning effect and exercise the ability of lifelong learning. This requires the use of open and advanced education ecosystem to connect and strengthen the organic combination of classroom teaching and extracurricular teaching; The traditional classroom learning model of practical ecological environment pays more attention to classroom learning than out of class application. Teachers pay more attention to the teaching of textbook knowledge, do not create enough English communication environment outside the classroom, and ignore the correlation between English learning and application environment. This requires understanding the education ecosystem with an open and systematic concept, and opening up the energy exchange and information sharing among various factors within the system, between the internal and external of the system.

4 Conclusions

ML is the proper meaning of modern instructional technology. It should become an important research field of modern instructional technology, and it is also possible. The research and application of ML will deepen the understanding of human learning and create conditions for the development of intelligent learning system. Based on the mega data environment, building an open, healthy and harmonious CET ecosystem is the key to improve the quality of CET. The application and development of mega data technology has broken the balance between various factors in the traditional CET ecosystem. Mega data technology itself also provides support for the construction of a new CET ecological environment. While building a harmonious ecological environment of College English, it has formed a huge cumulative database of College English learning. Through mega data technology, it can build a comprehensive, balanced and reasonable CET environment. Constructing an open college English teaching ecosystem in which various educational factors depend on each other, restrict each other and rebalance, and exploring the college English teaching mode and method combining inside and outside the classroom with practice under the big data environment are of positive significance for improving the quality of college English teaching.

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